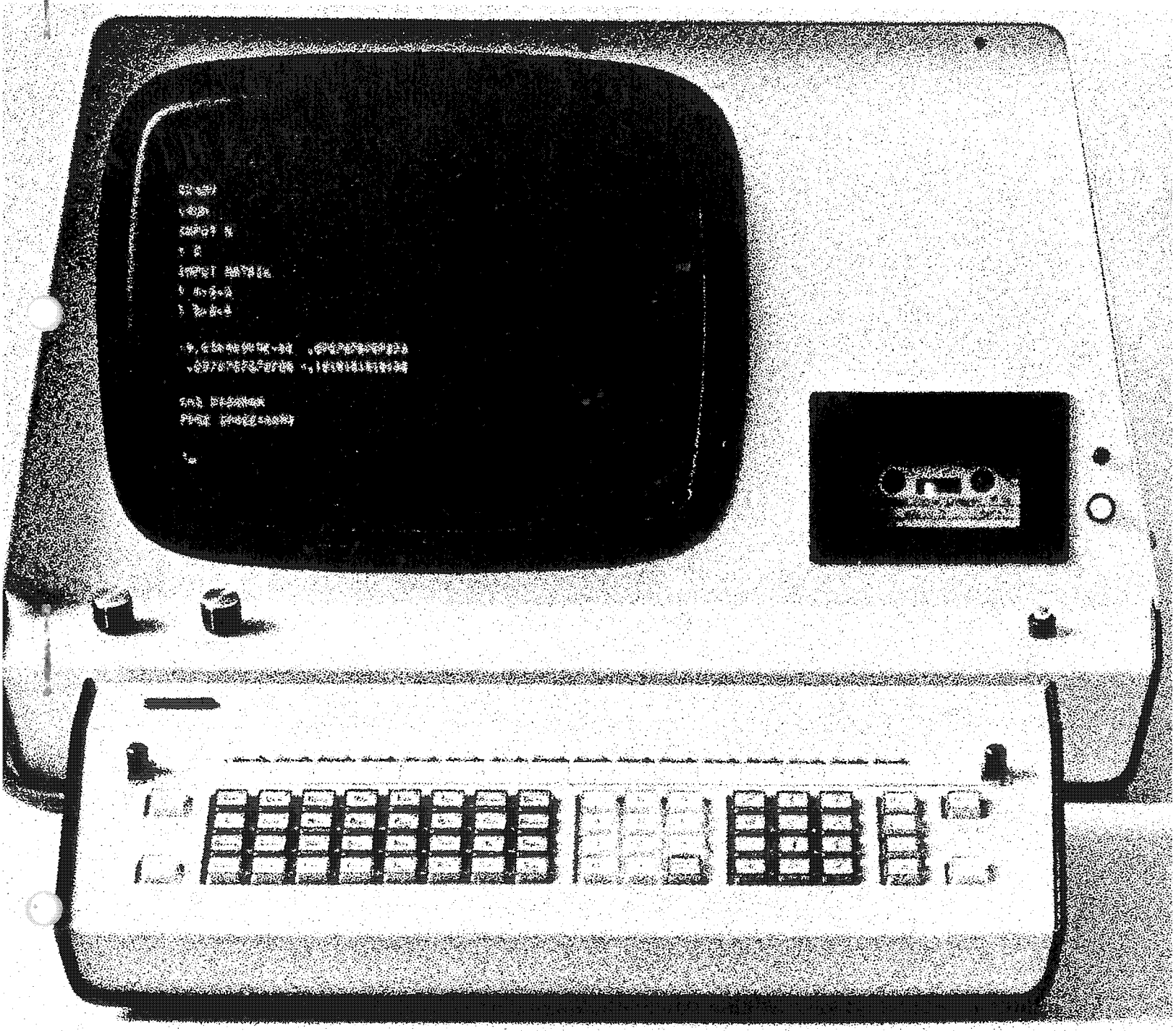
WANG

SOFTWARE HANDBOOK

SYSTEM 2200



2200

Series Software Handbook

WANG LABORATORIES, INC.
836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94 7421

INTRODUCTION

This software handbook provides a guide to software available for the Wang System 2200 Series in six application areas: Business; Education; Medicine; Public Service; Science, Engineering, and Mathematics; and Utilities. The software is developed by Wang Laboratories, Inc., SWAP (Society for Wang Applications and Programs), and Wang customers and software consultants (vendors).

NOTICE

HOW TO USE THIS HANDBOOK

The handbook is divided into chapters with each chapter representing an application area (e.g., Business). Each chapter is further divided into a certain number of categories and sub-categories within which the software is listed alphabetically by title. Included under each software title is the following information: the author, an abstract, minimum required equipment (explained in Appendix B), the price, and (for Wang entries only) a package number. Finally, the handbook should be placed in a three ring binder for ease of adding later additions, properly identified.

HOW TO ORDER LIBRARY MATERIAL

The ordering procedure is determined by the source of the material being ordered. The source of the material is indicated by the letter at the beginning of the Central Library Number (W = Wang, S = SWAP, and V = Vendor) located at the bottom of each entry. Prices are subject to change without written notification.

Wang-Developed Software:

Wang-developed software is ordered according to the Package Number through General Services. (The individual tape, disk, and manual numbers are not required.) The Package Number is a nine-position alphanumeric field broken down as follows: 195-BCCC-DE, where

B = Type of program:

"0" for System Programs
"1" for Technical Programs
"2" for Commercial Programs
"3" for Demo Programs

CCC = Unique accession number assigned in steps of 1 beginning with 1.

D = Medium on which the system is distributed:

"1" Cassette
"2" Flexible Disk (2200-Memorex)
"3" Diskette (WCS-Shugart)
"4" Fixed/Removable Disk (Diablo)
"5" 9 Track Tape
"6" Punched Cards
"7" Disk Image Software on Cassette

Note: Software is not necessarily provided on all media (e.g., "-2(-3)" at the end of a Package Number indicates software is available only on Flexible Disk and Diskette).

E = Assigned by Home Office to indicate:

Blank = No Support
M = Wang Maintenance Responsibility
V = Vendor Responsibility

Note: The letter "M" is applied at the end of a Part Number to signify that a customer has purchased a Software Support Contract.

Software Support

Continuing software support is a new two-part offering from the Programming Department. Part 1 provides a 90 day service available to all customers (period begins with date of shipment), and Part 2 is an annual service contract.

The continuing support service will be limited to those who are covered by the 90 day service or who have purchased an annual support contract, and normally includes:

1. Access to Field Analysts and Technical Information Center for questions.

2. Access to Programming Department for software bugs (only for Wang supported software that has not been modified).

3. Periodic receipt of technical notes on software problems.

4. Periodic receipt of errata sheets on software updates.

5. Periodic receipt, when necessary, of updated software on the magnetic media and updated manuals.

6. Periodic newsletters on new software.

The normal channel for service, be it questions or technical problems, initially should be through the Field Analysts or the Technical Information Center (T.I.C.). Any problem submitted to the Programming Department must be fully documented. In some cases, Programming may request a copy of the user's software on a magnetic medium.

The 90 day and annual support services in no way guarantee the software, and in some instances, the annual support contract will not be offered. When available, it so indicated (in Wang entries only) under Price.

The principal purpose for this continuing support is to provide a mechanism for notifying users of Wang-supported software of errors and software enhancements.

Send requests for Wang software to:

General Services
Wang Laboratories, Inc.
836 North Street
Tewksbury, Massachusetts 01876

SWAP Users Society Software:

SWAP material is free of charge and is available only to members. Membership information can be obtained by writing to:

Wang Laboratories, Inc.
% SWAP
836 North Street
Tewksbury, Massachusetts 01876
Phone (617) 851-4111

Vendor-Developed Software:

Many vendors and customers develop software for Wang equipment. The address of each vendor is located in Appendix A. To order any vendor material, write to the appropriate vendor(s) who will send you additional information directly.

DISCLAIMER

This volume consists solely of listings of available software. Wang Laboratories, Inc., by this listing makes no general warranties or representations concerning the suitability of a particular software item for a particular application, and cautions users to rely solely upon the developer's specific warranties and specifications made in connection with each software item.

TABLE OF CONTENTS

CHAPTER I
BUSINESS (100.00-390.00)
2200 SERIES

ACCOUNTING APPLICATIONS (100.00-100.70)

General Accounting Applications (100.00)

TITLE: GENERAL ACCOUNTING SYSTEM

AUTHOR: Stern Bernstein Associates

ABSTRACT:

The General Accounting system is a real time, random access, disk oriented system. Included in the system are cash receipts and disbursements; sales, purchase, general and payroll journals; provisions for sale commission; bank reconciliation; and accounts receivable-accounts payable. It is a fully coordinated and linked adjunct to the system. There is order creation and invoicing including back order capabilities as well as unique, group and tiered inventory.

The system has the capability of operating for one or several companies and is adaptable for CPA write-ups. The system has the added capability of operating in multiple foreign currencies.

General ledger system follows the double entry standards of accounting. Provision is made for all types of receipts and disbursements, bank debit and credit memos, clients-vendor debit and credit memos in addition to invoices.

A full payroll system is offered, capable of handling salaried and hourly employees year to day, quarter to day, and current figures are kept for each employee in addition to his source data.

Each client may be "tagged" with a salesman's code to facilitate commission accruals to each salesman's account. Payed invoices are so recorded thus facilitating payments to salesman of commission.

The accounts receivable-payable section is an open item system. Both outstanding and paid invoices are maintained so that statements can be rendered by open item only or all historical data, in case the account is in dispute. Access to accounts is by acronym or account number. Invoices for goods sold and purchased are automatically entered during invoicing and purchasing cycles. Provisions for every type of payment and discount is made.

The inventory system creates a hard goods trail showing all increments or decrements from invoicing and purchasing programs. Special adjustments are provided for. Inventory values can be updated under Lifo accounting. Inventory status is available at all times including on order, backorder, and current stock in several locations.

The invoicing program is complete in every respect and works on the packing list-invoice completion-invoice printing system, but may be easily modified for a single invoice print run including packing list. Both financial and merchandise transactions are automatically posted to their respective trails.

The entire system produces all customary reports of financial and merchandise transaction, summaries and analysis.

The system does not include cost accounting or manufacturing process accounting.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2230-1, 2216, 2221 and 2222 or 2215.

PRICE: $8,000.00 - $10,000.00, function of the amount of customization necessary.

CENTRAL LIBRARY NO.: V22-100.00-00013

Accounts Payable (100.05)

TITLE: ACCOUNTS PAYABLE

AUTHOR: Osborne & Associates, Inc.

ABSTRACT:

This program provides a complete A/P system including automatic check writing. The program generates the following reports:

1) A/P open item listing with totals for selected aging periods to determine cash need; report may be by vendor summary with totals only or with complete invoice detail.

2) Check register and check writing with complete invoice detail on check.

3) A/P closed listing.

4) Vendor purchases reports and date of last activity.

5) Vendor address list.

Features:

1) Upon entry, operator selects date to be paid to take into advantage discounts.

2) Discount percent is entered, and calculated automatically.

3) 5 aging periods may be utilized and changed at any time.

4) Invoice and check detail.

5) Program handles credit memos and negative amounts and invoices for partial use of credit memos in paying invoices when credit memo total is greater than invoice total. A voided check is provided automatically if amount due is zero, to provide vendor with payment detail.

6) G/L postings and job postings provided.

7) Complete audit trail.

8) Available with P/R, A/R, G/L, Costing Accounting packages.

MINIMUM REQUIRED EQUIPMENT: 2200B-4, 2222, 2216/17, 2221, and 2230.

PRICE: $3,000, including installation; training provided, $175.00/day plus expenses.

CENTRAL LIBRARY NO.: V22-100.05-00088

- -

TITLE: BAS ACCOUNTS PAYABLE SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The BAS Accounts Payable System operates in approximately the same way as a non-computerized system, except that the routine work of keeping files, recording balances, and making payments is performed by the System 2200. All the vendor records are arranged by Vendor ID on a tape or disk, which takes the place of a filing cabinet. Two master files are used: (1) a Vendor Master File on which vendor records are stored in order from lowest to highest Vendor ID, and (2) an Open Item File on which invoices are stored in order from lowest to highest Invoice Number for one vendor, and on which the vendor groups are arranged from lowest to highest Vendor ID. The Vendor Master File contains year-to-date purchases and discount amounts as well as current vendor balances, and the Open Item File contains unpaid invoices and current balances. Computations are performed automatically. There are four phases to the system: creating master files, entering invoices, making payment, and printing monthly reports. Phase I is executed after the system is installed. Phase II is executed every day, or as often as invoices are entered. Phase III is executed every two weeks, or as often as payments are made, and Phase IV gives monthly reports.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222 and 2221.
Disk: 2200B-3, 2243, 2222, 2216, and 2221.

PACKAGE NO.: 195-2006-1(-2)(-3)

PRICE: $700

CENTRAL LIBRARY NO.: W22-100.05-00001

Accounts Receivable (100.10)

TITLE: ACCOUNTS RECEIVABLE

AUTHOR: Osborne & Associates, Inc.

ABSTRACT:

This program is designed to operate from manually written invoices. The programs provide the following reports:

1) A/R ledger - with customer balance total, either summary or complete with invoice detail.

2) Aging analysis - summary or complete with invoice detail.

3) Closed item listing of invoices paid off.

4) Unposted item listing of invoices which have not been posted.

5) Customer sales analysis report.

6) Customer address listing.

Features:

1) Supports progress or down-payment invoicing in addition to normal invoicing. Progress income is posted to a separate contractual income account.

2) Allows entry of invoice which has not been dated and is not posted to income account.

3) Allows for multiple tax rates (which can be changed at any time) and non-taxable sales.

4) Maintains sales to date and last year sales for each customer.

5) Automatically handles credit memos.

6) Status of any invoice may be viewed at any time.

7) All transactions entries and update entries are printed in addition to update total, to provide a complete audit total. Program may be linked to G/L posting.

8) Invoice fields may be altered at any time; payment posting consists of a single item entry. Previous payments are displayed separately from new payments.

9) Customer name and address displayed before entering number to assure current posting.

10) Available with P/R, A/P, G/L, Cost Accounting packages.

MINIMUM REQUIRED EQUIPMENT: 2200B-4, 2222, 2216/17, 2230 and 2221.

PRICE: $3,000, including installation; training provided, $175.00/day plus expenses.

CENTRAL LIBRARY NO.: V22-100.10-00089

- -

TITLE: ACCOUNTS RECEIVABLE - BILLING

AUTHOR: Walter A. Treff, Process Equipment Design Corp.

ABSTRACT:

Programs permit complete handling of accounts receivable - broken into sub-groups as follows:

Fileview - permits CRT viewing of the account

a) address characteristics
b) all current posting
c) last billing date
d) aging groups at last billing

Posting - permits both debit and credit entries.

Statement Run - program mode prints statements for all accounts other than those inactive for more than a month (Numerical Sequence). All accounts are updated; aged and posting details are deleted after statement is run.

Trial Balance - program mode permits complete aged trial balance for all accounts other than those with a zero balance.

New Account - permits addition of new files and automatically inserts same in numerical sequence.

Past Due - program prints past due notice for option of 30, 60 or 90 days overdue.

Correct - allows operator to access all data in account for purpose of correction or change.

Two System Programs - program modes for disk initialization and backup copying.

Five Functional Programs - permits assorted operator convenience functions (i.e., rapid display of all customer account names & numbers on the disk - trial statement run without disk updating).

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216, 2217, 2261, 2230, and 2222.

PRICE: $1,800

CENTRAL LIBRARY NO.: V22-100.10-00064

- -

TITLE: BAS ACCOUNTS RECEIVABLE SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

BAS Accounts Receivable System creates and maintains an Open Item File on which cash or other payments are recorded. Cash received can be applied to specific invoices or as general payments. Monthly aging of the file provides statements to be sent to customers, with current, 30, 60 and 90 day balances. Accounting reports such as Aged Trial Balance provide valuable audit trails.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222, and 2221.
Disk: 2200B-3, 2243, 2222, 2216, and 2221.

PACKAGE NO.: 195-2003-1(-2)(-3)

PRICE: $700

CENTRAL LIBRARY NO.: W22-100.10-00002

- -

TITLE: BAS INVOICING SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

BAS Invoicing System prepares invoices to be sent to customers, accessing a permanently stored Customer File, and automatically computing line extensions, discounts, taxes, totals and subtotals. Provides audit control of transactions and interfaces with the programs of SALES ANALYSIS and ACCOUNTS RECEIVABLE.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222, and 2221.
Disk: 2200B-3, 2243, 2222, 2216, and 2221.

PACKAGE NO.: 195-2001-1(-2)(-3)

PRICE: $700

CENTRAL LIBRARY NO.: W22-100.10-00003

Assets Accounting (100.15)

TITLE: FINANCE/UTILITIES/GAMES GENERAL PROGRAM LIBRARY GLBR22B

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

This package provides descriptions, operating instructions, and examples for various programs in finance, utilities, and games in the following areas:

1. Assets Accounting - programs applicable to Assets Accounting are: Depreciation Charge (Declining Balances), Declining Balance Depreciation Rate, and Salvage Value.

2. Bond Analysis - programs applicable to Bond Analysis are: Number of Semi-Annual Periods between Two Dates (360 Day-Year), Bond Dollar Price, and Bond Yield (Basis).

3. Financial Analysis - programs applicable to Financial Analysis are: Present Investment, Nominal Interest Rate, Effective Interest Rate, Investment Withdrawal, Initial Investment, Sum Total from a Single Investment, Periodic Investment, Sum from Periodic Investment, and Average Growth Rate and Projected Sales.

4. Installment Loans - programs applicable to Installment Loans are: Discount and Price on Discount Commercial Paper, Interest Bearing Commercial Paper, Number of Days Between Two Dates, Day of Year, and Annual Debt Payment.

5. Mortgage Loans - program applicable to Mortgage Loans is: Mortgage Payment.

6. Portfolio Management - program applicable to Portfolio Management is: Annuity.

7. Chemical (Engineering) - programs applicable to Chemical Engineering are: Mass of Nitrogen in Containment System, and Percent Absorption to Concentration.

8. Statistics - programs applicable to Statistics are: Plot, Multi-Plot, T-Plot, and Histogram.

9. Graphics and Plotting - programs applicable to Graphics and Plotting are: Plot, Multi-Plot, Polar Plot, T-Plot, and Histogram.

10. Games - programs applicable to Games are: Artillery, Craps, Tic-Tac-Toe, One-Armed Bandit, and Black Jack.

MINIMUM REQUIRED EQUIPMENT: 2200A-1 (A-2 for #2), 2215, and 2216/2217. It may be adapted to 2201 or 2221W, if hardcopy is desired.

PACKAGE NO.: 195-0007-1

PRICE: $50.00

CENTRAL LIBRARY NO.: W22-100.15-00004

Billing (100.20)

(See: ACCOUNTS RECEIVABLE (100.10), abstracts (1) "Accounts Receivable-Billing" and (2) "BAS Invoicing System", pp.5&6 .)

CPA Packages (100.30)

TITLE: CASH-ACCOUNTANT'S CLIENT WRITEUP SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

CASH-Accountant's Client Writeup System is a powerful, economical turnkey accounting system for large or small firms, and features a simplified method of entering transactions, a flexible chart of accounts, and a wide variety of reports. Each client is on a separate flexible disk, and his chart of accounts is created uniquely for him by the accountant, with provision for the type of account and for subaccount and branch designations on every account. Transactions are entered in a batch mode, with the date and the batch, client, and accountant numbers entered once as part of the batch header. A reference number, employee number, English description, account number and amount are entered on each transaction. A running subtotal of the batch is available at any time with the touch of a key.

The system prepares a wide range of reports, including a Balance Sheet, Income Statement, Detailed General Ledger, Journal Audit List, Working Trial Balance, Pre-Closing Worksheet, 941A Forms, W-2's, Payroll Compensation Report, Comparative Analysis, among others. All reports except the Working Trial Balance and the Restaurant Payroll Summary are printed on regular 8½" by 11" paper for easier storage.

A Pre-Cash system is also available. It is specially designed as a low cost data entry facility which allows the operator to enter a large number of transactions for one client after another. The entries are saved for later processing by the regular CASH system.

MINIMUM REQUIRED EQUIPMENT: 2200T (16K), CRT, Keyboard, two diskette disks, and matrix printer.

PACKAGE NO.: (CASH) 195-2014-2(-3); (PRE-CASH) 195-2015-2(-3)

PRICE: $27,560 - includes all hardware and software, as well as first year maintenance on both hardware and software. (PRE-CASH is $6700 on the same basis.)

CENTRAL LIBRARY NO.: W22-100.30-00256

- -

TITLE: PACAS - PUBLIC ACCOUNTANTS' CLIENT ACCOUNTING SYSTEM

AUTHOR: Niakwa Management Services Ltd.

ABSTRACT:

This client writeup system produces ledgers, journals, and financial statements for clients of both U.S. and Canadian accountants. The system is designed to make data entry as simple, rapid, and error-free as possible, and provides the following: consolidation of statements at two levels, comparitive balance sheets and income statements, budget comparisons, funds flow analysis, unique reports showing percentage changes in account balances, graphs of any two accounts on the same chart (e.g., total income vs. total expenses for each month of the year), and invoice advices - easy to install and already operational in over a half-dozen locations.

MINIMUM REQUIRED EQUIPMENT: 2200T (12K), CRT, Keyboard, dual flexible disk drives, and 2231 line printer.

PRICE: $3,400

CENTRAL LIBRARY NO.: V22-100.30-00236

General Ledger (100.40)

TITLE: BAS GENERAL LEDGER SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

BAS General Ledger is a system for gathering, editing, and arranging the data which constitutes a company's financial reports. The end result of the system is the printing of the following: Trial Balance, Balance Sheet and Income Statement. General Ledger files are maintained and updated by the system. Provision also is included to allow the flexibility needed by a C.P.A. (Certified Public Accountant) firm to do a client's accounting.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222, and 2221.
Disk: 2200B-3, 2243, 2222, 2216 and 2221.

PACKAGE NO.: 195-2007-1(-2)(-3)

PRICE: $700

CENTRAL LIBRARY NO.: W22-100.40-00006

Inventory Management (100.45)

TITLE: BAS INVENTORY SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Inventory Control System described in this document is designed to provide the Wang 2200 user with a flexible inventory control system that can be modified to individual requirements. The inventory control system offers these features: File Inquiry; File Maintenance; Stock Status Reporting; Editing of Input; Printed Backup; Ability to Post Stock Receipts, Withdrawals, and Orders in any sequence; Interface with Invoicing System; and Physical Inventory Reports.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222, and 2221.
Disk: 2200B-3, 2243, 2222, 2216, and 2221.

PACKAGE NO.: 195-2005-1(-2)(-3)

PRICE: $700

CENTRAL LIBRARY NO.: W22-100.45-00007

Order Processing (100.50)

TITLE: S.E.L.S. (SIMPLIFIED ELECTRONIC LIQUOR SYSTEM)

AUTHOR: Real-Time Engineering Systems, Ltd.

ABSTRACT:

S.E.L.S. is an order entry, billing, accounts receivable, sales analysis and inventory control system designed especially for the wholesale liquor and wine distributor.

S.E.L.S. produces meaningful reports to allow the efficient control of inventory and accounts receivable. The invoicing program is the key to the system. With it, invoicing is fast, reliable and accurate. The numerous management reports include stock status, backordered and low stock report, daily activity report, receiving report, invoice register, sales analysis by brand and by salesman, aged trial balance, detail age analysis and customer statements.

S.E.L.S. keeps a record of sales several ways: by brand for week and month, by salesman by brand for week and month with YTD totals, and also gross profit by salesman.

Detailed marketing booklet is available upon request.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/17, 2222, 2230-1, and 2221 (disk size and print speed expandable per user needs).

PRICE: Package price is $4,500.00. Modifications and training are additional. Includes documentation and software (tape). Deposit required.

CENTRAL LIBRARY NO.: V22-100.50-00011

(See Also: ACCOUNTS RECEIVABLE (100.10), abstract "BAS Invoicing System", p. 6.)

Payroll (100.55)

TITLE: BAS PAYROLL SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

BAS Payroll provides accurate payroll preparation for a large variety of applications. Hourly, salaried and hourly-by-exception employees can all be accommodated by the system. Data on earnings units are entered via the keyboard and displayed for verification. With an accurate and updateable Master File, once these data have been entered, along with any other exceptional earnings and deductions, preparation of the payroll up to the printing of checks and forms for tax purposes proceeds automatically.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222, and 2221.
Disk: 2200B-3, 2243, 2222, 2216, and 2221.

PACKAGE NO.: 195-2004-1(-2)(-3)

PRICE: $1280

CENTRAL LIBRARY NO.: W22-100.55-00009

- -

TITLE: PAYROLL

AUTHOR: Osborne & Associates, Inc.

