

## SOFTWARE DATA SHEET

IDEAS (Inquiry Data Entry Access System) is a powerful application development tool which can be used to create and maintain data files, generate sophisticated screen formats, solicit and validate operator-entered data, and produce complex reports. IDEAS generates highly modularized BASIC code which can be easily modified through the use of the system resident macros, or can be used as is for simple application systems. A password security option is available for IDEAS-developed menus. The IDEAS access method is the powerful Hashed Index Keyed Access Method (HIKAM). HIKAM offers a unique combination of hashing and indexing access techniques which handles insertions and deletions easily, optimizes data storage and retrieval, minimizes overflow situations, is significantly faster than indexing, and performs well in both sequential and random access environments.

The flexibility and power offered by IDEAS makes it an invaluable software development tool because it facilitates the creation and maintenance of data files, screen formats, and reports. Documentation is provided on data files, screens, menus, and reports. Utilization of IDEAS can greatly reduce the programming effort required to produce versatile and comprehensive data entry systems. IDEAS is also convenient for small applications which do not warrant extensive programming time. These applications can be developed quickly, with little or no additional user programming required.

IDEAS is a Wang-developed and supported software package which offers 2200 series users state-of-the-art software technology designed for application development.

### FILE MANAGEMENT

HIKAM, the IDEAS file management system, combines hashing and indexing techniques to provide excellent performance in both random and sequential storage and retrieval environments. HIKAM files are formatted under software control in a way which optimizes search and access time, provides efficient disk management, and eliminates the need for periodic file reorganization. Compression of numeric and alphabetic data is completely automatic.

# 2200

## IDEAS (INQUIRY DATA ENTRY ACCESS SYSTEM)

- Automatic File Maintenance
- Easy Screen Generation
- Self-Documenting
- Flexible Report Generator
- Password Security
- Generates Modularized Basic Code

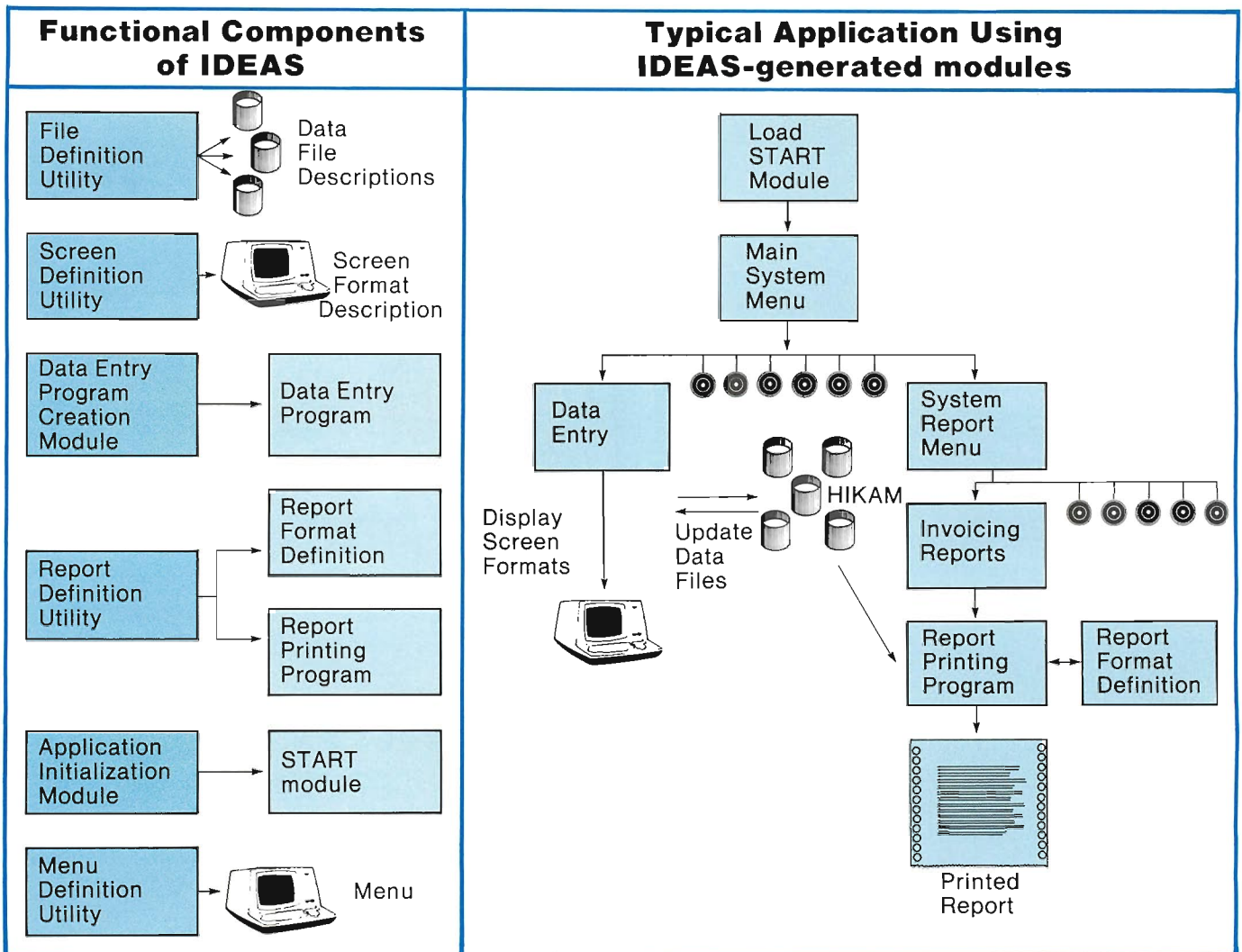
```

Invoice number 000999          Invoice date NOV 19 79
Customer number 10032         : Ship to:
THE BRASS & PENTER SHOP      : THE BRASS & PENTER SHOP
100 NORTH STREET             : 100 NORTH STREET
                               : LAWRENCE           MA, 00095
LAWRENCE                      MA, 00095
-----
Quantity  Product  Description      Cost      Extended Cost
-----
  30      00000136  BRASS INCLINOMETER  16.95     510.40
  14      00000102  GLASS TABLE        64.95     909.30
  11      00000123  PITCHWHEELS "LEAF PROOF" PLATE 49.95     499.50
-----
Sub Total                  1919.20
Customer Discount 20 %     Discount      383.84
-----
TOTAL $                   1535.36
-----
Instructions: Touch EXEC to accept, EDIT to modify
  
