Development of an Ada Programming Support Environment Database SEAD (Software Engineering and Ada Database)

User's Manual

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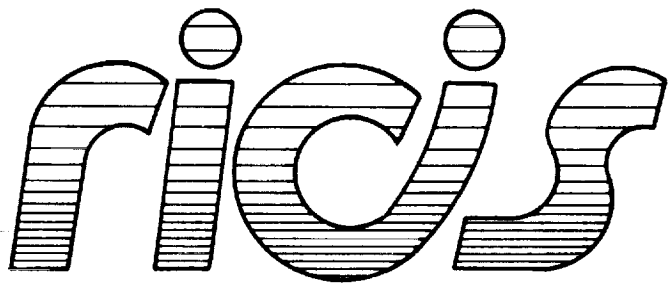
November 1, 1988

Cooperative Agreement NCC 9-16
Research Activity SE.1



Research Institute for Computing and Information Systems
University of Houston - Clear Lake

T·E·C·H·N·I·C·A·L R·E·P·O·R·T

The RICIS Concept

The University of Houston-Clear Lake established the Research Institute for Computing and Information systems in 1986 to encourage NASA Johnson Space Center and local industry to actively support research in the computing and information sciences. As part of this endeavor, UH-Clear Lake proposed a partnership with JSC to jointly define and manage an integrated program of research in advanced data processing technology needed for JSC's main missions, including administrative, engineering and science responsibilities. JSC agreed and entered into a three-year cooperative agreement with UH-Clear Lake beginning in May, 1986, to jointly plan and execute such research through RICIS. Additionally, under Cooperative Agreement NCC 9-16, computing and educational facilities are shared by the two institutions to conduct the research.

The mission of RICIS is to conduct, coordinate and disseminate research on computing and information systems among researchers, sponsors and users from UH-Clear Lake, NASA/JSC, and other research organizations. Within UH-Clear Lake, the mission is being implemented through interdisciplinary involvement of faculty and students from each of the four schools: Business, Education, Human Sciences and Humanities, and Natural and Applied Sciences.

Other research organizations are involved via the "gateway" concept. UH-Clear Lake establishes relationships with other universities and research organizations, having common research interests, to provide additional sources of expertise to conduct needed research.

A major role of RICIS is to find the best match of sponsors, researchers and research objectives to advance knowledge in the computing and information sciences. Working jointly with NASA/JSC, RICIS advises on research needs, recommends principals for conducting the research, provides technical and administrative support to coordinate the research, and integrates technical results into the cooperative goals of UH-Clear Lake and NASA/JSC.

The Development of an Ada Programming Support Environment Database

SEAD (Software Engineering and Ada Database)

User's Manual

Preface

This research was conducted under the auspices of the Research Institute for Computing and Information Systems by Morris Liaw, Assistant Professor of Computer Science at the University of Houston-Clear Lake, and Donna Evesson of GHG Corporation.

Funding has been provided by the Spacecraft Software Division, within the Mission Support Directorate, NASA/JSC through Cooperative Agreement NCC 9-16 between NASA Johnson Space Center and the University of Houston-Clear Lake. The NASA Technical Monitor for this activity was Brad Loveall of the Systems Support Branch, NASA/JSC.

UNIVERSITY
of HOUSTON

CLEAR LAKE
Houston, Texas

Research Order SE-1

The Development of an Ada Programming Support Environment Database

S E A D
Software Engineering and Ada Database

USERS MANUAL

Dr. Morris Liaw, Principal Investigator

University of Houston, Clear Lake

Donna Evesson, DBA

GHG Corporation

November 1, 1988

S E A D

USER MANUAL

PART I. OVERVIEW OF SEAD

Chapter 1. Purpose And Contents

S E A D
Software Engineering and Ada Database

PURPOSE:

SEAD has been developed to provide an information resource to NASA and NASA contractors with respect to Ada-based resources and activities which are available or underway either in NASA or elsewhere in the worldwide Ada community. The sharing of such information will reduce duplication of effort while improving quality in the development of future software systems.

CONTENT:

SEAD data is organized into five major areas:

1) Information regarding education and training resources which are relevant to the life cycle of Ada-based software engineering projects such as those in the Space Station Program.

2) Research publications relevant to NASA projects such as the Space Station Program. Conferences relating to Ada technology.

3) The latest progress reports on Ada projects completed or in progress both within NASA and throughout the free world.

4) Ada compilers and other commercial products that support Ada software development.

5) Reusable Ada components generated both within NASA and from elsewhere in the free world. This classified listing of reusable components shall include descriptions of tools, libraries and other components of interest to NASA.

Sources for the data include technical newsletters and periodicals, conference proceedings, the Ada Information Clearinghouse, product vendors, and project sponsors and contractors.

USER INTERFACE:

The SEAD user interface consists of a set of menu-driven interactive panels which allow searches on any field. The user may construct a query using a single value, a range of values, or a logical combination of values. The system will search the database for all records that match the query and retrieve them. The user may "browse" through the retrieved data, viewing the records one at a time.

**SEAD is accessible via NASA/JSC CIN. Interested NASA personnel and contractors may contact the Data Administrator at (713) 488-8806.

Chapter 2. Database Organizational Outline

S E A D
Software Engineering and Ada Database

=====DATABASE ORGANIZATIONAL OUTLINE=====

MAIN MENU

1. **EDUCATION AND TRAINING RESOURCES**

    1. Course Information
        - Each course record has 5 screens: course, sponsor, audience, format, and material.
    2. Book Information
        - Each book record has 4 screens: book, location, publisher, and author/author information.

2. **PUBLICATIONS AND CONFERENCES**

    1. Publication Information
        - Each publication record has ten screens: publication, location, author/author information, category and subject, general term, keyword, project cross-reference, product cross-reference, compiler cross-reference and package cross-reference.

    2. Conference Information
        - Each Conference record has six screens: conference, conference sponsor, coordinator/coordinator information, conference charge, presentation, presenter/presenter information.

3. **PROJECTS**
    - Each Project record has eight screens: project, contact_person/contact_person information, sub_project, project keyword, publication cross-reference, compiler cross-reference, and package cross-reference.

4. COMPILERS AND OTHER PRODUCTS

1. Compiler Information
   - Each Compiler record has eight screens: compiler, vendor, host system, target system, performance/evaluator information, publication cross-reference, project cross-reference, and package cross-reference.

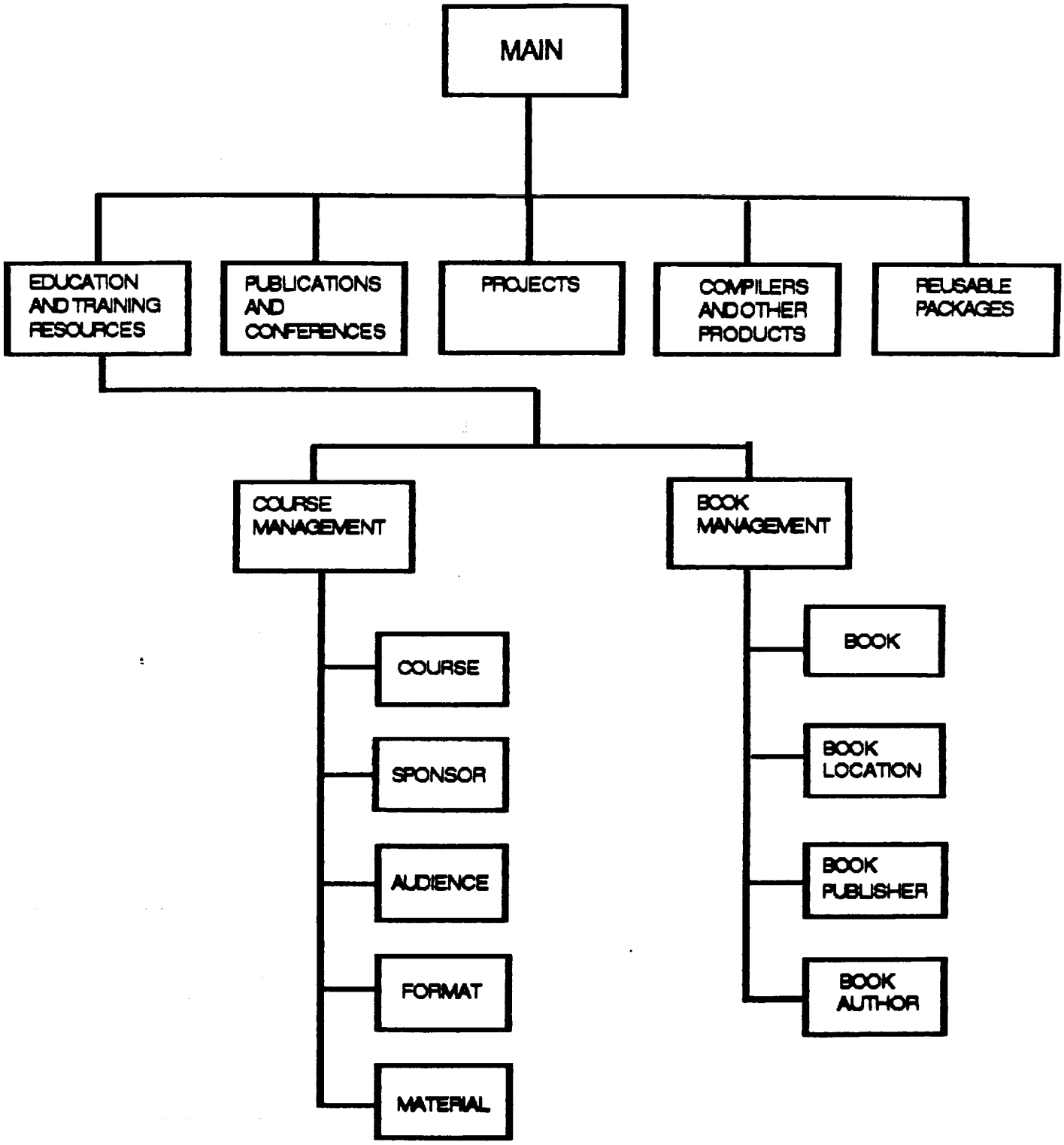
2. Product Information
   - Each Product record has seven screens: product, vendor, host system, target system, publication cross-reference, project cross-reference, and package cross-reference.