ABSTRACT:

Standard payroll program generating following reports:

- Data Entry Report
- Check Writer
- Check Register
- Payroll Ledger
- Quarterly 941 with summary
- Yearly W-2

Other standard features:

- Checks data entered for validity
- File maintenance allows easy error correction
- Multiple payrolls periods on single file
- Many methods of payment (18) - customer's choice
- Loans, insurance, garnishments, etc. handled

- o Modular allowing easy addition of A/P, A/R, G/L, and other packages

Optional Reports:

- o Monthly union reports
- o Certified payroll
- o Federal minority reports
- o Job costing, department costing
- o Equipment usage reports
- o Vacation/sick pay reports
- o Seniority report
- o Insurance reports

Optional Features:

- o Automatic posting to Cost Accounting
- o Automatic posting to General Ledger
- o Automatic Vacation/Sick pay calculation
- o Automatic Apprenticeship calculations
- o Job accumulation (hours and pay) by tasks
- o Equipment usage list tied to employee hours
- o Multiple states

Up to 500 employees - more with card reader (2214)

MINIMUM REQUIRED EQUIPMENT: 2200B-4, 2221, 2216/17, 2221, and 2230-1/2/3. (Multiple states option may require more core.)

PRICE: $3,000 - $8,000 depending on options, including installation; training provided, $175.00/day plus expenses.

CENTRAL LIBRARY NO.: V22-100.55-00090

- -

TITLE: PAYROLL AND LABOR COSTS REPORTING SYSTEM (PRA)

AUTHOR: Andres Loo

ABSTRACT:

This payroll and cost control system is available as part of a modular management information system for small to medium sized construction firms.

Designed for Canadian (B.C.) use, but can be modified. The system has two main functions, originating from a single major input. It does a complete payroll, including hours entry, calculation, printing of checks, payroll summaries, employee earnings record(s), list of checks printed, monthly union reports, and yearly T4's for an average of at least 250 employees. From the same hours entry, it produces complete labor hour reporting for at least 100 different activities for up to 25 different job sites simultaneously. The labor hours reporting can be linked with estimates and percent completion inputs to give a complete cost control of the job for customers who so desire, for moderate additional cost.

Inputs

Employee Hiring Slips
Employee Daily Timesheets
Changes in employee status and other corrections
Payouts (advances -- amount of check)
Stopped Check Entry

Outputs

Payouts (advances)
Payouts (terminations)
- employee daily hours record
- paychecks
- record of employment (separation certificate)

Up-to-date labor costs report
Employee earnings record(s)
(including all employee particulars & details from past pay periods)
Index of employees, either in alphabetical or employee number order
List of checks disbursed; in check number order
Viewing employee daily hours for any employee

Weekly

Complete payroll run for each of 25 job sites
- employee daily hours records
- pay checks
- payroll summary
- labor costs report

Monthly

Report to each union of hours worked and dues paid for each employee

Annually

Automatic generation of T4's for all employees

MINIMUM REQUIRED EQUIPMENT: 2200B-4, 2230-1, and 2221. Can run with flexible disk, but capacity is limited.

PRICE: $2000

CENTRAL LIBRARY NO.: V22-100.55-00072

Personnel & Pensions (100.60)

TITLE: EMPLOYEE BENEFIT ADMINISTRATION SYSTEM I

AUTHOR: Financial Statistics, Inc.

ABSTRACT:

The Employee Benefit Administration System (EBAS) is a mini-computer based package for administering employee benefit plans including allocations and statement preparation. EBAS eliminates many of the problems and delays inherent in large scale, batch computer systems and in actuarial service organizations, because it provides the user department (1) absolute control over processing priorities and (2) immediate data collection and editing facilities in an "on-line" or conversational mode. Coding forms, keypunching, multiple edit runs, turn around delays are totally eliminated from the processing cycle. Plan description and employee data is entered directly via

a CRT display, and the minicomputer supporting the EBAS system is so compact that it is located in the user area.

After a brief training period, clerical or accounting personnel can efficiently process complex plans from update through allocations and statement preparation. EBAS accepts a wide variety of benefit plan types, vesting provisions and allocation algorithms. The EBAS conversational software prompts the operator through the processing steps in easily understood user terms. Tight financial controls are maintained through internal checks, hard copy trial balances and administrative reports.

Both sequential and random access update and retrieval methods are incorporated. Termination calculations are instantly displayed including withdrawals, forfeitures, and lump sum distribution tax calculations. Specific plan descriptions or employee data may be recalled to the CRT screen by account number, social security number, or by participant name.

The installation, conversion, production processing and program maintenance require little or no data processing support. In fact, on the very first day of operation, new plans may be initialized, allocations performed, participant statements generated and mailed to your clients.

MINIMUM REQUIRED EQUIPMENT: 2200B (20K), two cassette or diskette drives, CRT, Keyboard, and 132-column printer.

PRICE: Varies with hardware configuration and is available upon request (license fee includes: conversational software system, warranty, 40 hours installation and training support, and documentation).

CENTRAL LIBRARY NO.: V22-100.60-00237

AGRICULTURE INDUSTRY (110.00)

Agriculture Industry (110.00)

TITLE: FRUIT POOLING ACCOUNTING

AUTHOR: Osborne & Associates, Inc.

ABSTRACT:

This program keeps track of all packouts and sales for packing houses. At the end of a pool, the sales and packouts are reconciled automatically resetting juices and packed fruit.

Reports generated:

- Grower Packouts
- Sales Invoices
- Reconciliation $ and Carton Ratio Tables
- Grower Statements
- Pool Summaries (2)
- Grower Listings (2)
- File Maintenance Listings
- Controls reported for audit trail

Features:

- o Can be combined with A/P, A/R, G/L, P/R, etc.
- o Handles packing house charges and advances to growers
- o Up to 4 grades and 12 sizes of packed fruit and 3 grades of juices
- o Up to 24 different sales types (converts automatically to cartons)
- o Complete audit trail for standard processing
- o Generates controls for verification of input
- o Simple methods for restarting pools on subsequent years
- o Complete backup of modular system
- o Handles up to 3000 growers

MINIMUM REQUIRED EQUIPMENT: 2200B-4, 2221 or 2231, 2216/17, 2230, and 2222. 3 Disks (available from O&A).

PRICE: $6,000, installation included; training, $175.00/day plus expenses.

CENTRAL LIBRARY NO.: V22-110.00-00091

AUTO DEALER APPLICATIONS (120.05-120.20)

Finance and Insurance (120.10)

TITLE: 2200 AUTO BILLING 1 AUBL22

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

This package performs all the arithmetic operations associated with the sale of a car. It is designed to disclose all items required by the "Truth-In-Lending Act". This package also prints out any of the necessary forms associated with the sale of a car. Local vendor customization is required. Package price is approximation and subject to change by local software vendor.

MINIMUM REQUIRED EQUIPMENT: 2200A-2(8K), 2216/2217, 2222 and 2201.

PACKAGE NO.: 195-2011-1

PRICE: $250 NOTE: Modifications needed for local forms.

CENTRAL LIBRARY NO.: W22-120.10-00010

BANKING APPLICATIONS (130.05-130.85)

Bond Analysis (130.15)

(See: ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #2, p. 7.)

Financial Analysis (130.45)

(See: ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLB$22B", #3, p. 7.)

Installment Loans (130.55)

(See: ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #4, p. 7.)

Mortgage Loans (130.65)

TITLE: MORTGAIN

AUTHOR: Joel Filler

ABSTRACT:

A customized set of inputs, calculations and forms is established for the user during the installation process. The program prompts the operator for inputs, performs calculations, and provides editing facilities. Input and calculated data is then recorded on a data cassette, and the "PRINT" portion of Mortgain read in. "PRINT" reads data from the data cassette, and calls in the individual forms. The operator is prompted as to form insertion and alignment, and the forms are printed out. A check-writing and ledger program is also available. Installation time: 4-6 weeks.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2222, 2216/2217, 2217 and 2201.

PRICE: One Time License fee - $5000 (includes 25 forms).

CENTRAL LIBRARY NO.: V22-130.65-00163

(See Also: ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #5, p. 7.)

Portfolio Management (130.75)

(See: (1) ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #6, p.7; and (2) PORTFOLIO MANAGEMENT (180.15) (FINANCIAL APPLICATIONS), abstract "Investment Performance System (IPS)", p. 18)

COMMUNICATIONS INDUSTRY (150.00)

Communications Industry (150.00)

TITLE: RAPID-RADIO AID PROGRAM/INFORMATION DIRECTORY

AUTHOR: VIAcomp Systems

ABSTRACT:

The RAPID System is a complete, fully integrated data management system designed especially for Radio and Television Stations. It performs the analysis, verification and maintenance of Contract, Account, Sales, and Inventory Files. The system provides an efficient and accurate billing process, and produces affidavits, invoices and monthly statements. A complete inventory of commercial spots is maintained by a one-time entry when the contract is entered, and provides daily program logs, sales analysis information, and availability reports.

The Accounts Receivable portion includes audit trails for daily, weekly, monthly, and annual cycles and creates transaction and aging reports.

The system was written by a radio engineer familiar with the problems of radio station management and experienced with Wang equipment.

MINIMUM REQUIRED EQUIPMENT: 2200T (24K), CRT, Keyboard, Single Flexible Disk Drive and 10-Megabyte Disk Drive, and 132-column printer.

PRICE: License - $11,400 with one year program maintenance (payable $950.00 per month).

CENTRAL LIBRARY NO.: V22-150.00-00221

CONSTRUCTION INDUSTRY (160.00)

Construction Industry (160.00)

TITLE: PLANNING AND ECONOMICS PACKAGE

AUTHOR: H.C. Priest, Trans Mountain Pipe Line Co., Vancouver, B.C.

ABSTRACT:

This package contains programs which are used for economic analyses of operating and capitol projects and investment opportunities.

MINIMUM REQUIRED EQUIPMENT: 2200, 2215/2222, 2216/2217, and 2201.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: B.43-8.6).

CENTRAL LIBRARY NO.: S22-160.00-00333

FINANCIAL APPLICATIONS (180.05-180.20)

Portfolio Management (180.15)

TITLE: INVESTMENT PERFORMANCE SYSTEM (IPS)

AUTHOR: Financial Statistics, Inc.

ABSTRACT:

The Investment Performance System (IPS) produces a series of reports to communicate to fund managers and their clients significant statistics covering the performance of investment funds. The reports display statistical information, including the BAI recommendations, in a user oriented, easily interpreted format. Among the available investment statistics are (1) time and dollar weighted rates of return, (2) unit value tables, (3) risk measurements displayed as performance consistency (mean absolute deviation) and market sensitivity (regression analysis). Reporting options include selection of the total account, the equity portion, fixed income portion or any user defined subset. Many of the reports compare the account performance factors to weighted or unweighted market indexes.

The user may specify, through control cards, on an account by account basis, exactly which statistics are to be displayed on the reports and the time period to be covered from one month to twenty years. Absolute control is maintained on the content and volume of output for each account. In addition, the user can define any aggregate of funds for a management review such as all funds assigned to an individual portfolio manager, all equities or municipal bonds.

The system is a "stand-alone" package. As such, it includes file maintenance facilities and can readily extract data from existing asset and trust accounting systems. IPS maintains an historical data base to facilitate past or present performance analysis. IPS is also available as a processing service.

MINIMUM REQUIRED EQUIPMENT: 2200B (20K), two cassettes or two floppy disks or equivalent, printer, CRT, and keyboard.

PRICE: License fee $9,750-includes conversational software, documentation, and 180 day warranty, with installation and training on a time and materials basis. Optional software maintenance agreement is $500 per year.

CENTRAL LIBRARY NO.: V22-180.15-00238

INSURANCE INDUSTRY (200.00)

Insurance Industry (200.00)

(See: PERSONNEL & PENSIONS (100.60), abstract "Employee Benefit Administration System I", p. 13.)

LEISURE TIME APPLICATIONS (230.00)

Leisure Time Applications (230.00)

TITLE: AUTOMATED TRAVEL PACKAGE

AUTHOR: Osborne & Associates, Inc.

ABSTRACT:

Handles two types of wholesale travel pensions:

- o Tour bookings
- o Hotel reservations

Generates following reports:

- o Daily transaction report
- o Coupon books for tours with travel reservations by booking date
- o Hotel reservations generated indicating immediate or mailed delivery
- o Accounts payable from tours booking
- o Accounts receivable from hotel reservations
- o Mailing lists for travel agents
- o Sales analysis on tours

Features (size quotes for small disk-double for large disk)

- o 5,000 agents accommodated
- o 500 Hotels
- o 400 different coupons
- o 500 different tours
- o Personalized coupons and mailing list
- o Complete backup for data security

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2222, 2201 and/or 2221, 2216/17, and 2230-2/3.

PRICE: $6,000, including installation; training, $175.00/day plus expenses.

CENTRAL LIBRARY NO.: V22-230.00-00095

MAILING ACTIVITIES (240.00)

Mailing Activities (240.00)

TITLE: MAIL LABELS

AUTHOR: YES Computer Sciences, Inc.

ABSTRACT:

A mailing label processor sub-system which has been developed to use the BASIA/B INVOICE CUSTOMER MASTER FILE and/or the BASIA/B ACCOUNTS RECEIVABLE CUSTOMER MASTER FILE to produce 2-up or 4-up labels.

The system will sort the files in zip sequence as required by postal regulations or in alpha sequence. The system can accommodate either single volume files (1800 names or less) or multi-volume files (more than 1800 names). The system will also print mailing labels directly from the BASIA/B Master Files.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2243, 2222, 2216, and 2221W.

PRICE: $300

CENTRAL LIBRARY NO.: V22-240.00-00223

MANUFACTURING INDUSTRY (250.05-250.30)

Scheduling (250.30)

TITLE: CPM-PERT LEAST-COST SCHEDULING SYSTEM

AUTHOR: Cogebec Information, Inc.

ABSTRACT:

After a project network has been drawn and approved, the system is used for creating and updating network data files, performing network computations, and printing these results. Network data is entered via the keyboard and is recorded on tape cassette. The system then uses the network data file to compute, for each activity, the following results:

- Earliest and latest beginning dates.
- Earliest and latest completion dates.
- Total margin (total float), Free Margin, Available Margin.
- Probability of completion at a given date (PERT-type networks only).
- Cost Slope (if "crash" duration and cost are present).

The System Update Function allows the user to update the network file by adding new activities, modifying existing activities, or deleting activities.

Three different reports, using project-relative or calendar dates, may be produced. In addition, users may define and produce a variety of customized, parameter-defined reports. Reports may be printed using either continuous or separate forms. The number of printed lines per page, line spacing, and report headings are determined by the user.

Auxiliary functions of the system include creation and printing of a five year calendar file (using either calendar dates or project-relative dates) and a network file backup system.

MEMORY SIZE	MAX # OF ACTIVITIES	MAX # OF EVENTS
12K	440	310
16K	675	480
20K	910	650
24K	1,145	820
28K	1,380	990
32K	1,615	1,160

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2217, 2222, and 2201 (alternate optional equipment: 2223, 2218, 2202, 2221W, 2231, and 2261).

PRICE: Negotiable.

CENTRAL LIBRARY NO.: V22-250.30-00239

- -

TITLE: PRODUCTION SCHEDULING - COST & CONTRIBUTION

AUTHOR: Walter A. Treff, Process Equipment Design Corp.

ABSTRACT:

Program group permits establishment, maintenance and selected recall of a data base item. Assemblies are broken into sub-assemblies for total quantity run requirements.

Group functions are as follows:

1) Data Base Load - permits loading inventory items (each with approximately 30 data fields) onto disk base. (2230-1 will hold approximately 2000 data base items.)

2) Data Base Read - retrieves any desired data base item and displays it on CRT for operator review.

3) Assembly Breakdown - stores sub-assembly data to make up one complete assembly (explosion) - Disk space requirement = 1 sector per assembly breakdown.

4) Order Entry Log - stores assembly production requirement as to: assembly number, number required, date due.

5) Long Run

   a) Stores order entry log for one additional month's retrievability.

   b) Prints the following tabulated values for each assembly:

      A) Due Date   B) Assembly Number

      For each sub-assembly:

      aa) Shop order number
      bb) Sub-assembly number
      cc) Total quantity
      dd) Mfg. due date
      ee) Price per 1000
      ff) Setup charge
      gg) Invoice price
      hh) Contribution

   c) Prints total of columns

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216, 2217, 2201, 2230, and 2222.

PRICE: (contract) $1100

CENTRAL LIBRARY NO.: V22-250.30-00077

MARKETING APPLICATIONS (260.05-260.15)

Market Research (260.10)

TITLE: TABLES

AUTHOR: Real Share Inc.

ABSTRACT:

Tables is a functional analytic tool for business and research analysts. Tables flexibility and power surpasses similar systems found on even large computers. Features include: one-, two-, and three-way tabulations; records; filtering; a wide variety of print options, including histograms; and full spooling of table requests and table outputs. With Tables' highly developed filters mechanism, you may request anywhere from a 1 to 17-way Analysis. Other highlights:

1) Publication-ready output
2) Complete and easy to use editing
3) Comprehensive report generator that maximizes the kinds and types of tables that can be generated including:
   a. 1-way, 2-way, and 3-way cross-tabulations
   b. 5 regular filters
   c. 9 summation filters
   d. up to 255 unique variables per data set
   e. histograms
   f. percent only, number only, or both
   g. percentages by row, column, or total
4) Ordering or rearranging lines or columns
5) Inverting lines into columns or columns into lines
6) Capability for recoding and collapsing
7) The unique feature of computing contingency summation tables where the cells are summations rather than frequency counts
8) Recapping of tables
9) Automatic footnoting
10) More than 200 unique table requests for each computer run (spooling).

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2240, and 2201.

PRICE: $5,000

CENTRAL LIBRARY NO.: V22-260.10-00093

PROPERTY MANAGEMENT/REAL ESTATE APPLICATIONS (280.00)

Property Management/Real Estate Applications (280.00)

TITLE: APARTMENT MANAGEMENT SYSTEM

AUTHOR: Prendergast Consultants

ABSTRACT:

The PCS Apartment Management System has the capability of storing over sixty (60) items per apartment. Information such as "last increase date" and scheduled maintenance dates for items such as paint, carpet, drapes, shampoo, or general maintenance are examples of the comprehensive data available. Detailed and summary reports for vacancies, delinquencies, maintenance, and income/expenses are also available.

Input of information into the system is easy. The software uses a cursor to identify the field where data is to be entered. The user may observe data as it is being entered and visually verify the information after entry. Each data entry is terminated with a carriage return, which indexes the CRT cursor to the next field. Depressing the carriage return before data is entered will clear a field. Function Keys are also available for manual positioning of the cursor to a particular field. The system will not accept alpha information in a numeric field and will only accept valid dates after January 1, 1960. The system will accept partial and/or multiple payments and compute a "paid-to" date which will be different than the due date. A single Function Key will pro-rate any account with a partial credit computed. Promotional discounts will be added to the partial payment balance and will also be added to the year-to-date advertising cost.

Identification of functions to be performed and interaction with the machine is simple to understand, involves a minimum of operator actions, and provides explanatory messages for error conditions and corrective procedures. A great deal of the simplicity inherent in the system is based upon the use of one button (Function Key) actions. For example, to produce any of the reports, a single function action followed by the name of the apartment building is all that is required. The report will be available within seconds on the system CRT and can be printed by simply selecting another Function Key.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216/2217, 2222, 2201, and 2240-2.

PRICE: $5,000

CENTRAL LIBRARY NO.: V22-280.00-00240

- -

TITLE: REAL ESTATE INVESTMENT ANALYSIS

AUTHOR: Osborne & Associates, Inc.

ABSTRACT:

Utility Programs including: Remaining Balance, Average Growth Rate, Projected Sales, Mortgage Optimization, Desired Yield, Compound

Interest Factors, Mortgage Amortization Schedule, Depreciation Schedule, and Map Check.

Analysis Program: Allows variations of investment parameters to generate acceptable 1st year projection. This information is then used to generate the following reports: Annual Expense breakdown, 1st year Data Entry and Projection, Title Page, Income and Expenses Schedule, Cash Flow Schedule, Resale Schedule, Partnership Schedule, and Summary (indicates time to sale, average rent, true yearly return).

Features:

- o Annual expenses and income breakdown
- o Up to 5 loans may specify in interest only due date, prepaid interest
- o Growth factors with break points in 7 categories
- o Depreciate on 3 categories by straight line, sum or digits or accelerated
- o Incorporates current tax laws
- o As many partners as needed
- o Ability to change 1st year data without restarting program
- o Indicates factors which will generate desired result

(EXPANSION of volume 30-700 series program)

MINIMUM REQUIRED EQUIPMENT: 2200A-3, 2222, 2201, and 2216/17.

PRICE: $1,000; training provided, $175.00/day plus travel and expenses.

CENTRAL LIBRARY NO.: V22-280.00-00094

TITLE: REAL ESTATE PACKAGE

AUTHOR: Structural Programming, Inc./Mitchell Systems

ABSTRACT:

Title	System	Description
Appraisal RA-1	1	RA-1A MORTGAGE INFORMATION This program calculates, with a breakdown of interest and principal repayments, any one of the following 5 quantities given the others: Loan Balance Interest Rate Period of Loan Number of Payments Per Year Monthly Payment RA-1A SIX FUNCTIONS OF A DOLLAR

This program calculates "The Six Functions of a Dollar":

Amount of $1
Amount of $1 Per Year
Sinking Fund Factor
Present Worth of $1 (Reversion Factor)
Present Worth of $1 Per Year (Inwood Factor)
Partial Payment (Mortgage Requirement)

The quantities can be compounded at any desired rate (monthly, quarterly, etc.).

The Ellwood tables contain the same values compounded yearly only.

RA-1A DEPRECIATION

This program calculates depreciation schedules for an asset given the following quantities:

Cost of the Asset
Useful Life of the Asset
Salvage Value

Five types of depreciation schedules are printed:

Straight Line Method
Sum-of-Years-Digits Method
Declining Balance - Real, i.e., the declining balance rate that will reduce value of asset to salvage value at the end of useful life.
Declining Balance - Optional Rate, e.g., 125% or 200%.
Same as above

RA-1A ELLWOOD GRAPHS

This program computes and prints out Ellwood-type graphs given:

Overall Capitalization Rate
Nominal Annual Interest Rate on Mortgage Loan
Loan Value Ratio
Annual Rate of Growth Income
Equity Yield Rates

RA-2 1 RA-2 MARKET DATA ANALYSIS

This program performs a multiple Linear Regression on a given set of data. It calculates the correlation matrix for the variables and generates the Regression Line.

RA-3 1

RA-3 CASH FLOW ANALYSIS

This program calculates and prints the internal rate of return for a given set of cash flows secured from a specified equity. A sinking fund factor can be applied to the positive cash flows in order that they may be compounded to adjust for the negative cash flows.

RA-3 CASH FLOW ANALYSIS

This program calculates and prints out the internal rate of return for a set of cash flows from a property held for a specified period, given:

Purchase Price and Resale Price Mortgage and Depreciation Information Tax Rates

Investment

RE-3 2

RE-3 RESIDENTIAL INVESTMENT ANALYSIS

This program enables an investor or developer to analyze an investment in apartments or condominiums. The program develops:

Income schedules for a variety of user- specified unit types and income producing parts of a project. Rental schedules can be increased over time at user-specified rates.

Expense schedules with different user-specified inflation rates for the various types of expenses.

Cash flow schedules based on a selection of up to 10 different mortgages and 5 types of depreciation. The CRT displays tables of debt service, cash flow, depreciation, tax savings, and yield (cash on cash) and gives the user the opportunity to review basic results before proceeding further with the program.

Resale projection schedules with a choice for capitalizing net or gross rents. Computations are made for sale expenses, adjusted depreciation, ordinary and capital gains, taxes payable, loan balance, and sale proceeds.

Limited partnership schedule for up to 20 partners with the specification of

partnership interests and tax bracket. Computations are made for the partners' tax savings, cash flow, net spendable cash, and internal rate of return.

Once the preliminary CRT display has been evaluated and the additional input information has been supplied, the machine generates a completely detailed and formatted record copy output for the user.

RE-4 2 RE-4 COMMERCIAL INVESTMENT ANALYSIS

This program is similar to the residential program. It permits user input that relates specifically to commercial projects, e.g., office building investments. Among other things, it includes leasing options and component depreciation as well as expanded maintenance and expense schedules that follow accepted accounting procedures for office and other commercial structures. The printed output of cash flow schedules, resale projection schedules and limited partnership schedules is similar to (RE02).

RE-5 2 RE-5 CONDOMINIUM INVESTMENT ANALYSIS

This program requires a detailed input of all construction, development and financing costs, construction loan interest rates, and disbursement methods, along with construction and rental/sales schedules. It then develops:

A detailed breakdown of all expenses with time. Closing disbursements, and uniformly distributed and variable costs are related to the construction schedule.

