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DATATRIEVE–11
Installation Guide

Order Number: AA–X022D–TC

This manual describes procedures for installing DATATRIEVE–11 on various PDP–11 operating systems.

Operating Systems:	RSX–11M/M–PLUS RSTS/E Micro/RSX Micro/RSTS VMS with VAX–11 RSX
Software Version:	DATATRIEVE–11 Version 3.3

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DECUS	RSX	VAX/VMS
Micro/RSTS	RSX–11M	VAX–11 RSX
Micro/RSX	RSX–11M–PLUS	VMS
MicroVAX	UNIBUS	VT
MicroVMS	VAX	
PDP	VAX CDD	
PDP–11	VAX DATATRIEVE	digital™

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Preface

This manual describes the procedures used to install DATATRIEVE–11 on a PDP–11 or VAX system under an RSX or RSTS operating system from a distribution kit on tape or disk.

Operating Systems and Versions

DATATRIEVE–11 runs on the following operating systems and versions:

- RSX–11M Version 4.5 or higher
- RSX–11M–PLUS Version 4.1 or higher
- RSTS/E Version 9.7 or higher
- Micro/RSX Version 4.1 or higher
- Micro/RSTS Version 2.2 or higher
- VAX–11 RSX Version 4.2 or higher, under VMS Version 5.1 or higher

Intended Audience

This manual is intended for system managers. Extensive knowledge of the host operating system is assumed.

Document Structure

This manual is organized as follows:

- Chapter 1 outlines the installation process.
- Chapter 2 explains the Auto-Install installation procedure on RSX–11M and RSX–11M–PLUS.

- Chapter 3 explains the installation procedure on Micro/RSX.
- Chapter 4 explains the Auto-Install installation procedure on RSTS/E.
- Chapter 5 explains the installation procedure on Micro/RSTS.
- Chapter 6 explains the installation procedure on VAX–11 RSX running under VMS.

Chapters 2 and 4 include descriptions of the default configuration files on the respective operating systems and how RSX–11M/M–PLUS and RSTS/E users can change the defaults.

Associated Documents

The following list of the DATATRIEVE–11 documentation set briefly describes the contents of each manual:

- *DATATRIEVE–11 Summary Description*. This manual provides an overview of DATATRIEVE–11 to guide users through the documentation set.
- *Introduction to DATATRIEVE–11*. This manual begins with a brief overview of DATATRIEVE–11, then interactively introduces basic DATATRIEVE tasks.
- *DATATRIEVE–11 User's Guide*. This manual explains how to set up your DATATRIEVE–11 environment, how to use data dictionaries, and how to use DATATRIEVE to define, retrieve, modify, and restructure data.
- *DATATRIEVE–11 Guide to Writing Reports*. This manual presents examples of DATATRIEVE–11 reports and describes how to format and produce a report.
- *DATATRIEVE–11 Call Interface Manual*. This manual explains how to call DATATRIEVE–11 from within programs written in high-level programming languages such as FORTRAN, COBOL, and BASIC.
- *DATATRIEVE–11 Reference Manual*. This manual explains in detail the rules governing the use of DATATRIEVE–11 and presents full descriptions of the commands and statements that compose the DATATRIEVE–11 language.
- *DATATRIEVE–11 Quick Reference Guide*. This guide provides quick reference information on the syntax and elements of DATATRIEVE–11.

Conventions Used in This Document

The following conventions are observed in this manual:

Convention	Meaning
UPPERCASE	Uppercase words and letters in examples indicate that you should type the word or letter exactly as shown.
lowercase	Lowercase words and letters in examples indicate that you are to substitute a word or value of your choice.
[ ]	Brackets in examples indicate optional elements.
n	A lowercase n indicates that you must substitute a value.
RSX–11	RSX–11 is used as a generic term for the RSX–11M and RSX–11M–PLUS operating systems.
CTRL/x	This symbol indicates that you hold down the control key while you simultaneously press the specified letter key. For example, CTRL/Z indicates you hold down the CTRL key and press the letter Z.
RET	The RET symbol indicates that you press the RETURN key.
color	Colored printing in interactive examples shows what you enter.
$	The symbol $ represents the nonprinting ALTMODE key. This key, called the escape (ESC) key on many terminals, is pressed in place of the RETURN key when specified. Unless otherwise specified (that is, with the $), all commands terminate with a carriage return.
. . .	The vertical ellipsis in output examples indicates that repetitive or irrelevant text has been omitted.
. . .	The horizontal ellipsis indicates that the preceding element can be repeated.

Chapter 1

Introduction to Installing DATATRIEVE–11

DATATRIEVE–11 Version 3.3 offers new features and enhancements. Before you can use the new version, you must install it on your system. This chapter provides information you need to perform the installation.

On each of the supported operating systems, DATATRIEVE–11 is installed with an automatic installation procedure. To install DATATRIEVE–11 on your Micro/RSX or Micro/RSTS system, use the installation procedure provided with your distribution kit. The installation procedure prompts you for information that you must supply to complete the installation.

If your operating system is RSX–11M, RSX–11M–PLUS, or RSTS/E, the installation procedure in your distribution kit is an automatic installation procedure that is new in DATATRIEVE–11 Version 3.3. The new procedure, called Auto-Install, functions as follows:

- Automatically checks the installation files for a new version of itself or an update. If Auto-Install finds a new version or update, it asks you if you want to install it. If you respond with ''YES,'' Auto-Install displays the commands needed to perform the installation or update. If you respond with ''NO,'' Auto-Install issues a warning that this could cause installations to fail and reprompts you to perform the installation or update.
- Combines the installation and update procedures for all products. Auto-Install checks the update area and applies any updates it finds to a product's installation files prior to performing the installation. The update procedures for DATATRIEVE–11 are in directory [222,200] for RSX, and PATCH$ for RSTS/E.

- Creates the following log files of the installation in the user's login directory:

  AUTOIN.LOG, which contains the main installation procedure's dialogue
  DTRDTR.LOG, which contains the DATATRIEVE–11 portion of the dialogue

- Creates temporary work areas on the user's device and deletes them before the installation completes. If any of these remain after an installation, you may delete them. The temporary work areas are created as follows:

  On RSX:

  Auto-Install sets your default device and directory to your login device and directory. It then creates the work area in directory [367,100] on your login device.

  On RSTS/E:

  Auto-Install creates the work area in directory [0,81] on your login device. The logical name for this directory is AUTWRK$.

- Creates temporary files in the user's login directory and deletes them before the installation completes. If any remain after an installation, you may delete them. The names of the temporary files are as follows:

CUSTOM.DAT	INSTAL.TMP	DTRDTR.SAV
UPDATE.DAT	AUTUPD.DAT	DTRDTR.TMP
ISTAT.DAT	DTRDTR.CFG	

- Allows its own installation files to remain on the system after it is installed in sysdev:[367,367]. These files are needed to reinstall DATATRIEVE–11 and other products and should not be deleted. If you accidentally delete them, you can reinstall Auto-Install from the distribution kit. On RSX, the names and functions of the installation files are as follows:

AUTOIN.CMD	Control installations
PRODIN.CMD	Installs individual layered products
CUSTOM.CMD	Controls customization processes
UPDATE.CMD	Controls the updating of the configuration data file
UPDATE.TSK	Updates the configuration data file
PRDTBL.DAT	Lists products Auto-Install may support
INSTAL.DAT	Lists products installed by Auto-Install
DEFUPD.TSK	Updates the status of the configuration data file

On RSTS/E the names and functions of the installation files are as follows:

AUTOIN.COM	Controls installations
PRODIN.COM	Installs individual layered products
CUSTOM.COM	Controls customization processes
UPDATE.COM	Controls the updating of the configuration data file
UPDATE.TSK	Updates the configuration data file
PRDTBL.DAT	Lists products Auto-Install may support
INSTAL.DAT	Lists products installed by Auto-Install
DEFUPD.TSK	Updates the status of the configuration data file

- Stores DATATRIEVE–11 installation data files on the system after it is installed. Do not delete these files. If they are deleted, subsequent installations will fail unless they are performed from the distribution kit.

- Handles error messages as follows:

  Ignores WARNING messages

  Aborts the installation of a product if FATAL messages are received during the installation of the product

  Aborts itself if FATAL messages are received during Auto-Install's installation dialogue

  Aborts the installation of a product if ERROR messages are received during the installation of the product

- Uses a configuration data file, which contains the parameters and values used to determine which features of DATATRIEVE–11 are supported by default.
- Provides a procedure that assists you in customizing your configuration data file to indicate which features DATATRIEVE–11 uses by default.
- Makes every attempt to restore the system to its prior state if an installation fails.

Chapter 2

Installing DATATRIEVE–11 on an RSX–11M or RSX–11M–PLUS Operating System

This chapter explains how to install DATATRIEVE–11 on the RSX–11M and RSX–11M–PLUS operating systems. Prior to installing this version of DATATRIEVE–11, perform the following steps:

1. Read this chapter, which contains information necessary for installing DATATRIEVE–11.
2. Read the release notes, which describe new features and known problems for this version of DATATRIEVE–11. For information on how to access the release notes, see Section 2.6.
3. Ensure that the RSX operating system is installed and functioning properly.
4. Choose the optional attributes for your installation. See Section 2.1.1 in this chapter for information on optional DATATRIEVE–11 attributes.

2.1 Preparing to Install DATATRIEVE–11

Unless you choose the default installation, you must choose optional attributes for your installation of DATATRIEVE–11. The following sections discuss these options in detail.

2.1.1 Default Attributes

The configuration data file contains parameters and values that determine the default attributes. You can accept these defaults or change them by answering the questions you will be asked in the installation dialogue if you choose to customize DATATRIEVE–11. The configuration data file is called DTRDTR.CFG. It is stored in directory [222,222] on the device you specify in answer to the question in the installation dialogue ''Final holding area for kit files after instal?''

Table 2–1 shows the questions in the configuration data file, the default answers for attributes, and the options that create the attributes.

Table 2–1: Configuration Data File with Default Attributes

Installation Question	Default Answer	Option
Target device	LB:	your choice
Final holding area for Kit files after installation	SY0:	your choice
Which directory do you want the DTR–11 task assigned to	LB:[1,54]	your choice; normally [1,54] on RSX-11M, [3,54] on RSX11M+
Name and location of dictionary	LB:[1,2]QUERY.DIC	your choice
Name and location of message file	LB:[1,2]QUERY.MSG	your choice
Name and location of Startup Command File	SY:QUERY.INI	your choice
Name and location of DDMF.LOG	SY:DDMF.LOG	your choice
Issue error messages for record too short	1=yes	0=no
Interpret input date	1=1/6 as January 6	0=1/6 as June 6
Control spooling	1=spool output	0=output to LP:
Divide by 0 warning	–1=yes	0=no warning
Terminal type	0=ask at runtime	1=VT52, 2=VT100
Control ADT	0=ADT enabled	1=ADT disabled
Set the default COLUMNS=PAGE	80	your choice
Message file organization	0=fixed	1=variable
Default size of dictionaries	200	your choice
Default protection	0=[grp,*]	–1=[*,*], 1=[grp,prgm]
Stack size (minimum 256)	256	your choice
Link against Supervisor Mode library	NO	YES
Is DECnet available	YES	NO
1=Flt_pt softw 2=FPP hardw 3=machine hardware decides at install	3	1=install FP SW, 2=omit FP SW
Allow future customization of this file?	YES	NO
Print release notes automatically?	NO	YES
Print the installation log automatically?	NO	YES

2.2 Mounting the Distribution Medium

To install DATATRIEVE–11, perform the following steps:

1. Log in to a privileged account. The installation procedure generates a log file, which will remain in your default login directory after you complete the installation. Using a hardcopy terminal produces a more detailed record of your installation session.
2. Verify that no one on your system is performing an installation using Auto-Install.
3. Verify that no one else on your system is using a previously installed version of DATATRIEVE–11.
4. If Auto-Install is not already installed on your system, verify that you have a total of 800 free blocks (including approximately 250 contiguous blocks for the largest component) of storage space available for Auto-Install on the system device (specified by *sysdev* in the installation procedure).
5. Verify that you have sufficient disk space to install DATATRIEVE–11. Approximately 7200 free blocks are needed; approximately 6500 will be permanently used by the software. This must include three sets of contiguous free blocks, each approximately 400 blocks long, for the DATATRIEVE–11 task, the DDMF server, and the LCDDMF server.
6. Place your distribution medium in the drive.