5. REUSABLE PACKAGE INFORMATION

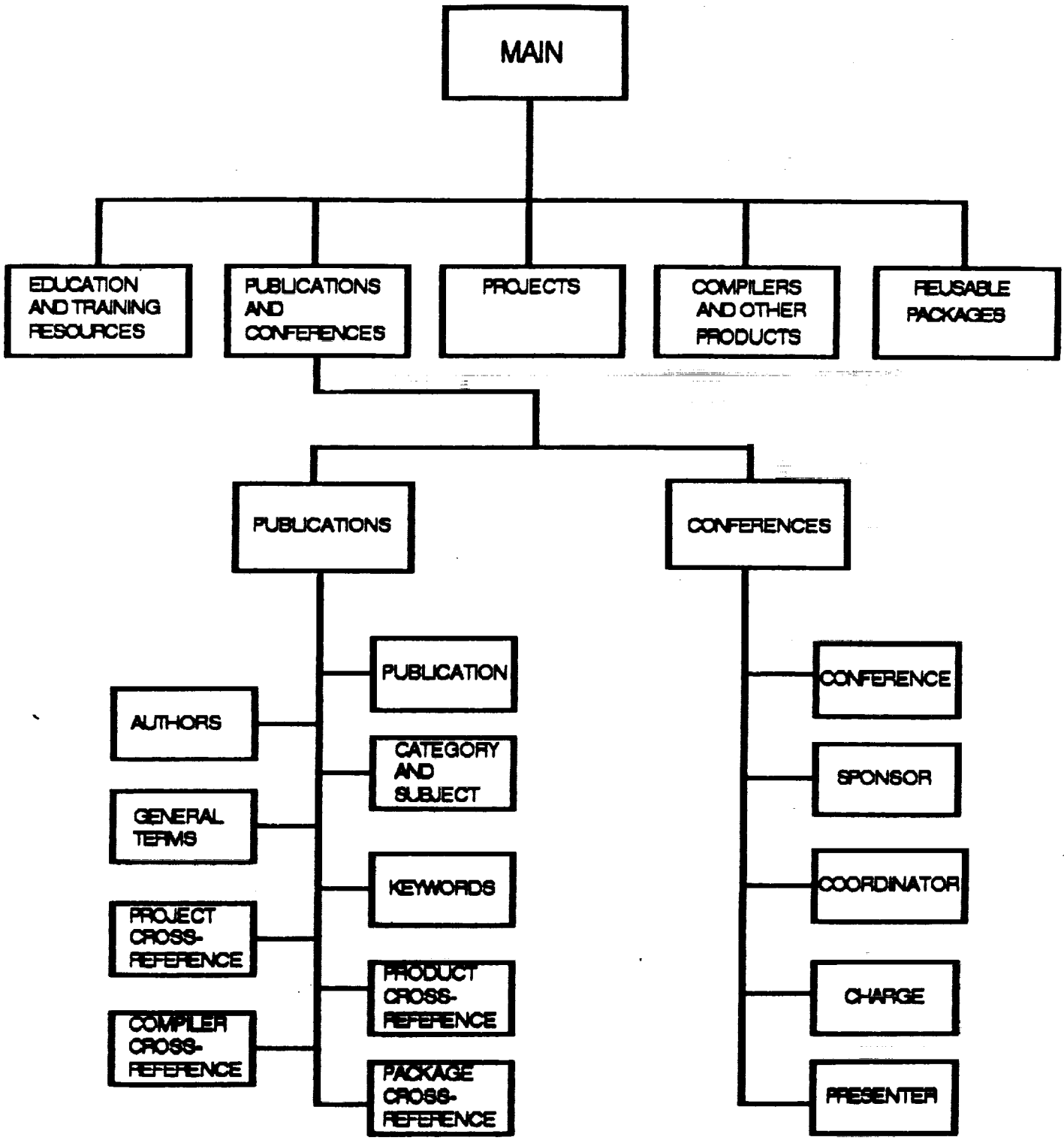
- Each Reusable Package record has twelve screens: reusable package, contact_person/contact_person information, creator/creator information, host system, target system, revise history, performance/performance evaluator information, package keyword(s), publication cross-reference, project cross-reference, product cross-reference, and compiler cross-reference.