A cash flow schedule is derived from the construction and sales schedules. This is printed out in a separate "pro forma" for use by the lending institution.

The program can be used to effectively determine the impact of varying construction and sales schedules, interest rates, et cetera, on the overall feasibility (profitability) of real estate projects.

RE-6 2 RE-6 CONSTRUCTION COST EVALUATION

This program requires a detailed input of all construction, development and financing costs, construction loan interest rates, and

disbursement methods, along with the construction schedule. It then develops:

> A detailed breakdown of all expenses with time. Closing disbursements, and uniformly distributed and variable costs are related to the construction schedule.

The program can be used to determine the impact of varying construction schedules, interest rates, etc., on total construction costs.

MINIMUM REQUIRED EQUIPMENT:

SYSTEM 1	SYSTEM 2
A) 2200 A/B	A) 2200 A/B
B) 2201 or 2221	B) 2201 or 2221
C) 2216/2217	C) 2216/2217
D) 2222	D) 2222
	E) 2217/2218

PRICE:

RA-1	$700
RA-2	$700
RA-3 A	$300
B	$500
RE-3	$1000
RE-4	$1000
RE-5	$1500
RE-6	To be supplied

CENTRAL LIBRARY NO.: V22-280.00-00016

TRANSPORTATION INDUSTRY (320.00)

Transportation Industry (320.00)

TITLE: DISPATCH

AUTHOR: Real Share Inc.

ABSTRACT:

Dispatch was developed for ground transportation companies. Matching perhaps several thousand passengers, each with his own travel pattern, with a fleet of vehicles can be time consuming, prone to error and likely poor fleet utilization.

Dispatch automatically groups all passengers with similar travel patterns together and produces a dispatch ticket for the vehicle driver.

Machine 'run time' for a company of 100 vehicles is about 2 hours per day, which includes all input, sorting and ticket printing.

Airline schedules and other fixed information is carried in the system. Full editing capability is provided.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2240, and 2221.

PRICE: $4,500

CENTRAL LIBRARY NO.: V22-320.00-00096

(See Also: LEISURE TIME APPLICATIONS (230.00), abstract "Automated Travel Package", p.19.)

UNCLASSIFIED BUSINESS APPLICATIONS (390.00)

Unclassified Business Applications (390.00)

TITLE: BAS SALES ANALYSIS SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

Customer Sales Analysis creates a master file of monthly net sales for this year and last by customer, posts new sales to it from an Invoice Transaction File, and prints a variety of reports analyzing sales by customer. Must be accompanied by BAS1 Invoicing.

Product Group Sales Analysis creates a master file of monthly gross sales, line-item discounts, and net sales for this year and last by product group number, posts new sales to it from an Invoice Transaction File, and prints a variety of reports analyzing sales by product group. Must be accompanied by BAS1 Invoicing.

Salesman Sales Analysis creates a master file of monthly gross sales, returns, and net sales for this year and last by salesmen, posts new sales to it from an Invoice Transaction File and prints a variety of reports analyzing sales by salesmen. Must be accompanied by BAS1 Invoicing.

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A-3, 2218, 2216/2217, 2222, and 2221.
Disk: 2200B-3, 2243, 2222, 2216, and 2221.

PACKAGE NO.: 195-2002-1(-2)(-3)

PRICE: $700

CENTRAL LIBRARY NO.: W22-390.00-00017

- -

TITLE: EZWRITER

AUTHOR: Felkins Consulting & Data Processing

ABSTRACT:

This program provides the 2200B System operator with text editing, printing, storage, and retrieval capability. The system has the following features: (1) stores and retrieves a 'page' of text (up to 62 lines) on disk or tape; (2) displays text on CRT, 15 numbered lines at a time; (3) prints any selected group of lines or the complete page as many times as desired; (4) allows one text to be appended to another; (5) deletes, replaces or inserts complete lines of text; (6) deletes, replaces or inserts characters within a line; (7) accepts almost all characters on the keyboard, including quotes, blanks, and commas in free form without the use of quotes; and (8) allows backspacing, tabbing and underlining. The system is used primarily for creating error-free business letters, reports, contracts, and other documents which must be created on a repetitive basis, and does not require retyping the whole letter in order to correct a few errors.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2222, 2201, 2216/2217, and 2230-1.

PRICE: $700.00 (includes tape and instruction manual).

CENTRAL LIBRARY NO.: V22-390.00-00241

CHAPTER II
EDUCATION (400.00-490.00)
2200 SERIES

ADMINISTRATION (400.05-400.20)

Budgeting (400.10)

(See: GOVERNMENT APPLICATIONS (600.00), abstract "Encumbrance Accounting System", p.49 .)

INSTRUCTION (410.05-410.20)

Primary/Elementary (410.05)

(See: JUNIOR/SENIOR HIGH (410.10), abstracts (1) "CATS (Computer-Assisted Testing System)" and (2) "Computer Aided Instruction (C.A.I.) Package", pp. 33 & 34.)

Junior/Senior High (410.10)

TITLE: A CLASSROOM TOOL - PROBABILITY AND STATISTICS ON THE COMPUTER

AUTHOR: David Clayman, Methuen Public Schools, Methuen, Massachusetts

ABSTRACT:

This is one of two high school course texts (see also SWAP Program No. E.44-9.1) described in the article, "Mathematics in Motion in Methuen", on page 12 of the December, 1974 issue of the PROGRAMMER Magazine, Vol. 8, No. 4.

NOTE: There is a $4.00 charge for this text to cover the cost of printing and mailing.

Program E.43-9.1 contains:

INTRODUCTION

1. MEET THE COMPUTERS - Organization of a Computer System, Components of Wang 2200 System.

2. IMMEDIATE MODE AND ITS USE - Permutations, Combinations, Probability.

3. PROGRAM MODE - Program Loop, Formatting, INPUT statement, N Factorial, INT Function, Rounding Off, Paging, "How Many Bridge Hands", GOSUB Routine.

4. USING THE OUTPUT WRITER AND SAVING A PROGRAM ON A CASSETTE - Binomial Distribution Problems, Multinomial Distribution, Birthday Problem.

5. POISSON DISTRIBUTION - Exponential Function, Operating Characteristic Curve.

6. FINITE MARKOV CHAIN - READ and DATA Statements, Matrices, Loading a Matrix in the computer, using matrices for sales and commission problems.

7. STATISTICS - Measures of Central Tendency, Standard Deviation, Coefficient of Correlation.

8. FLOWCHART.

9. PROGRAM CHAINING.

10. THE DEFFN' STATEMENT AND THE SPECIAL FUNCTION KEYS.

11. EPILOGUE.

MINIMUM REQUIRED EQUIPMENT: 2200 (4K).

PRICE: See "NOTE" above in Abstract (SWAP Library No.: E.43-9.1).

CENTRAL LIBRARY NO.: S22-410.10-00142

- -

TITLE: A CLASSROOM TOOL - COMPUTER SOLUTIONS FOR BUSINESS AND INDUSTRIAL PROBLEMS

AUTHOR: David Clayman, Methuen Public Schools, Methuen, Massachusetts

ABSTRACT:

This is one of two high school course texts (see also SWAP Program No. E.43-9.1) described in the article, "Mathematics in Motion in Methuen", on page 12 of the December,1974 PROGRAMMER Magazine, Vol. 8, No. 4.

NOTE: There is a $4.00 charge for this text to cover the cost of printing and mailing.

Program E.44-9.1 contains:

PREFACE - The World of Computers

1. MEET THE COMPUTER - Components, Procedures, CRT Display, Keyboard.

2. OUT FIRST PROGRAM - Sample Programs, FOR NEXT Loop, Format.

3. USING THE OUTPUT WRITER AND SAVING YOUR PROGRAM ON A CASSETTE - SELECT, SAVE.

4. PRICE LISTS & TABLES - Water Bills, Int Function, Paging.

5. ROUNDING OFF - Further Use of Int Function.

6. READ and DATA STATEMENTS.

7. LITERAL STRINGS - "Flags" in Program, Payroll Program.

8. "MARK-UP" PROBLEMS.

9. INPUT - General Price List Program, Paging Output.

10. INTRODUCING REM AND THE STR(FUNCTION - Auto Registration Problem.

11. CREDIT CARDS - Further Use of STR(Function.

12. MATRICES - Column Vector, Row Vector, Addition of Matrices, Matrix, Salesman-Product Matrix, Multiplication of Matrices.

13. LOADING A MATRIX INTO THE COMPUTER, DIM STATEMENT.

14. USING MATRICES FOR SALES AND COMMISSION PROBLEM.

15. MONEY: BUYING & SELLING MONEY - Simple Interest, Compound Interest, HEX(03), Monthly Payments, Mortgages.

16. ARRANGING NAMES ALPHABETICALLY AND ORDERING NUMBERS.

17. THE SEARCH - Business Directory, Sifting Information, RESTORE, COM, Program Chaining.

18. TAXES, TAXES, TAXES - FICA Deductions.

19. REAL ESTATE - Multiple Listing.

20. SPECIAL FUNCTION KEYS - Billing Problems, Inventory.

21. CONTROLLED FORMATTING - PRINTUSING, IMAGE.

22. FLOWCHARTS.

MINIMUM REQUIRED EQUIPMENT: 2200 (4K).

PRICE: See "NOTE" above in Abstract (SWAP Library No.: E.44-9.1).

CENTRAL LIBRARY NO.: S22-410.10-00141

- -

TITLE: CATS (COMPUTER-ASSISTED TESTING SYSTEM)

AUTHOR: Real Share, Inc.

ABSTRACT:

The market for this set of programs is any school, college, continuing or supplemental educational facility. The purpose of these programs is to allow the student to progress at his own pace, while providing the stimulus of immediate feedback. Obviously such a tool allows higher student/teacher ratios with the attendant cost savings.

Features of the system are:

1) after hour or "off-line" monitoring of individual student progress.

2) up to eight versions of each question on any test, from which the computer will randomly select a "unique" test for each student.

3) a test-analysis which does a statistical analysis on each question which will indicate "poor questions" or material inadequately taught.

4) student ability to "flag" questions for later discussion with instructor.

5) instructor ability to create and alter quizzes at any time without programming changes -- just simple typing.

Used for three semesters at the University of Hawaii -- over 10,000 quizzes administered with excellent acceptance by students and faculty.

MINIMUM REQUIRED EQUIPMENT: 2200C-2 and 2218, (8K for instructor and student use, 4K units may be added for student use).

PRICE: $600 (50% discount for non-profit educational institutions).

CENTRAL LIBRARY NO.: V22-410.10-00097

- -

TITLE: COMPUTER AIDED INSTRUCTION (C.A.I.) PACKAGE

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The programs in this package allow the creation, editing, and inserting of lessons planned by an instructor, and also permit students to observe lessons, interact with them, and test their knowledge in particular areas of concentration.

The Computer Aided Instruction Package consists of the following four programs:

1. LESSON CREATION PROGRAM - used by the instructor to create a lesson tape.

2. LESSON EDITING PROGRAM - allows the instructor to modify or delete existing lessons on a lesson tape.

3. LESSON INSERT PROGRAM - used by the instructor to insert lessons at any point on an existing lesson tape.

4. C.A.I. PROGRAM - allows students to view and interact with a lesson tape created by the instructor.

The programs are basic in operation and only limited knowledge of the System 2200 is required. Although flexible in application, the package is limited in design, allowing only multiple choice questions to be created.

The package can be used by an instructor to develop self-taught courses in almost any subject matter (e.g., mathematics, social studies, English, the sciences, or computer languages) and as an aid to both the instructor and the student. The instructor can use the program as a testing aid, individualize work, or check on the progress of individual students. Students can test their knowledge to determine where more work, study, or instruction is needed or to review material which was taught as a formal lesson. They also can study new material at a pace that is compatible to their learning ability.

MINIMUM REQUIRED EQUIPMENT: 2200(8K), Tape Drive, and printer (optional).

PACKAGE NO.: 195-2013-1

PRICE: $50.00

CENTRAL LIBRARY NO.: W22-410.10-00192

- -

TITLE: HUNTINGTON I EDUCATION PROGRAMS

AUTHOR: Developed by the Huntington Computer Project Staff, under the direction of Dr. Ludwig Braun and Dr. Marian Visich, Jr.

ABSTRACT:

This package includes programs applicable to the following disciplines: Biology/Earth Science, Chemistry, Mathematics, Physics, Social Studies, and Teacher Assistance.

MINIMUM REQUIRED EQUIPMENT: 2200 (8K).

PACKAGE NO.: 195-1005-1(-2)(-3)

PRICE: Package: $68.00

CENTRAL LIBRARY NO.: W22-410.10-00043

College (410.15)

TITLE: BASIC MATHEMATICS PACKAGE

AUTHOR: Carl W. Schlaphoff, Colorado Mountain College, Leadville, Colorado

ABSTRACT:

This package contains a series of computer programs written in the BASIC language for the purpose of presenting randomly generated basic mathematics problems to students and evaluating their responses - see also "A Teaching Assistant Named Wang," Sept. '74 PROGRAMMER, pp. 3 to 9. The included programs are designed to test twenty-five skills and are divided into eight major sections: Arithmetic, Integers, Fractions, Decimals, Simple Equations, Metric Conversions, Percent, Areas and Volumes.

The first four sections are stored on the first cassette tape, and the last four sections are stored on the second tape.

Purpose of the System:

The purpose of the BASIC Mathematics programs is to provide a narrowly-defined method for students to practice problem-solving skills in basic mathematics. These programs are intended to assist in the learning process, not serve as the "only way" to learn basic mathematics. They will be most effective if they are presented as an alternative method of practicing homework, one among several methods which are available to the students.

All programs stored on the cassette tapes require less than 4K of active memory.

Description of the System:

The system works as follows: A student inserts one of the cassette tapes into the cassette mechanism and a sheet of paper into the output typewriter. He loads and executes the first program on the tape. The first program gives information and asks questions which allows the system to determine the student's name, the date, the time, and what the student wants to practice. It then automatically loads the desired program, presents randomly-generated problems, and waits for the student to enter answers to the problems. The system watches the student's progress and grants a grade at an appropriate time and types the results on the grade sheet. The student then indicates what he wants to do next. The process continues until the student indicates that he is ready to quit. After the session is over, the typed gradesheet (figure included) is given to the instructor who copies the results on the student's record sheet (figure included). This allows the instructor to: (1) observe and record the skills which have been practiced by the student, (2) observe how well the student did, (3) determine if the student needs to discuss certain topics which are indicated by low scores, (4) observe improvement with a skill if it has been attempted more than once, and (5) suggest to the student which skills need further practice.

The record sheet provides a record of the amount of work each student puts forth and a detailed description of the student's strengths and weaknesses and progress throughout the course. It is easy to determine

whether or not a student is keeping up with the course. The average time required to earn a grade is about 12 minutes, and about 8 hours of clock time is required for a student to complete practicing all 25 skills. Students need about an hour of practice each week to keep up with the course. One terminal is capable of handling only 50 to 100 students per term, which is a limiting factor. The record sheets, however, allow an instructor to handle large numbers of students on an individual basis.

TABLE OF CONTENTS

HISTORY OF THE DEVELOPMENT OF THE SYSTEM, PURPOSE OF THE SYSTEM, DESCRIPTION OF THE SYSTEM, PROGRAM LOGIC AND FEATURES, ALGORITHM FOR EACH SKILL PRACTICED, EVALUATION OF RESULTS, RESULTS AND CONCLUSIONS, FUTURE IMPROVEMENTS, OPERATING INSTRUCTIONS, REFERENCES, APPENDICES.

MINIMUM REQUIRED EQUIPMENT: 2200A-1/2201.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.52-9.6).

CENTRAL LIBRARY NO.: S22-410.15-00214

- -

TITLE: BIOACIDS

AUTHOR: Richard Hunter, Chemistry Department, California State College, San Bernadino, California

ABSTRACT:

This program is used in Chemistry Education for drill practice on names, structures, and properties of 20 amino acids. All structures are displayed on the CRT. These structures are compressed in the program in a unique manner to require only about 15% of the memory usually required. The method is explained in the documentation.

Note: Those users without a teletype must reprogram line 8010.

MINIMUM REQUIRED EQUIPMENT: 2200B-8K, 2216/2217, and 2212.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.57-9.8).

CENTRAL LIBRARY NO.: S22-410.15-00217

- -

TITLE: FORCES

AUTHOR: Edward J. Gucker, S.U.N.Y., Brockport, New York

ABSTRACT:

This program plots trajectories of particles in arbitrary, two-dimensional, user-defined force fields. User must specify initial conditions for each particle, mass, and time increment used in integrating the equations of motion. Output is in an 8" by 8" square region, with independent scaling for the x and y axes. Points outside the grid are suppressed. Plots may be interrupted and resumed with new particles or with the same particle.

See also, "Simulation and Teaching," June 1975 PROGRAMMER magazine, Vol. 9, No. 2, pp. 3 to 10.

Known Program Anomalies:

Forces must be specified by legal byte strings - no interpretation is provided.

MINIMUM REQUIRED EQUIPMENT: 2200B (4K)/2202.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.49-9.6).

CENTRAL LIBRARY NO.: S22-410.15-00211

- -

TITLE: HYPO

AUTHOR: Klaas Westera, Wang Laboratories, Inc.; Don Mills, Ontario, Canada

ABSTRACT:

HYPO is a popular and widely used machine language in educational institutes throughout Canada and the United States. This language is used to introduce students to some of the basic concepts of digital computers. The language allows program and data storage, addition, subtraction, multiplication and division, input and output of data and conditional branching. Options in the compiler program allow for batching or single program runs for printer or CRT output. A full line of error messages is built into the compiler. Presently uses 2244A for input but could be modified for keyboard input. Also runs on 2200B-2, but could be altered for 2200S-1.

Input media are Wang or GEAC Mark Sense Cards. Output is on printer or CRT.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2244A, 2220, and 2231.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.50-9.6).

CENTRAL LIBRARY NO.: S22-410.15-00212

- -

TITLE: LEM

AUTHOR: Edward J. Gucker, S.U.N.Y., Brockport, New York

ABSTRACT:

This program simulates a lunar landing, with human control of magnitude and duration of thrust. The simulation runs in "real time", with interaction taking place as the LEM descends. The CRT shows velocity, acceleration, fuel remaining, altitude and thrust. An "automatic guidance system" is provided and may be placed in control of the LEM at any time. This program may be used to teach the distinction between velocity and acceleration.

See also, "Simulation and Teaching," June 1975 PROGRAMMER magazine, Vol. 9, No. 2, pp. 3 to 10.

MINIMUM REQUIRED EQUIPMENT: 2200B (4K), and CRT.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.48-9.6).

CENTRAL LIBRARY NO.: S22-410.15-00242

- -

TITLE: RYDBERG

AUTHOR: Ken Mantei, Chemistry Department, California State College, San Bernadino, California

ABSTRACT:

This program is used in Chemistry Education. It displays and compares a calculated hydrogen atom spectrum with an experimental spectrum for any trial value of Rydberg constant. Student must provide wavelength and intensity data. This trial and error optimization experience demonstrates the success of the Rydberg equation and the uniqueness of the Rydberg Constant.

MINIMUM REQUIRED EQUIPMENT: 2200B-8K, 2216/2217 and 2212.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.54-9.8).

CENTRAL LIBRARY NO.: S22-410.15-00216

- -

TITLE: ZAP

AUTHOR: Klaas Westera, Wang Laboratories, Inc., Don Mills, Ontario, Canada

ABSTRACT:

ZAP is a popular and widely used machine language in educational institutes throughout Canada and the United States. This language is used to introduce students to some of the basic concepts of digital computers. The language allows program and data storage, addition, subtraction, multiplication and division, input and output of data and conditional branching. Options in the compiler program allow for batching or single program runs and for printer or CRT output. A full line of error messages is built into the compiler. Presently uses 2244A for input but could be modified for keyboard input. Also runs on 2200B-2, but could be altered for 2200S-2.

Input media are Wang or GEAC Mark Sense Cards. Output is on printer or CRT.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2244A, 2220 and 2231.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.51-9.6).

CENTRAL LIBRARY NO.: S22-410.15-00213

(See Also: JUNIOR/SENIOR HIGH (410.10), abstracts (1) "CATS (Computer-Assisted Testing System)", (2) "Computer Aided Instruction (C.A.I.) Package", and (3) "Huntington I Education Programs", pp. 33, 34 and 35.)

Vocational and Technical (410.20)

(See: JUNIOR/SENIOR HIGH (410.10), abstracts (1) "CATS (Computer-Assisted Testing System)" and (2) "Computer Aided Instructions (C.A.I.) Package", pp. 34 & 35.)

UNCLASSIFIED EDUCATION APPLICATIONS (490.00)

Unclassified Education Applications (490.00)

TITLE: "TESTREAD" AND "TESTRITE"

AUTHOR: Richard G. Carpenter, Ohio Northern University, Ada, Ohio

ABSTRACT:

Uses 2200B with 2211 output for diagnostic testing (Multiple Choice/Fill in the Blank/True-False questions). Any subject area may be tested, not just Math. Program "TESTRITE" writes a test of one of the three types and saves it on tape.

Program "TESTREAD" reads the test off of the tape. "TESTREAD" is a timed test. The programs would be better if a disk drive were used.

Known Program Anomalities:

"TESTRITE" cannot use built-in "sin", "log", etc. keys. Fill in answers- spelling is critical.

MINIMUM REQUIRED EQUIPMENT: 2200B (8K) and 2211.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: E.55-9.8).

CENTRAL LIBRARY NO.: S22-490.00-00243

CHAPTER III
MEDICAL APPLICATIONS (500.00-590.00)
2200 SERIES

ADMINISTRATION (500.05-500.20)

Clinics (500.05)

TITLE: CLINICAL LABORATORY INFORMATION AND BILLING SYSTEM

AUTHOR: Synsis, Inc.

ABSTRACT:

Designed for a reference independent clinical laboratory, this system establishes a patient master file, enters requests, generates loading instructions and Master Worksheets, tests results either manually inputted or automatically with a paper tape reader, generates patient reports, and quality control statistics, bills vendors, records cash receipts and accounts receivable trial balance.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2222, 2203, 2230-3, and 2221.

PRICE: $7,000

CENTRAL LIBRARY NO.: V22-500.05-00018

- -

TITLE: MEDICAL LAB AND DOCTOR ACCOUNTING SYSTEM

AUTHOR: Ignacy Fonberg

ABSTRACT:

The System enables the user creation, updating, reviewing and deleting of the personal and medical files (accounts) of patients. Billing of patients is done automatically. The kind of insurance is selected, the appropriate form is placed in the printer and the machine prints the bills only for the patients with the given kind of insurance. Each patient's account can be billed at any time on any insurance form by recalling the account to the memory and using custom billing function key. The services paid in full or marked as such are omitted from the bill. They are printed on the billing form only if requested by the operator. The System considers aging of the balance and if payment is overdue prints an appropriate message on the bill. Number of days between billings is set up in each patient's account to 30, and can be changed by the operator. The services are entered into a file by keying a number which is assigned to given service. The machine displays on the CRT the English description of the service and the charge. The charge can be changed by the operator by entering a new charge or by keying in a discount coefficient, or both. The operator can also enter services which are not on

the list of services. The list of services and the list of physicians (needed for certain billings) can be easily updated.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, disk, and line printer.

PRICE: $5,000

CENTRAL LIBRARY NO.: V22-500.05-00244

- -

TITLE: MEDICO II MEDICAL ACCOUNTS RECEIVABLE

AUTHOR: Jinkins Associates

ABSTRACT:

The MEDICO II Medical Accounts Receivable System automates the complete accounts receivable function for a medical group practice. Programs include Billing Entry, Receipts Entry, Bill Printing & Posting, Receipts Posting, Changes & Adjustments Journal, Past Due Statements Printing, Aged Trial Balance, Delinquent Report, Procedure Usage Report, and Billing by Doctor Report. An interactive edit and correction module is included in the Bill Printing & Posting program. Reports such as bills, past due statements, and the Aged Trial Balance are printed in alphabetic order by patient in order to interface with manual systems. Capacity is 9000 active accounts, and more than 3000 new bills and 2500 past due statements per month.

Abercrombie Radiological Consultants, Inc. has estimated their total cost per statement at 34¢ - including an insurance form. The AMA Standard Insurance Form has been accepted nationwide by MEDICARE - MEDICAID and by most Tennessee insurors including Blue Cross.

Send a blank cassette to Jinkins Associates to receive a demonstration program, a 22 page brochure, a sample data-mailer, and a peddler's package.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2222, 2230-3, and 2221W (for larger users, a 2200S-2 for key-to-tape entry eases the workload).

PRICE: (for resale to end users only in a limited area) first system $2400, second system $2400, third system $1200, and additional systems no charge.