   If your distribution medium is a disk, insert the disk in the drive and set the switch to the RUN position. Make certain that the ready light is lit.

   If your distribution medium is tape, load the tape according to the instructions for your drive. Set the ONLINE/OFFLINE indicator to ONLINE and make certain that the ready light is on.

   If your distribution medium is a TK50 tape cartridge, insert the tape into the drive according to the instructions for the drive, and close the cartridge-release button on the drive. Press the LOAD button and make certain the LOAD light comes on.
7. Allocate and mount the device. Tapes and disks must be mounted foreign. For more information about allocating and mounting devices, see the *RSX–11M/M–PLUS Command Language Manual*.
8. Installation should take approximately 30 to 45 minutes, depending on your system environment, your configuration, and the software options you select.

2.3 Installing and Verifying DATATRIEVE–11

DATATRIEVE–11 is installed using the Auto-Install software. If Auto-Install has not been installed on your system, you must do so before installing DATATRIEVE–11.

2.3.1 Installing Auto-Install

To install Auto-Install, you must invoke the Backup and Restore Utility. You can do so by using one of the following commands, according to the type of distribution medium you have purchased:

For Disks:

```
$ BRU/NOI/NEW/IMAGE:RESTORE/BAC:AUT100.A/UFD indev: sysdev:
```

For Tapes:

```
$ BRU/REW/UFD/NOI/NEW/DENS:dens/BAC:AUT100.A indev: sysdev:
```

Replace *sysdev* with the name of your system device. Replace *indev* with the name of the device on which you allocated and mounted your distribution medium. The restored files will be located in sysdev:[367,367]. See the *RSX–11M/M–PLUS Utilities Manual* for more information on the Backup and Restore Utility.

2.3.2 Invoking Auto-Install on RSX

You can invoke Auto-Install with any one of the following commands:

1. `@sysdev:[367,367]AUTOIN.CMD`
2. `@sysdev:[367,367]AUTOIN.CMD DTR`
3. `@sysdev:[367,367]AUTOIN.CMD indev:DTR`

Replace *sysdev* with the name of your system device. Replace *indev* with the name of the device on which you allocated and mounted your distribution medium.

If you use command 1, the installation dialogue begins with step 1 in the following section.

If you use command 2, the installation dialogue begins with step 2.

If you use command 3, the installation dialogue begins with step 3.

2.3.3 Installation Dialogue

This section describes the installation dialogue that appears on your screen. The text that follows each question explains the answers to the question. These explanations do not appear in the actual installation dialogue.

The default answer appears at the end of each question, enclosed in angle brackets (< >). You can accept the default answer by typing it or by pressing RETURN.

Depending on how you invoked Auto-Install, you will enter the dialogue at step 1, step 2, or step 3.

1. `Which product(s) do you want to install?`

   In response to this prompt, type ''DTR,'' which is the product name for DATATRIEVE–11. Press CTRL/Z to exit from Auto-Install at this point.

2. `Where are the update files located <sysdev:>?`

   If the update files are located on the system device (*sysdev* in the installation procedure), press RETURN. If the update files are not located on the system device, enter the name of the device on which they are located, including the colon (:). To exit from Auto-Install at this point, press CTRL/Z.

   If there are no update files for DATATRIEVE–11 in this installation, press RETURN. The following messages will appear:

   ```
   WARNING----No updates found for configuration data file; procedure
   continuing
   WARNING----Update file DTR303.DAT not found at sysdev: [222,200]
              Kit files not updated; procedure continuing.
   ```

3. `Which device are the distribution files for DTR (DTR) located on (include colon)?`

   If you are installing DATATRIEVE–11 from a distribution kit, specify the drive on which you allocated and mounted the distribution disk or tape (in the form *ddnn*). If you are installing from an account on your system (for example, reinstalling an existing installation), specify the name of the device on which the source files are located (in the form *ddnn*). To exit from Auto-Install at this point, press CTRL/Z.

If you accept the default installation or have answered ''YES'' to the ''Allow future customization of this file?'' question during a previous installation, Auto-Install will issue the following question:

```
Do you want to customize DTR (DTR) (Y/N) <N>?
```

Type ''Y'' to customize your DATATRIEVE–11 installation.

Type ''N'' or press RETURN if you do not wish to customize DATATRIEVE–11.

The default may fulfill your system requirements. However, you may be able to improve performance by customizing. If you choose to customize DATATRIEVE–11, you are asked further questions.

If you have already customized DATATRIEVE–11 during a previous installation, or if you accept the default configuration, type ''N'' or press RETURN. The installation procedure will then skip all other questions pertaining to customization.

If you choose to customize, you will be asked further questions. Press RETURN to accept the default answer; press CTRL/Y to abort customization; press CTRL/Z to exit from customization but retain any changes made so far; or type a new value. If a question has multiple choices for the answer, the choices will be listed in angle brackets (< >).

NOTE

The default answers given in angle brackets may be different if you have customized the configuration file previously by editing the configuration data file. The answers you provide in this file become the default answers in the installation procedure.

Some examples of questions you will be asked if you are customizing follow. See Table 2–1 for all the questions and possible responses.

```
Final holding area for kit files after instal <SY0:>?
```

This is the device on which the distribution files will be stored when the installation is complete. Press RETURN if you want to store them on your default login device. Otherwise, enter the name of another device followed by a colon (:). The installation files will be stored in directory [222,222] on this device.

DATATRIEVE–11 has the option of using floating point emulation software if floating point processor hardware is not supported on the machine. The following question determines whether to install floating point emulation software.

```
1=Flt_pt softw  2=FPP hardw  3=Machine hardware decides at instal
```

If you specify 1, the floating point emulation software is installed regardless of whether the machine includes the floating point hardware. If you specify 2, the floating point emulation software is omitted without determining whether the floating point processor hardware is present. The default, 3, specifies that the floating point emulation software is installed if, and only if, the machine does not contain floating point hardware; if the floating point hardware is present, DATATRIEVE–11 uses floating point instructions.

You can improve performance by increasing the pool space available to DATATRIEVE for internal data structures. To increase the amount of pool space, you must have Supervisor Mode RMS and the floating point processor available, and you must choose them at installation time. Using the floating point processor also improves the speed of DATATRIEVE floating point operations.

```
Allow future customization of this file <YES>?
```

If you would like to allow DATATRIEVE–11 to be customized during subsequent installations, press RETURN. If you would like to disable customization during subsequent installations, type ''N'' or ''NO.''

```
Print the release notes automatically <NO>?
```

If you do not want to print the release notes, press RETURN. To print them, type ''Y.''

```
Print the installation log automatically <NO>?
```

If you do not want to print the log file, press RETURN. To print it, type ''Y.''

```
Do you want to customize DTR again <Y/N><NO>?
```

Type ''Y'' if you want to change any of your answers to the customization questions. If not, press RETURN or type ''N.''

Once the contents of the configuration data file are complete, Auto-Install installs DATATRIEVE–11. Throughout the installation process, Auto-Install displays several informational messages. Following the installation, Auto-Install runs the Installation Verification Procedure (IVP) for DATATRIEVE–11.

2.3.4 Installation Verification Procedure

The Installation Verification Procedure (IVP) consists of a program with many DATATRIEVE tests. If the installation and IVP are successful, the following message is displayed on your terminal at the end of the installation prodedure:

```
Installation of DTR (DTR) successful
```

If this message is not displayed on your terminal, an error has occurred in your installation. In this case, you must examine the installation output listing for error messages and correct the errors.

Begin the installation procedure again, starting with the command that invokes Auto-Install.

2.4 Installation Files

Once installed on your system, DATATRIEVE–11 causes specific directories to be searched for the files it needs. If you move these files to a different location, be sure to restore the original directory configuration before installing a subsequent update. The installation procedure deletes intermediary files, so that the files remaining in the directory when the installation procedure is complete are those you will need for rebuilding DATATRIEVE–11.

Table 2–2 lists and describes the files you should see on your target disk after installation. These files are necessary to make the software function properly and to perform the examples shown in the documentation.

[OPT] represents an account that is configurable by the installation, and [222,222] represents the final holding area for kit files after installation.

Table 2–2: RSX–11M/M–PLUS DATATRIEVE–11 Software Components

File Name	UIC	File Purpose
DTRLIB.OLB	LB:[1,1]	DATATRIEVE object library
DTCLIB.OLB	LB:[1,1]	Call Interface object library
SETUP.DTR	LB:[1,2]	DATATRIEVE setup file
OWNER.SEQ	LB:[1,2]	Sample data file
PERSON.SEQ	LB:[1,2]	Sample data file
YACHT.SEQ	LB:[1,2]	Sample data file
FAMILY.DAT	LB:[1,2]	Sample data file
YACHT.DAT	LB:[1,2]	IVP data file

(continued on next page)

Table 2–2 (Cont.): RSX–11M/M–PLUS DATATRIEVE–11 Software Components

File Name	UIC	File Purpose
PERSON.DAT	LB:[1,2]	IVP data file
OWNER.DAT	LB:[1,2]	IVP data file
DTRREL.DOC	LB:[1,2]	Online release notes
DTR.TSK	[OPT]	DATATRIEVE task image
DDMF.TSK	[OPT]	DATATRIEVE server task
REMDTR.TSK	[OPT]	DATATRIEVE Remote Terminal Interface
LCDDMF.TSK	[OPT]	Local server
QCPRS.TSK	[OPT]	Dictionary COMPRESS program
QXTR.TSK	[OPT]	Dictionary extract utility
QCVRT.TSK	[OPT]	Converts V2.x dictionaries to V3.x format
QDICT.TSK	[222,222]	Dictionary build program
MSGS.SEQ	[222,222]	Message file in distribution format
DTR11.ODL	[222,222]	DATATRIEVE overlay description file
DTR11.TKB	[222,222]	DATATRIEVE task build command file
DDM11.ODL	[222,222]	DATATRIEVE server overlay description file
DDM11.TKB	[222,222]	DATATRIEVE server task build command file
RD11P.TKB	[222,222]	Remote Terminal Interface program task build command file
LCI11.ODL	[222,222]	DATATRIEVE local server overlay description file
LCI11.TKB	[222,222]	DATATRIEVE local server task build command file
QC11P.TKB	[222,222]	COMPRESS program
QX11P.TKB	[222,222]	Dictionary extract utility command file
QT11P.TKB	[222,222]	Convert dictionary format command file
QD11P.TKB	[222,222]	Dictionary build program task build command file
QUERY.DIC	[OPT]	Data dictionary
QUERY.MSG	[OPT]	Message file
INSDTR.CMD	[222,222]	DATATRIEVE install file
INSDDM.CMD	[222,222]	DATATRIEVE server install file
DTR.TST	[222,222]	IVP DATATRIEVE test file

(continued on next page)

Table 2–2 (Cont.): RSX–11M/M–PLUS DATATRIEVE–11 Software Components

File Name	UIC	File Purpose
DTRIVP.CMD	[222,222]	IVP command file
DTRDTR.CFG	[222,222]	Configuration file
DTRX.ODL	[222,222]	Main DATATRIEVE overlay description file
DTR303.DAT	[222,222]	DATATRIEVE Version 3.3 file

2.5 Kit Contents

The kit files are copied over from the Auto-Install work area to [222,222] on the device you specify or default in answer to the following installation dialogue question:

```
Final holding area for kit files after install?
```

The files are stored on your system so that future installations (such as updates or patches) will not necessitate using the distribution kit. If you are unable to allow space on your system for these files, you may delete them. However, subsequent installations must be performed from the distribution kit.