***Note**: Each screen and each data item has on-line help available.

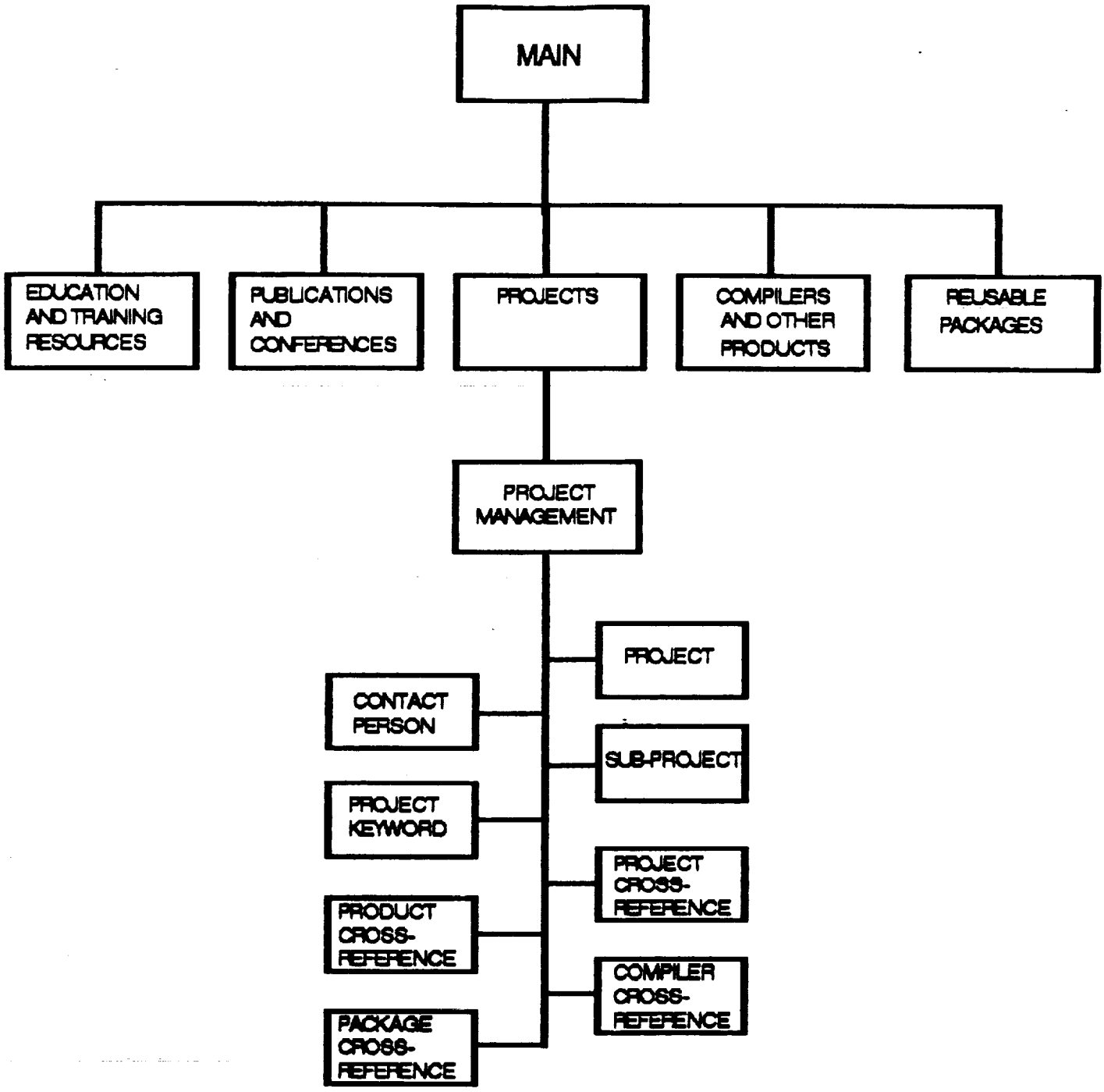
Chapter 3. Hierarchical Maps Of Menus



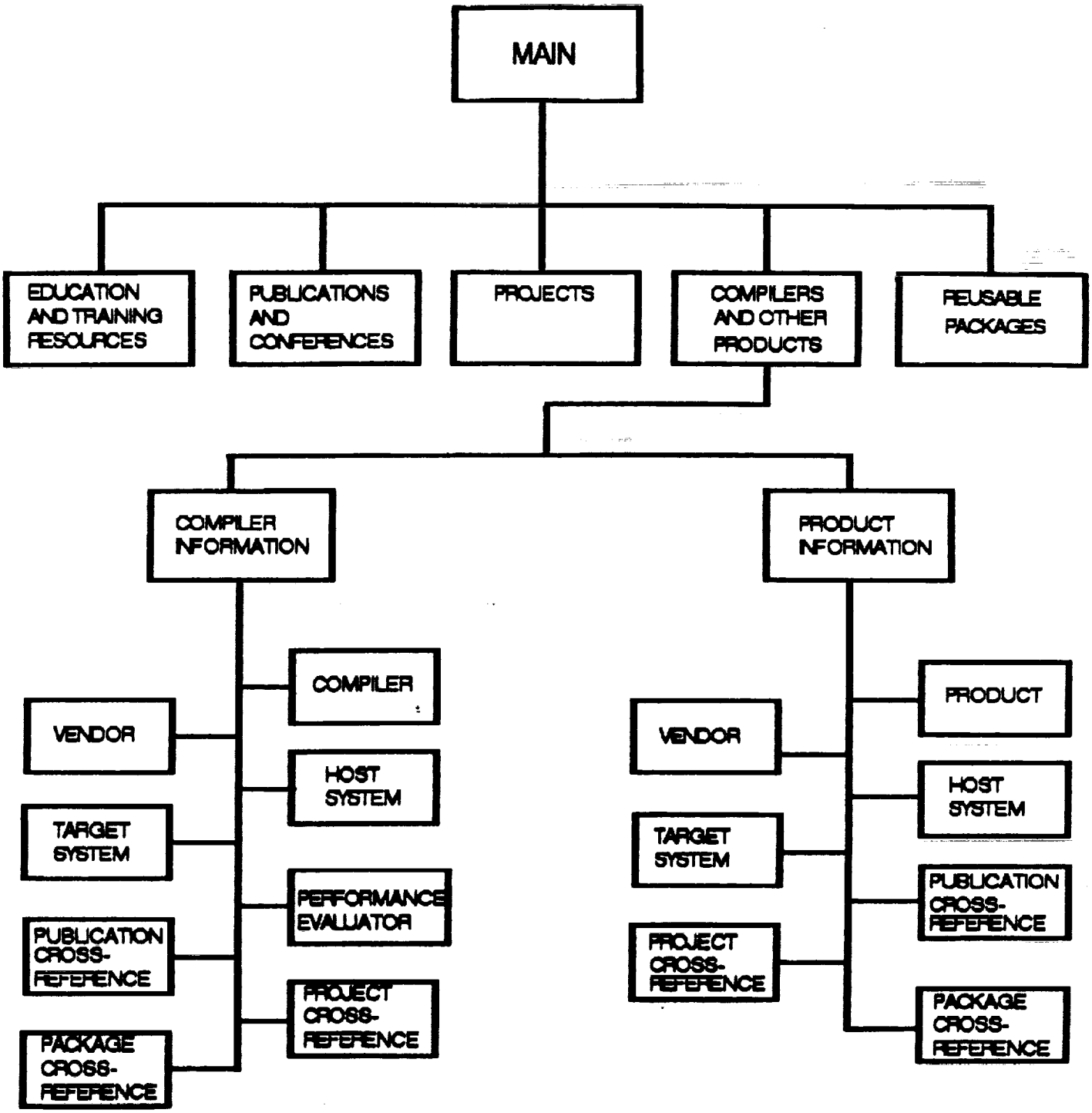
HIERARCHICAL MAP OF MENUS FOR
EDUCATION AND TRAINING RESOURCES



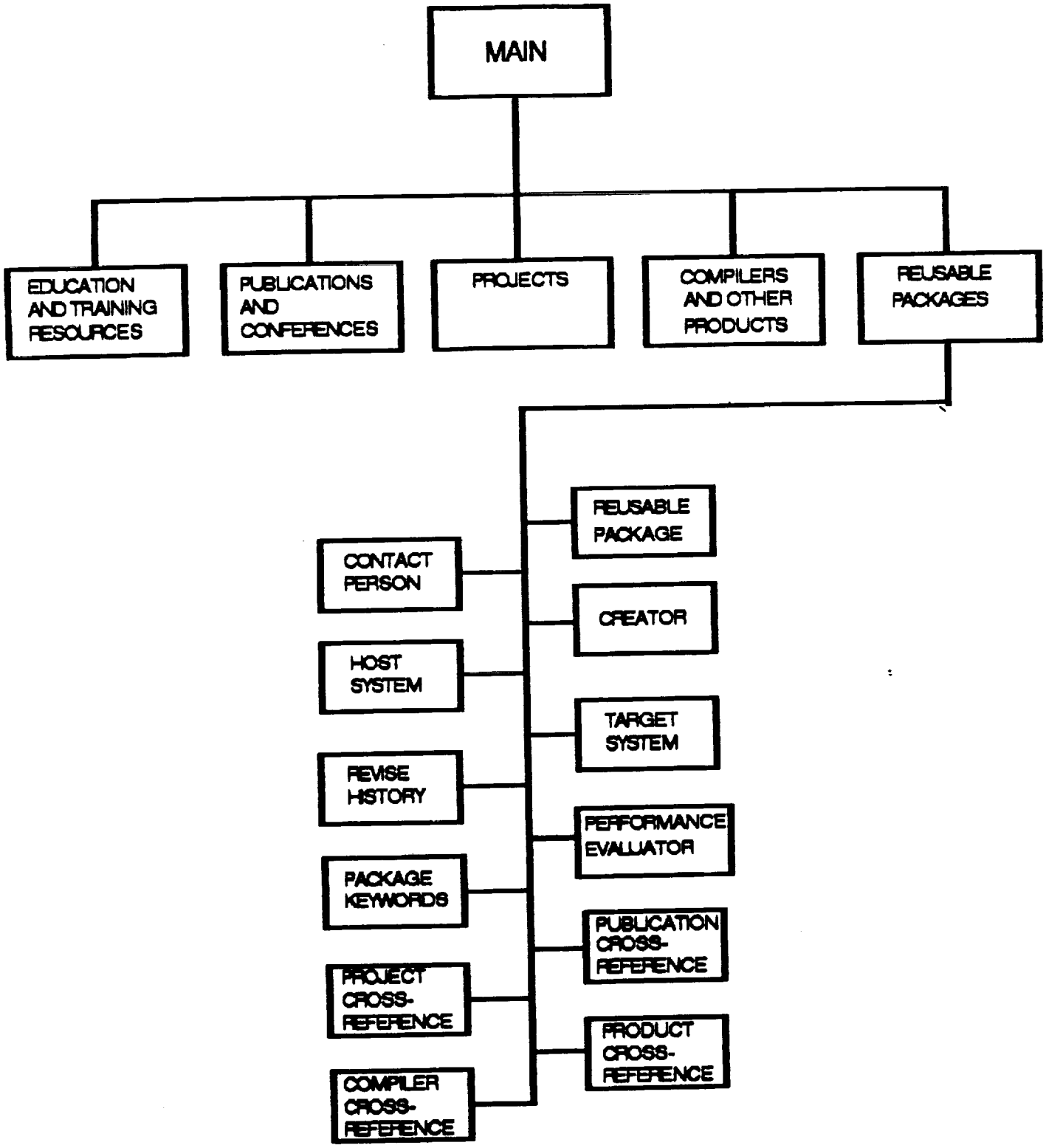
HIERARCHICAL MAP OF MENUS FOR PUBLICATIONS AND CONFERENCES



HIERARCHICAL MAP OF MENUS FOR PROJECTS



HIERARCHICAL MAP OF MENUS FOR COMPILERS AND OTHER PRODUCTS



HIERARCHICAL MAP OF MENUS FOR REUSABLE PACKAGES

PART II. GETTING STARTED

Chapter 1. Logging In And Logging Out

Chapter 1. Logging In And Logging Out

You must have access to a user account in the NASA/JSC Center Information Network (CIN) Environment in order to log in with a userid. You are identified to the Environment through a userid and a password. If you do not have a valid userid and password, see your systems manager or call the SEAD DBA at the users help desk at (713) 488-8806.

You can log into the (CIN) account from an IBM 3270, or an emulated VT100 terminal. Logging in follows the same steps, regardless of the terminal type.

The Basic Login Process:

To log in, you must respond to a series of login prompts. Note that:

- You will need to learn how to use a communications software program to dial into the (CIN) account to invoke SEAD.
- You can enter login information in uppercase or lowercase letters.
- You must press **[Return]** to complete each response and display the next prompt.
- If you discover an error before you press Return, you can press <-- (backspace) to delete your entry.

To Log in:

1. Make sure your terminal is on.

2. **Press Return twice** when terminal connects.

3. The system responds with a prompt that requests that a data line be entered.

```
ENTER NUMBER:
```

4. **Enter CIN1 and press Return.**

```
ENTER NUMBER:
CIN1
[PRESS RETURN]
```

5. If the data line is busy, the system will respond with the following message:

```
ENTER NUMBER:
CIN1
[PRESS RETURN]
ALL DATA LINES ARE BUSY

ENTER NUMBER:
```

6. **Enter CIN2 and press Return.**

```
ENTER NUMBER:
CIN1[PRESS RETURN]
ALL DATA LINES ARE BUSY

ENTER NUMBER:
CIN2
[PRESS RETURN]
```

7. If the incorrect number has been entered, the system will respond with the following message:

```
ENTER NUMBER:
CIN1H
[PRESS RETURN]
CIN1H  IS NOT A DATA LINE

ENTER NUMBER:
```

8. **Enter CIN1 or CIN2 again and press Return.** It is a possibility that you might have misspelled or entered the wrong keys.

9. The system responds with a prompt that request a terminal type.

```
enter terminal type:
```

10. **Press the Return key**, this will give you a listing of the available terminal types to choose from. **Enter the terminal type vt100.**

```
enter terminal type:
[PRESS RETURN]
VALID TYPES ARE:
DM1520        DM3045
IBM3101         IBM31ALT
IBMPC           VT100          GIGI
TV1912          TV1950         TV1950R
ADM3A           ADM31
enter terminal type: VT100
```

11. The system will connect to the Johnson Space Center/Center Information Network Dial-in Facility.

```
        W E L C O M E  T O  J O H N S O N  S P A C E

        C E N T E R  H O U S T O N  T E X A S

        C E N T E R  I N F O R M A T I O N  N E T W O R K

        C I N - B  D I A L - I N  F A C I L I T Y

    FOR NASA AUTHORIZED USERS ONLY-UNAUTHORIZED USE IS A
    VIOLATION OF FEDERAL LAW

        CALL (713) 280-4800 IF YOU NEED HELP


        PRESS ENTER THEN CLEAR KEY TO PROCEED
```

12. **Press the Enter key.** At this point, the screen is blank.

13. **Enter CISA and your userid and press Return.**

```
CISA USERID
[PRESS RETURN]
```

14. The system will respond with a prompt that request a logon password:

```
LOGON     USERID
VMXACI104R  Enter logon password:
```

15. **Enter your password at the prompt and press Return.**

```
LOGON     UHCLORC
VMXACI104R  Enter logon password: airplane **
[PRESS ENTER]


**You will not be able to see your password as
  you enter it.  This is only an example.
```

16. If your user id and password are accepted, the system responds with a Ready; prompt meaning that the system is Ready and waiting for the next command.

    Notice that the system does not display your password. This is security for the user so that your account can only be accessed by you.

```
LOGON     USER ID
VMXACI104R  Enter logon password:
VMXACI108I  Last logon at 23:52:47 CDT Sunday 09/25/88
from LK7755E.
LOGON AT 14:38:27 CDT WEDNESDAY 09/28/88
VM/SP 5.0 8801 CMS
DMSACC724I  319 replaces P (319)
DMSACP723I  P (319) R/O
DMSACP723I  B (291) R/O
DMSACP723I  C (391) R/O
Ready;
```

17. If your userid or user password are not accepted, the system responds with the following messages:

```
LOGON     USER ID
VMXACI104R  Enter logon password: aitplane  **
[PRESS ENTER]
DMKLOG050E LOGON unsuccessful--incorrect password

Enter one of the following commands:

LOGON userid          (Example: LOGON VMUSER1)
DIAL userid           (Example: DIAL VMUSER2)
MSG userid message    (Example: MSG VMUSER2 GOOD MORNING
LOGOFF
```

18. To continue, enter your userid as follows: **LOGON userid, press Return.**

```
Enter one of the following commands:

LOGON userid          (Example: LOGON VMUSER1)
DIAL userid           (Example: DIAL VMUSER2)
MSG userid message    (Example: MSG VMUSER2 GOOD MORNING)
LOGOFF

LOGON userid
[Press Return]
```

19. The systems responds with a prompt that request a password. **Enter your password and press Return.**

```
VMXACI104R  Enter logon password: airplane    **
[PRESS RETURN]
```

20. The system responds with the logon time and date, and also tells the user if there was an invalid logon attempt since the last logon. The system is now at the Ready; prompt waiting for the next command.

To invoke the SEAD program:

21. **Enter SEAD at the Ready; prompt and press Return.**

```
LOGON     USER ID
VMXACI104R  Enter logon password:
VMXACI108I  Last logon at 23:52:47 CDT Sunday 09/25/88
from LK7755E.
LOGON AT 14:38:27 CDT WEDNESDAY 09/28/88
VM/SP 5.0 8801 CMS
DMSACC724I  319 replaces P (319)
DMSACP723I  P (319) R/O
DMSACP723I  B (291) R/O
DMSACP723I  C (391) R/O
Ready;



SEAD      [PRESS RETURN]
```