CENTRAL LIBRARY NO.: V22-500.05-00245

- -

TITLE: MED LAB - A PATIENT RECORD AND BILLING SYSTEM FOR MEDICAL LABORATORIES

AUTHOR: Real-Share Inc.

ABSTRACT:

This system creates a file of patient information, records lab test and test results, automatically assigns standard fees or permits manual entry of extraordinary charges, prints reports for the patients' doctor,

prints a summary of laboratory production with a recap of tests given and a total of fees generated, bills the patient, separately bills the third party vendor, prints follow-up bills for individuals or agencies with overdue balances, records cash receipts and updates Accounts Receivable, prints a cash receipts journal, permits extensive editing of patient records or standard test information, and prints Accounts Receivable.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2222, 2231, and 2217.

PRICE: $2400, with monthly maintenance at $50.

CENTRAL LIBRARY NO.: V22-500.05-00020

Hospitals (500.10)

TITLE: HOSPITAL ACCOUNTING SYSTEM

AUTHOR: Comac Data Systems, Inc.

ABSTRACT:

This system handles both inpatient and outpatient accounting for a hospital with less than 150 beds. Includes patient census, patient billing, billing register, revenue analysis, census statistics, account analysis of daily charges, automatic posting to Accounts Receivable, statement preparation, cash receipts journal and Aged Trial Balance.

MINIMUM REQUIRED EQUIPMENT: 2200B-4, 2216/17, 2222, 2243 and 2221.

PRICE: $6,800

CENTRAL LIBRARY NO.: V22-500.10-00021

(See Also: PHARMACOLOGY (510.45), abstract "Pharmacy Prescription System", p. 46.)

Nursing Homes (500.20)

TITLE: NURSING HOME PACKAGE

AUTHOR: Mr. Labe Mell

ABSTRACT:

This system provides health care plans, physicians' orders, nursing and social service care plan, patient goals, medicine profiles, physical therapy care plan, completes third party insurance forms, bills patients, records cash receipts, bed census, aged accounts receivable trial balance, payroll, accounts payable, general ledger, and monthly profit and loss.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/17, 2217, 2222, 2230-3, and 2231.

PRICE: $20,000

CENTRAL LIBRARY NO.: V22-500.20-00022

MEDICAL PRACTICE (510.05-510.60)

Medical History (510.25)

TITLE: MEDICAL HISTORY

AUTHOR: RCB Services, Inc.

ABSTRACT:

An off-line self-administered system utilizing a health questionnaire as the basis of input. Programs contain free text insertion as well as automatic branching techniques. This system is similar to our 720 version but uses the CRT to prompt the operator. During the testing period, a physician saved one half an hour per patient working with the use of the 2200 Medical History System.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216/17, 2222 and 2231.

PRICE: $3500

CENTRAL LIBRARY NO.: V22-510.25-00023

Pathology (510.35)

TITLE: CLINICAL LABORATORY CALCULATING SYSTEM

AUTHOR: Synsis, Inc.

ABSTRACT:

This system performs routine laboratory calculations such as Glucose, Blood Urea Nitrogen, Creatinine, Bilirobin, Uric Acid, Cholesterol, Triglycerides, Phosphorus, Calcium, Amylase, Leucine Amino Peptidase, Protein Electrophoresis, Creatinine Phosphokinase, Lactic Acid Dehydrogenase, Creatinine Clearance, Urea Clearance, Plasma Iron Turnover, Tubular Reabsorption of Phosphorus, and Quality Control.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216/17, 2222, and 2201.

PRICE: $150

CENTRAL LIBRARY NO.: V22-510.35-00026

- -

TITLE: INTERPRETIVE LABORATORY REPORTING SYSTEM

AUTHOR: James W. Veenstra MD

ABSTRACT:

Based upon input from a Technicon SMA12-60 or SMA6-60, this system evaluates normal ranges of each test for each patient, generates a report indicating ranges, compares results to ranges, indicates disease possibilities and suggests additional tests which may be helpful.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216/17, 2222, and 2231.

PRICE: Negotiable.

CENTRAL LIBRARY NO.: V22-510.35-00025

- -

TITLE: RIADS (RADIOIMMUNOASSAY DATA SYSTEM)

AUTHOR: Synsis, Inc.

ABSTRACT:

This system is a Generalized RIA program utilizing Logit Transformation, Unweighted and Weighted Linear Regression Analysis. It presents a graph of Standard Curves on CRT and prints the same.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216/17, 2222 and 2231.

PRICE: $500

CENTRAL LIBRARY NO.: V22-510.35-00024

- -

TITLE: RIADS-22

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

Unless otherwise described, the programs of RIADS-22 (Radio Immuno Assay Data System) include the Logit-Log Transformation and Weighted Linear Regression Method of reducing radioimmunoassay data, based upon the method of D. Rodbard and J.E. LeWald. The RIADS-22 system employs the percent bound versus dose (concentration) approach to plotting the standard curve. Percent bound is determined by the ratio of CORRECTED CPM for each STANDARD to the average CORRECTED CPM for the 0-DOSE tubes. This is commonly expressed as B/BO. A LOGIT transformation is performed on this variable, so that when plotted versus the logarithm of the dose, the curve is approximately a straight line. The slope and intercept of this line is determined by a least squares linear regression method. Once this equation is determined, a series of weighted linear regressions is performed (in the method developed by Dr. Rodbard). These regressions are performed until a change in the slope of the line from one regression to the next is less than one part in ten thousand or 50 iterations have been performed. The concentration of the UNKNOWNS is determined by plotting B/BO on the standard curve.

MINIMUM REQUIRED EQUIPMENT: 2200 (8K), a single cassette drive or flexible disk, a CRT, any Wang printing device, and (optional) the Model 2203 Optical Punched Paper Tape Reader.

PACKAGE NO.: 195-1022-1(-2)(-3)

PRICE: $1000

CENTRAL LIBRARY NO.: W22-510.35-00225

Pharmacology (510.45)

TITLE: PHARMACY PRESCRIPTION SYSTEM

AUTHOR: Master Software Systems

ABSTRACT:

This system maintains patient profiles, fills Medicaid forms, automatically writes labels and prescriptions, generates statements for billing purposes, and can produce a customer record of drug purchases for income tax and insurance purposes. In effect, it eliminates the manual record keeping, label typing and form filling from the pharmacist's duties, and nearly doubles the number of prescriptions that can be filled. The system can be used to service hospitals, nursing homes or a walk-in business. It has a capacity of 10,000 Rx for 1000 patients with accounts receivable; add 4,000 more Rx without A/R.

MINIMUM REQUIRED EQUIPMENT: 2200C-3, 2231, 2216/2217, and 2230.

PRICE: $6,000 (sale restricted to end-users only).

CENTRAL LIBRARY NO.: V22-510.45-00246

Pulmonary (510.55)

TITLE: PULMONARY FUNCTION

AUTHOR: Pulmonary Diagnostic Consultants

ABSTRACT:

Pulmonary Function processes data obtained in a Pulmonary Function Laboratory. Predicted values for measurements are generated by regression equations published in scientific literature.

Diagnostic comments based on the data are also part of the output. Included are programs for Basic Spirometry, Single Breath Nitrogen, Nitrogen Washout, Diffusion, Blood Gases and Box Plethysmography.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2216/17, 2231, and 2222 with Option for 2242.

PRICE: $2000 plus $100 per month for maintenance, customization and updates.

CENTRAL LIBRARY NO.: V22-510.55-00027

Radiation Therapy (510.60)

TITLE: RADIOLOGICAL REPORT SYSTEM

AUTHOR: Comac Data Systems, Inc.

ABSTRACT:

This system consists of Generalized abnormal and normal radiology reports using a marked sense card input. It stores patient medical data for possible retrieval.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/17, 2222, 2231, 2214, and 2240-2.

PRICE: $7,500

CENTRAL LIBRARY NO.: V22-510.60-00028

CHAPTER IV
PUBLIC SERVICE (600.00-690.00)
2200 SERIES

GOVERNMENT APPLICATIONS (600.00)

Government Applications (600.00)

TITLE: ENCUMBRANCE ACCOUNTING SYSTEM

AUTHOR: YES Computer Sciences, Inc.

ABSTRACT:

This system facilitates the management and administration of a municipal or school budget. The system lays claim to previously appropriated funds as specific goods or services are purchased, with actual payment to be made at a later date. It produces reports on the status of the budgeted items by individual item, department budget, or total budget. It also lists open purchase orders and vendor historical information, and generates audit documents such as check registers, warrants, etc. It also provides for selecting invoices for payment and writes checks to the vendor.

MINIMUM REQUIRED EQUIPMENT: 2200B (16K), CRT, Keyboard, line printer, and 2230-2 Disk (or 2270-3 Triple Diskette Drive).

PRICE: $2,500. Also requires "Universal Data Management (UDM)", available for $3,500 (see Data Base Manager (800.05), p. 77).

CENTRAL LIBRARY NO.: V22-600.00-00257

- -

TITLE: STAR TRAC POLICE RADIO ACTIVITY SYSTEM

AUTHOR: Joseph W. Larimore & Associates

ABSTRACT:

This system is a dispatch tool designed to record incident information as it happens and to eliminate most of the clerical work in the dispatch center. The system keeps track of the availability of up to 28 patrol units. At a glance at the screen, the dispatcher can tell what each unit is doing and what units are available. The system maintains officer duty information and prints a duty log. It can also print a list of incidents that require reports and also assign case numbers automatically. It logs and retrieves all messages from control units, other agencies, and command personnel. Activity data is stored on disk and can be retrieved and displayed at anytime on the screen. Searches can be made by officer, date, unit, and incident. (This is Phase I of the three-phase STAR TRAC system.)

MINIMUM REQUIRED EQUIPMENT: 2200T (12K), disk, and printer.

PRICE: $10,000 to $25,000 for the entire STAR TRAC system (all three phrases).

CENTRAL LIBRARY NO.: V22-600.00-00247

CHAPTER V
SCIENCE, ENGINEERING AND MATHEMATICS (700.00-790.00)
2200 SERIES

ENGINEERING APPLICATIONS (700.05-700.45)

Arronautical (700.05)

TITLE: A FLIGHT PLANNING AID FOR MULTIPLE SEGMENT GREAT CIRCLE ROUTES

AUTHOR: Howard J. Talley, Jr., Hq. TAC/XPSY, Langley AFB, Virginia

ABSTRACT:

This program calculates great circle distances (nautical miles) and times along a route defined by a series of points chosen from a base list created by the user. Incremental and cumulative times and distances are calculated for each geographic point along the route. Aircraft speed in knots and segment winds are input by the user.

MINIMUM REQUIRED EQUIPMENT: 2200B-4K.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: S.426-9.8).

CENTRAL LIBRARY NO.: S22-700.05-00215

Chemical (700.15)

TITLE: STATISTICS/ENGINEERING GENERAL PROGRAM LIBRARY GLBR22A

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

This package provides descriptions, operating instructions, and examples for various programs in statistics and engineering in the following areas:

1. Chemical (Engineering) - program applicable to Chemical Engineering is Oil Well Depletion.

2. Civil and Sanitary - programs applicable to Civil and Sanitary Engineering are: Bernoulli's Equation, Head Loss in a Pipe, Manning's Formula, and Talbot's Formula.

3. Electrical - programs applicable to Electrical Engineering are: Characteristic Generator Resistance and Source EMF Voltage, "Erlang B" Equation, and Network Impedance - Finding a Series or Parallel Circuit.

4. Structural - programs applicable to Structural Engineering are: Pressure due to Surface Loads, Point Loads, Finite or Infinite Line Loads, Beam, and Warping Stress due to Temperature Differential.

5. Statistics - programs applicable to Statistics are: Linear Regression: $Y = A+BX$; Multiple Linear Regression; Nth Order Regression; Exponential Regression: $Y = Ae^{BX}$; Geometric Regression: $Y = AX^{B}$; Linear Correlation; Correlation Matrix; One and Two-Way Analysis of Variance; Analysis of Variance - Latin Squares; Chi-Square Test and Distribution; Chi-Square Analysis, T-Test; Wilcoxon Matched-Pairs Signed-Ranks Test; Mann-Whitney Test; Normal Frequency and Distribution Function; Negative Binomial Distribution; Binomial Distribution; Poisson Distribution; F-Value, T-Value, Random Normal Deviates; Mean, Variance, Standard Deviation; Geometric Mean and Standard Deviation; Cross and Auto-Covariance of Time Series; System Reliability; and Error Function.

MINIMUM REQUIRED EQUIPMENT: 2200A-1 (A-2 for #5), 2215 or 2222, 2216/2217, and output device (if hardcopy is desired).

PACKAGE NO.: 195-0006-1

PRICE: $50.00

CENTRAL LIBRARY NO.: W22-700.15-00029

(See Also: ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #7, p. 7 .)

Civil and Sanitary (700.20)

TITLE: HARDY CROSS METHOD FOR SOLVING FLOWS IN PIPE NETWORKS

AUTHOR: James D. Stauffer, Brundage, Baker & Stauffer, Ltd., Cincinnati, Ohio

ABSTRACT:

The programs within S.435-9.9, together, incorporate a method of controlled trial and error developed by Hardy Cross. Three basic theorems must be observed: (1) At each junction of pipes, the sum of flows leaving the junctions must be equal to the flows entering the junction; (2) In each loop or circuit the sum of the head losses must be equal to zero; (3) In each pipe, the headloss is equal to $H=KQ^{n}$. When balancing heads by correcting assumed flows, there must be basic formulations employed consistently throughout the network. Such things as this would be arbitrarily assigning positive signs to clockwise flows and headlosses. It should be noted that the arbitrary assigning of positive and negative flows and headlosses as stated have been used in this program series. Generally by observing the few rules as stated above, a network of pipes can be balanced rapidly and accurately by these programs.

See also article in December, 1975 issue of PROGRAMMER magazine, Vol. 9, No. 4, "Civil Engineering Firm Uses 2200 for Water Distribution Analyses."

MINIMUM REQUIRED EQUIPMENT: 2200-A (4K)/2201.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: S.435-9.9).

CENTRAL LIBRARY NO.: S22-700.20-00220

- -

TITLE: PROGRAM HARDY CROSS

AUTHOR: Rhys A. Sterling

ABSTRACT:

PROGRAM HARDY CROSS is a water distribution system analysis and design program written for the Wang System 2200-B (or equal) computer. This program is written especially for the consulting firm which has little or no expertise in computer programming but requires a system which can quickly and easily analyze complex water distribution problems at minimum cost.

The complete program and network setup guidelines is documented in a report entitled "WATER DISTRIBUTION NETWORK ANALYSIS BY COMPUTER." Ample sample network systems are analyzed with network setup, program input and program output completely explained. The program consists of three major sections: flow allocation based on initially assigned inputs and junction (node) drawoffs, Hardy Cross balance of loop flows, and five various junction pressure routines. The five types of pressure routines available are: (1) a straight network balance and the output of the corresponding junction pressures; (2) for a specified junction pressure, the pressure required by a single source input may be calculated; (3) for a specified junction pressure, the required input pressure from the primary source of a multiple source input system may be calculated; (4) increasing a storage tank elevational head in predetermined increments and analyzing any one specified junction pressure desired; and (5) study the relative rate of descent of a one or two tank system and analyzing any one specified junction pressure at predetermined time increments.

This program includes capabilities of simulating centrifugal pumps operating on their characteristic operating curves in conjunction with elevated storage reservoirs. One of the series of programs in this package is designed to calculate the pump operating curve function from information supplied from the manufacturer's pump literature. Included in this series of programs are routines for the initial saving of data on cassette tape (or disk), editing data and listing data. Therefore, all system data is entered only once and stored for future editing - a major time saver.

MINIMUM REQUIRED EQUIPMENT:

A 2200-B with 12K bytes of free working memory will suffice to simulate a network with 150 pipes, 50 loops (with 20 pipes per loop max) and 105 junctions (with 5 tributary pipes per junction max). Each additional 4K will allow another 100 pipes, 33 loops and 67 junctions. The program will allow the use of a selectric typewriter or high speed line printer as output devices. The program is designed to remain on cassette tape (its original form) or may be copied to disk for use with a dual disk drive system.

PRICE: $300.00 (A report entitled "WATER DISTRIBUTION NETWORK ANALYSIS BY COMPUTER" is available at no cost.)

CENTRAL LIBRARY NO.: V22-700.20-00199

(See Also: CHEMICAL (ENGINEERING) (700.15) , abstract "Statistics/Engineering General Program Library GLBR22A", #2, p. 51.)

Electrical (700.25)

(See: CHEMICAL (ENGINEERING)(700.15) , abstract "Statistics/Engineering General Program Library GLBR22A", #3, p. 51 .)

Mechanical (700.30)

TITLE: FLOATING HEAD FLANGE PER ASME CODE, SEC. VIII, DIV. 1, PARA. UA-6 & TEMA

AUTHOR: M.J. Hedemark

ABSTRACT:

This program computes the loads, lever arms, moments, and geometry for a Floating Head Flange per ASME Code, Sec. VIII, Div. 1, para. UA-6 and TEMA.

The design procedure is as follows:

1. The design conditions are entered via the keyboard.
2. The flange geometry is established.
3. The bolting quantity and diameter is established such that area requirements, maximum spacing, and minimum spacing criterion are satisfied. Bolt quantities are multiples of four.
4. The selected gasket width is compared to the calculated minimum gasket width.
5. If the selected width is inadequate, then the gasket width is increased by 1/16" and steps 2, 3, and 4 above are repeated.
6. Loads, lever arms, moments, and flange thicknesses are computed for the atmospheric and the external operating condition. The largest of these two thicknesses is selected for the flange thickness.
7. The selected flange thickness (from 6 above) is compared with the minimum flange thickness and is set equal to this minimum if it is not larger.
8. The total moment due to internal operating conditions is computed. If this moment is positive or zero (≥ 0), then the flange thickness due to this moment is computed and the larger of this thickness

and the selected flange thickness (from 7 above) is the floating head flange thickness. If this moment is negative (< 0) and the flange thickness due to the absolute value of this moment is less than or equal to the selected flange thickness (from 7 above) then the floating head flange thickness is that which was established in 7 above. On the other hand, if the flange thickness due to the absolute value of this moment is greater than the selected flange thickness (from 7 above), then the floating head is moved towards the flange centroid (in increments of 1/16") until this condition no longer controls the design of the flange thickness.

MINIMUM REQUIRED EQUIPMENT: 2200(4K), 2216, 2201, 2215, and 2217.

PRICE: Terms and prices quoted upon request.

CENTRAL LIBRARY NO.: V22-700.30-00031

- -

TITLE: INTEGRAL TYPE (HUB) FLANGE PER ASME CODE, SEC. VIII, DIV. 1 & TEMA

AUTHOR: M.J. Hedemark

ABSTRACT:

This program computes the stresses, lever arms, moments, geometry, and associated tubesheet and channel cover thicknesses for an Integral Type (Hub) Flange per ASME Code, Sec. VIII, Div. 1, Para. UA-45 through UA-52 and UG-34, and TEMA. Two solutions are given. The first is the least weight rectangular section from which a flange may be machined; the second is the least finished weight flange. Both solutions are optimized using a finite sampling technique. The design procedure is as follows:

1. The design conditions are entered via the keyboard.

2. The basic flange geometry is established.

3. The bolting quantity and diameter is established such that area requirements and minimum spacing criterion are satisfied. Bolt quantities are multiples of four.

4. The selected gasket width is compared to the calculated minimum gasket width.

5. If the selected width is inadequate, then the gasket width is increased to the minimum required, "rounded-up" to the nearest 1/16", and steps 2, 3, and 4 above are repeated.

6. Loads, lever arms, moments, and "shape constants" are computed for the atmospheric and operating conditions. A flange thickness is computed to satisfy both conditions.

7. If the bolt spacing exceeds the maximum per TEMA, then the flange thickness is increased if the atmospheric condition controls the design of flange thickness. On the other hand, if the operating condition controls the design of flange

thickness, then bolts are added and steps 3 through 6 above are repeated.

8. Tubesheet (pull-thru and U-tube) and channel cover (Code and TEMA) thicknesses are computed.

9. Flange weights are calculated and compared to the weights from the previous "best" solution. If the current solution is a better solution weight-wise, then the current solution replaces the prior "best" solution and is used for future comparisons.

10. The finite sampling technique employed allows G, g_1 , and h to be bounded independent variables. Depending upon the previous solution, one of these variables is modified and steps 3 through 9 above are repeated.

11. After G, g_1, and h have been used in all possible combinations, within the limits of the design conditions, the "best" solutions (weight-wise) are printed.

MINIMUM REQUIRED EQUIPMENT: 2200(4K), 2216, 2201, 2215, and 2217.

PRICE: Terms and prices quoted upon request.

CENTRAL LIBRARY NO.: V22-700.30-00032

- -

TITLE: INTEGRAL TYPE (HUB) MATING FLANGE (TUBESHEET CONNECTION) PER ASME CODE, SEC. VIII, DIV. 1 & TEMA

AUTHOR: M.J. Hedemark

ABSTRACT:

This program computes the stresses, lever arms, forces, moments, and geometry for a flange where the number of bolts, bolt diameter, bolt circle, gasket load reaction diameter G, and the gasket width N are established from the mating high pressure flange, per ASME Code, Sec. VIII, Div. 1, Para. UA-45 through UA-52 and UG-34, and TEMA. Two solutions are given. The first is the least weight rectangular section from which a flange may be machined; the second is the least finished weight flange. Both solutions are optimized using a finite sampling technique. The design procedure is as follows:

1. The design conditions are entered via the keyboard.

2. The basic flange geometry is established.

3. The given bolt quantity and diameter are checked to insure that area requirements and minimum spacing criterion are satisfied.

4. The given gasket width is compared to the calculated minimum gasket width and the TEMA minimum gasket width.

5. The given gasket load reaction diameter G is checked to insure that it is neither too small, with respect to the inside diameter of the shell B, nor too large, with respect to the given bolt circle.

6. Loads, lever arms, moments, and "shape constants" are computed for the atmospheric and operating conditions. A flange thickness is computed to satisfy both conditions.

7. If the bolt spacing exceeds the maximum per TEMA, then the flange thickness is increased.

8. Flange weights are calculated and compared to the weights from the previous "best" solution. If the current solution is a better solution weight-wise, then the current solution replaces the prior "best" solution and is used for future comparisons.

9. The finite sampling technique employed allows g and h to be bounded independent variables. Depending upon the previous solution, one of these variables is modified and steps 3 through 8 above are repeated.

10. After g_1 and h have been used in all possible combinations, within the limits of the design conditions, the "best" solutions (weight-wise) are printed.

MINIMUM REQUIRED EQUIPMENT: 2200(4K), 2216, 2201, 2215, and 2217.

PRICE: Terms and prices quoted upon request.

CENTRAL LIBRARY NO.: V22-700.30-00034

- -

TITLE: NOZZLE REINFORCEMENT PER ASME CODE, SEC. VIII, DIV. 1 & TEMA

AUTHOR: M.J. Hedemark

ABSTRACT:

This program computes the reinforcement of an opening in a cylinder or a head per ASME Code, Sec. VIII, Div. 1, Para. UG-27, UG-36, UG-37, UG-40, UG-41, UG-43, UG-45, UW-12, and UW-16, and TEMA. The design procedure is as follows:

1. The design conditions are entered via the keyboard.

2. The design conditions allow the initial solution to be a pipe, LWN, or heavy wall stub.

3. The cylinder or head is checked to insure that it is of sufficient thickness to withstand the given pressure and corrosion allowance. The excess thickness in the cylinder or head available for reinforcement is computed.

4. If the solution is to be a pipe design, then a pipe wall is selected such that it will withstand the given pressure and corrosion allowance and satisfy UG-45. If the solution is to be a LWN or heavy wall stub, then the wall thickness is checked to insure that it is sufficient to withstand the given pressure and corrosion allowance. The excess thickness in the nozzle wall available for reinforcement is computed.

5. A minimum attachment fillet weld is computed per UW-16.

6. The limits of reinforcement are computed per UG-40 and within these limits, the area available for reinforcement in the shell or head is computed.

7. The stress ratio of the nozzle stress to the shell or head stress is computed per UG-41.

8. The area available for reinforcement in the nozzle wall is computed within the limits of reinforcement per UG-40 and adjusted by the stress ratio.

9. The area available for reinforcement in the fillet weld is computed and adjusted by the stress ratio.

10. If the solution is to be a heavy wall stub, then the area available for reinforcement in the reinforcing element is computed and adjusted by the stress ratio.

11. The total area of available reinforcement is compared to the required area. If sufficient, a solution is printed. If not sufficient, then for a pipe design, the fillet weld is first increased, the pipe wall is increased, and then the shell or head thickness is increased. For a LWN design, the fillet weld is first increased, the LWN bore is reduced, and then the shell or head thickness is increased. For a heavy wall stub design, the outside diameter of the stub is increased.

12. Following the first solution, options are available allowing for optimization.

MINIMUM REQUIRED EQUIPMENT: 2200(4K), 2216, 2201, 2215, and 2217.