```

# WANG

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**FILE MANAGEMENT (Continued)**

The maximum file size on an IDEAS-developed system is virtually unlimited since multiple volume as well as single volume files are supported. A logical file may span up to eight disk platters on line; thus, the maximum file size is limited only by available memory and disk space, and, in extreme cases, key size.

Each data file must have one primary key; up to sixteen alternate keys may be associated with each primary data file. Duplicate primary and alternate keys are allowed. Two types of duplicate alternate keys are available — one which optimizes sequential processing, and another which increases efficiency in a random access environment. All key file maintenance, regardless of file type, is automatically performed by the system.

Primary or alternate keys may be composed of up to three different fields which do not have to be contiguous in the record. Any combination of three fields may form the key. The sort order for each field in the key may be specified as ascending or descending.

Two utilities are available which increase the power of IDEAS-developed software systems; one which provides data file recovery routines, and another which provides a telecommunications interface. The File Recovery Utility reconstructs damaged data files from information saved on disk. A utility to convert IDEAS files to standard telecommunications format allows the use of any standard Wang TC utilities and emulators. TC files may be converted to IDEAS format using this utility.

## DATA ENTRY

Data file definitions may be created, revised, and documented through a set of data file utilities. Each data file must have one primary key and may have up to sixteen alternate keys. Several options are available to the user that allow for the most efficient method of disk storage and retrieval, in both sequential and random access modes. Since the choices made in these options have a definite effect on file performance, memory requirements, and disk storage allocation, the system automatically computes all relevant information and displays it, allowing the user to maximize efficiency in all applications, depending upon individual requirements.

Data entry, inquiry, and update programs are generated through the Data Entry/Inquiry/Update Module. These data entry programs allow data manipulation on files created through the Data File Utilities. Programs generated are based on the type of data entry program desired, and the screen and data file definitions. Eight different types of data entry programs can be generated, each with a different set of available data entry operations. To create a data entry program, the user need only enter the name of the program to be created, the screen format and data file to be used, and specify the type of data entry program desired.