22. The SEAD logo will appear on the screen.

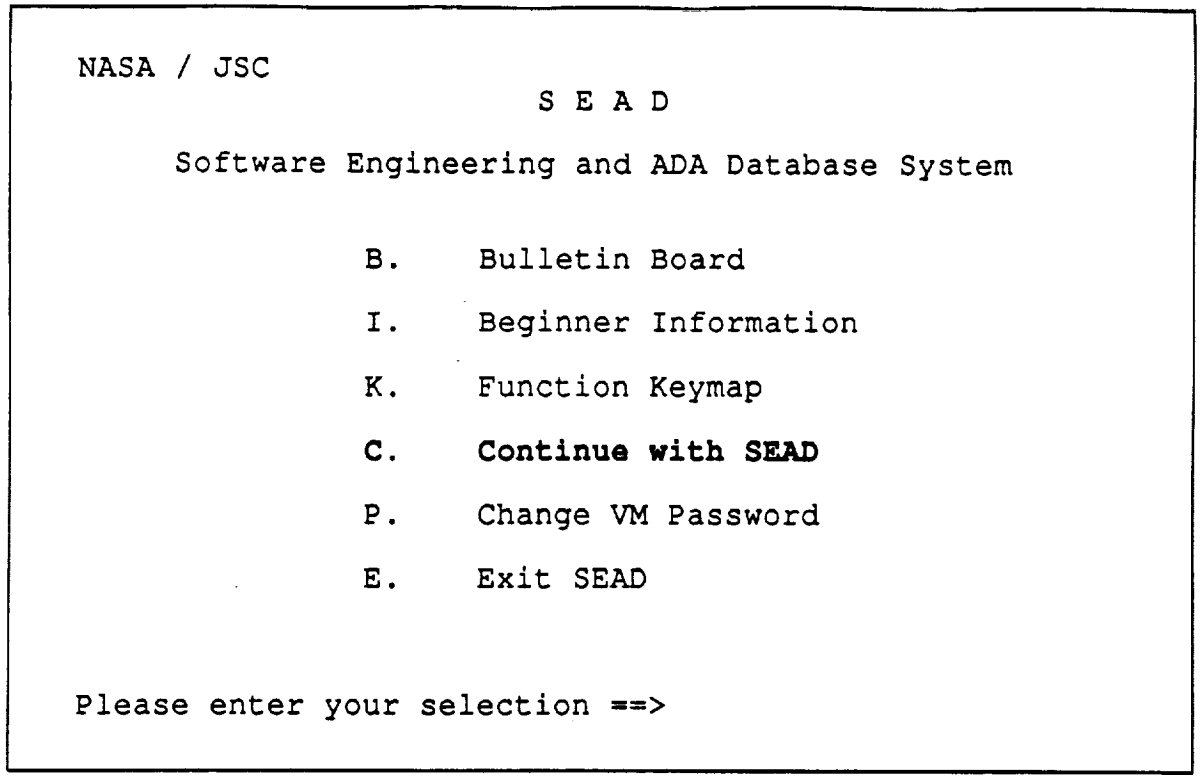
```
NASA / JSC

@@    @      @      @@@@@@      @           @ @@@@@@ @@@@@@    @@@@
@ @   @     @ @     @           @ @         @      @    @         @
@  @ @    @@@@@    @@@@@@    @@@@@      @       @    @@@@@@ @
@    @@   @      @         @   @      @    @     @   @          @   @
@     @ @         @ @@@@@@ @         @ @      @@@@    @@@@@@    @@@@

OOOOOOOOOOO OOOOOOOOOOO           OOOOO            OOOOOOOOO
OOOOOOOOOOO OOOOOOOOOOO          OOO OOO           OOOOOOOOOO
OOO         OOO                 OOO   OOO          OOO     OOO
OOO         OOO                OOO     OOO         OOO      OOO
OOOOOOOOOOO OOOOOOO           OOOOOOOOOOOOO        OOO       OOO
OOOOOOOOOOO OOOOOOO          OOOOOOOOOOOOOOO       OOO       OOO
         OOO OOO             OOO             OOO    OOO      OOO
         OOO OOO            OOO               OOO   OOO     OOO
OOOOOOOOOOO OOOOOOOOOOO  OOO                   OOO  OOOOOOOOOO
OOOOOOOOOO  OOOOOOOOOOO OOO                     OOO OOOOOOOOO


Welcome to SEAD!   Please type <ENTER> to continue.
```

23. **[PRESS RETURN]** at the SEAD logo, and the Open Main Menu of SEAD will appear.



24. For instructions on selecting from the Open Main Menu, please see PART II - Chapter 2 of this users manual.

Logging Out:

1. At the Open Main Menu, **enter the letter <E>Exit to exit the SEAD program.** This will return the system back to the Ready; prompt.

```
NASA / JSC
                          S E A D

     Software Engineering and ADA Database System

                 B.     Bulletin Board

                 I.     Beginner Information

                 K.     Function Keymap

                 C.     Continue with SEAD

                 P.     Change VM Password

                 E.     Exit SEAD


Please enter your selection ==> E    [PRESS RETURN]
```

2. The system exits out of SEAD and is at the Ready; prompt waiting for a command. **Enter LOGOFF at the Ready; prompt and press Return.**

   Ready; **LOGOFF**

3. The system will logoff your userid and password from the SEAD account and return to the Center Information Network.

4. At this point you will need to follow the instructions on your communications software to hang-up from the system.

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Chapter 2. Description Of The Open Main Menu

B. Bulletin Board -

Enables the user to browse the following Ada information: Conferences, Workshops, Meetings, etc.

I. Beginner Information -

Enables the first time user to browse instructions explaining about the structure of the database and how to retrieve information from the database.

K. Function Keymap -

Enables the user to browse the function keys available to use while in the database.

C. Continue with SEAD -

Enables the user to continue research by browsing through the database for the following information: Education and Training Resources, Publications and Conferences, Project, Compilers and Other Products, and Reusable Packages.

P. Change VM Password -

Enables the user to change his/her password within SEAD without logging out of the VM System. This function is only temporarily available.

E. Exit -

Enables the user to exit out of SEAD.

Chapter 3. Function Key Descriptions For The IBM3270 And The VT100.

Chapter 3. Function Key Descriptions for the IBM 3270 and the VT100.

TERMS AND CONCEPTS

RECORD A representation of a single row from the database table.

FIELD A portion of a form used for entering and/or displaying a single item of information. Fields most often represent columns from database tables, but may also represent other information.

FUNCTION KEYS

The following function keys are available while running a form; they are grouped here by function type.

You can display the function key assignments for your terminal by pressing PF1 (SHOW FUNCTION KEYS). A key map of the VT100 keys corresponding to the IBM 3270 keys is included at the end of this section.

Ask your Database Administrator for the exact keystrokes required by your particular terminal type.

NOTES: The function-key descriptions listed below are based on the default function key assignments. Since any of these functions can be redefined by the DBA, some of these functions may work differently, or may not be available to you at all.

A. Cursor Movement

IBM3270	VT100		
<==	<==	**LEFT**	Moves the cursor one character to the left.
PF23	ESC [	**SCROLL LEFT**	Moves the cursor left through the block you are currently in until there is no more data to browse.

IBM3270	VT100		
PF2	ESC 2	**MENU**	Displays a list of blocks in the current form.
PF11	ESC -	**NEXT BLOCK**	Moves the cursor to the next block in the current form.
<ENTER>	<ENTER>	**NEXT FIELD**	Tabs forward to the next field in the current record, based on an order established by the forms designer. Fields designated by the designer as "non-enterable" are skipped by the NEXT FIELD function.
PF20	ESC I	**NEXT PRIMARY KEY FIELD**	Tabs forward to the next field in the block that has been designated as part of the "primary key"--those fields that uniquely identify a particular row of a database table.
PF8	ESC 8	**NEXT RECORD**	If a query has been executed in a block displaying only one record, displays the next record that satisfies the query. In a block displaying multiple records, moves the cursor to the next record in the block. If the current record is the last record displayed in a multiple record block, moves other records up to make room for a new one.
PF9	ESC 9	**NEXT SET OF RECORDS**	If a query is active in a block displaying multiple records, displays the next set of retrieved records.
PF10	ESC 0	**PREVIOUS BLOCK**	Moves the cursor to the previous block of the current form.
PF19	ESC U	**PREVIOUS FIELD**	Tabs back to the previous field of the current record, skipping those fields designated as "non-enterable" by the designer.
PF7	ESC 7	**PREVIOUS RECORD**	Displays the previous record in the current block.

IBM3270	VT100		
==>	==>	**RIGHT**	Moves the cursor one character to the right.
PF22	ESC P	**SCROLL RIGHT**	Moves the cursor right through the block until there is no more data to browse.

B. Editing Data

IBM3270	VT100		
Del	Del	**CHARACTER DELETE**	Deletes the character at the current cursor position.
Insert	**CHAR**	**INSERT/ REPLACE**	Toggles between Insert Character mode and Replace mode.
PF17	ESC T	**CLEAR BLOCK**	Erases all records from the current block and initializes the fields with default values. Undoes all uncommitted update inserts, and deletes from the current block.
PF12+PF19	ESC = + ESC U	**CLEAR FIELD**	Erases the contents of a field form the current form, beginning at the current cursor position.
PF18	ESC Y	**CLEAR FORM/ ROLLBACK**	Erases data from all blocks of the current form. Undoes all uncommitted updates, inserts and deletes from all blocks of the form.
PF12+PF20	ESC = + ESC Y	**CLEAR RECORD**	Erases all fields of the current record from the form. If an uncommitted record has been updated, undoes the updated and erases the record from the screen. If a query is active, erases the current record and displays the next retrieved record.

C. Query Processing

IBM3270	VT100		
PF16	ESC R	**ABORT QUERY**	Terminates the current query or stops the LIST OF FIELD VALUES function.
PF12+PF13	ESC = + ESC Q	**COUNT QUERY**	Displays the number of records satisfying the current query. To see the actual retrieved records, use the EXECUTE QUERY function.
PF4	ESC 4	**ENTER QUERY**	Notifies SQL*Forms that query criteria are about to be entered.
PF5	ESC 5	**EXECUTE QUERY**	Used alone, retrieves all records for the current block. Used in conjunction with ENTER QUERY, retrieves all records satisfying the query.

D. Maintaining the Database
(These are to be used only by the SEAD DBA)

IBM3270	VT100		
PF6	ESC 6	**COMMIT**	Permanently enters all changes into the database as a unit of work.
PF12+PF14	ESC = + ESC W	**CREATE RECORD**	Initializes a record for insertion.
PF12+PF17	ESC = + ESC T	**DELETE RECORD**	Deletes a retrieved record.
PF12+PF16	ESC = + ESC R	**DUPLICATE RECORD**	Duplicates the previous record.
PF12 + PF18	ESC = + ESC Y	**ENABLE RECORD UPDATE**	Enables you to update a retrieved record.

E. User Aids

IBM3270	VT100		
PF13	ESC Q	**DISPLAY ERROR**	Displays an error message and help information for the field where the last error occurred.
PF12+PF15	ESC = + ESC E	**DUPLICATE FIELD**	Copies the field value from the same field of the previous record into the current field.
PF3	ESC 3	**EXIT**	Exits the current form and returns to the SQL*Forms main prompt.
PF14	ESC W	**HELP**	Displays information about the current field. If the HELP function is issued a second time, displays complete attributes for the field.
PF15	ESC E	**LIST OF FIELD VALUES**	Displays the possible values for the current field. To see subsequent values, press NEXT FIELD; to stop, press ABORT QUERY.
(*DISABLED)		**PRINT FORM**	Creates a file of the current screen page, all the pages of the form, the key sequences for the functions, or the entire help information for a specified field.
<CLEAR>	CTRL +	**REDISPLAY PAGE**	Restores the screen image.
PF1	ESC 1	**SHOW FUNCTION KEYS**	Displays the function key assignments for the current terminal type.

Chapter 4. Function Keymaps For The IBM3270 And The VT100.

Chapter 4. Function Keymaps for the IBM3270 and the VT100.

KEYMAP FOR THE IBM 3270

FUNCTION	KEYSTROKE(S)	FUNCTION	KEYSTROKE(S)
Transmit	PF21	**Execute Query**	**PF5**
Scroll Right	PF22	Block Menu	PF2
Next Field	PF20	Enter	ENTER
Next Record	PF8	Commit Transaction	PF6
Next Set of Records	PF9	**Exit/Cancel**	**PF3**
Next Block	PF11	No Operation	PF16
Scroll Left	PF23	Redisplay Page	CLEAR for VM PA2 for MVS
Previous Field	PF19		
Previous Record	PF7	**Help**	**PF14**
Previous Block	PF10	List Field Values	PF15
Clear Field	PF12+PF19	**Display Error**	**PF13**
Clear Record	PF12+PF20	Enable Record Update	PF12+PF18
Clear Block	PF17	**Show Function Keys**	**PF1**
Clear Form/Rollback	PF18		
Delete Record	PF12+PF17		
Create Record	PF12+PF14		
Duplicate Field	PF12+PF15		
Duplicate Record	PF12+PF16		
Enter Query	**PF4**		
Count Query Hits	PF12+PF13		

KEYMAP FOR THE VT100 TERMINAL

FUNCTION	KEYSTROKE(S)	FUNCTION	KEYSTROKE(S)
Transmit	ESC O	**Execute Query**	**ESC 5**
Scroll Right	ESC P	Block Menu	ESC 2
Next Field	ESC I	Enter	ENTER
Next Record	ESC 8	Commit Transaction	ESC 6
Next Set of Records	ESC 9	**Exit/Cancel**	**ESC 3**
Next Block	ESC -	No Operation	PF16
Scroll Left	PF23	Redisplay Page	CLEAR for VM PA2 for MVS
Previous Field	ESC U		
Previous Record	ESC 7	**Help**	**ESC 14**
Previous Block	ESC 0	List Field Values	ESC E
Clear Field	ESC = + ESC U	**Display Error**	**ESC Q**
Clear Record	ESC = + ESC Y	Enable Record Update	ESC = + ESC Y
Clear Block	ESC T		
Clear Form/Rollback	ESC Y	**Show Function Keys**	**ESC 1**
Delete Record	ESC = + ESC T		
Create Record	ESC = + ESC W		
Duplicate Field	ESC = + ESC E		
Duplicate Record	ESC = + ESC R		
Enter Query	**ESC 4**		
Count Query Hits	ESC = + ESC Q		

Note: All function keys on the VT100 correspond to the function keys on the IBM 3270. Example: PF12 on the IBM 3270 is ESC 12 or ESC = on the VT100 keyboard.