PRICE: Terms and prices quoted upon request.

CENTRAL LIBRARY NO.: V22-700.30-00005

- -

TITLE: OPTIONAL TYPE (LOOSE TYPE) FLANGE WITH MATING FLANGE (TUBESHEET CONNECTION) PER ASME CODE, SEC. VIII, DIV. 1 & TEMA

AUTHOR: M.J. Hedemark

ABSTRACT:

This program computes the geometry, forces, lever arms, moments, stress, and associated tubesheet and channel cover thicknesses for an Optional Type (Loose Type) Flange per ASME Code, Sec. VIII, Div. 1, Para. UA-45 through UA-52 and UG-34, and TEMA. Three solutions are computed: a low G, high G, and intermediate G. Once the three solutions are printed, the designer has the option of terminating the run, computing another flange design, or computing a matching flange to any one of the three initial solutions. The design procedure is as follows:

1. The design conditions are entered via the keyboard.

2. Weld sizes and basic flange geometry are computed.

3. The bolting quantity and diameter is established such that area requirements and minimum spacing criterion are satisfied. Bolt quantities are multiples of four.

4. The selected gasket width is compared to the calculated minimum gasket width.

5. If the selected width is inadequate, then the gasket width is increased by 1/16" and steps 3 and 4 are repeated.

6. Forces, lever arms, moments, and "shape constants" are computed for the atmospheric and operating conditions. A flange thickness is established to satisfy both conditions.

7. If the bolt spacing exceeds the maximum per TEMA, then the flange thickness is increased if the atmospheric condition controls the design of flange thickness. On the other hand, if the operating condition controls the design of the flange thickness, then bolts are added and steps 3 through 6 are repeated.

8. Tubesheet (pull-thru and U-tube) and channel cover (Code and TEMA) thicknesses are computed.

9. Flange weights, net and gross, are computed.

10. The flange solution is stored in a 3 x 42 matrix. Then G is modified and steps 3 through 9 are repeated. This procedure is continued until three solutions (high G, low G, and intermediate G) are obtained and then the three solutions are printed.

11. At this point the designer may terminate the run, compute another set of flange solutions, or compute a mating flange to one of the solutions in 10 above.

12. If the mating flange option is selected, then a flange is designed maintaining the critical dimensions using the same basic procedure stated above.

MINIMUM REQUIRED EQUIPMENT: 2200(4K), 2216, 2201, 2215, and 2217.

PRICE: Terms and prices quoted upon request.

CENTRAL LIBRARY NO.: V22-700.30-00038

- -

TITLE: TUBE VIBRATION ANALYSIS FOR SHELL & TUBE HEAT EXCHANGERS

AUTHOR: M.J. Hedemark

ABSTRACT:

This program computes the maximum allowable shell-side fluid velocity using an analysis defined in Nelms and Segaser, "Survey of Nuclear Reactor System Primary Circuit Heat Exchangers", Oak Ridge National Laboratory Report No. ORNL-4399, April 1969, and two dimensionless numbers (Baffle-Type Damage Number and Collision-Type Damage Number) using an analysis defined in Thorngren, "Predict Exchanger Tube Damage", Hydrocarbon Processing, April 1970, so that damage to heat exchanger tubes due to flow induced vibration, fatigue at the baffle hole, and tube collision may be avoided. The design procedure is as follows:

1. The design conditions are entered via the keyboard.

2. The effective weight of the tube is computed.

3. The transverse-spacing and longitudinal-spacing ratios are computed.

4. The Stroubal Number obtained from Y.E. CHEN, "Flow Induced Vibration and Noise in Tube-Bank Heat Exchangers Due to Von Karman Streets", ASME Paper 67-VIBR-48, March 1967, Figure 3 or 13 is entered via the keyboard.

5. Queries pertaining to the method of tube support, whether or not the tube span under consideration is a U-bend, and the length of the unsupported tube span are displayed on the CRT and responded to via the keyboard.

6. The natural frequency of the tube and the maximum allowable shell-side fluid velocity are computed.

7. If the tube span under consideration is a straight section, then the lift force on the tube, maximum tube deflection, maximum tube bending moment, and maximum tube-wall bending stress are computed.

8. If the tube span under consideration is a straight section supported on each end by baffles, then the Baffle-Type Damage Number and Collision-Type Damage Number are computed.

9. Once the first solution has been computed and printed out, there are various options available for other solutions.

MINIMUM REQUIRED EQUIPMENT: 2200(4K), 2216, 2201, 2215 and 2217.

PRICE: Terms and prices quoted upon request.

CENTRAL LIBRARY NO.: V22-700.30-00008

Structural (700.40)

TITLE: STRUCTURAL ENGINEERING SYSTEMS (S.E.S.-1)

AUTHOR: Ecom Associates

ABSTRACT:

The software consists of several programs that can be used independently or linked together to complete the major design and analysis portion of a project.

ABSTRACTS:

FA-1 CONTINUOUS FRAME ANALYSIS (MOMENT DISTRIBUTION)

The program analyzes a continuous beam or single level frame without sidesway with variable or constant moment of inertia members, with or without cantilevers at ends. Various loading conditions (concentrated, partial uniform and checkerboard loading) may be included.

FA-2 MULTI-STORY FRAME ANALYSIS

The program analyzes a multi-story rigid frame consisting of non-prismatic members for gravity, wind, and seismic loads.

FA-4 SINGLE BEAM SPAN ANALYSIS

The program calculates shears, moments, and deflections at specified points in a constant or variable-section single beam span. (May be used to analyze a single simply-supported beam with or without cantilevers, or for any span of continuous construction if end moments have been determined previously.)

SD-1 STEEL BEAM DESIGN

The program analyzes or designs braced or unbraced steel beams according to the 1969 AISC Specification. Sections are selected or checked from a data file containing W6 through W36 Sections, S-shapes, and channel sections. Maximum moments are calculated automatically from the loading input. A shear stress check is included also.

SD-2 STEEL COLUMN DESIGN (WITH BIAXIAL BENDING)

The program analyzes and designs a steel column subjected to biaxial bending according to the 1969 AISC Specification. Selections are from W6 through W36 sections. It also designs base plates for axially loading columns.

CD-1 CONCRETE BEAM DESIGN

The program designs continuous reinforced concrete beams of variable depth and width according to provisions of ACI-318-7L, using either the working stress or ultimate strength design method. The program also may be used just for the selection of flexural steel for beam selections.

CD-3 FLAT SLAB ANALYSIS AND DESIGN

The program analyzes and designs flat slab systems including flat plates, flat slabs and waffle slabs for vertical loads per ACI 318-71. Systems may include spandrel beams and cantilevers. A single frame line including columns above and below the floor is examined.

DF-1 FRAME ANALYSIS DATA FILE TAPE (USED WITH FA-1, FA-4, and CD-1)

The tape is used for storage of data generated by the continuous frame analysis program FA-1. This stored data may be used in the beam span analysis program (FA-4), the reinforced concrete design program (CD-1), or reused in program (FA-1) to do a revised continuous frame analysis.

MINIMUM REQUIRED EQUIPMENT: 2200A (8K), 2216/2217 and 2222. Different program versions are available for each of the following output devices: 2201, 2241, 2221 and 2231.

PRICE:

NUMBER	TITLE (S.E.S. 1)	INDIVIDUAL PROGRAM PRICE
FA-1	Continuous Frame Analysis	$400.00
FA-2	Multi-Story Frame Analysis	$450.00
FA-4	Single Beam Span	$210.00
SD-1	Steel Beam Design	$150.00
SD-2	Steel Column Design (with Biaxial Bending)	$240.00
CD-1	Concrete Beam Design	$400.00
CD-3	Flat Slab Analysis and Design	$500.00
DF-1	Frame Analysis Data File Tape (used with FA-1, FA-4, CD-1)	$ 50.00

*The above listed eight programs (S.E.S-1), if purchased in entirety are priced at $2300 through Wang Laboratories, Inc. Prices include the program on magnetic tape cassette, a user's manual for the program purchased, and post paid delivery to the purchaser's address.

CENTRAL LIBRARY NO.: V22-700.40-00036

- -

TITLE: STRUCTURAL ENGINEERING SYSTEM (S.E.S.-2)

AUTHOR: Structural Programming, Inc.

ABSTRACT:

The software consists of several programs that can be used independently or linked together to complete the major design and analysis portion of a project.

ABSTRACTS:

SA-1 FRAME ANALYSIS

The basic system consists of a frame analysis program (stiffness method of analysis with "STRESS" formatting) along with separate steel and concrete design programs. The frame program is capable of analyzing a plane frame with no more than 140 members. The maximum permissable number of joints depends on the shape of the structure, the way the joints are numbered and the capacity of the machine. Program output includes Joint displacements; X,Y rotation; and member forces.

SS-1 STEEL DESIGN

This program uses the forces at each end of the member, the loads on the member, the member length, its bending axis and the effective length factor K to determine six acceptable wide flange shapes. Input to the program can be either by keyboard or from a tape created by the frame analysis program. The program designs both columns and beams according to the 1970 AISC code.

SC-1 CONCRETE COLUMN DESIGN

This program uses user-specified concrete and steel strength. The column dimensions and the applied load and moment for the design of rectangular or circular concrete columns are according to the 1971 ACI code. Input to the program may either be by keyboard or by a tape created by the frame analysis program.

SC-3 CONCRETE SLAB DESIGN

This program uses user-specified concrete and steel strength. Slab dimensions and the number of slab supports for the design of solid or waffle two-way slabs are according to the 1971 ACI code. The maximum number of spans that can be handled by the program is 10, and the additional loading input to the program must be from a tape created by the frame analysis program.

MINIMUM REQUIRED EQUIPMENT: 2200A (12K), 2216/17, and 2222 (2221, 2231 or 2261).

PRICE:

NUMBER	1 TITLE (SES-2)	INDIVIDUAL PROGRAM PRICE
SA-1	Frame Analysis	$1000.00
SS-1	Steel (Wide Flange) Design (Beam U Column)	800.00

SC-1	Concrete Column Design (Round and Rectangular)	500.00
SC-3	Concrete Slab Design (Flat Plate, Drop Panel and Waffle)	600.00

*The above listed four programs (SES-2), if purchased in entirety, are package priced at $2300 through Wang Laboratories, Inc. Prices include the programs on magnetic tape cassette and a user's manual.

CENTRAL LIBRARY NO.: V22-700.40-00033

(See Also: CHEMICAL (ENGINEERING) (700.15), abstract "Statistics/Engineering General Program Library GLBR22A", #4, p. 51 .)

Surveying (700.45)

TITLE: A BASIC PROGRAM FOR QUANTITY SURVEYORS

AUTHOR: Lai Pang Fee, Chartered Surveyors, Singapore, Malaysia

ABSTRACT:

Program prints out data lists of Item No., Unit, Length, Breadth, Height, reduced quantities, accumulated reduced quantities, rate, extension and accumulated total cost. See also September 1975 PROGRAMMER magazine, Vol. 9, No. 3, "A BASIC Computer Language Program for Quantity Surveyors."

MINIMUM REQUIRED EQUIPMENT: 2200-1/2201.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: S.436-9.9).

CENTRAL LIBRARY NO.: S22-700.45-00248

- -

TITLE: TDS-22 SERIES OF LAND SURVEYING SYSTEMS

AUTHOR: Holguin-Clarke

ABSTRACT:

These software packages provide a progression of capability levels for surveying calculations. Each system consists of a minimum of two Major Modules, Coordinate Geometry and Traverse, plus a set of miscellaneous utility programs such as Profiles, Cut and Fill, Curve Staking, Stadia Reduction, Level Circuits, etc. The differences in the systems are reflected in Point Storage, additional program capabilities and an ascending level of minimum hardware configurations.

TDS-22/1

ABSTRACT:

150 Points may be stored in memory at one time and can be transferred to tape.

MINIMUM REQUIRED EQUIPMENT: 2200A-3, 2216/2217, 2222 and 2241.

PRICE: $1000

TDS-22/2

ABSTRACT:

Point storage is 3500 on tape. Additional program capabilities are: Sophisticated Data Management System, Point Protection, and Define Distance Capability.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2222 and 2241.

PRICE: $1500

TDS-22/3

ABSTRACT:

Point Storage is 6000 on disk. Program has all of TDS-22/2, plus automatic lot printout sequence capability.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2222, 2241 and 2243.

PRICE: $2500

TDS-22/3P

ABSTRACT:

Point Storage is 6000 on disk. Program has all of TDS-22/3, plus complete manual and automatic plotting and labeling system for 2232A Plotter.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2216/2217, 2222, 2232A, 2241, and 2243.

PRICE: $4000

CENTRAL LIBRARY NO.: V22-700.45-00037

MATHEMATICAL APPLICATIONS (710.05-710.15)

Differential/Integral Equations (710.05)

(See: GENERAL MATHEMATICS (710.10), abstract "General Mathematics Program Library GLBR22", #1, p. 66.)

General Mathematics (710.10)

TITLE: GENERAL MATHEMATICS PROGRAM LIBRARY GLBR22

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

This package provides descriptions, operating instructions, and examples for various programs in mathematics in the following areas:

1. Differential/Integral Equations - programs applicable to Differential/Integral Equations are: Simpson's Rule, Numerical Integration (Romberg's Method), RUNGE-KUTTA, Gaussian Quadrature (20 Point), Derivative (Difference Quotients), Explicit Second Degree Equation, Second Degree Equation II, Bessel Function, Gamma Function, Fourier Analysis (Defined Function), and Fourier Analysis (Tabulated Function).

2. General Mathematics - programs applicable to General Mathematics are: Roots of a Quadratic: $AX^2 + BX + C = 0$; Roots of a Polynomial: $P(X) = A_0 + A_1X + \ldots + A_nX^n$; Half-Interval Search for Roots; Real Roots of a Polynomial: $A_1X^n + A_2X^{N-1} + \ldots + A_NX + A_N + 1 = 0$; Matrix Inversion (Gauss-Jordan Elimination Method); Matrix Inversion (Gauss-Jordan Done In Place); Eigenvalue and Eigenvector; Vector Operations; Vector Analysis; Solution of Simultaneous Equations (Gauss-Jordan); Matrix Addition, Subtraction, and Scalar Multiplication; Matrix Multiplication; Solution of Simultaneous Equations (Gauss-Seidel); Linear Programming (Simplex Method); Complex Determinant; Hyperbolic Functions and Inverse Hyperbolics; Sin, Cos, Tan, Sinh, Cosh, Tanh-Complex Argument; Angle Conversion I; Angle Conversion II; Trigonometric Polynomial; Plane Triangle Solution; Coordinate Change; Area of Rectilinear Surface; Linear Interpolation; Langrangian Interpolation; Greatest Common Divisor of Two Integers; Prime Factorization of Integers; Log B to Base A; Second Degree Equation I; Algebra of Complex Numbers; Hypergeometric Function; Square Root of a Complex Number; Fourier Analysis (Defined Function); and Fourier Analysis (Tabulated Function).

3. Statistics - program applicable to Statistics is: Permutations and Combinations.

MINIMUM REQUIRED EQUIPMENT: 2200A-1, 2215 or 2222, 2216/2217, and output device (if hardcopy is desired).

PACKAGE NO.: 195-0005-1

PRICE: $50.00

CENTRAL LIBRARY NO.: W22-710.10-00039

- -

TITLE: GOLDEN DIMENSION

AUTHOR: Lee R. Morse, and Larry R. Kingler, Scott Electronics Corporation, Orlando, Florida.

ABSTRACT:

This program generates the Fibonacci series (0,1,1,2,3,5,...) and also prints the value for phi, as phi is the convergent value of the series.

MINIMUM REQUIRED EQUIPMENT: 2200 with a 2201.

PRICE: Available to SWAP Members only - no charge (SWAP Library No.: G/D.37-8.5).

CENTRAL LIBRARY NO.: S22-710.10-00040

- -

TITLE: INVERT

AUTHOR: Miguel M. Soriano, Data S.A., Mexico

ABSTRACT:

This program inverts a matrix which cannot be inverted because it is too large for the memory of the computer. It can be used to invert up to double the size of a normal inversion program.

MINIMUM REQUIRED EQUIPMENT: 2200A-1.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: S.437-9.9).

CENTRAL LIBRARY NO.: S22-710.10-00249

Statistics (710.15)

TITLE: ANALYSIS OF VARIANCE (ANOVA)

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Analysis of Variance (ANOVA) Package consists of 11 programs to determine whether test observations, subject to one, two, or more factors simultaneously, differ only by random error. Observations are repeated for each condition or combination of conditions of different factors. One or more F-values are computed and used to determine whether the differences between test observations are too great to be random error. If they are, the factors

then are assumed to have an affect. In each of the eleven ANOVA programs, observations are entered through the keyboard, stored on a tape cassette or disk, read back into memory at a later time, and used to compute Sums of Squares, Mean Squares, and F-Values, which are printed in an ANOVA table.

The ANOVA package not only permits fast data entry and execution, but also provides data verification to ensure accuracy. Entered observations are displayed for editing or correcting individually or in groups before they are stored on tape cassette or disk. In the disk version only, after data files are stored, they may be recalled for editing, and in some programs, items may be deleted or added to keep pace with current experiments.

In the disk version only, five utilities are provided to ease data and program management. These utilities provide the capability to copy and verify existing files, to eliminate unwanted data files, to provide a printed copy of the catalog index, to modify the arrays on the System Disk to best utilize memory, and to transfer from the ANOVA system to another application while retaining the start-up information.

The Analysis of Variance (ANOVA) System contains the following routines:

1-way ANOVA (equal or unequal groups)
2-way ANOVA (one observation/cell)
2-way ANOVA (m observations/cell)
2-way ANOVA (m observations/cell, m can be unequal)
Latin Squares
3-way ANOVA (m observations/cell)
3-way ANOVA (m observations/cell, m can be unequal)
2-factor ANOVA (equal or unequal cell frequency)
2-factor ANOVA (with repeated measures on factor B)
3-factor ANOVA (equal or unequal cell frequency)
3-factor ANOVA (with repeated measures on factor C)

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A/B/C (12K) or S-2, 2222, and 2216/17.
Disk: 2200T-2 (2200S-2 with Option 24), 2270-2, CRT, Keyboard and Line Printer.

PACKAGE NO.: 2200A:195-1007-1
2200S:195-1006-1
2200T:195-1006-2(-3)

PRICE: $200 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-710.15-00181

- -

TITLE: ANALYSIS OF VARIANCE AND COVARIANCE

AUTHOR: Rose E. Dellamary (submitted by A.K. Burditt, Jr.), USDA, ARS, Subtropical Horticulture Research Unit, Miami, Florida

ABSTRACT:

Block 1 of program S.395-9.1 analyzes a Two-Way table with a single observation per cell, computes the F-probability, and optionally, Duncan's Multiple Range Test.

Block 2 of this program uses a One-Way Analysis of Covariance, up to 130 treatments with any number of replicates. The F-Probability is calculated.

Known Program Anomalies:

Size limit of table is 20 x 20, which can be easily changed for memory larger than 4K.

MINIMUM REQUIRED EQUIPMENT: 2200-A (4K).

PRICE: Available to SWAP members only - no charge (SWAP Library No.: S.395-9.1).

CENTRAL LIBRARY NO.: S22-710.15-00143

- -

TITLE: NONPARAMETRIC STATISTICS

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Nonparametric Statistics Library contains a number of programs commonly used in statistics and is intended to be a "set-it-and-forget-it" system. The user loads the desired programs into the System 2200 memory, enters the values relevant to his problem, and allows the System 2200 to do the rest.

The major reference suggested and used in the development of this fully automated system was Siegel's "Nonparametric Statistics for the Behavioral Sciences." Thus, any of the techniques given in Siegel's text are fully automated with this Library.

The Nonparametric Statistics contains 26 programs:

Utility Program
Binomial Test
Chi-Square One-Sample Test
Kolmogorov-Smirnov One-Sample Test
One-Sample Runs Test
McNemar Test for The Significance of Changes
Sign Test
Wilcoxon Matched-Pairs Signed-Ranks Test
Walsh Test
Fisher Exact Probability Test
Chi-Square Test for Two Independent Samples
Median Test
Mann-Whitney U Test
Kolmogorov-Smirnov Two-Sample Test
Wald-Wolfowitz Runs Test
Cochran Q Test
Friedman Two-Way Analysis of Variance by Ranks Test
Chi-Square Test for k Independent Samples
Extension of The Median Test (Median Known)
Extension of The Median Test (Median Unknown)

Kruskal-Wallis One-Way Analysis of Variance by Ranks Test
Contingency Coefficient, C
Spearman Rank Correlation Coefficient, r_s
Kendall Rank Correlation Coefficient, r
Kendall Partial Rank Correlation Coefficient, $\tau_{XY.Z}$
Kendall Coefficient of Concordance, W

MINIMUM REQUIRED EQUIPMENT: 2200A/B/C or S (8K), 2222, and 2216/17.

PACKAGE NO.: 2200A:195-1012-1
2200S:195-1011-1

PRICE: $200 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-710.15-00184

- -

TITLE: REGRESSION ANALYSIS

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Regression Analysis Package consists of 12 analytical programs which perform different statistical functions. Observations are entered through a keyboard, stored on a tape cassette or disk, read back into memory at a later time, and used to produce results such as standard deviation, mean, residual sums, regression coefficient, T-value, covariance values, and a plot of the data and regression line, among others, in report quality form.

Data entry and correction is fast and easy. Observations entered are displayed for verification before the items are stored on tape cassette or disk to ensure data integrity, thereby reducing errors in entry and calculation. Stored data can be recalled for editing or correction and data files may be expanded and deleted (also merged on the disk version only) to keep an up-to-date record of research.

In the disk version only, seven utilities are provided to ease data and program management. These utilities provide the capability to copy and verify existing files, delete obsolete data files and individual observations, redimension the system disk to best utilize available memory, merge data files, scale or transform existing data files to create new files, and transfer from the Regression Analysis system to another application while retaining the start-up information.

The Regression Analysis System contains the following routines:

Simple Linear Regression Analysis
Geometric Least Squares
Exponential Least Squares
Curve Fitting (by summation of two exponentials)
Curve Fitting (by summation of three exponentials)
Polynomial Regression Analysis
Polynomial Regression (for coefficients only)
Stepwise Polynomial Regression Analysis

Multiple Linear Regression Analysis
Multiple Linear Regression (for coefficients only)
Stepwise Multiple Linear Regression
General Multiple Linear Regression Analysis

MINIMUM REQUIRED EQUIPMENT: Tape: 2200A/B/C or S-2, 2222, and 2216/17.
Disk: 2200T-2 (2200S-2 with Option 24), CRT, and Keyboard; Line Printer and Plotter (optional).

PACKAGE NO.: 195-1010-1(-2)(-3)

PRICE: $200 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-710.15-00183

- -

TITLE: SEQUENTIAL ANALYSIS

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

Sequential Analysis consists of eight chapters describing seven independent operations on the System 2200. Each operation consists of two programs: one to create graphs and one to allow data entered through the keyboard to be printed on one of the graphs - the Acceptance-Rejection Region Graph. Chapter titles give the names of the types of distributions available.

This is intended to be a "set-it-and-forget-it" system. The user loads the appropriate program into the computer's memory, enters the values relevant to his problem, and allows the computer to do the rest.

The system produces six kinds of output.

The minimum output consists of the value keyed in, plus three numbers labeled "slope", "h0", and "h1". The acceptance and rejection numbers are linear functions of j, the observation number; the three values are their (common) slope and their respective intercepts.

The table of acceptance/rejection numbers gives critical values of the test statistic, the a(j) and r(j). There is also a message stating the formula for the test statistic.

A graph of the acceptance and rejection lines is available.

A graph of the Operating Characteristic (OC) function is available. The OC function gives the probability of accepting the null hypothesis H0 for a range of "true" values of the parameter being tested.

A graph of the Average Sample Number (ASN) function is available. The ASN function is the expected or average value of the (variable) sample size for a range of "true" values of the parameter being tested.

After the program has completed its run, the user can calculate from his data and plot the value of the test statistic. By using the graph of the

acceptance and rejection lines, he can obtain both pictorial and numerical display of the direction his data is taking.

The Sequential Analysis package handles seven common cases of testing a simple null hypothesis HO against a simple alternative Hl:

NORMAL I	$\mu = \mu_0$ vs. $\mu = \mu_1$	$\{\mu_0 < \mu_1\}$	,σ^2 known
NORMAL II	$\sigma = \sigma_0$ vs. $\sigma = \sigma_1$	$\{\sigma_0 \quad \sigma_1\}$	,μ known
NORMAL III	$\sigma = \sigma_0$ vs. $\sigma = \sigma_1$	$\{\sigma_0 < \sigma_1\}$	,μ unknown
NORMAL IV	$\mu = \mu_0$ within δ		,σ^2 known
BINOMIAL	$\rho = \rho_0$ vs. $\rho = \rho_1$	$\{\rho_0 < \rho_1\}$	
NEGATIVE BINOMIAL	$m = m_0$ vs. $m = m_1$	$\{m_0 < m_1\}$	,k known
POISSON	$\mu = \mu_0$ vs. $\mu = \mu_1$	$\{\mu_0 < \mu_1\}$	

The Program Descriptions show how a composite hypothesis may be reformulated into a simple hypothesis.