2.6 Accessing the Release Notes

The DATATRIEVE–11 release notes describe new features and known problems for this version of DATATRIEVE–11. Auto-Install automatically copies the release notes file from the distribution medium to directory [222,222] on your system disk and names it DTRREL.DOC. Once you have copied the release notes file to your directory, you can use the PRINT command to print it.

In addition, the release notes are stored online in LB:[1,2]DTRREL.DOC.

If you accept the default installation or answer ''YES'' to the question ''Print the release notes automatically?'' during the installation dialogue, Auto-Install will print the release notes file.

To copy the release notes file from the distribution medium prior to installing DATATRIEVE–11, enter one of the following commands according to the distribution medium you have purchased:

For Disks:

```
$ BRU/NOI/NEW/IMAGE:RESTORE/BAC:DTRREL.BCK/UFD indev: outdev:
```

For Tapes:

```
$ BRU/DENS:dens/BAC:DTRREL.BCK/REW/NOI/UFD/NEW indev: outdev:
```

Replace *indev* with the device on which your distribution medium is allocated and mounted. Replace *outdev* with the destination device. See the *RSX–11M/M–PLUS Utilities Manual* for more information on the Backup Restore Utility (BRU). The restored Release Notes will be in *outdev:*[367,100]DTRREL.DOC.

Chapter 3

Installing DATATRIEVE–11 on a Micro/RSX System

To install DATATRIEVE–11 on a Micro/RSX system, use the Micro/RSX automatic installation procedure, OPTION.CMD. As this procedure executes, it displays prompts to which you must respond to install DATATRIEVE–11. This section explains how to use the OPTION installation procedure.

Before you invoke the installation procedure, perform the following steps:

1. Log in to a privileged account.
2. Verify that you have sufficient disk space to install DATATRIEVE–11. Your system requires approximately 3100 blocks for installation. All of this will be permanently used by the software.[1]
3. Verify that, within these 3100 blocks, you have free blocks of contiguous storage as follows: 400 blocks for the DATATRIEVE–11 task, 400 blocks for the DDMF task (the remote call interface server), and 375 blocks for LCDDMF (the local call interface server). The remaining free blocks can be noncontiguous storage for OTS and call interface libraries.
4. Note that installation should take approximately 15 minutes, depending on your system environment, your configuration, and the software options you select during installation.
5. Insert the DTR diskette or tape into the drive. If you insert the DTR tape, you also need to press the LOAD button. (The LOAD button will blink slowly for about 15 seconds. Wait until it stops blinking.)

[1] This block-count specification refers to the disk space required on your system disk. The sizes are approximations; actual sizes may vary depending on your system environment, your configuration, and the software options you select during installation.

Release notes are copied automatically as part of the installation procedure. You can read them on line or print them after you complete installation. They reside in directory [1,2] and are called DTRREL.DOC.

Invoke the installation procedure. If you are an inexperienced DATATRIEVE–11 user, type the following standard command:

```
$  @OPTION
```

If you are an experienced DATATRIEVE–11 user, you may wish to modify the standard command as follows:

```
$  @OPTION /DISK
```

The /DISK switch allows tape users to install DATATRIEVE–11 on a disk other than the system disk (LB:). For example, you can use an optional fixed disk, if you have one.

If you use the /DISK switch, the output disk you want to use must be spinning and mounted as a public device. You must also include two lines in the file LB:[1,2]STARTUP.CMD to ensure that this disk is mounted as a public device each time the system is started up. Insert the following lines immediately before the label .APP1:

```
.IF $$CLI EQ "MCR" MOU device:/SYS
.IF $$CLI EQ "DCL" MOUNT device:/SYSTEM
```

After you type the standard or a modified @OPTION command, OPTION displays its main menu.

If DATATRIEVE–11 is already installed on your system, you must type ''R'' to indicate that you want to remove the old version of DATATRIEVE–11. The installation command procedure displays the information you need to perform this operation. Once the task is removed, reinvoke OPTION.CMD by typing the standard or a modified @OPTION command.

When you are ready to install DATATRIEVE–11, type ''I'' to indicate that you want to install software. Then, follow the instructions displayed on your terminal.

When all the files are copied, a message will appear on the terminal:

```
Now running customization procedure for DTR
```

Next you will have to respond to the following:

```
Enter 1, 2, or 3 to decide if Floating Point Emulation
      Software will be used or Floating Point
      Processor.  3 is the default.

1. Yes - include the floating point emulation code,
         regardless of what the hardware looks like.

2. No  - do not include the floating point emulation code,
         regardless of what the hardware looks like.

3. Let the procedure decide based on the state
   of the machine being installed on.

Enter 1, 2, or 3 <3>
```

OPTION.CMD installs DATATRIEVE–11 and runs the Installation Verification Procedure features of DATATRIEVE–11 and ensures that it is working properly. If the IVP completes successfully, the following message appears:

```
DATATRIEVE-11 installation verification successful.
```

If the installation procedure completes successfully, the following message displays:

```
Procedure successfully completed.
```

When you see this message, DATATRIEVE–11 is ready for use. Be sure to remove your diskette or tape from the drive.

If the installation procedure fails, your system issues an error message that identifies the reason for failure. For explanations of error messages issued by the installation procedure and suggestions for possible user actions to fix problems, consult the appropriate operating system manual.

Table 3–1 lists the files you should see on your fixed disk after installation. Do not delete any of these files; the software needs them to function and to support the running of the examples shown in the documentation.

Table 3–1: Micro/RSX DATATRIEVE–11 Software Components

File Name	UIC	File Purpose
DTCLIB.OLB	LB:[1,1]	Call Interface object library
DTRIVP.CMD	LB:[1,1]	IVP command file
DTR.TST	LB:[1,1]	IVP test file
SETUP.DTR	LB:[1,2]	DATATRIEVE setup file

(continued on next page)

Table 3–1 (Cont.): Micro/RSX DATATRIEVE–11 Software Components

File Name	UIC	File Purpose
FAMILY.DAT	LB:[1,2]	Sample data file
YACHT.DAT	LB:[1,2]	IVP data file
PERSON.DAT	LB:[1,2]	IVP data file
OWNER.DAT	LB:[1,2]	IVP data file
OWNER.SEQ	LB:[1,2]	Sample data file
PERSON.SEQ	LB:[1,2]	Sample data file
YACHT.SEQ	LB:[1,2]	Sample data file
QUERY.DIC	LB:[1,2]	Data dictionary
QUERY.MSG	LB:[1,2]	Message file
DTRREL.DOC	LB:[1,2]	Online release notes
DTR.INS	LB:[1,2]	Installation command file
DDMINS.CMD	LB:[1,2]	DATATRIEVE server installation file
DDMREM.CMD	LB:[1,2]	Remove server file
DTRSUPER.CMD	LB:[1,2]	Determine system configuration file
DTR.TSK	LB:[3,54]	DATATRIEVE task image
DDMF.TSK	LB:[3,54]	DATATRIEVE server task
QCPRS.TSK	LB:[3,54]	Dictionary COMPRESS program
QXTR.TSK	LB:[3,54]	Dictionary extract utility
REMDTR.TSK	LB:[3,54]	DATATRIEVE Remote Terminal Interface
LCDDMF.TSK	LB:[3,54]	Local server
FAMILY.DAT	[SELF]	IVP data file
DTR.TST	[SELF]	IVP command file

Chapter 4

Installing DATATRIEVE–11 on a RSTS/E Operating System

This chapter explains how to install DATATRIEVE–11 on the RSTS/E operating systems. Prior to installing this version of DATATRIEVE–11, perform the following steps:

1. Read this chapter, which contains information necessary for installing DATATRIEVE–11.
2. Read the release notes, which describe new features and known problems for this version of DATATRIEVE–11. For information on how to access the release notes, see Section 4.6.
3. Ensure that the RSTS/E operating system is installed and functioning properly.
4. Choose the optional attributes for your installation. See Section 4.1.1 in this chapter for information on optional DATATRIEVE–11 attributes.

A DATATRIEVE–11 installation requires approximately 30 to 45 minutes to complete.

4.1 Preparing to Install DATATRIEVE–11

Unless you choose the default installation, you must choose optional attributes for your installation of DATATRIEVE–11. The following sections discuss these options in detail.

4.1.1 Default Attributes

The configuration data file contains parameters and values that determine the default attributes. You can accept these defaults or change them; that is, you can customize DATATRIEVE–11 by answering a set of questions in the installation dialogue.

The configuration data file is called DTRDTR.CFG. Its location depends on your response to the question:

```
Final holding area for Kit files after installation
```

The default location is logical name DTR$ on your system device. To override the default, you must be prepared to specify a logical name defined as a device and directory. (Auto-Install does not accept a physical device and directory specification in response to this question.) For example, you can define DTRKIT$ before starting the installation:

```
$ ASSIGN/SYSTEM/REPLACE DU0:[100,100] DTRKIT$
```

Then you can respond to the ''Final holding area . . . '' question by specifying the logical name DTRKIT$.

Table 4–1 shows the questions in the configuration data file, the default answers for attributes, and the options that create the attributes.

Table 4–1: Configuration Data File with Default Attributes

Installation Question	Default Answer	Option
Final holding area for Kit files after installation	DTR$:	your choice
Name and location of dictionary	LB:QUERY.DIC	your choice
Name and location of message file	LB:QUERY.MSG	your choice
Name and location of Startup Command File	SY:QUERY.INI	your choice
Name and location of DDMF.LOG	SY:DDMF.LOG	your choice
Issue error messages for record too short	1=yes	0=no
Interpret input date	1=1/6 as January 6	0=1/6 as June 6
Control spooling	1=spool output	0=output to LP:
Divide by 0 warning	–1=yes	0=no warning
Terminal type	0=ask at runtime	1=VT52, 2=VT100
Control ADT	0=ADT enabled	1=ADT disabled
Set the default COLUMNS=PAGE	80	your choice
Message file organization	0=fixed	1=variable
Default size of dictionaries	200	your choice
Default protection	0=[grp,*]	–1=[*,*], 1=[grp,prgm]
Stack size (minimum 256)	256	your choice
Link against Supervisor Mode library?	NO	YES
Is DECnet available	YES	NO
1=Flt_pt softw 2=FPP hardw 3=machine hardware decides at install	3	1=install FP SW, 2=omit FP SW
Allow future customization of this file?	YES	NO
Print release notes automatically?	NO	YES
Print the installation log automatically?	NO	YES

4.2 Mounting the Distribution Medium

To install DATATRIEVE–11, perform the following steps:

1. Log in to a privileged account. The installation procedure generates a log file, which will remain in your default login directory after you complete the installation. Therefore, it is no longer essential to use a hardcopy terminal to produce a record of your installation session.

2. Verify that no one on your system is performing an installation using Auto-Install.
3. Verify that no one else on your system is using a previously installed version of DATATRIEVE–11.
4. If Auto-Install is not already installed on your system, verify that you have 800 total free blocks of storage space available, including approximately 250 contiguous blocks for the largest component, for Auto-Install on the system device (specified by *sysdev* in the installation procedure).
5. Verify that you have sufficient disk space to install DATATRIEVE–11. Approximately 7200 free blocks are needed; approximately 6500 will be permanently used by the software. This must include three sets of contiguous free blocks, each approximately 400 blocks long, for the DATATRIEVE–11 task, the DDMF server, and the LCDDMF server.
6. Place your distribution medium in the drive.