Chapter 5. Procedures For Display

Chapter 5. Procedures For Display

=====PROCEDURES FOR DISPLAY=====

To display all records in a table:
Press **EXECUTE QUERY <PF5>**.
Press **NEXT RECORD <PF8>** to display each subsequent record.
To retrieve records by matching values:
Press **ENTER QUERY <PF4>**;
enter the values you want to match into the appropriate fields
(a value can be exactly as JONES, or, _ON%, where "_" represents any character and "%" represents any string);
press **COUNT QUERY HITS <PF12+PF13>** to find the number of records matched;
press **ENTER QUERY <PF5>**.
Press **NEXT RECORD <PF8>** to view subsequent records retrieved by the query.
To retrieve records by entering a **WHERE** condition:
Press **ENTER QUERY <PF4>**;
move the cursor to the field where you want to enter a variable; type &, followed by a variable name (for example, &SAL);
press **EXECUTE QUERY <PF5>**;
When prompted with "Query where ... ?, enter any **WHERE** condition.
(for example: &FEE > 1000; &DATE < 31-NOV-87; &SAL = 45000 or &NAME like "KERRY") then press **ENTER**.
Return to **Menu <PF2>**

PART III. USING THE DATABASE

Chapter 1. Basic Concept

Chapter 1. Basic Concepts

A FORM is a "fill-in-the-blanks" arrangement of database data that allows easier data entry, update, and query. Although a form may be displayed on one or more PAGES, only one page is visible on the terminal screen at a time.

A form consists of one or more BLOCKS. Each block corresponds to a single table in the ORACLE database. For each block, the form will display one or more RECORDS (or rows) from the database table. Each record consists of one or more FIELDS, which may correspond to columns in the database. See Figure I-1.

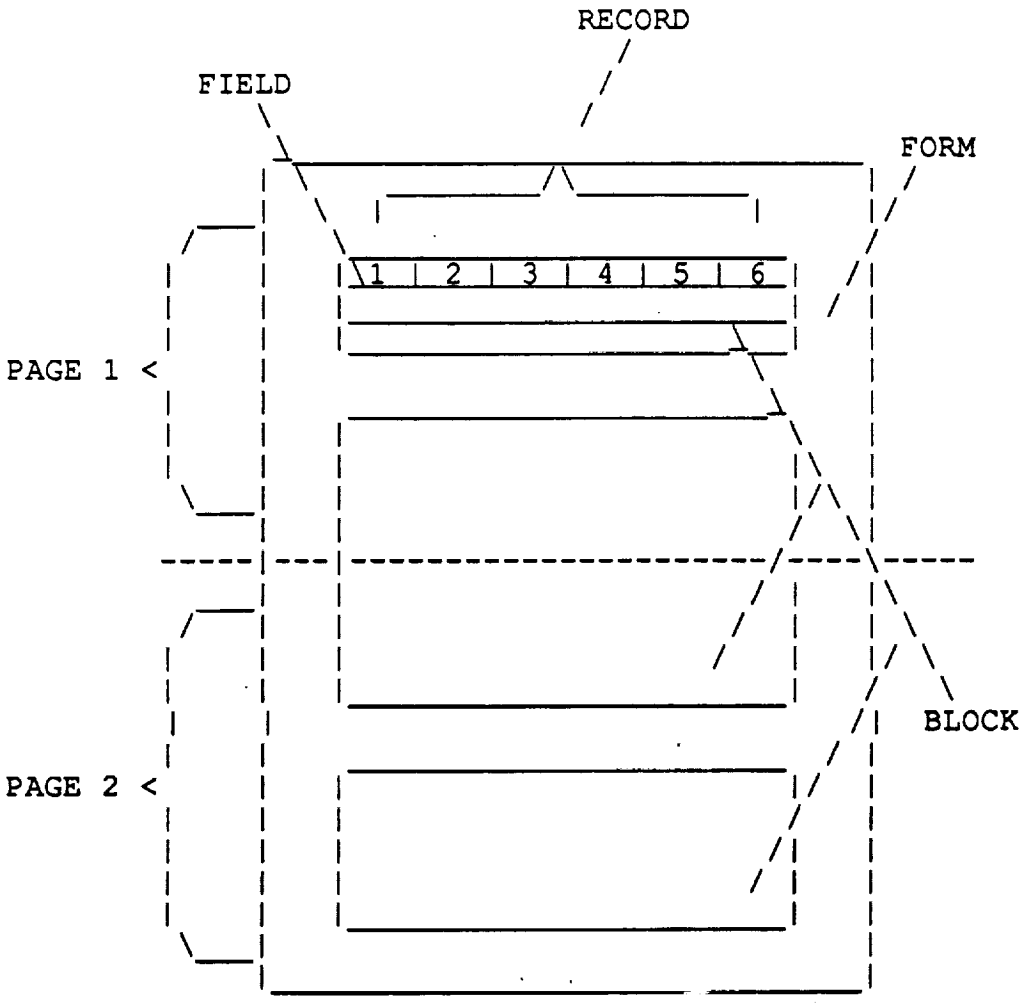


Figure I-1
Basic Concepts

Chapter 2. Running A Form

You can use a form to enter new information into an ORACLE database or to issue a query that retrieves and displays existing information. Once information is displayed on the screen, you can view it, change it, or remove it from the database entirely.

Chapter 2. Running a Form

To enter SQL*Forms and run an existing form, follow these steps:
*****This tutorial is not available on-line at this time, but can be used as a guide for using SEAD. Logon to SEAD using the directions in PART II - Chapter 1 of this users manual, please use this tutorial as a reference.**

1. Log on to your system in the normal manner.

2. At the system command prompt, you have to enter IAP, the name of the form you want to run, and your ORACLE user name and password in the following format:

   IAP form_name username/password

   For this tutorial, type

   IAP EMPLOYEE SCOTT/TIGER

   and press ENTER.

After completing these steps, SQL*Forms displays the sample form on your screen (Figure I-2).

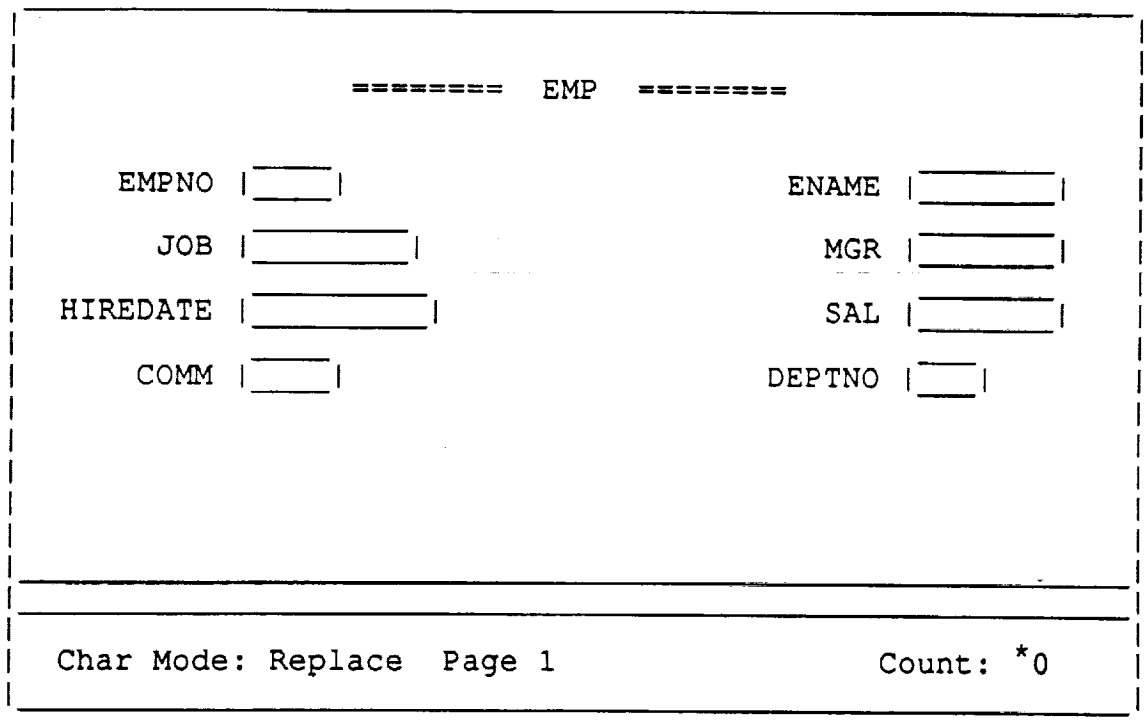


Figure I-2
Displaying the Sample Form

The sample is based on the EMP table from ORACLE's sample database, and contains information about the employees numbers, names, job titles, managers, hire dates, salaries and commissions, and department numbers.

Chapter 3. Retrieving All Records

Chapter 3. Retrieving All Records

Currently, the sample form has no information displayed in its fields. To retrieve all the records stored in EMP, press the **[EXECUTE QUERY]** key (for a list of the keys, see **Chapter 7. HELP WITH FUNCTION KEY DEFINITIONS or PART II Chapters 3-4**). SQL*Forms displays the first record on the screen (Figure I-3).

Note: If you or someone else (in a multiuser environment) have previously done the exercises in the Tutorial, permanent changes may have been made to the sample Oracle tables. In that case, the data you see on your screen may differ somewhat from the data shown in the screen images of this Tutorial.