MINIMUM REQUIRED EQUIPMENT: 2200B/C or S (8K), 2222, and 2216/17.

PACKAGE NO.: 2200B:195-1009-1
2200S:195-1008-1
2200T:195-1016-2(-3)

PRICE: $175 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-710.15-00177

(See Also: (1) ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #8, p. 7 ; (2) CHEMICAL (ENGINEERING) (700.15), abstract "Statistics/Engineering General Program Library GLBR22A", #5, p. 51 ; (3) GENERAL MATHEMATICS (710.10), abstract "General Mathematics Program Library GLBR22", #3, p.66 ; and (4) GRAPHICS AND PLOTTING (800.30), abstracts (a) "Model 2202 Plotting Output Writer Utility Routines", (b) "Model 2212 Analog Flatbed Plotter Utility Routines", and (c) "Model 2232A Digital Flatbed Plotter Utility Routines", pp. 79 - 81.)

OPERATIONS RESEARCH AND MANAGEMENT SCIENCE (730.05-730.20)

Mathematical Programming (730.10)

TITLE: CRITICAL PATH

AUTHOR: David A. Velez McCaskey (submitted by Miguel M. Soriano), Data S.A., Mexico

ABSTRACT:

This program calculates the critical path of a schedule of activities, using the Ford-Fulkerson algorithm. The Ford-Fulkerson algorithm can be divided in two phases. The first, where d_{ij} represents the duration of the operation which begins at the event i and ends at event j, and secondly, where TPi is defined equal to zero for every i, proceeding in the following manner:

if: dij = TPj - TPi, the last value of TPj is replaced by:
TPj = TPi = dij,

and if: dij $\leq$ TPj - TPi, the last value of TPj is preserved.

The total list of activities is then examined applying said equations until no TPi is modified; the maximum value of the TPi will proportion the minimum duration in the accomplishment of the project.

If after a certain number of iterations equal to the number of activities still one TPi has been modified, the network contains at least one circuit. Therefore, the net of activities is closed.

In the second phase of the algorithm, the TLi are then defined equal to the maximum value of the TPi for every i, following an identical process as the one used in the first phase, applying the following equations until necessary for every one of the activities:

dij $\geq$ TIj - TIi, TLI = TIj - dij, and if dij $\leq$ TIj - TLi, the last value of TIi is preserved.

Once the two phases are concluded, the earliest starting time and the latest finishing times are known. With that information, the earliest finishing times, the latest finishing times and the totals and free slacks can be calculated using the following equations:

TTPI = TPI + dij, TILi = TLj - dij, HTij = TIj - TPi - dij, and HLij = TPj - TPi - dij.

MINIMUM REQUIRED EQUIPMENT: 2200B-4, OP-2 ROM, 2234 and 2221.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: B.56-9.9).

CENTRAL LIBRARY NO.: S22-730.10-00219

Simulation Models and Games (730.20)

TITLE: THE GAME OF LIFE - A SIMULATION APPROACH

AUTHOR: Stephen B. Wampler, Arizona Medical Center, Tucson, Arizona

ABSTRACT:

This program simulates genetic patterns through the use of John Horton Conway's genetic laws.

MINIMUM REQUIRED EQUIPMENT: 2200B-1, 2222, 2216/2217 (readily adaptable to 2200A-1).

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.33-8.3).

CENTRAL LIBRARY NO.: S22-730.20-00046

UNCLASSIFIED SCIENCE, ENGINEERING AND MATHEMATICS APPLICATIONS (790.00)

Unclassified Science, Engineering and Mathematics Applications (790.00)

TITLE: ENHANCED CALCULATOR FEATURE FOR SCIENTIFIC USE

AUTHOR: Paul Chow, California State University at Northridge, Northridge, California.

ABSTRACT:

This program provides 32 commonly used scientific functions, such as hyperbolic functions, complex algebra, error function, integration, roots of a quadratic, change of coordinate system, and more; these functions are accessible through the 32 special function keys on the keyboard.

MINIMUM REQUIRED EQUIPMENT: 2200A, 2215/2222, and 2216/2217.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: S.341-8.4).

CENTRAL LIBRARY NO.: S22-790.00-00334

- -

TITLE: TIME/VELOCITY MANIPULATION - PACKAGE I

AUTHOR: Geoconcepts, Inc.

ABSTRACT:

This is a basic utility package designed to permit collection, editing and display of time, velocity and depth data in most forms needed by geophysicists.

Velocities and seismic sections can be digitized and converted to depth. Velocity data can be displayed and edited in several forms. Isochrons, isopachs and interval velocities can be computed and tabulated. Time splicing and dix computations are handled automatically from data tapes. Package also includes map digitizing and plotting routine for storage and rescaling.

MINIMUM REQUIRED EQUIPMENT: 2200B(24K), 2232, 2231, 2216/2217, and 2222.

PRICE: $4400.00, net 30 days.

CENTRAL LIBRARY NO.: V22-790.00-00298

- -

TITLE: PROSPECT ANALYSIS - Package II

AUTHOR: Geoconcepts, Inc.

ABSTRACT:

A diverse package designed to provide various specific tools to assist geophysicists in interpretive problems. Package includes log v/log d plots, curve fitting, synthetic seismograms, synthetic profiles, contouring and 3D projections. Synthetic routines are designed to assist in correlation of well data, stratigraphic analysis, and bright spot interpretation.

MINIMUM REQUIRED EQUIPMENT: 2200B(24K), 2232, 2231, 2216/2217, and 2222.

PRICE: $6300.00, net 30 days.

CENTRAL LIBRARY NO.: V22-790.00-00299

- -

TITLE: 2D EARTH MODEL - PACKAGE III

AUTHOR: Geoconcepts, Inc.

ABSTRACT:

Package consists of a series of six programs which accept data from an interpreted cross-section of the earth and through normal incidence ray tracing procedures generates a complete synthetic seismic section.

Input data are defined in terms of continuously variable depths, velocities, and densities. Travel times are computed and stored for later use. An edit step, a CDP sort routine, collects data from ray tracing and reflection coefficient computations. These sorted data are convolved with a ricker wavelet to generate the final seismic profile. Model handles most structural and stratigraphic situations and computation time is a function of model size.

MINIMUM REQUIRED EQUIPMENT: 2200B(24K), 2232, 2231, 2216/2217, and 2222.

PRICE: $7000.00, net 30 days.

CENTRAL LIBRARY NO.: V22-790.00-00300

CHAPTER VI
UTILITIES (800.00 - 890.00)
2200 SERIES

DATA MANAGEMENT APPLICATIONS (800.05-800.50)

Data Base Manager (800.05)

TITLE: EXPRESS FILE MANAGER

AUTHOR: Express Software Systems, Inc.

ABSTRACT:

Express File Manager (EFM) provides the normal file maintenance functions - add, delete, and modify plus keyed inquiry for any disk file interactively without any programming. File creation is accomplished by interactively describing each file, its record description and descriptions for all the fields. Typically this takes 10-20 minutes depending on file complexity. At this point the user can immediately perform file maintenance and inquiry.

EFM will accommodate hierarchical files up to 16 levels and up to 16 different segment types. Segment keys may be of different sizes, both numerical and alpha. All data is tightly packed.

In addition, EFM provides over 25 service subroutines to facilitate the coding of custom applications. There is also a set of status and utilization reports for the database administrator. A listing generator is also furnished.

MINIMUM REQUIRED EQUIPMENT: 2200B-4, any Disk size.

PRICE: $5000 perpetual lease with multiple quantity discounts.

CENTRAL LIBRARY NO. V22-800.05-00079

- -

TITLE: UNIVERSAL DATA MANAGEMENT SYSTEM (UDM)

AUTHOR: YES Computer Sciences, Inc.

ABSTRACT:

UDM provides a resident executive program which is concerned with the maintenance of Disk Files. Up to 31 defined fields are permitted per record. Automatic Blocking/Unblocking of records is performed. Records are read into and written from an alphanumeric array buffer and are requested by record number. Records may be 2, 4, 8, 16, 32, 64, 128 or 256 Bytes in length, and may be blocked 128, 64, 32, 16, 8, 4, 2, or 1 per sector. Up to six files are

normally supported, but this number does not depend on Wang Hardware Files and may be easily increased to as many as 255. A hash lookup is used for keyed access due to fast lookup (any 3 read operations, including record retrieval) and low overhead (typical 1 sector per 32 data records). The subroutine library contains a full complement of subroutines for utilizing the hash method. In addition, UDM provides utility programs for allocation, definition and modification of files, as well as data entry, editing and reporting. Another group of programs are concerned with establishment and maintenance of Hashed files. In addition, a sort function is provided (which may be invoked by an applications program) and a special report program generator is provided. The general goal of the system is to reduce the number of applications programs needed as well as to reduce the complexity of each applications program, and to provide easy methods of dealing with "unusual" circumstances (e.g., repairing record count if lost by applications program "bug", etc.).

MINIMUM REQUIRED EQUIPMENT: 2200B, CRT, Disk, and printer (optional).

PRICE: Perpetual license fee $1500 - $3500 depending on options (OEM schedule available for Software vendors).

CENTRAL LIBRARY NO.: V22-800.05-00222

File Generation and Maintenance (800.20)

TITLE: SYSTEM 2200 DISK UTILITY KEYED FILE ACCESS METHOD 2 (KFAM-2)

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

KFAM-2 is a new version of the KFAM disk file management system. ("KFAM" is an acronym for "Keyed File Access Method".) KFAM-2 enables the user to access and update cataloged files on any 2200 Series disk with only a relatively few lines of user-generated program text. All of the complex and messy housekeeping operations typically associated with the maintenance of large disk-based files are handled by KFAM internally, and are transparent to the user's software. The data file is maintained with the aid of a specially designed companion index file, called the Key File, which contains keys and pointers to all records in the data file. The "B-Tree" technique employed in the Key File's organization enables the system to access any record with a minimum number of searches and disk accesses. KFAM-2 also provides stand-alone utilities for the creation and reorganization of the Key File, along with nine resident subroutines which are called by the user's program to access, delete, or insert records in the data file. Average direct access time for a record in a 20,000-record file on a fixed/removable disk is typically less than one second. For flexible disk drives, the average access time is somewhat longer. Finally, KFAM-2 permits a maximum key length of 12 bytes. A special routine is provided for converting Key Files created with the original KFAM to the format required by the new system.

MINIMUM REQUIRED EQUIPMENT: 2200B or C (12K) with any 2200 Series disk drive and line printer.

PACKAGE NO.: 195-0014-1

PRICE: $100 (Annual Support Contract: $200.00)

CENTRAL LIBRARY NO.: W22-800.20-00180

- -

TITLE: SYSTEM 2200 DISK UTILITY KEYED FILE ACCESS METHOD 3 (KFAM-3)

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

KFAM-3 is a new version of the KFAM disk file management system. ("KFAM" is an acronym for "Keyed File Access Method".) KFAM-3 enables the user to access and update cataloged files on any 2200 Series disk with only a relatively few lines of user-generated program text. All of the complex and messy housekeeping operations typically associated with the maintenance of large disk-based files are handled by KFAM internally, and are transparent to the user's software. The data file is maintained with the aid of a specially designed companion index file, called the Key File, which contains keys and pointers to all records in the data file. The "B-Tree" technique employed in the Key File's organization enables the system to access any record with a minimum number of searches and disk accesses. KFAM-3 provides stand-alone utilities for the creation and reorganization of the Key File, along with nine resident subroutines which are called by the user's program to access, delete, or insert records in the data file. Average direct access time for a record in a 20,000-record file on a fixed/removable disk is typically less than one second. For flexible disk drives, the average access time is somewhat longer. KFAM-3 is somewhat faster and more efficient than KFAM-2, and permits a maximum key length of 30 bytes, while KFAM-2 restricts the key length to 12 bytes. KFAM-3 also requires Option-5 (the Sort ROM). Finally, KFAM-3 provides a special routine for converting Key Files created with the original KFAM to the format required by the new system.

MINIMUM REQUIRED EQUIPMENT: 2200B or C (12K) with any 2200 series disk drive and line printer, and Option 5.

PACKAGE NO.: 195-0015-1(-2)(-3)

PRICE: $100 (Annual Support Contract: $200.00)

CENTRAL LIBRARY NO.: W22-800.20-00182

Graphics and Plotting (800.30)

TITLE: MODEL 2202 PLOTTING OUTPUT WRITER UTILITY ROUTINES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Model 2202 Plotting Output Writer Utility Routines provide users of the Model 2202 Digital Plotter with full plotting capabilities. The

routines are divided into Sections: the Plotter Program Package, and the Plotter Utility Package. The Plotter Program Package is a group of stand-alone programs which scale, plot and alphanumerically label rectangular, parametric or polar equations; bar charts; pie charts; point plots; and line graphs. The user can select either linear logarithmic or polar scales for special plots. No technical programming background is necessary to produce graphs. For the user with knowledge of System 2200 BASIC programming techniques, the Plotter Utility Package is a listing and description of the various internal subroutines used in the Plotter Program Package to perform the plotting functions. It is provided as an aid to the programmer who wants to develop a custom program package.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2215 or 2222, 2216/2217, and 2202.

PACKAGE NO.: 195-0009-1

PRICE: $100 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-800.30-00049

- -

TITLE: MODEL 2212 ANALOG FLATBED PLOTTER UTILITY ROUTINES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Model 2212 Analog Flatbed Plotter Utility Routines consist of two parts: the Plotter Program Package and the Plotter Utility Package. The Plotter Program Package, provided on a tape cassette, is a group of stand-alone programs which scale, plot and alphanumerically label rectangular, parametric, or polar equations; bar charts; pie charts; point plots; and line graphs. The user can select either linear, logarithmic or polar scales for special plots. No technical programming knowledge is necessary to produce graphs. Full instructions are provided. The Plotter Utility Package has a listing and detailed description of the various internal subroutines used to perform the plotting functions in the Plotter Program Package. It is provided for the user with knowledge of System 2200 BASIC programming techniques who wants to develop a custom program package.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2215 or 2222, 2216/2217 and 2212.

PACKAGE NO.: 195-0010-1

PRICE: $100 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-800.30-00050

- -

TITLE: MODEL 2232A DIGITAL FLATBED PLOTTER UTILITY ROUTINES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Model 2232A Digital Flatbed Plotter Utility Routines consist of two parts: the Plotter Program Package and the Plotter Utility Package. The Plotter Program Package, provided on a tape cassette, is a group of stand-alone programs which scale, plot and alphanumerically label rectangular, parametric, or polar equations; bar charts; pie charts; point plots; and line graphs. Full alphanumeric labeling in any size, rotated to any angle. No technical programming knowledge is necessary to produce the graphs. Full instructions are provided. The Plotter Utility Package has a listing and detailed description of the various internal subroutines used to perform the plotting functions in the Plotter Program Package. It is provided for the user with knowledge of the System 2200 BASIC programming techniques who wants to develop a custom program package.

MINIMUM REQUIRED EQUIPMENT: 2200B-3, 2215, 2216/2217, and 2232A.

PACKAGE NO.: 195-0011-1

PRICE: $100 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-800.30-00051

(See Also: ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #9, p.7 .)

Utilities (800.50)

TITLE: CARD READER UTILITIES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The 2234A/2244A Card Reader Utilities facilitate the transferring of card images in Hollerith, mark sense, binary, GEAC, and Wang formats to a tape or disk unit and/or an output printer or typewriter. The utilities contain the following programs: Card Image Out, Card Image Dump, Card Image To Printer, and Card Program List.

CARD IMAGE OUT (CIMAGOUT)

This program reads Hollerith, program or Binary formats into memory. From memory the card images are transferred to an output buffer in blocks of 2000 or less bytes. The output buffer then is written onto a disk platter or a tape cassette.

CARD IMAGE DUMP (CIMAGDMP)

This program reads either a card in Hollerith, Wang or binary formats or a card image from tape or disk which has been created by the CIMAGOUT program. The output produced by this program contains a line number, the record size, and the card image.

CARD IMAGE TO PRINTER

This program reads card images from the card reader or a tape or disk unit. The user defines the fields he wants to print. This program allows column headings with print starting in a specific position and summations on fields.

CARD PROGRAM LIST (CPRGLIST)

This program lists program cards out with automatic page control on a high speed printer or selectric typewriter. To terminate Card Program List under program control, an E must be placed in column 80 of the final card of a Hollerith deck or an END verb in the final card of a GEAC/Wang deck.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, 2234A or 2244A, 2221 or 2201, and 2240 (2270-2) or 2218.

PACKAGE NO.: 195-0016-1(-2)(-3)

PRICE: $75.00 (Annual Support Contract: $50.00)

CENTRAL LIBRARY NO.: W22-800.50-00191

- -

TITLE: THE DISK SORT UTILITY

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Disk Sort Utility has been prepared to enhance and make more effective the disk sorting capabilities of a Wang system. The utility uses Sort statements and can be run on any of the Wang disk units. The program is stored for transmittal to the user on a tape cassette, and must be copied to a disk before being run. Part of the procedure used for copying the program to a disk includes modifications to tailor the program to the specific equipment configuration used. In addition to the usual input and output files, the program requires that a "sort-work file" be specified; this is an interim file used by the program for storing intermediate results. All three of these files must be unique. The program file and all the data files must be mounted at the start of each program run and all must remain mounted until its end.

Depending upon the size of the records to be sorted and the available machine configuration, either a full-record or key sort is performed. The choice of which type of sort to perform is made by the program. In general, with short records, a full-record sort is faster than a key sort. In a full-record sort, the entire input record is reformatted so that the record can be efficiently moved. When the sort and merge operations take place, the entire input record is used. After all records have been sorted on the final merge pass, the records are reformatted to the input format before being written out on the output file.

In a key sort, only the sort key is extracted from each input record and carried, with a pointer to the input record, as the sort record. The sort

records are sorted internally and are used to form sorted strings which are merged until all records have been used. At the end of program execution, the sort records are read in order, the appropriate input records are found (with the pointers), and the output file is created. This method will generally be used if the file is too large to be sorted in a single pass, given the size of the sort records and the amount of memory available for sort buffers, e.g., with long records and when the record length is more than twice as long as the sort key length.

MINIMUM REQUIRED EQUIPMENT: 2200B/C (8K - 32K),2240 or 2270 or 2230 or 2260,and 2216/17.

Package No.: 195-0013-1

PRICE: $100.00 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-800.50-00250

TITLE: 2200 INTEGRATED SUPPORT SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The 2200 Integrated Support System (ISS) is a concatenation of software designed to make easier the job of creating and running a disk based computing system. It provides utility programs to do some of the standard tasks of the system, and subroutines to do some of the standard tasks of programs. It ties together support and application software. A common system setup tests the CPU, and then begins the processing day by requesting standard system data. Beneath this common setup, a hierarchy of accessways links all parts of the system and makes the standard system data universally available.

ISS resides on three functionally organized diskettes. Each contains the daily setup module called Initial Program Load (IPL), the master transfer module called START, as well as a file of routines.

The START modules are the key links of the system. They offer easy access to the routines on their respective diskettes, as well as transfer routes to the other START modules and to application software. They execute an intra-system CPU initialization which makes standard system data available to all software in the system. At the end of execution, each user program or ISS routine offers a route back to a START module. START is a major system-integrating factor which puts all the elements of the system at the fingertips of the operator.

The IPL module is executed once at the beginning of each day. It first performs a brief, 30-45 second, CPU diagnostic. If no hardware malfunction is detected, it begins the processing day by requesting keyboard entry of the date. This date is saved in Gregorian alphanumeric format and in Julian numeric format for use by any part of the system.

Generally, if IPL detects a hardware malfunction, the operator loads and executes the appropriate programs of the 2200 Hardware Diagnostic System. These programs should be sufficient to define the exact nature and location of the problem.

ISS provides for entry of the system CPU memory size and makes this information available for use by any part of the system.

ISS is designed so that application programs may be integrated into it with the minimum constraint of those programs.

Support Services of the ISS Diskettes

The Application Support Diskettes

The Application Support Diskettes are so named since only they provide transfer routes to an application program. In addition to this basic function, they contain and provide easy access to Utilities, KFAM 03 Utilities, and the Disk Sort Utility. Finally, both Application Support Diskettes provide a routine for changing the memory size information which ISS makes available to all system elements.

Utilities

The Utilities are stand-alone routines designed to perform tasks frequently required in a disk based data processing system. Their functions are summarized below:

1) COPY/VERIFY - Copies files from one storage device to another and verifies the copy. Any combination of cataloged disk or cassette tape may be used for input and output. When the output medium is disk, additional sectors may be added to the copied files.

2) SORT DISK CATALOG - Prints a disk catalog index sorted alphabetically by file name or numerically by starting sector address.

3) CONDENSE DISK - Removes scratched files from a disk, and relocates active files to close the resultant gaps.

4) DISK DUMP - Prints the hexadecimal and character equivalents of the contents of any file stored on disk.

5) DECOMPRESS - Copies a program file and in doing so breaks up all multi-statement lines, assigning a unique line number to each BASIC statement.

6) LIST/CROSS REFERENCE - Prints a list of a program file with each BASIC statement printed on a separate line. For each input program file, it prints three cross-reference tables: one which associates referenced line numbers with the lines which refer to them, one which associates all variables with the lines in which they appear, and one which associates all DEFFN' subroutines with the lines which refer to them.

7) COMPRESSION - Reduces the size of source program files by eliminating REM lines, extra spaces, and inessential line numbers.

KFAM 03

KFAM 03 is a software system designed to organize a disk based data file in a manner which makes it possible to rapidly access individual records in the file, and to add and delete records without disturbing the file's organization.

KFAM keeps track of the location of every record in the user's data file (referred to simply as the "User File"). For this purpose, it creates and maintains a special index file called the "Key File". In the Key File, a "key" is stored for each record in the User File.

To locate a record in the User File, an application program simply passes the identifying key to a KFAM subroutine which in turn moves the disk read/write head to the record's location in the User File.

The KFAM system has two types of component software: stand-alone utilities and incorporable subroutines. The stand-alone utilities create and maintain the key file. The incorporable subroutines are used to access records and update existent KFAM files.

KFAM 03 is the version of KFAM which most effectively uses the sophisticated programming features of 2200 systems. For users who may already have data files organized under KFAM01 or KFAM02 and who wish to benefit from KFAM03, two stand-alone conversion utilities are provided by ISS.

The Disk Sort Utility

The Disk Sort Utility is a stand-alone subsystem designed to rapidly sort the records in a cataloged disk data file. It appears in two components - one is used to calculate the size of the work file needed for execution, and the other performs the actual sorting. For maximum efficiency, the system uses the "extended" BASIC statements described in "Sort Statements".

Programming Aids Diskette

The Programming Aids diskette offers the programmer a variety of DEFFN' subroutines which may be incorporated into application programs. These subroutines are designed to perform standard tasks frequently required within application programs. In addition to these subroutines, it also offers several translation tables for use with the BASIC statement $TRAN.

The Programming Aids diskette includes an IPL as well as a START module and, therefore, may be used for beginning the processing day.

There are two groups of DEFFN' subroutines on the diskette. They are the Screen/Disk subroutines and the KFAM subroutines.

The Screen/Disk subroutines perform standard tasks relating to Operator to CPU and Disk to CPU interaction. They include the following:

1) Search Catalog Index: This subroutine examines the Disk Catalog Index to see if a particular file has been cataloged.

2) Allocate Data File Space: This subroutine opens a data file on any selected disk and allocates to it the available sectors between the current end and the end of the cataloged area. It checks the index to ensure the uniqueness of the file name, and allows a minimum acceptable file size to be specified.

3) Free Unused Sectors: This subroutine examines the last file in a catalog area, de-allocates those sectors between the DATASAVE DC (#n) END trailer and the end of the file, and repositions the end of the file sector. The de-allocation may be restricted by specifying that a minimum number of extra sectors be maintained in the file area.

4) Data Entry: This subroutine accepts a keyboard entry, using the KEYIN verb, and checks the entry to ascertain whether it is within a specified range and whether its length and number of places before and after the decimal, is acceptable. It also displays a prompt and creates an appropriate entry mark.

5) Open/Close Output: These subroutines open for output, or close, data files containing certain special purpose software header and trailer records.

6) Open/Close Input: These subroutines open for input, or close, data files containing certain special purpose software header and trailer records.

7) Alphanumeric Input: This subroutine displays a prompt on Line 1 of the CRT, and on Line 2 a series of prompting dashes indicating the maximum field size to be entered. The entered alphanumeric information replaces the prompting dashes.