   If your distribution medium is a disk, insert the disk in the drive and set the switch to the RUN position. Make certain that the ready light is lit.

   If your distribution medium is tape, load the tape according to the instructions for your drive. Set the ONLINE/OFFLINE indicator to ONLINE and make certain that the ready light is on.

   If your distribution medium is a TK50 tape cartridge, insert the tape into the drive according to the instructions for the drive, and close the cartridge-release button on the drive. Press the LOAD button and make certain the LOAD light comes on.
7. Installation should take approximately 30 to 45 minutes, depending on your system environment, your configuration, and the software options you select.

4.3 Installing and Verifying DATATRIEVE–11

DATATRIEVE–11 is installed using the Auto-Install software. If Auto-Install has not been installed on your system, you must do so before installing DATATRIEVE–11.

4.3.1 Installing Auto-Install

To install Auto-Install, type the following command:

```
$ RESTORE/REPLACE/ACCOUNT/END=NODISMOUNT indev:[1,2]AUT100.A AUTOIN$:*.*
```

Replace *indev* with the name of the device on which you allocated and mounted your distribution medium.

4.3.2 Invoking Auto-Install on RSTS/E

You can invoke Auto-Install with any one of the following commands:

1. `@AUTOIN$:AUTOIN.COM`
2. `@AUTOIN$:AUTOIN.COM DTR`
3. `@AUTOIN$:AUTOIN.COM indev:DTR`

Replace *indev* with the name of the device on which you allocated and mounted your distribution medium.

If you use command 1, the installation dialogue begins with step 1 in the following section.

If you use command 2, the installation dialogue begins with step 2.

If you use command 3, the installation dialogue begins with step 3.

4.3.3 Installation Dialogue

This section describes the installation dialogue that appears on your screen. The text that follows each question explains the answers to the question. These explanations do not appear in the actual installation dialogue.

The default answer appears at the end of each question, enclosed in angle brackets (< >). You can accept the default answer by typing it or by pressing RETURN.

Depending on how you invoked Auto-Install, you will enter the dialogue at step 1, step 2, or step 3.

1. `Which product(s) do you want to install?`

   In response to this prompt, type ''DTR,'' which is the product name for DATATRIEVE–11. Press CTRL/Z to exit from Auto-Install at this point.

2. `Where are the update files located <PATCH$:>?`

   If the name of the patch account is PATCH$, press RETURN. If the patch account is not named PATCH$, you must be prepared to specify a logical name defined as a device and directory. To exit from Auto-Install at this point, press CTRL/Z.

   If there are no update files for DATATRIEVE–11 in this installation, press RETURN. The following messages will appear:

   ```
   WARNING----No updates found for configuration data file; procedure
   continuing.

   WARNING----Update file DTR303.DAT not found at PATCH$:
              Kit files not updated; procedure continuing.
   ```

3. `Which device are the distribution files for DTR (DTR) located on (include colon)?`

   If you are installing DATATRIEVE–11 from a distribution kit, specify the drive on which you allocated and mounted the distribution disk or tape (in the form *ddnn*). If you are installing from an account on your system (for example, reinstalling an existing installation), specify DTR$. To exit from Auto-Install at this point, press CTRL/Z.

If you accept the default installation or have answered ''YES'' to the ''Allow future customization of this file?'' question during a previous installation, Auto-Install will issue the following question:

```
Do you want to customize DTR (DTR) (Y/N) <N>?
```

Type ''Y'' to customize your DATATRIEVE–11 installation.

Type ''N'' or press RETURN if you do not wish to customize DATATRIEVE–11.

The default may fulfill your system requirements. However, you may be able to improve performance by customizing. If you choose to customize DATATRIEVE–11, you are asked further questions.

If you have already customized DATATRIEVE–11 during a previous installation, or if you accept the default configuration, type ''N'' or press RETURN. The installation procedure will then skip all other questions pertaining to customization.

If you choose to customize, you will be asked further questions. Press RETURN to accept the default answer; press CTRL/Y to abort customization; press CTRL/Z to exit from customization but retain any changes made so far;

or type a new value. If a question has multiple choices for the answer, the choices will be listed in angle brackets (< >).

NOTE

The default answers given in angle brackets may be different if you have customized already by editing the configuration data file. The answers you provide in this file become the default answers in the installation procedure.

Some examples of questions you will be asked if you are customizing follow. See Table 4–1 for all the questions and possible responses.

```
Final holding area for kit files after installation <DTR$:>?
```

This is the device on which the distribution files will be stored when the installation is complete. Press RETURN if you want to store them on your default login device. Otherwise, enter the name of another device followed by a colon (:).

DATATRIEVE–11 has the option of using floating point emulation software if floating point processor hardware is not present on the machine. The following question determines whether to install floating point emulation software.

```
1=Flt_pt softw  2=FPP hardw  3=Machine hardware decides at instal
```

If you specify 1, the floating point emulation software is installed regardless of whether the machine includes the floating point hardware. If you specify 2, the floating point emulation software is omitted without determining whether the floating point processor hardware is present. The default, 3, specifies that the floating point emulation software is installed if, and only if, the machine does not contain floating point hardware; if the floating point hardware is present, DATATRIEVE–11 uses floating point instructions.

You can improve performance by increasing the pool space available to DATATRIEVE for internal data structures. To increase the amount of pool space, you must have Supervisor Mode RMS and the floating point processor available, and you must choose them at installation time. Using the floating point processor also improves the speed of DATATRIEVE floating point operations.

```
Allow future customization of this file <YES>?
```

If you would like to allow the configuration file to be customized during subsequent installations, press RETURN. If you would like to disable customization during subsequent installations, type ''N'' or ''NO.''

```
Print the release notes automatically <NO>?
```

If you do not want to print the release notes, press RETURN. To print them, type ''Y.''

```
Print the installation log automatically <NO>?
```

If you do not want to print the log file, press RETURN. To print it, type ''Y.''

```
Do you want to customize DTR again <Y/N><NO>?
```

Type ''Y'' if you want to change any of your answers to the customization questions. If not, press RETURN or type ''N.''

Once the contents of the configuration data file are complete, Auto-Install installs DATATRIEVE–11. Throughout the installation process, Auto-Install displays several informational messages. Following the installation, Auto-Install runs the Installation Verification Procedure (IVP) for DATATRIEVE–11.

4.3.4 Installation Verification Procedure

The Installation Verification Procedure (IVP) consists of a program with many DATATRIEVE tests. If the installation and IVP are successful, the following message is displayed on your terminal at the end of the installation procedure:

```
Successful completion of Installation test
```

If this message is not displayed on your terminal, an error has occurred in your installation. In this case, you must examine the installation output listing for error messages and correct the errors. For explanations of error messages issued by the installation procedure and possible remedial actions, see the operating system documentation.

Begin the installation procedure again, starting with the command that invokes Auto-Install.

When the IVP completes successfully, the following message appears on your terminal:

```
Installation of DTR (DTR) successful
```

4.3.5 Restart After Shutdown

The Command Control Language (CCL) command for DATATRIEVE–11 is defined as DTR by the Auto-Install procedure. If your system shuts down, redefine this CCL command using the following command:

```
$ DEFINE/COMMAND/SYSTEM DTR $DTR.TSK
```

4.4 Installation Files

Once installed on your system, DATATRIEVE–11 causes specific directories to be searched for the files it needs. If you move these files to a different location, be sure to restore the original directory configuration before installing a subsequent update. The installation procedure deletes intermediary files, so that the files remaining in the directory when the installation procedure is complete are those you will need for rebuilding DATATRIEVE–11.

Table 4–2 lists and describes the files you should see on your target disk after installation. Do not delete these files; the software needs them to function. You may delete the kit files from DTR$ (or another final holding area that you have specified) if you need disk space.

Table 4–2: RSTS/E DATATRIEVE–11 Software Components

File Name	PPN	File Purpose
DTRLIB.OLB	LB:	DATATRIEVE object library
DTCLIB.OLB	LB:	Call Interface object library
SETUP.DTR	[1,2]	DATATRIEVE setup file
DTRREL.DOC	[1,2]	Online release notes
OWNER.SEQ	[1,2]	Sample data file
PERSON.SEQ	[1,2]	Sample data file
YACHT.SEQ	[1,2]	Sample data file
YACHT.DAT	[1,2]	IVP data file
PERSON.DAT	[1,2]	IVP data file
OWNER.DAT	[1,2]	IVP data file

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Table 4–2 (Cont.): RSTS/E DATATRIEVE–11 Software Components

File Name	PPN	File Purpose
FAMILY.DAT	[1,2]	IVP data file
DTR.TSK	[1,2]	DATATRIEVE task image
DDMF.TSK	[1,2]	DATATRIEVE server task
LCDDMF.TSK	[1,2]	Local server
REMDTR.TSK	[1,2]	DATATRIEVE Remote Terminal Interface
QCPRS.TSK	[1,2]	Dictionary COMPRESS program
QXTR.TSK	[1,2]	Dictionary extract utility
QDICT.TSK	DTR$[1]	Dictionary build program
DTR11.TKB	DTR$[1]	DATATRIEVE task build command file
DTR11.ODL	DTR$[1]	DATATRIEVE overlay description file
DDM11.TKB	DTR$[1]	DATATRIEVE server task build command file
DDM11.ODL	DTR$[1]	DATATRIEVE server overlay description file
LCI11.TKB	DTR$[1]	DATATRIEVE local server task build command file
LCI11.ODL	DTR$[1]	DATATRIEVE local server overlay description file
RDRSTS.TKB	DTR$[1]	Remote Terminal Interface program task build command file
QCRSTS.TKB	DTR$[1]	COMPRESS program
QXRSTS.TKB	DTR$[1]	Dictionary extract utility command file
QDRSTS.TKB	DTR$[1]	Dictionary build program task build command file
QTRSTS.TKB	DTR$[1]	Dictionary conversion utility command file
MSGS.SEQ	DTR$[1]	Message file in distribution form
DTR.TST	DTR$[1]	IVP DATATRIEVE test file
DTRIVP.COM	DTR$[1]	IVP command file
DTRDTR.CFG	DTR$[1]	Configuration file

[1]Logical DTR$ is the default final holding area for kit files. You can change this to another logical location by responding to the question: ''Final holding area for kit files after instal''. See Section 4.1.1 for a more detailed explanation.

(continued on next page)

Table 4–2 (Cont.): RSTS/E DATATRIEVE–11 Software Components

File Name	PPN	File Purpose
DTR303.DAT	DTR$[1]	DATATRIEVE Version 3.3 file
DTRT.ODL	DTR$[1]	Main DATATRIEVE overlay description file
QUERY.DIC	[OPT]	Data dictionary
QUERY.MSG	[OPT]	Message file

[1]Logical DTR$ is the default final holding area for kit files. You can change this to another logical location by responding to the question: ''Final holding area for kit files after instal''. See Section 4.1.1 for a more detailed explanation.

4.5 Kit Contents

All kit files are copied over from the Auto-Install work area to the final holding area (that is, DTR$, unless otherwise specified) during the installation. They may be deleted if additional disk space is needed. If you delete them, you will have to use the distribution kit to do subsequent installations.

4.6 Accessing the Release Notes

The DATATRIEVE–11 release notes describe new features and known problems for this version of DATATRIEVE–11. Auto-Install automatically copies the release notes file from the distribution medium to directory [1,2] on your system disk and names it DTRREL.DOC. Once you have copied the release notes file to your directory, you can use the PRINT command to print it.