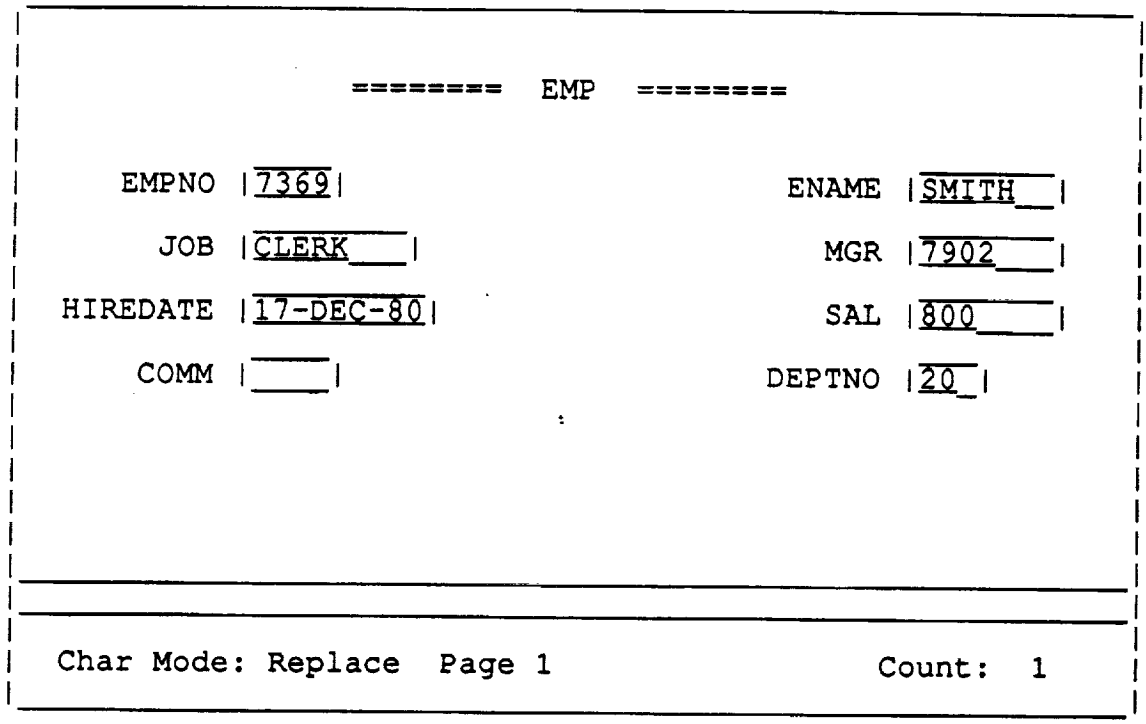


Figure I-3
Displaying the First Record

Chapter 4. Moving Around The Form

Chapter 4. Moving Around The Form

Each displayed field on the screen corresponds to a column in the database. You can move from field to field by using the **[NEXT FIELD]** and **[PREVIOUS FIELD]** keys. For example:

1. Press **[NEXT FIELD]** three times.

   The cursor should be positioned on the MGR field.

2. Press **[PREVIOUS FIELD]** three times, to position the cursor back on the EMPNO field.

3. Press **[NEXT FIELD]** seven times, until you reach the DEPTNO field.

4. Press **[NEXT FIELD]** once more.

   The cursor should be positioned on the EMPNO field.

Notice that the **[NEXT FIELD]** key cycles through all the employee fields in a forward direction. The **[PREVIOUS FIELD]** key cycles through all the fields in the opposite direction.

Just as **[NEXT FIELD]** and **[PREVIOUS FIELD]** cycle through fields, **[NEXT RECORD]** and **[PREVIOUS RECORD]** cycle through the retrieved records. To view the remaining employee records, press the **[NEXT RECORD]** key once for each succeeding record. For example, when you press **[NEXT RECORD]** once, SQL*Forms displays the record for Employee 7499 (Figure I-4).

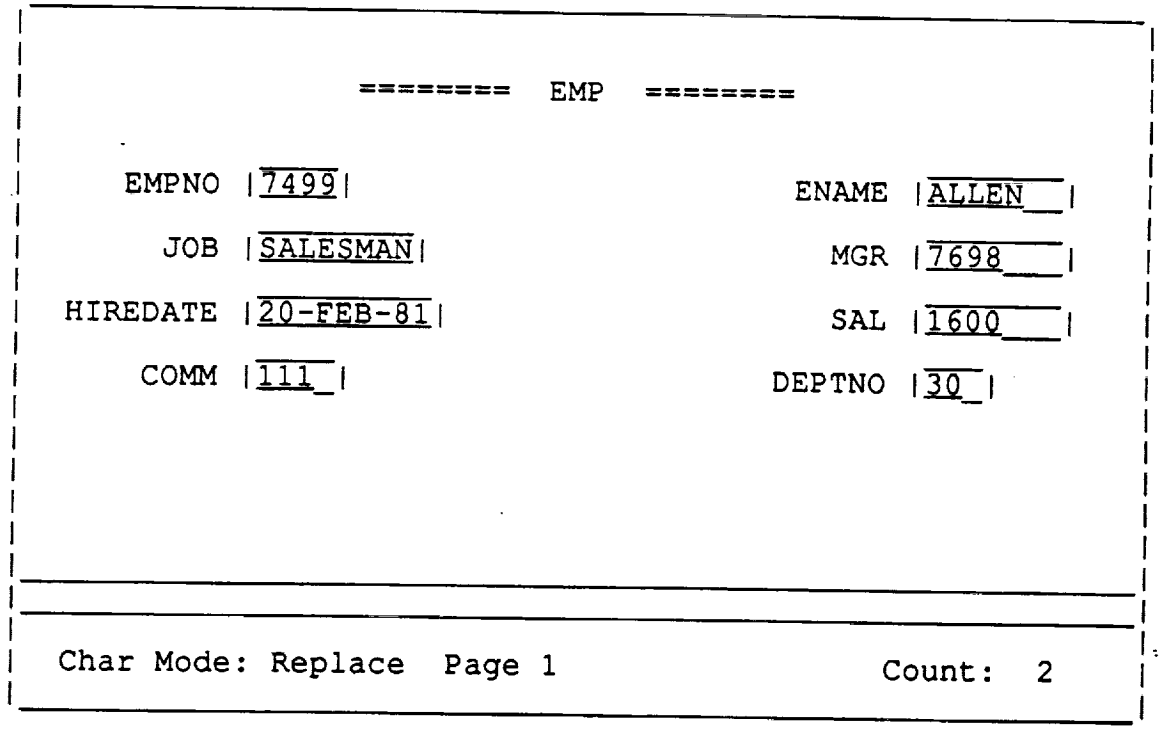


Figure I-4
Retrieving the Next Record

You can continue pressing **[NEXT RECORD]** until the last record is displayed. At this point the message, "Last row of query retrieved," appears in the message area and the fields on the screen are set to their default values (blank, in this example).

To display preceding records, use the **[PREVIOUS RECORD]** function key. If you continue pressing **[PREVIOUS RECORD]** until the first record is redisplayed, SQL*Forms issues the message, "At first record."

Note: Besides **[NEXT FIELD]**, **[PREVIOUS FIELD]**, **[NEXT RECORD]**, and **[PREVIOUS RECORD]**, SQL*Forms provides several other functions for cursor movement. For a list of available cursor-movement functions, see the SQL*Forms User's Quick Reference.

Exercises:

1. If you are currently in the employee record for Allen (Figure I-4) and the cursor is positioned at the HIREDATE field, how do you get to the ENAME field?

2. Suppose the database currently contains two employee records: Smith (Figure I-3) and Allen (Figure I-4) in that order. If you are currently in the first record, Smith, what steps are necessary to get to the JOB field for Allen?

3. If you are in the record for Allen, what steps are necessary to get to the SAL field for Smith?

Chapter 5. Retrieving Specific Records

Chapter 5. Retrieving Specific Records

If your database contains a large number of records, it is time-consuming to retrieve all the records and look through them one at a time to find a particular one. Instead, when you want to retrieve specific records, you can specify criteria you want those records to meet and SQL*Forms will retrieve all records matching your specification.

Suppose you want to see the records of all employees whose job is MANAGER. You can do this by entering the value you want to match directly on the form:

1. Press the **[ENTER QUERY]** key.

   SQL*Forms displays the message, "Enter a query, then press QUERY key to execute it."

2. Press **[NEXT FIELD]** two times, until the cursor is positioned on the Job field.

3. Type MANAGER in the JOB field.

   If you make a mistake when entering your query, you can use the **[CHARACTER DELETE]** function key to delete the character to the left of the cursor. Or, you can use the functions **[RIGHT]** or **[LEFT]** to move the cursor in either direction horizontally without changing any characters; and then type the desired character over the incorrect one.

4. Press the **[EXECUTE QUERY]** key.

SQL*Forms displays the first record that satisfies your query (Figure I-5).

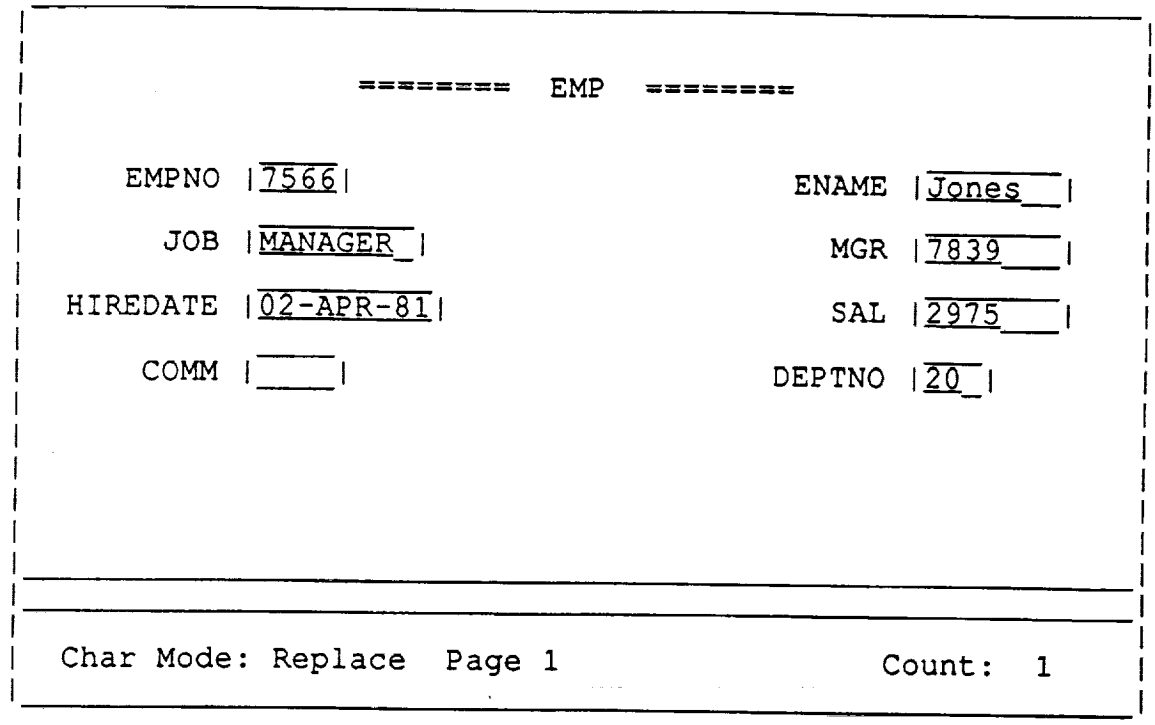


Figure I-5
Retrieving Records that Match a Specific Value

As always, pressing **[NEXT RECORD]** and **[PREVIOUS RECORD]** displays the other records retrieved by the query.

Note: Although this example showed a value entered in only one field, you can also specify values for several fields. For example, entering MANAGER in the JOB field and 30 in the DEPTNO field would retrieve the record for the manager of Department 30.

Exercises:

1. If you are currently in the EMPNO field of a record and you want to display the employee record for Jones, how would you do this?

2. If you are currently in the COMM field of a record and you want to display all the employee records that have employee number 7566 as their manager, how would you do this?

3. Suppose you are currently in the ENAME field of a record, what steps are necessary to find all the salesmen in department 20?

Chapter 6. The [HELP] Function

Chapter 6. The [HELP] Function

The **[HELP]** function displays information about the current field. **[HELP]** can display information in two forms:

1. a brief description of the field, displayed on the message line.