8) Numeric Input: This subroutine displays a prompt on Line 1, and on Line 2 a series of prompting dashes indicating the maximum number of digits to be entered before and after the decimal point. The entered numeric data replace the prompting dashes.

9) Position Cursor: This subroutine moves the cursor to any point on the CRT and, optionally, erases the screen below and to the right of the new cursor position.

10) Date: This is a group of routines which convert and manipulate dates in Gregorian and Julian form. It includes an accept date routine for operator entry of the date.

11) Operator Wait: This subroutine displays the message "KEY RETURN(EXEC) TO RESUME" and waits on an INPUT instruction for depression of RETURN(EXEC).

The Programming Aids Diskette offers two sets of KFAM subroutines. These sets are identical except that one of them, the INQUIRY ONLY set, excludes those subroutines which can add or delete records in a KFAM organized file. (Operations which only need to access KFAM organized records can substantially reduce memory usage with INQUIRY ONLY.)

The KFAM subroutines enable the programmer to easily open and close KFAM files, find the first, next, or last record of the user file (in logical key sequence) and locate, add, and delete records in the file, by specifying the key.

The Translation Tables provided in the Programming Aids Platter are:

EBCDIC TO ASCII
ASCII TO EBCDIC
2200 TO 1200
1200 TO 2200

MINIMUM REQUIRED EQUIPMENT: ISS requires dual disk handling capability with at least one drive for a flexible disk. ISS operates on a 2200C processor which is equipped with Options 2 and 5 (provided other system requirements are met). Memory and printer requirements are listed below by operation. (Memory given is memory actually used, expressed to the nearest larger K.)

System Element	Memory Used	Printer Required?
IPL	8K	No
START	2K	No
COPY/VERIFY	8K	No
SORT DISK CATALOG	8K	No
CONDENSE DISK	7K	No
DISK DUMP	8K	Yes
DECOMPRESS	8K	No
LIST/CROSS REFERENCE	8K	Yes
COMPRESSION	12K	No
KFAM UTILITIES*	12K	Yes
DISK SORT UTILITY	8K	No

*With minor programming changes, the printer may be omitted for KFAM.

PACKAGE NO.: 195-0004-2(-3)

PRICE: $250.00 (Annual Support Contract: $250.00)

CENTRAL LIBRARY NO.: W22-800.50-00198

- -

TITLE: (MODEL 2209) NINE-TRACK TAPE DRIVE UTILITIES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Nine-Track Tape Utilities consist of a number of routines created for processing nine-track tapes to be read or written on a Model 2209 Nine-Track Tape Drive at 800 bpi.

The routines operate at four levels:

1. A LOADER to load all nine-track routines and subroutines into memory, and to provide a user 'menu' to simplify program selection.

2. A Physical I/O Control System (Physical IOCS) containing the subroutines which perform physical operations on tape such as rewinding, backspacing, writing a file mark (EOF), etc.

3. A Logical I/O Control System (Logical IOCS) containing the subroutines which perform logical I/O operations including opening and closing of files, translations from ASCII to EBCDIC (and vice versa), and creating or updating internal tape labels.

4. A set of primary routines to initialize or write and update volume labels, to read or write data and to transfer data from tape to disk, disk to tape, card to tape and Nine-Track to Print (Dump the Tape Contents).

MINIMUM REQUIRED EQUIPMENT: 2200 with at least 12K of user RAM and the General I/O Statements (Option 2 or Option 23); 2209; 2234A/2244A and/or 2240, 2242, 2243, 2230 or 2260 (to transfer data from card reader, or disk to tape or from tape to disk); and a printer (to dump data from tape).

PACKAGE NO.: 195-0017-1(-2)(-3)

PRICE: $150.00 (Annual Support Contract: $150.00)

CENTRAL LIBRARY NO.: W22-800.50-00196

- -

TITLE: MODEL 2262 X-Y DIGITIZER UTILITIES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Model 2262 X-Y Digitizer utility package consists of 12 programs and includes the following routines:

1. Menu Definition - permits the operator to digitize and define his own menu, and store it out on tape or disk.

2. Area Utility - computes and displays the area of a plane figure in scaled units.

3. Image Storing - establishes disk or tape files which enable the operator to store off coordinates of a digitized image.

4. Equal Scaling - computes equal scaling factors for the X and Y axes, and converts digitizer coordinates to a user-defined real coordinate system.

5. Unequal Scaling - computes different scale factors for the X and Y axes, and converts digitizer coordinates to a user-defined real coordinate system.

6. Coordinate Transformation - converts digitizer coordinates to a user-defined real coordinate system.

7. Image Plotting - plots out one or more sections of the image digitized and stored with Image Storing. The image can be replotted to any scale, with a resolution factor specified by the operator.

8. Direction & Distance - computes and displays the distance between two digitized points, and the angular direction of a point from the real X axis.

9. Inquiry/List - enables the operator to display and/or print the file names of data files created with Image Storing.

10. Regression - utilizes digitizer input for polynomial regression computations (coefficients only), with an option for producing plotted output.

11. Interpolation - interpolates the values of digitized points lying on a line between two known reference points.

12. Back-Up - provides the capability to utilize a tape cassette drive to produce back-up copies of data disks in systems with only a single disk drive.

MINIMUM REQUIRED EQUIPMENT: 2200B-3 or C-3 (12K of memory), 2262, single flexible disk or diskette drive and/or tape cassette drive, and a 2202, 1212 or 2232A (output device if hardcopy is desired). (System 2200S needs either Option 22, 23, or 24.)

PACKAGE NO.: 195-0012-1(-2)(-3)

PRICE: $100 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-800.50-00185

- -

TITLE: 2200 PLOTTER UTILITIES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Wang Plotter Utilities Package consists of a group of ten utility programs designed to perform certain commonly-used plotting operations, and to simply general plotter control for the application programmer. The utility programs are written not as stand-alone programs (although they can be accessed directly from the keyboard via the Special Function keys), but as subroutines which can be called from a user-supplied mainline program.

The subroutines perform a variety of functions. One routine permits the user to define a portion of the plotting surface within which all plotting will take place (the "active plotting area"). Separate routines perform such commonly used operations as plotting a straight line, plotting a circle, plotting a coordinate grid, and plotting an alphanumeric character string within the defined plotting area. A generalized routine called the "Plot Instruction Emulator" simulates nine plotting instructions and is a powerful and versatile tool for writing customized plotter routines.

Wang manufactures several different types of plotters, each with its own unique characteristics and idiosyncrasies. The plotter utilities are compatible with all Wang plotters. The utilities have been designed to obviate, to the extent possible, all dependence on individual plotter hardware. Of the ten utility programs, only one, the Plotter Control Routine, directly accesses the plotter, and is directly hardware dependent. The remaining nine routines are totally independent of the hardware, and function identically for all plotters.

The following is a brief summary of each of the ten plotter utility programs:

1. SET PLOTTER BOUNDARIES (DEFFN'19)

   This routine is used to define the boundaries of the "active plotting area." The "active plotting area" is that portion of the plotting surface available for plotting. Once defined, this area is recognized by all subsequent plotter utilities, and no plotting is permitted beyond its boundaries.

2. LOAD CHARACTER GENERATION ARRAY (DEFFN'22)

   This routine loads a previously created character generation array from disk into memory. The character generation array is created initially by the START module during system startup, and is stored out on disk at that time. It must be loaded into memory prior to plotting a character string.

3. PLOT CHARACTER STRING (STRAIGHT LINE) (DEFFN'20)

   This routine plots a string of alphanumeric characters relative to a specified point in the active plotting area. The characters are defined in the character generation array, which must be resident in memory to run this routine. The character size is specified by the user, as are the slant and rotation of the character string relative to the plotter axes.

4. PLOT CHARACTER STRING (ON A CIRCLE) (DEFFN'21)

   This routine plots a string of alphanumeric characters on the circumference of a circle. The center point and radius of the circle are determined by the user, as are the character size and slant of the character string. The character string is plotted relative to a selected reference point on the circle.

5. PLOT LINE BETWEEN TWO POINTS (DEFFN'25)

   This routine plots a straight line between two points whose coordinates are specified by the user. The line may be solid, dashed, dotted, or dashed/dotted.

6. PLOT COORDINATE GRID (DEFFN'26)

   This routine plots a coordinate grid of horizontal and vertical grid lines in the active plotting area. The origin point of the grid, as well as the increments between successive horizontal grid lines and between successive vertical grid lines are specified by the user.

7. PLOT CIRCLE (DEFFN'27)

   This routine plots a circle whose origin point and radius length are defined by the user. The size of the straight-line segments used in approximating the circle must also be specified by the user.

8. PLOT BOARDER AROUND ACTIVE PLOTTING AREA (DEFFN'28)

   This routine plots a boarder around the active plotting area, defined in the Set Plotter Boundaries routine. The boarder may be plotted as a solid line, or as a dashed, dotted, or dashed/dotted line.

9. PLOT INSTRUCTION EMULATOR (DEFFN'29)

   This utility is a generalized routine which simulates nine basic plot instructions. In every case, the user is required to pass a maximum of three parameters: a delta X and delta Y, or an X and Y coordinate, depending on the option chosen, and an instruction code. The following instructions are provided:

   1. Send Plotter Home
   2. Move Delta X, Delta Y (Tacit Move)
   3. Move to X,Y (Tacit Move)
   4. Move Delta X, Delta Y (Actual Move)
   5. Move X,Y (Actual Move)
   6. Move Delta X, Delta Y, Plot Point
   7. Move to X,Y Plot Point
   8. Plot Line Delta X, Delta Y
   9. Plot Line to X,Y

10. PLOTTER CONTROL ROUTINE (DEFFN'30)

    The plotter control routine is the only routine which addresses the plotter directly, and is the device-dependent routine. It is called by the Plot Instruction Emulator to execute the plotter operations simulated by the instructions in the Emulator. Two versions of the Plotter Control Routine are provided: one version controls the Models 2212 and 2232A plotters, and a second version controls the Model 2202 plotter. The Plotter Control Routine is not designed to be directly accessed by the user.

MINIMUM REQUIRED EQUIPMENT: 2200 (8K), Options - Sort Statements and Disk Statements, any disk unit, and any plotter.

PACKAGE NO.: 195-0021-2(-3)

PRICE: 100.00 (Annual Support Contract: $100.00)

CENTRAL LIBRARY NO.: W22-800.50-00251

- -

TITLE: REPORT PROGRAM LANGUAGE UTILITY

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Report Program Language Utility utilizes a high-level instruction set for the purpose of generating programs to print reports from existing files. The three basic components of this operation are the system program, the source program, and the object program. The system program contains the logic to create the source and object programs. The source program, written in Report Language, is compiled, producing object programs in BASIC. The object program then is executed to produce the report desired.

The Report Language provides capabilities to format numeric data, edit or update source programs, append BASIC subroutines to the object program, define working variables, and utilize partial fields (string functions). These capabilities, plus the ease of programming, make Report Language a tool for even the marginally experienced programmer.

Report Language supports one input file, which may be a sequential catalog file, a BAS-1 (Basic Accounting System-1) file, a KFAM-3 (Keyed File Access Method-3) file, or a multi-volume file. Records may be selected for printing, depending on the value or values of specified fields within a record, and also may be sorted in any indicated order prior to printing.

The report format is determined by the user. Several statements are available to provide DETAIL lines (one line or group of lines per record selected), page headers, and up to 9 levels of totals. Totals may be accumulated automatically for any number of numeric data items, at any combination of levels (maximum of 30 accumulations). Page breaks and group totals are handled automatically.

MINIMUM REQUIRED EQUIPMENT: 2200T (or 2200S with Option 24), a CRT, a keyboard, a Model 2270-2, and a line printer.

PACKAGE NO.: 195-0019-2(-3)

PRICE: $200.00 (Annual Support Contract: $150.00)

CENTRAL LIBRARY NO.: W22-800.50-00206

- -

TITLE: SYSTEM 2200 GENERAL UTILITIES VOLUME II

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

This manual provides descriptions and operating instructions for a number of utility routines that have been prepared for users of the Wang System 2200. Programs included are: Compression Program, Decompression and Cross Reference Program, Listing Program, Disk and Tape Dump, Disk Sort, Tape Sort, Tape/Disk and Display Utilities, Scratch Volume Initialization and Date Routines.

MINIMUM REQUIRED EQUIPMENT: Compression - 2200B-3, 2215, 2216/2217, and Tape/Disk.
Decompression and Cross Reference - 2200B-3, 2215, 2216/2217, and printer (optional).
Listing - 2200B-2, 2215, 2216/2217, and Printer (optional).
Dump - 2200B-2, 2215, 2216/2217, and Printer (optional).
Sort - 2200B-2, 2215, 2216/2217, and Tape/Disk.

PACKAGE NO.: 195-0002-1

PRICE: $125.00

CENTRAL LIBRARY NO.: W22-800.50-00053

- -

TITLE: SYSTEM 2200 GENERAL UTILITIES III

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

General Utilities Volume III provides descriptions and operating instructions for a number of utility routines that have been prepared for users of the Wang System 2200. All the utilities in this package are independent of any other program. Programs included are: Copy/Verify Utility Start-up, Tape to Tape Copy/Verify, Tape to Disk Copy/Verify, Disk to Tape Copy/Verify, Disk to Disk Copy/Verify, Sort Disk Catalog, Tape File List, Disk Sector Condense, 1200/2200 Translation 1, 1200/2200 Translation 2, and Tape Structure List.

MINIMUM REQUIRED EQUIPMENT: 2200B (8K).

PACKAGE NO.: 195-0003-1

PRICE: $75

CENTRAL LIBRARY NO.: W22-800.50-00035

- -

TITLE: TAPE COPY PROGRAM

AUTHOR: Richard Turner, Unidyne Corp., Norfolk, Virginia

ABSTRACT:

This program copies and verifies either programs or data onto blank tape cassettes.

MINIMUM REQUIRED EQUIPMENT: 2200B-1, 2215/2222, 2216/2217, and 2218, if more tape drives are desired.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.124-8.6).

CENTRAL LIBRARY NO.: S22-800.50-00335

- -

TITLE: TEXT EDITING UTILITIES

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The Text Editing Utilities Package enhances the operation of a Wang 1200/1222 Word Processing System by adding a text editing capability to a Wang system. It contains utilities to read 1200 tape cassettes, store text on disk, edit text stored on disk, maintain the disk, print text on a printer, or write text on a 1200 tape cassette.

The Text Editing Utilities consist of the following ten programs, plus DISK INITIALIZATION and MENU programs.

TAPE TO DISK - reads tapes created on a 1220 or 1222 and stores their text on a floppy disk.

TEXT EDITOR - either inputs information directly on a disk or makes any type of correction to text stored on a disk.

GLOBAL REPLACE - allows a word or phrase to be replaced by another word or phrase throughout a document or only in desired locations within the document.

DOCUMENT/LETTER ASSEMBLY - an output program which creates tapes to be played out on a 1200, is also capable of assembling a document or letter from one or more documents on a disk, and can also create form letters.

DISK TABLE OF CONTENTS - allows the titles or names of documents stored on a disk to be viewed on the CRT or printed out on the high speed printer in alphabetical order.

DELETE A DOCUMENT - a program which removes obsolete or unwanted text from a disk, with a built-in safety feature that eliminates the possibility of the wrong document being deleted.

COPY DISK - copies text stored on one disk onto another disk, for back-up copy protection.

ENVELOPE TAPE - a program which allows addresses to be saved and stored on a tape which can be used for addressing envelopes (directly related to DOCUMENT/LETTER ASSEMBLY).

PRINT A DOCUMENT - creates draft copies of document on the high speed printer.

SELECT KEYBOARD - a program which allows the system to make adjustments for a keyboard change (2222 to 2223 or vice versa).

MINIMUM REQUIRED EQUIPMENT: 2200T (16K) (or C with Options 2 and 5), 2222 or 2223, 2217, 2270-2, and a printer if hardcopy is desired.

PACKAGE NO.: 195-0018-2(-3)

PRICE: $600 (Annual Support Contract: $250.00)

CENTRAL LIBRARY NO.: W22-800.50-00226

DEMONSTRATIONS (810.00)

Demonstrations (810.00)

TITLE: ODD-ORDER MAGIC SQUARES

AUTHOR: Chin-Yeang Lim, College of Our Lady of the Elms, Chicopee, Massachusetts

ABSTRACT:

This program prints magic squares of odd orders. It is written to print magic squares of orders 3, 5, 7 , 9. It can be modified easily to print other higher order magic squares.

MINIMUM REQUIRED EQUIPMENT: 2200A (4K), 2201 and 2216/17.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.52-8.10).

CENTRAL LIBRARY NO.: S22-810.00-00057

- -

TITLE: PERPETUAL CALENDAR

AUTHOR: Chin-Yeang Lim, College of Our Lady of the Elms, Chicopee, Massachusetts.

ABSTRACT:

This program prints the calendar for a chosen year (=1752) making use of Zeller's Congruence. Although it is written for a hardcopy output, with only minor modifications, it can be used to get an output on the CRT.

MINIMUM REQUIRED EQUIPMENT: 2200A/2201.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.42-8.8).

CENTRAL LIBRARY NO.: S22-810.00-00056

(See Also: GENERAL MATHEMATICS (710.10), abstract "Golden Dimension", p. 67.)

GAMES (820.00)

Games (820.00)

TITLE: BATTLE OF NUMBERS

AUTHOR: Richard Turner, NAV SEC NOR DIV, Norfolk, Virginia

ABSTRACT:

In this game, the player challenges the System 2200; a pile of objects is available, from which more than 0 and less than K (determined by a random number generator) objects must be removed at each turn. The player who removes the last object loses.

MINIMUM REQUIRED EQUIPMENT: 2200, 2215/2222, and 2216/2217.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.26-8.3).

CENTRAL LIBRARY NO.: S22-820.00-00336

- -

TITLE: RONA

AUTHOR: Mark Musen, Brown University, Providence, Rhode Island

ABSTRACT:

This program turns the System 2200 into a "gossipist". All information must be taught to Rona, who will answer almost any question you ask with as many appropriate answers as she can find.

MINIMUM REQUIRED EQUIPMENT: 2200A-1, 2215/2222, and 2216/2217.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.29-8.3).

CENTRAL LIBRARY NO.: S22-820.00-00337

- -

TITLE: RUMMY

AUTHOR: Robert Benbow & Carl W. Schlaphoff, Colorado Mountain College, Leadville, Colorado.

ABSTRACT:

Rummy is a program which plays a game of four card rummy with the operator. The operator must have four of a kind to win. The strategy

is to accumulate a hand of four like cards as quickly as possible. Sorry, no straights allowed for a win.

PROGRAM DESCRIPTION

First an array is set up for the card deck. Its dimensions are four by thirteen for suits and cards. Subroutine '00 fills each element of the array with a "C", which means there is a card in that position in the array. Two hands of four cards then are dealt and the top card is displayed. The top row of cards are Mac's (the machine's) and as in any card game his opponent only sees the back of Mac's cards. Stu's (the operator) cards are displayed in the bottom row face up. The top card is between the two rows in what shall be the discard pile for the rest of the game. Subroutine '01 picks a random position in the deck array and then replaces the "C" with an "E" to show that the card has been taken out of the deck. The row and column positions are used then to give the card a recognizable name such as 2D, KH, etc. in subroutine '02.

Stu is given first chance at the top card. If he doesn't take it, Mac checks to see if he wants it. If not, a new card is displayed to Stu. If Stu doesn't want the new card, it becomes Stu's discard. If Stu wants it, he must discard. Subroutine '08 checks to see if Stu's discard is in Stu's hand. Subroutine '09 replaces Stu's discard with the new card. In case of an illegal discard, subroutine '10 prints out "Does not compute" and the information is asked for again. When it is Mac's turn, subroutine '04 is used to see if Mac wants a card and to replace and discard the appropriate card. Since Mac cannot see very well, his cards must be arranged with all like cards put at the end of his hand. The two subroutines used for this are '11 and '12. This way Mac, by the use of subroutine '20, tells his opponent who won.

Subroutine '06 arranges a card description in a standard 3-digit form. The display during the game is accomplished by Subroutine '03. Subroutine '22 is used to pause.

MINIMUM REQUIRED EQUIPMENT: 2200A-1/4K.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.44-8.9).

CENTRAL LIBRARY NO.: S22-820.00-00060

TITLE: SIMULATION OF STOCK MARKET WITH COMMISSIONS

AUTHOR: John Collins, Collins Engineering Co., Ft. Walton Beach, Florida

ABSTRACT:

In this simulation of the stock market, the operator specifies how many shares of speculative stock, preferred stock, warrants, and bonds he wishes to buy or sell. In this way, he controls his "fortune" in the stock market; the simulation of price movement is controlled by a random number generator.

MINIMUM REQUIRED EQUIPMENT: 2200, 2215/2222, and 2216/2217.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: B.40-8.3).

CENTRAL LIBRARY NO.: S22-820.00-00338

- -

TITLE: 2200 GAME PACKAGE

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

This package contains ten games:

1. Arith: this program can be used as a learning tool for arithmetic problems, including addition, subtraction, multiplication, and division.
2. Arty: this game is an interactive artillery game.
3. Blackjack: the System 2200 deals this game.
4. Crypto: the System 2200 tests your talent with Cryptograms.
5. Football: this game can be played against the System 2200 or against a friend.
6. Horse: this horse race game uses a random number generator to determine the winner.
7. Life: John Conway's genetic laws are explored in this game.
8. Ten Pin: a bowling game is simulated by the System 2200, with the players taking turns.
9. Ten Pin B: this is a modification of Ten Pin in which you try to reach a score of 300.
10. Kalah: this is an April Fool version of the ancient game.

MINIMUM REQUIRED EQUIPMENT: All programs require the following equipment: 2216/2217, and 2215/2222.

See below for individual System 2200 sizes:

1,7,9: 2200B-8K
2,6,10: 2200A-4K
3,4,5,8: 2200A-8K

PRICE: Available to SWAP members only - no charge (SWAP Library No.: G/D.41-8.5).

CENTRAL LIBRARY NO.: S22-820.00-00383

(See Also: (1) ASSETS ACCOUNTING (100.15), abstract "Finance/Utilities/Games General Program Library GLBR22B", #10, p.7 ; and (2) GENERAL MATHEMATICS (710.10), abstract "Golden Dimension", p. 67.)

HARDWARE MANAGEMENT APPLICATIONS (830.05-830.20)

Diagnostic Monitors (830.05)

TITLE: THE 2200 HARDWARE DIAGNOSTIC SYSTEM

AUTHOR: Wang Laboratories, Inc.

ABSTRACT:

The 2200 Hardware Diagnostic System is a software system designed to help maintain the maximum efficiency of your Wang system. It contains programs which exhaustively test the hardware components of the system and which attempt to pinpoint any malfunctions. The nature of these programs forces their operation outside the processing day, as that is defined for users of the 2200 Integrated Support System (ISS).

The diagnostic programs resident of this system should be executed:

1. once every 60 to 80 hours of operation,

2. whenever a hardware malfunction is suspected, and

3. whenever a Wang Service Representative requests their execution.

In addition, the memory diagnostic should be executed whenever the IPL (Initial Program Load) memory diagnostic of ISS detects a problem.

It is best to execute diagnostic routines as close as possible to the time of observation of a suspected problem. This ensures that the environmental conditions of the test most closely resemble those under which the problem may occur.

Six basic diagnostics are offered: Memory, CPU, Printer, Disk Instructions, Disk, and Disk Platter Verify. There are two types of memory and disk diagnostic known as the System Diagnostic and the Burn-In Diagnostic. These differ in the number of times each part of the subject system is tested. The Burn-In diagnostic performs the tests many more times than the System Diagnostic and is recommended when an intermittent system problem appears to have eluded the System Diagnostic.

The Disk Platter Verify is provided for the purpose of testing disk platters and diskettes not currently in use in the system.

The Disk, Disk Instructions, and Disk Platter diagnostics require occasional operator attention. The other diagnostic routines do not, and may be left to operate outside of normal system working hours. The approximate execution times for representative diagnostics are given below.

TEST	CONFIGURATION	TIME
Memory (system diagnosis)	8K 16K 24K	10 min 17 min 24 min
CPU	Not Significant	13 min
Printer	2221W	6 min
Disk Instructions	Not Significant	4 min
Disk (system diagnosis)	Single Drive Diskette 2230-3	38 min 2 hr, 22 min
Disk Platter/Verify	diskette	8 min

The diagnostics output results to a printer or display. The detailed output exceeds the capacity of the display, and therefore, if the display output option is chosen, the diagnostic results are reported merely as pass/fail. Whenever a printer is available, it is recommended that the hardcopy option be elected.

After all tests are executed, a pass/fail summary of the results is displayed. At this point, the operator has the option of passing control to the IPL module of an ISS diskette or returning to the 2200 Hardware Diagnostic System master menu.