If you accept the default installation or answer ''YES'' to the question ''Print the release notes automatically?'' during the installation dialogue, Auto-Install will print the release notes file.

To copy the release notes file from the distribution medium prior to installing DATATRIEVE–11, enter the following command:

For disks:

```
$ RESTORE/REPLACE/END=NODISMOUNT indev:[1,2]DTRREL.BCK DTR$:*.*
```

For tapes:

```
$ RESTORE/REPLACE/REWIND/END=NODISMOUNT indev:DTRREL.BCK DTR$:*.*
```

Replace *indev:* with the device on which your distribution medium is allocated and mounted.

Chapter 5

Installing on a Micro/RSTS System

To install DATATRIEVE–11 on your Micro/RSTS system, use the installation procedure provided with your distribution kit. The installation procedure prompts you for information that you must supply to complete the installation. This section explains these prompts, the responses to them, and the other steps you must take to install DATATRIEVE–11.

Before you invoke the installation procedure, perform the following steps:

1. Log in to a privileged account.
2. Verify that no one on your system is using a previously installed version of DATATRIEVE–11.
3. Verify that you have sufficient disk space to install DATATRIEVE–11. Your system requires 2800 free blocks for installation. All of this space will be used permanently to contain the software.[1]
4. Verify that, within these 2800 blocks, you have 400 free blocks of contiguous storage for the DATATRIEVE–11 task and 375 free blocks for the LCDDMF task (the local call interface server). The remaining free blocks can be noncontiguous storage to the OTS library and other files.
5. Note that installation should take approximately 5 to 15 minutes, depending on your system environment, your configuration, and the software options you select during installation.

After completing these steps, you are ready to begin the installation. Mount the first floppy of the distribution medium on the appropriate device. Copy the release notes from the distribution medium and read them on line or print them. To copy the release notes, issue the following command:

[1] This block-count specification refers to the disk space required on your system disk. The sizes are approximations; actual sizes may vary depending on your system environment, your configuration, and the software options you select during installation.

```
$  RESTORE dev:[1,2]DTRREL.BCK *.*/END=NODISMOUNT
```

Replace *dev* with the device on which your distribution medium is mounted. The release notes are copied to your directory and named DTRREL.DOC.

To invoke the installation procedure, issue the following command:

```
$  @[0,1]INSTAL DTR
```

After all the files have been copied, the following message is displayed on your terminal:

```
         Reading config.DTR
```

Next you will have to respond to the following:

```
Enter 1, 2, or 3 to decide if Floating Point Emulation
      Software will be used or Floating Point
      Processor.  3 is the default.

1. Yes - include the floating point emulation code,
         regardless of what the hardware looks like.

2. No  - do not include the floating point emulation code,
         regardless of what the hardware looks like.

3. Let the procedure decide based on the state
   of the machine being installed on.

Enter 1, 2, or 3 <3>
```

The installation procedure installs DATATRIEVE–11 and runs the Installation Verification Procedure (IVP). The IVP is a program that tests the features of the DATATRIEVE–11 compiler and its Object Time System (OTS) to ensure that they are working properly. If the installation procedure is successful and the IVP completes successfully, the following message appears:

```
Installation of  DATATRIEVE-11 Successful
```

When this message appears, DATATRIEVE–11 is ready for use.

If the installation procedure fails, your system will issue an error message that identifies the reason for failure. For explanations of error messages issued by the installation procedure and suggestions for possible user actions to fix problems, consult the operating system manual for your system.

The Command Control Language (CCL) command for DATATRIEVE–11 is defined as DTR by the Auto-Install procedure. If your system shuts down, redefine this CCL command using the following command:

```
$  DEFINE/COMMAND/SYSTEM DTR $DTR.TSK
```

You may want to include this command in the startup file, [0,1]START.COM.

Table 5–1 lists the files you should see on your fixed disk after installation. [SYS] represents the system account, [SELF] represents your account, and DTR$ is the default location for kit files.

Table 5–1: Micro/RSTS DATATRIEVE–11 Software Components

File Name	PPN	File Purpose
DTCLIB.OLB	LB:	Call Interface object library
SETUP.DTR	LB:	DATATRIEVE setup file
OWNER.SEQ	[1,2]	Sample data file
PERSON.SEQ	[1,2]	Sample data file
YACHT.SEQ	[1,2]	Sample data file
FAMILY.DAT	[1,2]	Sample data file
YACHT.DAT	[1,2]	IVP data file
PERSON.DAT	[1,2]	IVP data file
OWNER.DAT	[1,2]	IVP data file
QUERY.DIC	[1,2]	Data dictionary
QUERY.MSG	[1,2]	Message file
DTR.TSK	[SYS]	DATATRIEVE task image
LCDDMF.TSK	[SYS]	Local server
QCPRS.TSK	[SYS]	Dictionary COMPRESS program
QXTR.TSK	[SYS]	Dictionary extract utility
DTRREL.DOC	DTR$	Online release notes
DTR.TST	[SELF]	IVP command file

Chapter 6

Installation on VMS with VAX–11 RSX

This chapter describes how to install DATATRIEVE–11 as a layered product on VMS with VAX–11 RSX, using VMSINSTAL.

VMSINSTAL is the command procedure that installs DATATRIEVE–11 on your VAX–11 RSX system. As the command procedure executes, it displays questions regarding installation options. This chapter explains these questions, their answers, and other steps you must take to install DATATRIEVE–11.

Default settings are provided for all the questions. If you want to accept a default, press RETURN.

6.1 License Registration

You must register DATATRIEVE–11 for VAX–11 RSX through the VMS License Management facility (LMF) in accordance with the license agreement for your site. The license registration you need is contained in the Product Authorization Key (PAK) that is shipped with DATATRIEVE–11 software. The PAK is a paper certificate that contains information about the license you have to run a particular piece of software; you will enter some of this information interactively when you register the license.

License registration must be completed before you begin the installation. During the installation dialogue, VMSINSTAL asks whether you have registered your DATATRIEVE–11 license and loaded the appropriate authorization key. If you install the product without having registered it, you will be unable to run the Installation Verification Procedure (IVP) or use the software.

To register a license under VMS, log into the system manager's account, SYSTEM, with the PAK certificate close at hand. Then do either of the following:

- Invoke the procedure SYS$UPDATE:VMSLICENSE.COM. It will prompt you for information from your PAK.
- Issue a LICENSE REGISTER command, appending the qualifiers that correspond to PAK information.

If you plan to use DATATRIEVE–11 on more than one node in a VAXcluster, you need to perform a license load on the other nodes after you have completed the installation.

For detailed information on using LMF, refer to the manual on the License Management Utility in the VMS documentation set.

6.2 Required Operating System Components

For a list of the required VMS classes, see the Software Support Addendum (SSA), which comes with the Software Product Description (SPD).

6.3 Preparing to Install DATATRIEVE–11 with VMSINSTAL

Before you invoke VMSINSTAL, do the following:

1. Log in to the system account.
2. Be sure you are running VMS Version 5.1 (or higher) and that the VAX–11 RSX Version 4.2 (or higher) product is installed.
3. Be sure the logical name SYS$DISK is assigned to the disk that contains the current version of VMS. This disk also contains the command procedure that initiates the new installation or update procedure. Note that SYS$DISK should not be SYS$SYSTEM.
4. If possible, alter your system so that it is operating in standalone mode. If you cannot do this, at least disable the help files and the currently-installed version of DATATRIEVE–11. This will prevent other user activity from interfering with your installation.

5. Verify that you have sufficient disk space to install DATATRIEVE–11. Your system requires approximately 3300 free blocks for installation. Of this, 2400 blocks will be used permanently by the software.[1]
6. Verify that, within these 3300 blocks, you have 275 free blocks of contiguous storage for the DATATRIEVE–11 task. The remaining free blocks can be noncontiguous storage; it is used to contain files such as the call interface libraries, the dictionary files, and message files.
7. Note that installation should take approximately 20 to 30 minutes, depending on your system environment, your configuration, and the software options you select during installation.
8. Issue the following command:

```
$  SET DEFAULT SYS$UPDATE
```

Release notes are copied automatically as part of the installation procedure. You can retrieve any release notes copied from the SYS$HELP directory. During the installation, you will receive a prompt asking if you want to print the release notes and how many copies you want to print. After installation, you can type or print the release notes from SYS$SYSTEM:DTR11.RELEASE_NOTES.

After completing these steps, you are ready to invoke the installation procedure.

6.4 Installing DATATRIEVE

To begin the installation, type the following command:

```
$  @VMSINSTAL DTR11033 dev:
```

Replace *dev* with the device in which you placed your distribution kit.

The installation procedure first checks to ensure that you are running it in standalone mode. If you are not, VMSINSTAL issues a warning message that identifies the active processes on your system. It also asks if you want to continue.

```
Do you want to continue anyway [NO]?
```

If you want to install DATATRIEVE–11 in standalone mode, press RETURN. The installation procedure stops, so you can reconfigure your system and reinvoke VMSINSTAL.

[1] This block-count specification refers to the disk space required on your system disk. The sizes are approximations; actual sizes may vary depending on your system environment, your configuration, and the software options you select during installation.

If you want to install DATATRIEVE–11 while processes are active on your system, type ''YES''.

VMSINSTAL then asks you if you are satisfied with the backup of your system disk.

```
Are you satisfied with the backup of your system disk [YES]?
```

If you are not satisfied, type ''NO''. VMSINSTAL will abort, and you can then backup your system disk. If you are satisfied, press RETURN or type ''YES''.

Once you have accepted the backup of your system disk, the following message appears:

```
Please mount the first volume of the set on dev:

Are you ready?
```

Place the first volume of your distribution kit in a free drive. Then, type ''YES'' to proceed. If you type ''NO'', VMSINSTAL will abort.

For each additional volume of your distribution kit, the installation procedure displays the following message:

```
%BACKUP-I-READYREAD, mount volume n on dev: for reading
Enter "Yes" when ready:
```

Place each volume in a free drive and type ''YES''. VMSINSTAL recognizes when you have mounted the correct number of volumes for your system and moves to the next step in installation. If you do not mount the correct number, VMSINSTAL aborts.

VMSINSTAL confirms that the entire distribution kit has been mounted; then, the following messages appear:

```
The following products will be processed:

DTR11 V3.3

Beginning installation of DTR11 V3.3 at hh:mm

%VMSINSTAL-I-RESTORE, Restoring product saveset A . . .
```

You will receive an information message indicating that the release notes have been copied to SYS$HELP.

You must have VMS Version 5.1 or higher on your system to proceed with the installation. The next prompt asks you to enter information concerning product licensing.

```
Product:       PDP11-DTR
Producer:      DEC
Version:       3.3
Release Date:  17-MAY-1989

Does this product have an authorization key registered and loaded?:
```

This prompt refers to the Product Authorization Key (PAK) that is provided in the DATATRIEVE–11 kit. You must verify that DATATRIEVE–11 has been registered correctly. If you have registered DATATRIEVE–11 using the PAK, type ''YES''. If not, type ''NO'' or press RETURN, and VMSINSTAL will discontinue the installation.

The next prompt identifies the release notes file.

```
This kit contains the file, DTR11033.RELEASE_NOTES, which is the release
notes for PDP--11 DATATRIEVE/VAX V3.3. This file is placed in SYS$HELP
after the installation.
```

This product includes a MACRO language file called QD.MAC that you can edit to customize DATATRIEVE–11 for querying. At this point in the installation, you can edit QD.MAC if you wish by spawning an edit process. The following shows how to enter and exit the process.

```
* Do you wish to Edit QD.MAC ? [YES]?
%DCL-S-SPAWNED, process SYSTEM_1 spawned
%DCL-S-ATTACHED, terminal now attached to process SYSTEM_1
```

The contents of the QD.MAC file are listed later in this chapter. You are advised to study this information to prepare your edits before you begin the installation.