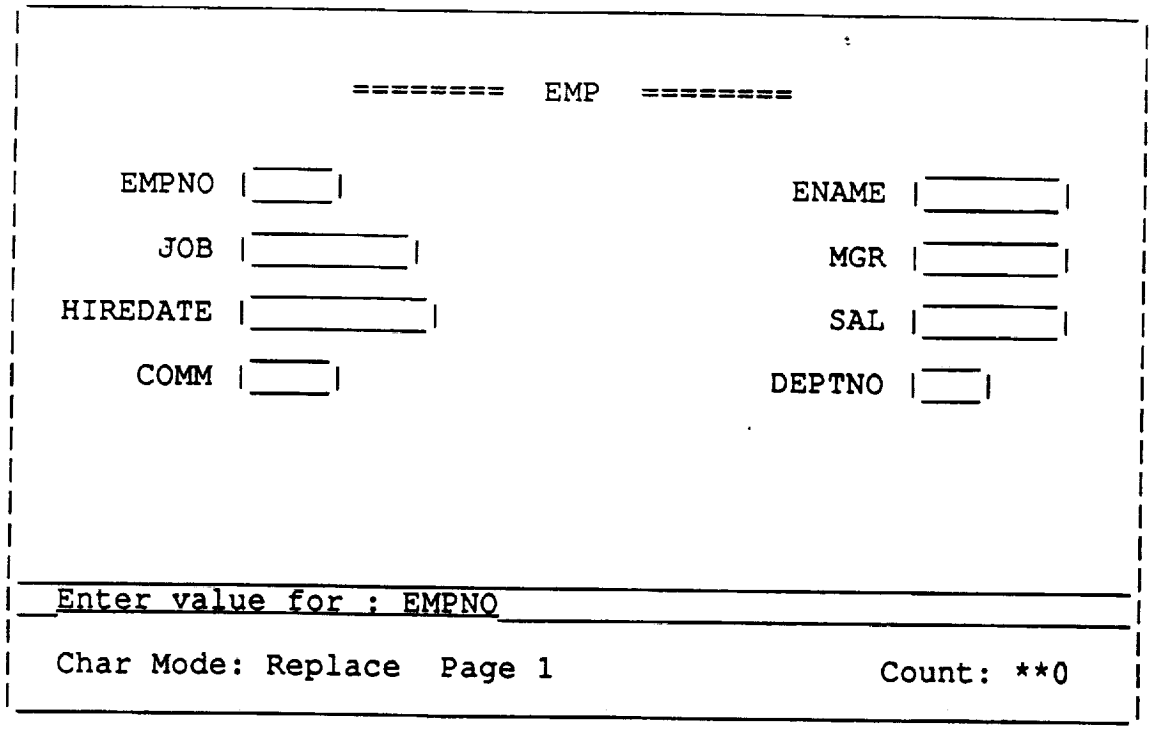
2. a screenful of information about the field, which replaces the current page of the form on the display.

If the designer of the form provided a brief description of the current field, that description appears when you press **[HELP]**. If you want to see the screenful of information, press **[HELP]** a second time.

If the designer of the form did not provide a brief description of the current field, the screenful of information appears when you press **[HELP]** the first time.

To leave the screenful of help information and redisplay the current page of the form, press any function key except **[HELP]**.

From the basic tutorial, if you were at the screen in Figure I-2 and the cursor is positioned at the first field, EMPNO, pressing the **[HELP]** key once would display:



To get to the help screen, press the **[HELP]** key a second time to display:

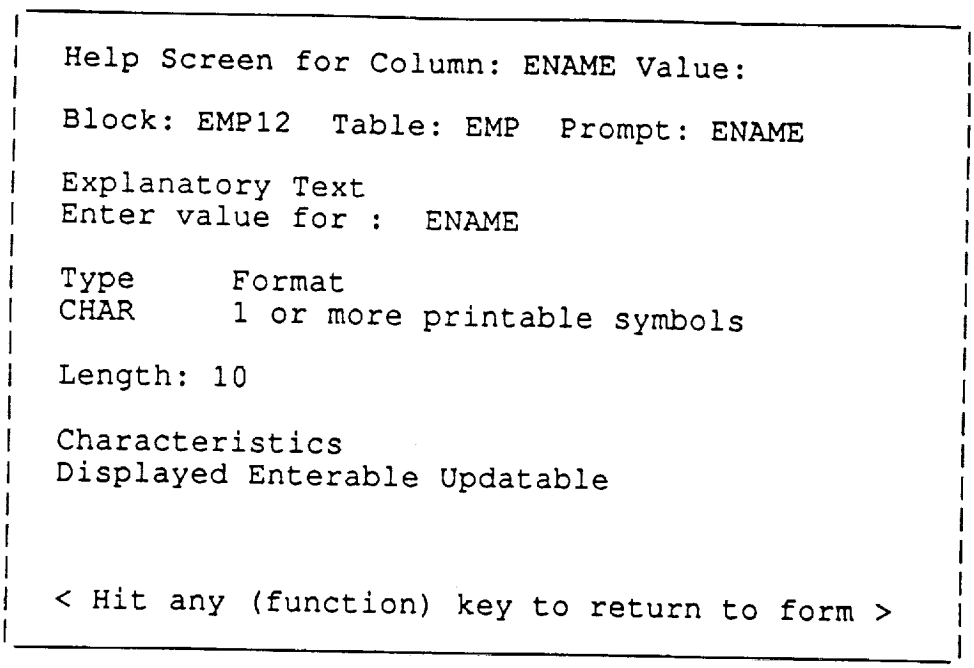
```
Help Screen for Column: EMPNO Value:

Block: EMP12  Table: EMP  Prompt: EMPNO

Explanatory Text
Enter value for :  EMPNO

Type      Format
NUMBER    \+-!9999999999\.9999999999!\E\+-!99!

Length: 6

Characteristics
Displayed Enterable Mandatory Primary


< Hit any (function) key to return to form >
```

Pressing the **[HELP]** key once while at the ENAME field will display:

```
                ========  EMP  ========

   EMPNO  |____|                     ENAME  |________|
     JOB  |________|                   MGR  |________|
HIREDATE  |_________|                  SAL  |________|
    COMM  |____|                    DEPTNO  |___|



Enter value for :  ENAME
Char Mode: Replace  Page 1                 Count: *0
```

Chapter 7. [HELP] With Function Keys

Pressing the **[HELP]** key a second time will display:



You can also display a help screen by pressing **[DISPLAY ERROR]**. This key displays information about the field or operation in which an error most recently was detected, whether or not that is the current field. It never displays the one-line field description.

Chapter 7. Help With Function Key Definitions

You can display the keyboard map that corresponds to your computer by pressing **[SHOW FUNCTION KEYS]**. This is **PF1 or ESC1** in most, but not all, keyboard maps.

KEYMAP FOR THE IBM 3270

FUNCTION	KEYSTROKE(S)
Transmit	PF21
Scroll Right	PF22
Next Field	PF20
Next Record	PF8
Next Set of Records	PF9
Next Block	PF11
Scroll Left	PF23
Previous Field	PF19
Previous Record	PF7
Previous Block	PF10
Clear Field	PF12+PF19
Clear Record	PF12+PF20
Clear Block	PF17
Clear Form/Rollback	PF18
Delete Record	PF12+PF17
Create Record	PF12+PF14
Duplicate Field	PF12+PF15
Duplicate Record	PF12+PF16
Enter Query	**PF4**
Count Query Hits	PF12+PF13

FUNCTION	KEYSTROKE(S)
Execute Query	**PF5**
Block Menu	PF2
Enter	ENTER
Commit Transaction	PF6
Exit/Cancel	**PF3**
No Operation	PF16
Redisplay Page	CLEAR for VM PA2 for MVS
Help	**PF14**
List Field Values	PF15
Display Error	**PF13**
Enable Record Update	PF12+PF18
Show Function Keys	**PF1**

KEYMAP FOR THE VT100

FUNCTION	KEYSTROKE(S)
Transmit	ESC O
Scroll Right	ESC P
Next Field	ESC I
Next Record	ESC 8
Next Set of Records	ESC 9
Next Block	ESC -
Scroll Left	PF23
Previous Field	ESC U
Previous Record	ESC 7
Previous Block	ESC 0
Clear Field	ESC = + ESC U
Clear Record	ESC = + ESC Y
Clear Block	ESC T
Clear Form/Rollback	ESC Y
Delete Record	ESC = + ESC T
Create Record	ESC = + ESC W
Duplicate Field	ESC = + ESC E
Duplicate Record	ESC = + ESC R
Enter Query	**ESC 4**
Count Query Hits	ESC = + ESC Q

FUNCTION	KEYSTROKE(S)
Execute Query	**ESC 5**
Block Menu	ESC 2
Enter	ENTER
Commit Transaction	ESC 6
Exit/Cancel	**ESC 3**
No Operation	PF16
Redisplay Page	CLEAR for VM PA2 for MVS
Help	**ESC 14**
List Field Values	ESC E
Display Error	**ESC Q**
Enable Record Update	ESC = + ESC Y
Show Function Keys	**ESC 1**

Note: All function keys on the VT100 correspond to the function keys on the IBM 3270. Example: PF12 on the IBM 3270 is ESC 12 or ESC = on the VT100 keyboard.

Chapter 8. Help With A Field With A List Of Values

If the current field has a list of valid values, you can display the first possible value by pressing **[LIST OF FIELD VALUES]**. A two-character state name field is one example of a field that might well have such a list of values.

Chapter 9. Help Form A Form

Some forms can provide additional kinds of help at your request. Where additional help is available, it usually takes the form of a box or screenful of information that you can display by pressing a certain function key or making a certain selection from a menu. The instructions for using a form may tell you whether that form can provide any additional help, and if so, how to request it.

Chapter 10. Leaving SQL*Forms

Once you have completed your work with a particular form, press the **[EXIT]** function key. This ends the session.

APPENDIX A

Quick Reference For Logging Into SEAD

UNIVERSITY
of HOUSTON

CLEAR LAKE
Houston, Texas

S E A D

Software Engineering and Ada Database
University of Houston, Clear Lake-NASA Johnson Space Center
GHG Corporation

=====GENERAL INFORMATION=====

=====QUICK REFERENCE FOR LOGGING INTO SEAD=====

UNIVERSITY
of HOUSTON

CLEAR LAKE
Houston, Texas

S E A D
Software Engineering and Ada Database
University of Houston, Clear Lake-NASA Johnson Space Center
GHG Corporation

=====GENERAL INFORMATION=====

=====QUICK REFERENCE FOR LOGGING INTO SEAD=====

TO:_____

Your user I.D. (username) is _____.
You may access the SEAD through the NASA/JSC Center Information Network (CIN).

If you do not have the capability to directly connect to the CIN, you may dial in at 713/483-2500. You should use or emulate a VT100 terminal. Once you are connected, follow the procedure outlined on the following pages. If you do have a direct connection, simply type SEAD followed by your username at the CIN Menu. For direct connection, it is best to have or emulate an IBM3270. Please be aware that the SEAD relies on the function keys (ESC sequence on the VT100) and, if you or your communications software have redefined these keys to some other functions, you will have difficulty using the database.

The first time you sign on, your password will be the same as your username. The system will immediately prompt you to enter a new password. Your new password must be from 6 to 8 characters and can contain alpha and numeric characters. You will be asked to type the new password twice to verify it. Please remember your new password, as this is what you will use for your next logon.

After you get to the main menu of SEAD, you should be able to follow the on-line menus, comments, and help. When you are ready to quit, return to the main menu and select <E> to exit, then hang up.

If you encounter any problems, call the SEAD Administrator at (713) 488-8806. We also welcome any comments or suggestions you may have regarding the structure, content, and usability of the SEAD.