## SCREEN AND MENU DISPLAYS

The Screen Mask Utilities provide the user with an easy-to-use tool for developing the screens necessary for interactive application systems. All the BASIC code needed to save and reproduce a user-defined screen display format is generated by these utilities. A data file may be specified as a "companion" file for each screen. This companion file is then associated with the creation of the screen display, and certain important field parameters and defaults are automatically entered by the system. Other files may be accessed by the screen as well; however, the above mentioned parameters must be entered by the user. An unlimited number of screens may be created and used per data file.

Menu displays are quickly created by the Application Menu Program Utilities. Up to thirteen programs or sub-menus can be called per menu. Thus, custom menus and the necessary BASIC code to reproduce the menu, and to link up to thirteen programs, can be generated in a minimal amount of time.

A password security system is available through the menu utilities. Passwords may be assigned to menus during menu creation. Menus with assigned passwords will be displayed, but will not allow loading of subsequent programs until the correct password is entered.

```
I.D.E.A.S. System Utilities Disk Address Selection Module          Release 1.0
-----

Note:  This module allows the selection of the disk address for the
       drive containing the I.D.E.A.S. System Utility Modules.  The
       disk addresses shown below represent the possible disk addresses
       that may be supported by the I.D.E.A.S. System.  However, not
       all of the possible addresses are available on all system
       configurations.  It is important that you choose only from those
       disk addresses available to you on your particular system.

Allowable disk addresses:      310  320  330  350  360  370
                               B10  B20  B30  B50  B60  B70
                               D10  D11  D12  D13  D14  D15  D50  D51  D52  D53  D54  D55
                               D20  D21  D22  D23  D24  D25  D60  D61  D62  D63  D64  D65
                               D30  D31  D32  D33  D34  D35  D70  D71  D72  D73  D74  D75

Please enter the I.D.E.A.S. System Utilities' disk address.  B10 >>>
```

## REPORTS/FORM PRINTING

The report writer provided by IDEAS combines versatility, power, and ease of use. Complex reports can be designed and implemented quickly, and with a minimum of effort. The report definition files created by the Report/Form Printing Utilities define the content and format of the report to be printed. Each report may access data from up to four data files.

Reports may contain three levels of totaling in addition to page totals and page numbers. Up to ten math constants and thirty-two math functions may be used per report. Text is entered for the report mask in a way very similar to screen mask creation; however, the screen scrolls to the side to accommodate the maximum width of 158 columns per report (in 12-pitch); and the screen scrolls vertically to allow the maximum page length of 66 lines.

## APPLICATION INITIALIZATION

"START" modules for IDEAS-developed applications are created from user inputs in the Application Initialization Program Generation Module. The created START module initializes system addresses and operating parameters, and opens user-specified files. It then loads a user-specified program which is typically a "Main Menu" which controls the flow of the application.

## SYSTEM RESIDENT MACROS

All application programs generated by IDEAS use a subset of the system-resident macros. These macros

are a set of 59 powerful subroutine calls designed to minimize programming effort in all phases of IDEAS-developed applications. For example, all file access, key file maintenance, data packing and unpacking, and actual disk operations is performed automatically through the use of one of two system resident macros. Several commonly used system resident macros are summarized below:

- A macro which GETs and unpacks a record from a specified file.
- A macro which packs a record and PUTs it into a specified file.
- A macro which displays all fields starting at the current field.
- A macro finds the first physical key in a specified file.

## EASE OF MODIFICATION AND MAINTENANCE

User modification of IDEAS-developed applications is greatly simplified when the system resident macros are used — even the most simple application can be developed and made quite powerful through the use of these macros. The BASIC code generated by IDEAS is designed to facilitate the use of the macros through a high degree of modularity. This modularity makes it easy to modify IDEAS-generated code; for example, because the generated code is modularized, it is easy to add user-specified validation checks, such as range checking and table lookup, to IDEAS-generated programs. Maintenance is also easy as a result of the modularized code.

```
IDEAS System Utilities - Primary program selection menu module
=====

FN  Operation
-----

'00 - System date module
----- Other IDEAS System Utilities -----
'05 - Data file utilities
'06 - Screen mask utilities
'07 - Report / Form printing utilities
'08 - Application initialization ("START") program generation
'09 - Application menu program utilities
'10 - Data entry / inquiry / update program generation
'11 - Application module execution
'31 - Application peripheral device address selection module

Please touch the special function key corresponding to the desired operation
```

Wang Laboratories reserves the right to change specifications without prior notice.



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