Next, you are asked whether you want to run the Installation Verification Procedure (IVP) at this time. The IVP is a program that tests the features of DATATRIEVE–11 and its OTS to ensure that they are working properly.

If you accept the default, VMSINSTAL begins the IVP as soon as it completes installation. If you type ''NO'', VMSINSTAL stops after installation.

```
* Do you want to run the IVP after the installation [YES]?
```

Press RETURN or type ''YES'' if you want to run the IVP immediately following the installation. It is recommended that you do so, although you can run it separately at another time if you prefer.

The next prompt you receive asks the following:

```
Do you want to purge files replaced by this installation [YES]?
```

If you do not want to save any of the files from the previous version of DATATRIEVE–11, press RETURN. The files will be deleted during the installation procedure. However, if you want to save any files from the previous version, type ''NO''.

VMSINSTAL then completes the installation without asking you any more questions. Informational messages appear on your screen as VMSINSTAL finishes each step. Much of this information will be helpful if the installation does not go as expected.

If the IVP runs, output from it appears on your screen. When the IVP has completed successfully, VMSINSTAL displays a message informing you whether or not the installation was successful. After the IVP finishes running, terminate the installation procedure.

To terminate the installation procedure, enter ''EXIT'' in response to the following prompt:

```
Products:
```

If you are using the console device, VMSINSTAL displays the following message:

```
Please mount the console volume on dev:
Are you ready?
```

Mount the console volume in the console drive and type ''YES'' to continue. A message confirming the mounting of the console volume appears.

VMSINSTAL then signals termination with the following message:

```
VMSINSTAL procedure done at hh:mm
```

If this installation is successful, DATATRIEVE–11 is ready for use when the installation procedure is complete.

If the installation is not successful, consult the VMS installation documentation for possible causes of the failure.

6.5 Files Produced by Installation

Table 6–1 lists the files you should see on your target disk after installation. Do not modify files related to the resident library; the software requires the current versions. [SYS], [SYSTEST], and [SYSLIB] are system accounts; [OPT] represents an account that is defined by the installation.

Table 6–1: VAX–11 RSX DATATRIEVE–11 Software Components

File Name	UIC	File Purpose
SETUP.DTR	LB:[1,2]	DATATRIEVE setup file
FAMILY.DAT	LB:[1,2]	Sample data file
OWNER.SEQ	LB:[1,2]	Sample data file
PERSON.SEQ	LB:[1,2]	Sample data file
YACHT.SEQ	LB:[1,2]	Sample data file
YACHT.DAT	[SYSTEST]	IVP data file
PERSON.DAT	[SYSTEST]	IVP data file
OWNER.DAT	[SYSTEST]	IVP data file
DTR.TSK	[SYS]	DATATRIEVE task image
QCPRS.EXE	[SYS]	Dictionary COMPRESS program
QXTR.EXE	[SYS]	Dictionary extract utility
QDICT.EXE	[SYS]	Dictionary build program
QUERY.DIC	[OPT]	Data dictionary
QUERY.MSG	[OPT]	Message file
DTR.TST	[SYSTEST]	DATATRIEVE IVP command file
DTR11IVP.COM	[SYSTEST]	Invokes DATATRIEVE IVP command file
DTRLIB.OLB	[SYSLIB]	DATATRIEVE object library

6.6 Postinstallation Considerations

This section describes necessary and optional follow-up procedures to be considered.

6.6.1 Running the Installation Verification Procedure

Normally, you will run the Installation Verification Procedure (IVP) automatically, as an adjunct to the installation. You can run the IVP anytime after the installation as follows:

```
$ SET DEF SYS$TEST
$ @DTR11IVP.COM
```

The IVP data files are generated when you run the DTR11IVP command file, using sample data files that should be present in LB:[1,2].

6.6.2 License Load on Other VAXcluster Nodes

If you plan to use the installed DATATRIEVE–11 on more than one node in a VAXcluster, you must perform a license load on each node in the VAXcluster from which you plan to use DATATRIEVE–11. Refer to Section 6.1 for information about the license load procedure.

6.7 Contents of Query Description File QD.MAC

The following is a list of the Query Description file QD.MAC as provided with the software. You can edit this file to customize DATATRIEVE–11 for your system.

```
; COPYRIGHT (c) 1977, 1989
; DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS.
;
; THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED
; ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH THE
; INCLUSION OF THE ABOVE COPYRIGHT NOTICE.  THE SOFTWARE OR ANY OTHER
; COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY
; OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF THE SOFTWARE IS HEREBY
; TRANSFERRED.
;
; THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
; AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
; CORPORATION.
;
; DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
; SORTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
;
; February 83 Added parameter for record format, MSGLEN
;  Note: DICSIZ is now used as initial allocation quantity by QDICT

 .IDENT  /V03.03/


 .TITLE  QD  QUERY DICTIONARY DEFINITION

 .PSECT  QD

;
; The following two ASCII strings are used by both Datatrieve and the
; Datatrieve installation utility (QDICT) to identify the dictionary
; and the message files.  If these files are to reside other than in
; SYS$COMMON:[1,2], modify the following strings within the slashes (/).
;

QDNAM::         .ASCII  /LB:[1,2]QUERY.DIC/
QDNAML==.-QDNAM
QDINI::         .ASCII  /LB:[1,2]QUERY.DIC/

MSNAM::         .ASCII  /LB:[1,2]QUERY.MSG/
MSNAML==.-MSNAM
 .EVEN

QDNLEN:: .WORD QDNAML    ; Dynamic length field
```

```
FNAME:: .ASCII /DDMF.LOG/             ; Log file for the Server
FNAMS==.-FNAME          ; Length of log file
 .EVEN

;
; The following ASCII string is used by Datatrieve to
; identify the startup command file.
;

INIFIL::.ASCII  "SY:QUERY.INI"
INILEN==.-INIFIL


; To change the default in the following parameters,
; remove the leading semicolon from the desired value, and
; type a semicolon in front of the undesired parameter.

; THE FOLLOWING PARAMETER CONTROLS INPUT RECORD LENGTH CHECKING

CHKLEN==1   ; ISSUE WARNING MESSAGE FOR RECORD TOO SHORT
;CHKLEN==0   ; DON'T ISSUE WARNING MESSAGE


; THE FOLLOWING PARAMETER CONTROLS DEFAULT MONTH/DAY VS. DAY/MONTH

MMDD==1    ; "1/6" IS INTERPRETED AS JANUARY 6
;MMDD==0   ; "1/6" IS INTERPRETED AS JUNE 1


; THE FOLLOWING PARAMETER CONTROLS AUTOMATIC SPOOL ON RSX-11M ONLY

SPL11M==1   ; SPOOL ALL OUTPUT REFERENCES TO LP:
;SPL11M==0   ; SEND OUTPUT TO LP: DIRECTLY (NO ATTACH)


; THE FOLLOWING PARAMETER CONTROLS THE ACTION TAKEN FOR DIVIDE BY ZERO

DIV0==-1  ; ISSUE WARNING MESSAGE AND RETURN -1 AS VALUE
;DIV0==0  ; DON'T ISSUE WARNING MESSAGE AND RETURN 0 AS VALUE


; THE FOLLOWING PARAMETER CONTROLS THE TERMINAL TYPE FOR GUIDE MODE

TRMTYP==0  ; DETERMINE TERMINAL AT RUNTIME (VT52 OR VT100)
;TRMTYP==1  ; TERMINAL IS ASSUMED TO BE A VT52
;TRMTYP==2  ; TERMINAL IS ASSUMED TO BE A VT100


; THE FOLLOWING PARAMETER CONTROLS DISABLING OF ADT

ADTENA==0  ; ADT ENABLED
;ADTENA==1 ; ADT DISABLED

; The following parameter controls the default columns-page

COLPAG==80.

; The following parameter controls the record format for QDICT.

MSGLEN==0  ; Fixed Length Record Format.
;MSGLEN==1  ; Variable Length Record Format.

; The following parameter controls the default data dictionary size
; It is also used as the initial allocation quantity by QDICT.
```

```
DICSIZ==200.  ; 200 decimal blocks is the default dictionary
   ; size when you create a data dictionary in
   ; DATATRIEVE with the DEFINE DICTIONARY command.
   ; To change the default, replace 200 with the desired
   ; number of decimal blocks. All dictionaries created
   ; within DATATRIEVE-11 will have the new block
   ; allocation.


; This parameter determines the default protection which is to be assigned
; to new dictionary elements:

;QDPROT ==  -1  ; [*,*]
QDPROT  == 0  ; [group,*]
;QDPROT ==  1  ; [group,programmer]


; The following are global systems which are not defined on all operating
; systems:

IO.RTT==5001
SF.GMC==2560
TC.TTP==10
TC.WID==1
T.V100==15
EF.TNS==3
LN.TNS==16

 .END
```