MINIMUM REQUIRED EQUIPMENT: 2200T CPU with a keyboard, CRT, 8K of memory and a single diskette drive.

PACKAGE NO.: 195-0020-2(-3)

PRICE: $50 (Automatic Enclosure)

CENTRAL LIBRARY NO.: W22-830.05-00200

SOFTWARE MANAGEMENT (850.05-850.15)

Software Library Services (850.15)

TITLE: 2200 TAPE LIBRARY CLASSIFICATION SYSTEM

AUTHOR: John Maunder, Highways Department, Adelaide, South Australia

ABSTRACT:

Because no organization can spend an unlimited amount of time on program development, it would be greatly advantageous for all users to avoid duplication of programs by maintaining a library file which would:

a) List and describe all programs within the organization, that is, all programs written by, or obtained by, personnel within the organization and to have all such programs immediately accessible.

b) List and describe all programs available within the locality of the user and available at short notice.

c) List and describe all programs available from SWAP.

This program enables the custodian of a Wang 2200 to maintain a library file to execute all the above.

See also the article "2000 Tape Library and Classification System," September 1975 PROGRAMMER magazine, Vol. 9, No. 3.

MINIMUM REQUIRED EQUIPMENT: 2200B (4K) with program modifications.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.165-9.9).

CENTRAL LIBRARY NO.: S22-850.15-00218

SYSTEM DESIGN MANAGEMENT APPLICATIONS (860.05-860.35)

Cross-Referencing (860.05)

TITLE: "CROSSREF"

AUTHOR: Robert Marinelli, Mobil Shipping & Transportation Co., New York, New York

ABSTRACT:

Given any System 2200 program, this program lists the desired program, along with a cross referenced variable listing.

MINIMUM REQUIRED EQUIPMENT: 2200B-2, and 2221.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.125-8.6).

CENTRAL LIBRARY NO.: S22-860.05-00339

- -

TITLE: CROSSREF/2

AUTHOR: Andres Loo, Software Consultant, Vancouver, B.C., Canada

ABSTRACT:

This is a 2200B program to list and cross-reference other 2200 programs. It was developed from SWAP Program T.125-8.6 "CROSSREF", written by Robert J. Marinelli, but is faster and of greater capacity than CROSSREF. CROSSREF 2 would list all references in an 8K program with 500 references present in 15 minutes; CROSSREF would list only the first 254 references of the same program in 30 minutes. CROSSREF 2 does not use sorts, but stores occurrences of variables as linked record chains.

By removing the option to list a program, at least 700 additional references can be handled for any given size machine. Approximate machine capacities of CROSSREF 2 are:

Storage	With Listing	Without Listing
8K	(must be compressed)	630 references
12K	910 references	1610 references
16K	1960 references	2660 references

etc., adding 1024 references for each 4K additional memory capacity.

Program T.139-9.4 as submitted has 700-reference capacity, on 12K, and runs on a 2230 disk and high speed printer (device 215), but can be modified to run on a tape drive or a 2240 disk, or any output device. Reference table capacity can easily be modified. Disk and high speed printer are recommended for optimum performance.

Known Program Anomalities:

Like program T.125-8.6, this program will interpret certain command elements as variable, e.g., F, R, T in disk statements, F, R, O, M in UNPACK () FROM, and exponentials (e.g., 1E7, etc.). Hex codes and (), POS(), etc. will be printed out as variables.

MINIMUM REQUIRED EQUIPMENT: Can be modified for 2200B(8K).

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.139-9.4).

CENTRAL LIBRARY NO.: S22-860.05-00252

Documentation Aids (860.10)

TITLE: LABELIST

AUTHOR: Juan Manual Daviia (submitted by Miguel M. Soriano), Data S.A., Mexico

ABSTRACT:

This program lists and numbers the labels of files recorded in a given cassette, indicating either the file is a program or a data file.

MINIMUM REQUIRED EQUIPMENT: 2200B-1/2201.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.166-9.9).

CENTRAL LIBRARY NO.: S22-860.10-00253

- -

TITLE: LIST 8080

AUTHOR: Luis Ignacio Raudon (submitted by Miguel M. Soriano), Data S.A., Mexico

ABSTRACT:

This program reads ASCII code cards and prints them on the line printer, with or without page control.

MINIMUM REQUIRED EQUIPMENT: 2200B-1, 2234, and 2221.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.167-9.9).

CENTRAL LIBRARY NO.: S22-860.10-00254

- -

TITLE: WANG 2200 VARIABLES AND SUBROUTINES CHECKOFF SHEET PRINTER

AUTHOR: Andres Loo, Vancouver, British Columbia

ABSTRACT:

This program prints out five different kinds of checkoff sheets for: numeric variables, numeric arrays, alpha variables, alpha arrays, and subroutines. These sheets can be used for program documentation and can be used in conjunction with the documentation forms in the System 2200 Programming Tools Manual.

MINIMUM REQUIRED EQUIPMENT: 2200A-1, 2215/2222, 2216/2217, and 2201/2221.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.114-8.4).

CENTRAL LIBRARY NO.: S22-860.10-00340

Flowcharters (860.15)

TITLE: FLOWPROG

AUTHOR: Tyler Olsen, Wang Laboratories, Inc., Tewksbury, Massachusetts

ABSTRACT:

This program creates flowcharts from a BASIC program tape.

MINIMUM REQUIRED EQUIPMENT: 2200B (16K).

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.140-9.4).

CENTRAL LIBRARY NO.: S22-860.15-00210

Programmer Aids (860.20)

TITLE: POSX

AUTHOR: R.P. Gustalson, Cominco American Inc., Spokane, Washington

ABSTRACT:

This subroutine is used to locate matching strings and can be described as a variation of the POS function for the Wang 2200. Unlike POS(, the relational operator is limited to =, but the character sought is extended to be an alphanumeric variable. This subroutine is analagous to the INSTR function of the DEC PDP 11 minicomputers. Trailing blanks in either string will be ignored.

MINIMUM REQUIRED EQUIPMENT: 2200A.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.168-9.9).

CENTRAL LIBRARY NO.: S22-860.20-00255

- -

TITLE: WANG 2200-2230 PROGRAM SCANNER

AUTHOR: Andres Loo, Vancouver, British Columbia

ABSTRACT:

This program scans for and prints specified hex codes or string of hex codes. This programming aid can be used to analyze, document, and prove programs.

MINIMUM REQUIRED EQUIPMENT: 2200B-1, 2215/2222, 2216/2217, and hardcopy device, if hardcopy desired.

PRICE: Available to SWAP members only - no charge (Swap Library No.: T.113-8.4).

CENTRAL LIBRARY NO.: S22-860.20-00341

UNCLASSIFIED UTILITIES (890.00)

Unclassified Utilities (890.00)

TITLE: BRAILLE 2 and BRAILLE LIST

AUTHORS: Michael S. Inoue, Oregon State University, Corvallis, Oregon and Wang Laboratories Programming Department, Tewksbury, Massachusetts

ABSTRACT:

BRAILLE 2 was originally written by Dr. Inoue and subsequently compressed and modified to operate on 2K of core by Wang Laboratories. The Wang programming department also developed the BRAILLE LIST program which allows the user to obtain a listing of his program statements in Braille.

BRAILLE 2 converts 2200B and 2202 into a Braille printer. After loading the program and depressing RUN, execute, an entry from the keyboard will produce Braille imprints that are legible by a visually-impaired individual. Capital alphabets, numerals, selected symbols, and spacing and return are included. The program is open-ended to allow additional Braille characters for a system with more than 4K bytes of memory. An attractive feature for a non-blind operator is an English printing below the Braille. The printing occurs from right to left so that Braille protrusion occurs left to right. The program automatically returns carriage when the line is filled.

See also March 1975 PROGRAMMER article "Training of the Visually Impaired," Vol. 9 No. 1, pp. 3 to 6.

Known Program Anomalies:

None. The selectric head should be set to 5 for maximum impression. It is recommended that two sheets of backing paper be used for optimum impressions, with selectric head set to 7.

MINIMUM REQUIRED EQUIPMENT: 2200B (4K)/2202.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.138-9.4).

CENTRAL LIBRARY NO.: S22-890.00-00209

- -

TITLE: DISK CATALOG LOADER

AUTHOR: Giles Bilodeau, Arsenault, Garneau, Villeneuve et Associes, Montreal Canada.

ABSTRACT:

This program saves any disk catalogued area on a tape cassette. The required tape length is fixed by the program. The only manual input needed is "F" or "R", according to the catalog to be saved. The reloading of the catalog on disk is done automatically, the loader program having been recorded at the beginning of the data cassette. If one cassette is not sufficient to save the whole catalog, use T.126-8.7 program to complete after the "End of Tape" error.

MINIMUM REQUIRED EQUIPMENT: 4K-2200B and 2230-1.

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.134-8.10).

CENTRAL LIBRARY NO.: S22-890.00-00061

- -

TITLE: PACK

AUTHOR: Kenneth R. Parker, Department of the Army, Washington, D.C.

ABSTRACT:

Program PACK eliminates all scratched catalogued files and unused space within a program file while rebuilding the index on the selected Disk (user has a choice between FIXED or REMOVABLE Disk). Active DATA files remain untouched in length even though the entire file may not be in use. Similar to Wang's MOVE verb which transfers all unscratched files from one Disk to the other, PACK works only on the desired Disk and thus requires ONLY ONE Disk.

This program has only been in operation for a short period of time. Though we have had no problems using the package, I do wish to be able to channel queries on this package back to myself, since it has not had much "air-time".

Write to: Kenneth R. Parket, Mathematician, Department of the Army, Systems and Methods Support Division, Engineer Studies Group, 6500 Brooks Lane, Washington, D.C. 20315.

Known Program Anomalies:

Depressing the RESET button during program execution may bring unpleasant expletives from co-workers who just lost their files.

MINIMUM REQUIRED EQUIPMENT: 2200/2230-1 (uses 6097 bytes).

PRICE: Available to SWAP members only - no charge (SWAP Library No.: T.137-8.10).

CENTRAL LIBRARY NO.: S22-890.00-00062

APPENDIX A: LIST OF VENDORS

Cogebec Information Inc.
2024 Chemin Saint Louis
Sillery, Quebec G1T 1P1
Canada

Comac Data Systems, Inc.
239 Tonawanda Creek Rd.
Amherst, New York 14120

Creative Software Department
6415 Dean Hill Drive - Suite 8
Knoxville, Tennessee 37919

ECOM Associates/Computerized Structural Design
Engineering Computer Software
660 East Mason Street
Milwaukee, Wisconsin 53202

Express Software Systems, Inc.
20 East 46th Street
New York, New York 10017

Felkins Consulting & Data Processing
P.O. Box 177
Jonesboro, Arkansas 72401

Joel Filler
113 Cherokee Road
Nashville, Tennessee 37205

Financial Statistics, Inc.
2001 Bryan Tower, Suite 320
Dallas, Texas 75201

Ignacy Fonberg
600 Orange Street
New Haven, Connecticut 06511

Geoconcepts, Inc.
Suite 214
6420 Hillcroft
Houston, Texas 72036

M.J. Hedemark
5480 Louisiana Drive
Concord, California 94521

Holguin-Clark, Inc.
2820 North Station
El Paso, Texas 77902

Jinkins Associates
114 Andover Circle
Oak Ridge, Tennessee 37830

Joseph W. Larimore & Associates
8630 Delmar Avenue, Suite 205
St. Louis, Missouri 63124

Andres Loo
Software Consultant
2398 W. 34th Avenue
Vancouver, British Columbia
Canada, V6M 1G7

Master Software Systems
3687 Philsdale Avenue
Memphis, Tennessee 38111

Mr. Labe Mell
Moody Nursing Home
4115 Glenwood Rd.
Decatur, Georgia 30032

Niakwa Management Services Ltd.
575 St. Mary's Road
Winnipeg 8, Manitoba
Canada

Osborne & Associates, Inc.
2950 7th Street
Berkeley, California 94710

Perrault & Perrault, Inc.
Consulting Engineers
1968 Dallas Drive
Baton Rouge, Louisiana 70806

Portland Cement Association
Old Orchard Road
Skokie, Illinois 60076

Prendergast Consultants
2041 Rosecrans, Suite 245
El Segundo, California 90245

Process Equipment Design Corp.
P.O. Box 7150, Stewart Sta.
Richmond, Virginia 23221

Pulmonary Diagnostic Consultants
Prestonsburg Community College
Prestonsburg, Kentucky
Att: Ken Buick

RCB Services, Inc.
5700 Northwest Grand Blvd.
Oklahoma City, Oklahoma 73112

REAL SHARE INC.
Pacific Trade Center
190 S. King Street, Suite 890
Honolulu, Hawaii 96813

Real-Time Engineering Systems, Ltd.
49 East Downer Place, Suite 601
Aurora, Illinois 60505

Rhys A. Sterling
S. 11825 Player Drive
Spokane, Washington 99203

Stern, Bernstein Associates
361 East 49th Street
New York, New York 10017

Structural Programming, Inc./Mitchell Systems
2 Militia Drive
Lexington, Massachusetts 02173

Synsis, Inc.
2510 N. Figueroa Street
Los Angeles, California 90069

Technical Programs, Inc.
604 Park Drive
University Park
Boca Raton, Florida 33432

James W. Veenstra, MD
Department of Pathology
Clovis Memorial Hospital
Clovis, New Mexico

Viacomp Systems
8630 Delmar Boulevard
St. Louis, Missouri 63124

YES Computer Sciences, Inc.
188 Pine Grove Street
New Bedford, Massachusetts 02745

APPENDIX B: EQUIPMENT LIST

Model	Description
2200S-1	CPU including 4096 bytes of random access memory (RAM)† & 3 I/O Ports
2200T-1	CPU including 8192 bytes of random access memory (RAM)† & 3 I/O Ports
-	Additional 8192 bytes of random access memory (RAM)†
WCS/10	Computer System with 8192 bytes of random access memory (RAM)†, Integrated Keyboard, Tape Drive and CRT Display, Stand and 3 I/O ports.
WCS/20	Computer System with 8192 bytes of random access memory (RAM)†, 12" CRT & Keyboard Console, single diskette Drive/Desk, and 6 I/O Ports.
WCS/30	Computer System with 16,384 bytes of random access memory (RAM)†, 12" CRT & Keyboard Console, single diskette Drive/Desk, 5-Megabyte Disk Drive/Stand, 132-column Printer/Stand, and 6 I/O Ports.
-	Additional 8192 bytes of random access memory (RAM)†

Compatible CPU								Model	Description
					WCS				
A	B	C	S	T	10	20	30		
									CPU Options
	**	**		*				OP-1	Matrix Statements
	X	X		*	X	*	*	OP-2	General I/O Statements
X	X	*	*	*	*	*	*	OP-3	Character Edit Feature
	**	**		*		*	*	OP-5	Sort Statements
			X	X	X			OP-20	Up to 6 I/O Ports for 2200S,T, or WCS10 CPU
			X	X	X	X	X	OP-20A	Up to 9 I/O Ports for 2200S,T, or WCS CPU
			X	*	X	*	*	OP-21	Matrix Statements
			X	*	X	*	*	OP-22	Advanced Programming & Matrix Statements
			X	*	X	*	*	OP-23	General I/O, Advanced Programming & Matrix Statements
			X	*	X	*	*	OP-24	Disk, General I/O, Advanced Programming Sort & Matrix Statements
X	X	X						2219	Extended Chassis for 2200A/B/C CPU
X	X	X	X	X				2290	CPU/Peripheral Stand
									Input Peripherals
	X	X		X		X	X	2203	Punched Tape Reader
X	X	X	X	X	X	X	X	2214	Mark Sense Card Reader
X	X	X	X	X	X	X	X	2234A	Hopper Sense Card Reader
X	X	X	X	X	X	X	X	2244A	Hopper-Feed Mark Sense/Punch Card Reader
X	X	X	X	X	X	X	X	2262-1	Digitizer 20" x 20" Tablet
X	X	X	X	X	X	X	X	2262-2	Digitizer 30" x 40" Tablet
X	X	X	X	X	X	X	X	2262-3	Digitizer 30" x 48" Tablet

Output Peripherals

X	X	X	X	X	X	X	X	2201	Output Writer
	X	X		X		X	X	2202	Plotting Output Writer
	X	X		X		X	X	2212	Analog Flatbed Plotter (10" x 15")
X	X	X	X	X	X	X	X	2221W	Line Printer (132 column)
X	X	X	X	X	X	X	X	2231	Line Printer (80 column)
	X	X		X		X	X	2232A	Digital Flatbed Plotter (31" x 48")
X	X	X	X	X	X	X	X	2241	Thermal Printer (80 column)
X	X	X	X	X	X	X	X	2261	High Speed Printer (132 column)
	X	X		X		X	X	2291	Digital Flatbed Plotter Stand

Interface Controllers

X	X	X	X	X	X	X	X	2207A	I/O Interface Controller (RS-232-C) Selectable BAUD
X	X	X	X	X	X	X	X	2227	Asynchronous Telecommunications Controller
X	X	X	X	X	X	X	X	2227N	Null Modem
X	X	X	X	X	X	X	X	2250	I/O Interface Controller (8 bit parallel)
X	X	X	X	X	X	X	X	2252	Input Interface Controller (BCD 10 digit parallel)
X	X	X	X	X	X	X	X	2252A	Scanning Input Interface Controller (BCD 1-10 digit parallel)

Keyboard/Display Peripherals

X	X	X	X	X	X	X	X	2215	BASIC Keyword Keyboard
X	X	X	X	X	X	X	X	2216	CRT Executive Display
X	X	X	X	X	X	X	X	2216A	Upper/Lower Case CRT Display
X	X	X	X	X	X	X	X	2216/17	Combined CRT Executive Display/Single Tape Cassette Drive
X	X	X	X	X	X	X	X	2216A/17	Combined Upper/Lower Case CRT Display/ Single Tape Cassette Drive
X	X	X	X	X	*	X	X	2220	Console-9 in. CRT/Keyboard/Single Tape Cassette
X	X	X	X	X	X	X	X	OP-30	Upper/Lower Case for 2220 CRT
X	X	X	X	X	X	X	X	2222	Alpha-Numeric Typewriter Keyboard
X	X	X	X	X	X	X	X	2223	Alpha-Numeric/BASIC Keyword Keyboard
X	X	X	X	X		*	*	2226	12 in. CRT/Alpha-Numeric/BASIC Keyword Keyboard
X	X	X	X	X	X	X	X	OP-4	Audio Signal for 2216 & 2216A CRT
X	X	X	X	X	X	X	X	OP-31	Audio Signal for 2220 & OP-30 CRT
X	X	X	X	X	X	X	X	OP-32	Keyboard Clicker
X	X	X	X	X	X	X	X	2292	Auxiliary Display w/25' cable

Mass Storage Peripherals

	ǂ	ǂ	ǂ		ǂ	X	X	2209	Nine-Track Tape Drive
X	X	X	X	X	X	X	X	2217	Single Tape Cassette Drive
X	X	X	X	X	X	X	X	2218	Dual Tape Cassette Drive
	X	X		X		X	X	2224-2	Disk Multiplexer (2 Station)
	X	X		X		X	X	2224-3	Disk Multiplexer (3 Station)
	X	X		X		X	X	2224-4	Disk Multiplexer (4 Station)
	X	X		X		X	X	2230-1	Fixed/Removable Disk Drive 1,228,800 bytes
	X	X		X		X	X	2230-2	Fixed/Removable Disk Drive 2,457,600 bytes
	X	X		X		X	*	2230-3	Fixed/Removable Disk Drive 5,013,504 bytes
	X	X		X		X	X	2230MXA	Daisy-Chain Type Disk Multiplexer (1 CPU)
	X	X		X		X	X	2230MXB	Daisy-Chain Type Disk Multiplexer (up to 4 CPU's)
	X	X		X		X	X	2260	Fixed/Removable Disk Drive 10,027,008 bytes

	X	X		X		*	*	2270-1	Single Removable Diskette Disk Drive	262,144 bytes
	X	X		X		X	X	2270-2	Dual Removable Diskette Disk Drive	524,288 bytes
	X	X		X		X	X	2270-3	Triple Removable Diskette Disk Drive	786,432 bytes

* A standard feature.

** OP-1 and OP-5 may not be ordered together.

† RAM in Models T and WCS 10/20/30 are expandable to a maximum 32K bytes. Ram in Model S is expandable to a maximum 16K bytes (32K with Option 24). Additional Memory Blocks are ordered in 8K (System S is upgraded to 8K before adding additional memory blocks) byte increments over and above initial 8K bytes included with CPU.

‡ General I/O Statements required.

Note:

Since the 2240, 2242, and 2243 Flexible Disk Drives are no longer available, the chart below gives a comparable substitution for them:

	Flexible Disk Drives	Diskette Drives
one drive	2242	2270-1
dual drive	2240	2270-2
triple drive	2243	2270-3

To help us to provide you with the best manuals possible, please make your comments and suggestions concerning this publication on the form below. Then detach, fold, tape closed and mail to us. All comments and suggestions become the property of Wang Laboratories, Inc. For a reply, be sure to include your name and address. Your cooperation is appreciated.

700-3520B

TITLE OF MANUAL: **SOFTWARE HANDBOOK**

COMMENTS:

Fold

Fold

(Please tape. Postal regulations prohibit the use of staples.)

WANG

Fold

FIRST CLASS
PERMIT NO. 16
Tewksbury, Mass.

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

– POSTAGE WILL BE PAID BY –

WANG LABORATORIES, INC.
836 NORTH STREET
TEWKSBURY, MASSACHUSETTS 01876

Attention: Marketing Department

Fold

Cut along dotted line.

Printed in U.S.A.

WANG LABORATORIES (CANADA) LTD.
49 Valleybrook Drive
Don Mills, Ontario M3B 2S6
TELEPHONE (416) 449-2175
Telex: 069-66546

WANG EUROPE, S.A.
Buurtweg 13
9412 Ottergem
Belgium
TELEPHONE 053/704514
Telex: 26077

WANG DO BRASIL COMPUTADORES LTDA.
Rua Barao de Lucena No. 32
Botafogo ZC-01 20,000
Rio de Janeiro RJ
Brasil
TELEPHONE 226-4326
Telex: 2123296

WANG COMPUTERS (SO. AFRICA) PTY. LTD.
Corner of Allen Rd. & Garden St.
Bordeaux, Transvaal
Republic of South Africa
TELEPHONE (011) 48-6123

WANG INTERNATIONAL TRADE, INC.
836 North Street
Tewksbury, Massachusetts 01876
TELEPHONE (617) 851-4111
TWX 710-343-6769
Telex: 94-7421

WANG SKANDINAVISKA AB
Pyramidvaegen 9A
S-171 36 Solna,
Sweden
TELEPHONE 08-826814
Telex: 11498

WANG NEDERLAND B.V.
Damstraat 2
Utrecht, Netherlands
(030) 93-09-47
Telex: 47579

WANG PACIFIC LTD.
902-3 Wong House
26-30, Des Voeux Road, West
Hong Kong
TELEPHONE 5-435229
Telex: 74879

WANG INDUSTRIAL CO., LTD.
110-118 Kuang-Fu N. Road
Taipei, China
TELEPHONE 784181-3
Telex: 21713

WANG GESELLSCHAFT M.B.H.
Formanekgasse 12-14
A-1190 Vienna, Austria
TELEPHONE 36.32.80
Telex: 74640

WANG S.A./A.G.
Markusstrasse 20
CH-8042 Zurich 6
Switzerland
TELEPHONE 41.1.26.6866
Telex: 59151

WANG COMPUTER PTY. LTD.
55 Herbert Street
St. Leonards, 2065
Australia
TELEPHONE 439-3511
Telex: 25469

WANG ELECTRONICS LTD.
1 Olympic Way, 4th Floor
Wembley Park,
Middlesex, England
TELEPHONE 01/903/6755
Telex: 923498

WANG FRANCE S.A.R.L.
Tour Gallieni, 1
78/80 Ave. Gallieni
93170 Bagnolet, France
TELEPHONE 33.1.3602211
Telex: 68958F

WANG LABORATORIES GMBH
Moselstrasse 4
6000 Frankfurt AM Main
West Germany
TELEPHONE (0611) 252061
Telex: 04-16246

WANG DE PANAMA (CPEC) S.A.
Apartado 6425
Calle 45E, No. 9N. Bella Vista
Panama 5, Panama

WANG COMPUTER SERVICES
836 North Street
Tewksbury, Massachusetts 01876
TELEPHONE (617) 851-4111
TWX 710-343-6769
Telex: 94-7421

24 Mill Street
Arlington, Massachusetts 02174
TELEPHONE (617) 648-8550

WANG LABORATORIES, INC.
836 NORTH STREET, TEWKSBURY, MASSACHUSETTS 01876, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

Printed in U.S.A.
700-3520B
3-76-1M
Price: see current list