NOTES: UPPER CASE — indicates system response
lower case — indicates user input
========== — indicates new screen

<cr>
<cr>

ENTER NUMBER:

cin1 <cr>

CALLING 61247

CALL COMPLETE

<cr>

YALE ASCII TERMINAL COMMUNICATIONS SYSTEM V2.1

ENTER TERMINAL TYPE: **vt100 <cr>**

W E L C O M E T O J O H N S O N S P A C E

C E N T E R H O U S T O N T E X A S

C E N T E R I N F O R M A T I O N N E T W O R K

C I N - B D I A L - I N F A C I L I T Y

FOR NASA AUTHORIZED USERS ONLY-UNAUTHORIZED USE IS A VIOLATION OF FEDERAL LAW

CALL (713)-280-4800 IF YOU NEED HELP

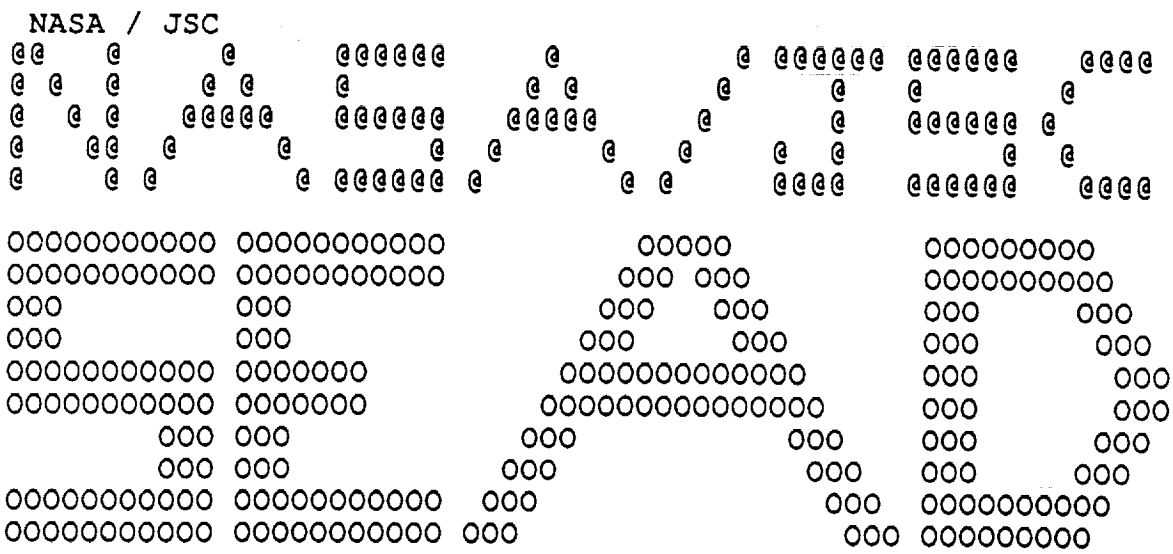
PRESS ENTER THEN CLEAR KEY TO PROCEED **<cr>**

---

sead username <cr>

LOGON USERNAME
VMXACI104R ENTER LOGON PASSWORD:

password <cr>



Welcome to SEAD! Please type <ENTER> to continue. **<cr>**

NASA / JSC
10/19/88

S E A D

Software Engineering and ADA Database System

B. Bulletin Board

I. Beginner Information

K. Function Keymap

C. Continue with SEAD

P. Change VM Password

E. Exit SEAD

Please enter your selection ==> I <cr>

Description of the Open Main Menu.

B. Bulletin Board -

Enables the user to browse the following Ada information: Conferences, Workshops, Meetings, etc.

I. Beginner Information -

Enables the first time user to browse instructions explaining about the structure of the database and how to retrieve information from the database.

K. Function Keymap -

Enables the user to browse the function keys available to use while in the database.

C. Continue with SEAD -

Enables the user to continue research by browsing through the database for the following information: Education and Training Resources, Publications and Conferences, Project, Compilers and Other Products, and Reusable Packages.

P. Change VM Password -

Enables the user to change his/her password within SEAD without logging out of the VM System. This function is only temporarily available.

E. Exit -

Enables the user to exit out of SEAD.

=====PROCEDURES FOR DISPLAY=====

To display all records in a table:
Press **EXECUTE QUERY <PF5>**.
Press **NEXT RECORD <PF8>** to display each subsequent record.
To retrieve records by matching values:
Press **ENTER QUERY <PF4>**;
enter the values you want to match into the appropriate fields
(a value can be exactly as JONES, or, _ON%, where "_" represents any character and "%" represents any string);
press **COUNT QUERY HITS <PF12+PF13>** to find the number of records matched;
press **ENTER QUERY <PF5>**.
Press **NEXT RECORD <PF8>** to view subsequent records retrieved by the query.
To retrieve records by entering a **WHERE** condition:
Press **ENTER QUERY <PF4>**;
move the cursor to the field where you want to enter a variable; type &, followed by a variable name (for example, &SAL);
press **EXECUTE QUERY <PF5>**;
When prompted with "Query where ... ?, enter any **WHERE** condition.
(for example: &FEE > 1000; &DATE < 31-NOV-87; &SAL = 45000 or &NAME like "KERRY") then press **ENTER**.
Return to **Menu <PF2>**

KEYMAP FOR THE IBM 3270

FUNCTION	KEYSTROKE(S)
Transmit	PF21
Scroll Right	PF22
Next Field	PF20
Next Record	PF8
Next Set of Records	PF9
Next Block	PF11
Scroll Left	PF23
Previous Field	PF19
Previous Record	PF7
Previous Block	PF10
Clear Field	PF12+PF19
Clear Record	PF12+PF20
Clear Block	PF17
Clear Form/Rollback	PF18
Delete Record	PF12+PF17
Create Record	PF12+PF14
Duplicate Field	PF12+PF15
Duplicate Record	PF12+PF16
Enter Query	**PF4**
Count Query Hits	PF12+PF13

FUNCTION	KEYSTROKE(S)
Execute Query	**PF5**
Block Menu	PF2
Enter	ENTER
Commit Transaction	PF6
Exit/Cancel	**PF3**
No Operation	PF16
Redisplay Page	CLEAR for VM PA2 for MVS
Help	**PF14**
List Field Values	PF15
Display Error	**PF13**
Enable Record Update	PF12+PF18
Show Function Keys	**PF1**

KEYMAP FOR THE VT100 TERMINAL

FUNCTION	KEYSTROKE(S)	FUNCTION	KEYSTROKE(S)
Transmit	ESC O	**Execute Query**	**ESC 5**
Scroll Right	ESC P	Block Menu	ESC 2
Next Field	ESC I	Enter	ENTER
Next Record	ESC 8	Commit Transaction	ESC 6
Next Set of Records	ESC 9	**Exit/Cancel**	**ESC 3**
Next Block	ESC -	No Operation	PF16
Scroll Left	PF23	Redisplay Page	CLEAR for VM PA2 for MVS
Previous Field	ESC U	**Help**	**ESC 14**
Previous Record	ESC 7	List Field Values	ESC E
Previous Block	ESC 0	**Display Error**	**ESC Q**
Clear Field	ESC = + ESC U	Enable Record Update	ESC = + ESC Y
Clear Record	ESC = + ESC Y	**Show Function Keys**	**ESC 1**
Clear Block	ESC T		
Clear Form/Rollback	ESC Y		
Delete Record	ESC = + ESC T		
Create Record	ESC = + ESC W		
Duplicate Field	ESC = + ESC E		
Duplicate Record	ESC = + ESC R		
Enter Query	**ESC 4**		
Count Query Hits	ESC = + ESC Q		

Note: All function keys on the VT100 correspond to the function keys on the IBM 3270. Example: PF12 on the IBM 3270 is ESC 12 or ESC = on the VT100 keyboard.

S E A D
Software Engineering and Ada Database

=====DATABASE ORGANIZATIONAL OUTLINE=====

MAIN MENU

1. **EDUCATION AND TRAINING RESOURCES**

    1. Course Information
        - Each course record has 5 screens: course, sponsor, audience, format, and material.
    2. Book Information
        - Each book record has 4 screens: book, location, publisher, and author/author information.

2. **PUBLICATIONS AND CONFERENCES**

    1. Publication Information
        - Each publication record has ten screens: publication, location, author/author information, category and subject, general term, keyword, project cross-reference, product cross-reference, compiler cross-reference and package cross-reference.

    2. Conference Information
        - Each Conference record has six screens: conference, conference sponsor, coordinator/coordinator information, conference charge, presentation, presenter/presenter information.

3. **PROJECTS**

    Each Project record has eight screens: project, contact_person/contact_person information, sub_project, project keyword, publication cross-reference, compiler cross-reference, compiler cross-reference, and package cross-reference.

4. COMPILERS AND OTHER PRODUCTS

1. Compiler Information
   - Each Compiler record has eight screens: compiler, vendor, host system, target system, performance/evaluator information, publication cross-reference, project cross-reference, and package cross-reference.

2. Product Information
   - Each Product record has seven screens: product, vendor, host system, target system, publication cross-reference, project cross-reference, and package cross-reference..

5. REUSABLE PACKAGE INFORMATION

Each Reusable Package record has twelve screens: reusable package, contact_person/contact_person information, creator/creator information, host system, target system, revise history, performance/performance evaluator information, package keyword(s), publication cross-reference, project cross-reference, product cross-reference, and compiler cross-reference.

***Note:** Each screen and each data item has on-line help available.

APPENDIX B

Quick Reference Card

USING THE KEYBOARD

The following tables show what keys to press to perform various actions within the database. The keys below are listed for the IBM3270 keyboard and the VT100 keyboard.

For Cursor Movement	Press	
	IBM3270	VT100
Left	<--	<--
Right	-->	-->
Scroll Left	PF23	ESC [
Scroll Right	PF22	ESC P
Menu	PF2	ESC 2
Next Block	PF11	ESC -
Next Field	ENTER	ENTER
Next Primary Key Field	PF20	ESC I
Next Record	PF8	ESC 8
Next Set of Records	PF9	ESC 9
Previous Block	PF10	ESC 0
Previous Field	PF19	ESC U
Previous Record	PF7	ESC 7

To Edit Data	Press	
	IBM3270	VT100
Character Delete	DEL	DEL
Character Insert	INS	INS
Clear Block	PF17	ESC T
Clear Field	PF12 + PF19	ESC = + ESC U
Clear Form/Rollback	PF18	ESC Y
Clear Record	PF12 + PF20	ESC = + ESC Y

Query Processing (To Retrieve Records)

	Press	
	IBM3270	VT100
Abort Query	PF16	ESC R
Count Query	PF12 + PF13	ESC = + ESC Q
Enter Query	PF4	ESC 4
Execute Query	PF5	PF5

Maintaining the Database

	Press	
	IBM3270	VT100
Commit (Saves Changes)	PF6	ESC 6
Create Record	PF12 + PF14	ESC = + ESCW
Delete Record	PF12 + PF17	ESC = + ESC T
Duplicate Record	PF12 + PF16	ESC = + ESC R
Enable Record Update	PF12 + PF18	ESC = + ESC Y

To

	Press	
	IBM3270	VT100
Display Error	PF13	ESC Q
Duplicate Field	PF12 + PF15	ESC = + ESC E
EXIT	PF3	ESC 3
HELP	PF14	ESC W
List of Field Values	PF15	ESC E
Print Form	Disabled	Disabled
Redisplay Page	<CLEAR>	CTRL +
Show Function Keys	PF1	ESC 1