Appendix A

Sample RSX–11M/M–PLUS Installation Log

```
RSX-11M/M-PLUS Auto-Install Procedure V1.0
          02-MAY-89    09:36:39

Type "?" for help; CTRL/Z to end; or valid input.
Which product(s) do you want to install? DTR
Type "?" for help; CTRL/Z to exit Auto-Install; or valid input.
Where are the update files located <DU0:>?
Type "?" for help; CTRL/Z to skip this product; or valid input.
Which device are the distribution files for DTR (DTR) located on (include colon)? MM0:
BRU - Start Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Complete
Products being installed:
    Device      Product Task name
    ------      ------- ---------
    MM0:        DTR     (DTR)
Determining system configuration.
BRU - Start Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Complete
WARNING -- no updates found for configuration data file; procedure continuing.
Do you want to customize DTR (DTR) (Y/N) <N>?  Y
Target device <LB:>?
Final holding area for kit files after instal <SY0:>?
Which directory do you want the DTR-11 task assigned to ([g,m]) <[1,54]>?
Name and location of dictionary <LB:[1,2]QUERY.DIC>?
```

```
Name and location of message file <LB:[1,2]QUERY.MSG>?
Name and location of startup command file <SY:QUERY.INI>?
Name and location of DDMF.LOG <SY:DDMF.LOG>?
Issue error messages for record too short <1=yes,0=no> <1>?
Interpret input date<1= 1/6 as Jan 6, 0= 1/6 as Jun 1> <1>?
Control spooling <0=send directly to LP:, 1=spool output, > <1>?
Divided by 0 warning <-1=yes, 0=no warning given> <-1>?
Terminal type <0=ask terminal at runtime, 1=VT52, 2=VT100> <0>?
Controls ADT <0=ADT enabled, 1=ADT disabled> <0>?
Set the default COLUMNS-PAGE <80>?
Message file organization <0=Fixed, 1=Variable> <0>?
Default size of dictionaries <200>?
Default protection <-1 [*,*], 0 [grp,*], 1 [grp,prgm]> <0>?
Stack size <minimum 256> <256>?
Link against Supervisor Mode library <NO, YES> <NO>?
Is DECnet available (YES/NO) <YES>?
1=Flt_pt Softw, 2=FPP Hardw, 3=Machine hardware decides at instal <3>?
Allow future customization of this file <YES>?
Print release notes automatically <NO>?
Print the installation log automatically <NO>?
Do you want to customize DTR (DTR) again (Y/N) <N>?

Installation of DTR (DTR) beginning at 02-MAY-89 09:39:20

Reading DTRDTR.CFG.
Transferring kit files to work area.
BRU - Start Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Complete
BRU - Start Tape 1 on MM0:
BRU - End of Tape 1 on MM0:
BRU - Complete
DMO -- TT0:  dismount from MM0: *** Final dismount initiated ***
*** MM0:  -- Dismount completed
Updating kit files.
WARNING -- update file DTR303.DAT not found at DU2:[222,200].
           Kit files not updated; procedure continuing.
```

```
Building product DTR (DTR).

Runing pre-processing for QD

Check system config

Building product DATATRIEVE-11

It will take approximately 30 minutes to build product DATATRIEVE

Module "QD    " replaced


Now build the Datatrieve-11 utilities

UNABLE TO CREATE NEW QUERY DICTIONARY,  FILE ALREADY EXISTS.
CREATING MESSAGE FILE
POPULATING MESSAGE FILE
SUCCESSFUL COMPLETION

Task-build Datatrieve-11

Copy task and library to correct accounts

Build local call interface

Install Datatrieve-11 task

Build the remote terminal interface

Build DDMF

Now copy appropriate files

Install the tasks and make DDMF DECnet object 30.


DATATRIEVE-11 installation procedure ended

Transferring files from work area.

Running IVP command procedure DTRIVP.CMD.

!
!  Start of DATATRIEVE-11 V3.3 Installation Test
!
!
! ***************************** N O T E ************************************
! *
! * This verification procedure will scroll on the screen for about 7 minutes. *
! *           ( No input is required from you during this time. )
! *
! ******************************************************************************
!
! PRINT TODAY'S DATE
!
PRINT "TODAY" USING DD-MMM-YYYYBBW(9)
02-MAY-1989  Tuesday
```

```
!
! CLEAN UP FROM POSSIBLE PREVIOUS RUNS OF TEST
!
DELETE FAMILIES;
DELETE FAMILY-REC;
DELETE KETCHES;
DELETE OWNERS-SEQUENTIAL;
DELETE OWNERS;
DELETE OWNER-RECORD;
DELETE SAILBOATS;
DELETE YACHTS-SEQUENTIAL;
DELETE YACHTS;
DELETE YACHT;
DELETE PRICE-PER-POUND;
DELETE VERIFY;
DELETE LOA-REPORT;
DELETE RIG-TABLE;
DELETE PERSONNEL;
DELETE PERSONNEL_SEQ;
DELETE PERSONNEL_REC;
DELETE PERSONNEL_SEQ_REC;
!
! DEFINE RECORD
!
DEFINE RECORD YACHT USING
01 BOAT.
  03 TYPE.
     06 MANUFACTURER PIC X(10)
        QUERY-NAME IS BUILDER.
     06 MODEL PIC X(10).
  03 SPECIFICATIONS
     QUERY-NAME SPECS.
     06 RIG PIC X(6)
        VALID IF RIG EQ "SLOOP","KETCH","MS","YAWL".
     06 LENGTH-OVER-ALL PIC XXX
        VALID IF LOA BETWEEN 15 AND 50
        QUERY-NAME IS LOA.
     06 DISPLACEMENT PIC 99999
        QUERY-HEADER IS "WEIGHT"
        EDIT-STRING IS ZZ,ZZ9
        QUERY-NAME IS DISP.
     06 BEAM PIC 99.
     06 PRICE PIC 99999
        VALID IF PRICE>DISP*1.3 OR PRICE EQ 0
        EDIT-STRING IS $$$,$$$.
;
[Record YACHT is 41 bytes long]
!
! DEFINE DOMAINS
!
DEFINE DOMAIN YACHTS-SEQUENTIAL USING YACHT ON LB:[1,2]YACHT.SEQ ;
DEFINE DOMAIN YACHTS USING YACHT ON YACHT.DAT;
!
! DEFINE THE ACTUAL FILE FOR YACHTS
!
DEFINE FILE YACHTS KEY=TYPE(NO DUP),KEY=MODEL(DUP,NO CHANGE),
       ALLOCATION=30, SUPERSEDE
!
! MAKE YACHTS ACCESSABLE BY OTHERS
```

```
!
DEFINEP YACHTS 2,PW,"SHHHH",W   ! PASSWORD FOR WRITE
DEFINEP YACHTS 3,UIC,[*,*],R    ! EVERYONE ELSE GETS READ
DEFINEP YACHT  2,UIC,[*,*],RE   ! GIVE ACCESS TO RECORD DEFINITION, TOO
SHOWP YACHTS
      1,UIC, [1,*], "RWMEC"
      2,PW, "SHHHH", "W"
      3,UIC, [*,*], "R"
!
! DEFINE PROCEDURES
!
DEFINE PROCEDURE PRICE-PER-POUND
PRICE/DISP ("PRICE"/"PER"/"POUND") USING $$.99
END-PROCEDURE
DEFINEP PRICE-PER-POUND 2,UIC,[*,*],RE
!
DEFINE PROCEDURE VERIFY
VERIFY USING
  BEGIN
     PRINT
     DISPLAY "CONFIRM WITH Y IF OK"
     IF *.CONFIRM NOT CONTAINING "Y" THEN ABORT "UPDATE ABORTED"
  END
END-PROCEDURE
DEFINEP VERIFY 2,UIC,[*,*],RE
!
! COPY DATA FROM SEQUENTIAL TO INDEXED FILE
!
READY YACHTS WRITE
SHOW FIELDS
YACHTS
    BOAT
        TYPE [Indexed field]
            MANUFACTURER (BUILDER)    [Character string, indexed key]
            MODEL       [Character string, indexed key]
        SPECIFICATIONS (SPECS)
            RIG [Character string]
            LENGTH_OVER_ALL (LOA)     [Character string]
            DISPLACEMENT (DISP) [Number]
            BEAM        [Number]
            PRICE       [Number]
READY YACHTS-SEQUENTIAL
SHOW READY
Ready domains:
        YACHTS_SEQUENTIAL: RMS SEQUENTIAL, PROTECTED READ
        YACHTS: RMS INDEXED, PROTECTED WRITE
!
! ************ NOTE  ***********
! *** The following STORE will take 1 - 2 minutes. ***
! ******************************
!
FOR YACHTS-SEQUENTIAL STORE YACHTS USING BOAT=BOAT
!
FINISH YACHTS-SEQUENTIAL;
!
! TEST STORE
!
! PLEASE SUPPLY THE FOLLOWING VALUES:
!    MANUFACTURER:       HINKLEY
```

```
!    MODEL:              BERMUDA 40
!    RIG:                YAWL
!    LENGTH-OVER-ALL:    140
!    LENGTH-OVER-ALL:    40
!    DISPLACEMENT:       20000
!    BEAM:               12
!    PRICE:              82000 AND XX/100
!    PRICE:              $82,000
!    CONFIRM:            N
!
STORE YACHTS USING BEGIN
       MANUFACTURER= "HINKLEY"
       MODEL = "BERMUDA 40"
       RIG = "YAWL"
       LENGTH-OVER-ALL = 40
       DISPLACEMENT= 20000
       BEAM = 12
       PRICE = 82000
       END
!
!
! CHANGE READY MODE FOR READ ACCESS
!
READY YACHTS
FIND YACHTS WITH PRICE NE 0
[51 records found]
SORT BY LOA,DESC DISPLACEMENT
SHOW ALL
Domains:
        YACHTS          YACHTS_SEQUENTIAL
Records:
        YACHT
Procedures:
        PRICE_PER_POUND VERIFY
Tables:
The current dictionary is SY:[1,1]QUERY.DIC
Collections:
       CURRENT
Ready domains:
        YACHTS: RMS INDEXED, PROTECTED READ
SHOW CURRENT
Collection CURRENT
        Domain: YACHTS
        Number of records: 51
        No selected record
        Sort order: LENGTH_OVER_ALL,DISPLACEMENT
PRINT ALL

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE
```

```
 WINDPOWER   IMPULSE    SLOOP   16       650  07   $3,500
 CAPE DORY   TYPHOON    SLOOP   19     1,900  06   $4,295
 VENTURE     21         SLOOP   21     1,500  07   $2,823
 VENTURE     222        SLOOP   22     2,000  07   $3,564
 EASTWARD    HO         MS      24     7,000  09  $15,900
 ISLANDER    BAHAMA     SLOOP   24     4,200  08   $6,500
 IRWIN       25         SLOOP   25     5,400  12  $10,950
 CAPE DORY   25         SLOOP   25     4,000  07   $8,995
 SALT        19         SLOOP   25     2,600  07   $6,590
 WESTERLY    CENTAUR    SLOOP   26     6,700  08  $15,245
 GRAMPIAN    26         SLOOP   26     5,600  08  $11,495
 AMERICAN    26-MS      MS      26     5,500  08  $18,895
 TANZER      26         SLOOP   26     4,350  09  $11,750
 ALBIN       79         SLOOP   26     4,200  10  $17,900
 AMERICAN    26         SLOOP   26     4,000  08   $9,895
 HUNTER      27         SLOOP   27     6,500  09  $14,999
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600
 CAPE DORY   28         SLOOP   28     9,000  09  $21,990
 SABRE       28         SLOOP   28     7,400  09  $22,000
 GRAMPIAN    28         SLOOP   28     6,900  10  $14,475
 TANZER      28         SLOOP   28     6,800  10  $17,500
 ISLANDER    28         SLOOP   28     5,994  10  $15,908
 NORTHERN    29         SLOOP   29     7,250  09  $20,975
 IRWIN       30         SLOOP   30    10,000  10  $19,950
 HUNTER      30         SLOOP   30     9,500  10  $21,500
 GRAMPIAN    30         SLOOP   30     8,600  09  $17,775
 ISLANDER    30         SLOOP   30     8,600  10  $20,990
 ALBIN       BALLAD     SLOOP   30     7,276  10  $27,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 BOMBAY      CLIPPER    SLOOP   31     9,400  11  $23,950
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480
 CHALLENGER  32         SLOOP   32    12,800  11  $31,835
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 BAYFIELD    30/32      SLOOP   32     9,500  10  $32,875
 GRAMPIAN    34         KETCH   33    12,000  10  $29,675
 GRAMPIAN    2-34       SLOOP   34    11,800  10  $29,675
 CARIBBEAN   35         SLOOP   35    18,000  11  $37,850
 CHRIS-CRAF  CARIBBEAN  SLOOP   35    18,000  11  $37,850
 CHALLENGER  35         SLOOP   35    14,800  12  $39,215
 I. TRADER   37         KETCH   36    18,600  12  $39,500
 ISLANDER    36         SLOOP   36    13,450  11  $31,730
 ALBERG      37 MK II   KETCH   37    20,000  12  $36,951
 IRWIN       37 MARK II KETCH   37    20,000  11  $36,950
 NORTHERN    37         KETCH   37    14,000  11  $50,000
 LINDSEY     39         MS      39    14,500  12  $35,900
 HINKLEY     BERMUDA 40 YAWL    40    20,000  12  $82,000
 CHALLENGER  41         KETCH   41    26,700  13  $51,228
 GULFSTAR    41         KETCH   41    22,000  12  $41,350
 ISLANDER    FREEPORT   KETCH   41    22,000  13  $54,970
 COLUMBIA    41         SLOOP   41    20,700  11  $48,490
 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500

SELECT FIRST
PRINT

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 WINDPOWER   IMPULSE    SLOOP   16       650  07   $3,500
```

```
SELECT
PRINT BOAT,:PRICE-PER-POUND

                               LENGTH                      PRICE
                                OVER                        PER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE   POUND

 CAPE DORY   TYPHOON    SLOOP   19     1,900  06   $4,295 $2.26

!
!
! DEFINE REPORT PROCEDURE
!
DEFINE PROCEDURE LOA-REPORT
REPORT ON TI:
   SET REPORT-NAME="JIM'S VERY OWN LISTING"/"OF"/"INTERESTING SAILBOATS"/
       "(BY LENGTH)"
   SET LINES-PAGE=55, COLUMNS-PAGE=72
   AT TOP OF LOA PRINT LOA("LENGTH")
   PRINT TYPE, RIG, DISP, BEAM USING Z9 , PRICE
   AT BOTTOM OF LOA PRINT SKIP, COL 32, "*** AVERAGE ***",
      AVERAGE DISP, AVERAGE BEAM, AVERAGE PRICE
   AT BOTTOM OF REPORT PRINT SKIP, "REPORT AVERAGES",
      AVERAGE DISP, AVERAGE BEAM, AVERAGE PRICE
   AT BOTTOM OF PAGE PRINT SKIP, COL 20,
      """ANOTHER SERVICE OF QUERY ENTERPRISES"""
END-REPORT
END-PROCEDURE
!
! INVOKE REPORT (SUGGEST OUTPUT ON TI:)
!
:LOA-REPORT


                        JIM'S VERY OWN LISTING
                                 OF
                        INTERESTING SAILBOATS                25-Apr-89
                             (BY LENGTH)                     Page 1

      LENGTH      MANUFACTURER    MODEL      RIG    WEIGHT  BEAM  PRICE

       16          WINDPOWER      IMPULSE     SLOOP      650    7   $3,500

                                 *** AVERAGE ***         650   07   $3,500
       19          CAPE DORY      TYPHOON     SLOOP    1,900    6   $4,295

                                 *** AVERAGE ***       1,900   06   $4,295
       21          VENTURE        21          SLOOP    1,500    7   $2,823

                                 *** AVERAGE ***       1,500   07   $2,823
       22          VENTURE        222         SLOOP    2,000    7   $3,564

                                 *** AVERAGE ***       2,000   07   $3,564
       24          EASTWARD       HO          MS       7,000    9  $15,900
                   ISLANDER       BAHAMA      SLOOP    4,200    8   $6,500

                                 *** AVERAGE ***       5,600   08  $11,200
       25          IRWIN          25          SLOOP    5,400   12  $10,950
                   CAPE DORY      25          SLOOP    4,000    7   $8,995
                   SALT           19          SLOOP    2,600    7   $6,590
```

		*** AVERAGE ***		4,000	08	$8,845
26	WESTERLY	CENTAUR	SLOOP	6,700	8	$15,245
	GRAMPIAN	26	SLOOP	5,600	8	$11,495
	AMERICAN	26-MS	MS	5,500	8	$18,895
	TANZER	26	SLOOP	4,350	9	$11,750
	ALBIN	79	SLOOP	4,200	10	$17,900
	AMERICAN	26	SLOOP	4,000	8	$9,895
		*** AVERAGE ***		5,058	08	$14,196
27	HUNTER	27	SLOOP	6,500	9	$14,999
	ALBIN	VEGA	SLOOP	5,070	8	$18,600
		*** AVERAGE ***		5,785	08	$16,799
28	CAPE DORY	28	SLOOP	9,000	9	$21,990
	SABRE	28	SLOOP	7,400	9	$22,000
	GRAMPIAN	28	SLOOP	6,900	10	$14,475
	TANZER	28	SLOOP	6,800	10	$17,500
	ISLANDER	28	SLOOP	5,994	10	$15,908
		*** AVERAGE ***		7,218	09	$18,374
29	NORTHERN	29	SLOOP	7,250	9	$20,975
		*** AVERAGE ***		7,250	09	$20,975
30	IRWIN	30	SLOOP	10,000	10	$19,950
	HUNTER	30	SLOOP	9,500	10	$21,500
	GRAMPIAN	30	SLOOP	8,600	9	$17,775

"ANOTHER SERVICE OF QUERY ENTERPRISES"

JIM'S VERY OWN LISTING
OF
INTERESTING SAILBOATS 25-Apr-89
(BY LENGTH) Page 2

LENGTH	MANUFACTURER	MODEL	RIG	WEIGHT	BEAM	PRICE
	ISLANDER	30	SLOOP	8,600	10	$20,990
	ALBIN	BALLAD	SLOOP	7,276	10	$27,500
		*** AVERAGE ***		8,795	09	$21,543
31	RYDER	S. CROSS	SLOOP	13,600	0	$32,500
	BOMBAY	CLIPPER	SLOOP	9,400	11	$23,950
		*** AVERAGE ***		11,500	05	$28,225
32	WRIGHT	SEAWIND II	SLOOP	14,900	0	$34,480
	CHALLENGER	32	SLOOP	12,800	11	$31,835
	O'DAY	32	SLOOP	11,000	0	$29,500
	BAYFIELD	30/32	SLOOP	9,500	10	$32,875
		*** AVERAGE ***		12,050	05	$32,172
33	GRAMPIAN	34	KETCH	12,000	10	$29,675
		*** AVERAGE ***		12,000	10	$29,675
34	GRAMPIAN	2-34	SLOOP	11,800	10	$29,675
		*** AVERAGE ***		11,800	10	$29,675
35	CARIBBEAN	35	SLOOP	18,000	11	$37,850
	CHRIS-CRAF	CARIBBEAN	SLOOP	18,000	11	$37,850
	CHALLENGER	35	SLOOP	14,800	12	$39,215

```
                          *** AVERAGE ***      16,933   11  $38,305
      36          I. TRADER    37          KETCH   18,600   12  $39,500
                  ISLANDER     36          SLOOP   13,450   11  $31,730

                          *** AVERAGE ***      16,025   11  $35,615
      37          ALBERG       37 MK II    KETCH   20,000   12  $36,951
                  IRWIN        37 MARK II  KETCH   20,000   11  $36,950
                  NORTHERN     37          KETCH   14,000   11  $50,000

                          *** AVERAGE ***      18,000   11  $41,300
      39          LINDSEY      39          MS      14,500   12  $35,900

                          *** AVERAGE ***      14,500   12  $35,900
      40          HINKLEY      BERMUDA 40  YAWL    20,000   12  $82,000

                          *** AVERAGE ***      20,000   12  $82,000
      41          CHALLENGER   41          KETCH   26,700   13  $51,228
                  GULFSTAR     41          KETCH   22,000   12  $41,350
                  ISLANDER     FREEPORT    KETCH   22,000   13  $54,970
                  COLUMBIA     41          SLOOP   20,700   11  $48,490

                          *** AVERAGE ***      22,850   12  $49,009

                  "ANOTHER SERVICE OF QUERY ENTERPRISES"


                        JIM'S VERY OWN LISTING
                                OF
                        INTERESTING SAILBOATS                25-Apr-89
                             (BY LENGTH)                     Page 3

     LENGTH      MANUFACTURER    MODEL      RIG    WEIGHT  BEAM  PRICE

      42          OLYMPIC      ADVENTURE   KETCH   24,250   13  $80,500

                          *** AVERAGE ***      24,250   13  $80,500

 REPORT AVERAGES                                   10,597   09  $26,498

                  "ANOTHER SERVICE OF QUERY ENTERPRISES"


!
! RATTLE UPDATE
!
FIND YACHTS WITH BEAM=0
[5 records found]
PRINT ALL

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 TA CHIAO    FANTASIA   SLOOP   35    23,200  00
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480

SELECT FIRST;PRINT
```

```
                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00

READY YACHTS MODIFY
!
! RESPOND WITH 47 (OR SOMETHING)
!
MODIFY USING BEAM = 47
PRINT TYPE,BEAM

MANUFACTURER   MODEL    BEAM

 METALMAST   GALAXY      47

!
! RESPOND WITH 48 (OR SOMETHING)
!
MODIFY ALL USING  BEAM = 48
!
PRINT ALL BEAM

BEAM

 48
 48
 48
 48
 48

!
! RESPOND EACH TIME WITH 0 (PLEASE)
!
FOR CURRENT PRINT TYPE THEN MODIFY USING BEAM = 0

MANUFACTURER   MODEL

 METALMAST   GALAXY
 O'DAY       32
 RYDER       S. CROSS
 TA CHIAO    FANTASIA
 WRIGHT      SEAWIND II

READY YACHTS READ
PRINT ALL

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 TA CHIAO    FANTASIA   SLOOP   35    23,200  00
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480
```

```
!
! CHECK MULTIPLE COLLECTIONS AND STATISTICAL FUNCTIONS
!
FIND SMALLS IN YACHTS WITH LOA<24 AND PRICE NE 0
[4 records found]
!
FIND BIGGIES IN YACHTS WITH LOA>40 AND PRICE NE 0
[5 records found]
!
SHOW COLLECTIONS
Collections:
        BIGGIES (also CURRENT)
        SMALLS
!
PRINT AVERAGE DISP

WEIGHT

23,130

!
PRINT MAX DISP

WEIGHT

26,700

!
PRINT AVERAGE PRICE OF BIGGIES,AVERAGE PRICE OF SMALLS

 PRICE   PRICE

$55,307  $3,545

!
SORT SMALLS BY LOA,DISP
SORT BIGGIES BY LOA,DISP
SELECT FIRST SMALLS
SELECT LAST BIGGIES
PRINT SMALLS.BOAT,SKIP,BIGGIES.BOAT

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 WINDPOWER   IMPULSE    SLOOP   16       650  07   $3,500
 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500

!
!
PRINT YACHTS WITH LOA EQ MAX LOA OF YACHTS

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500
 PEARSON     419        KETCH   42    21,000  13
```

```
!
! TEST OF HIERARCHIES AND VIEW
!
DEFINE DOMAIN FAMILIES
 USING FAMILY-REC ON LB:[1,2]FAMILY.DAT;
DEFINE RECORD FAMILY-REC
01 FAMILY.
   03 PARENTS.
      06 FATHER PIC X(10).
      06 MOTHER PIC X(10).
   03 NUMBER-KIDS PIC 99 EDIT-STRING IS Z9.
   03 KIDS OCCURS 0 TO 10 TIMES DEPENDING ON NUMBER-KIDS.
      06 EACH-KID.
         09 KID-NAME PIC X(10) QUERY-NAME IS KID.
         09 AGE PIC 99 EDIT-STRING IS Z9.
;
[Record FAMILY_REC is 142 bytes long]
!
! PERFORM A FEW NIFTY OPERATIONS ON FAMILIES
!
READY FAMILIES
SHOW FIELDS FOR FAMILIES
 FAMILY
     PARENTS
         FATHER [Character string]
         MOTHER [Character string]
     NUMBER_KIDS     [Number]
     KIDS [List]
         EACH_KID
             KID_NAME (KID)   [Character string]
             AGE      [Number]
PRINT FAMILIES

                      NUMBER    KID
  FATHER     MOTHER    KIDS     NAME    AGE
```

```
JIM         ANN           2   URSULA      7
                              RALPH       3
JIM         LOUISE        5   ANNE       31
                              JIM        29
                              ELLEN      26
                              DAVID      24
                              ROBERT     16
JOHN        JULIE         2   ANN        29
                              JEAN       26
JOHN        ELLEN         1   CHRISTOPHR  0
ARNIE       ANNE          2   SCOTT       2
                              BRIAN       0
SHEARMAN    SARAH         1   DAVID       0
TOM         ANNE          2   PATRICK     4
                              SUZIE       6
BASIL       MERIDETH      6   BEAU       28
                              BROOKS     26
                              ROBIN      24
                              JAY        22
                              WREN       17
                              JILL       20
ROB         DIDI          0
JEROME      RUTH          4   ERIC       32
                              CISSY      24
                              NANCY      22
                              MICHAEL    20
TOM         BETTY         2   MARTHA     30
                              TOM        27
GEORGE      LOIS          3   JEFF       23
                              FRED       26
                              LAURA      21
HAROLD      SARAH         3   CHARLIE    31
                              HAROLD     35
                              SARAH      27
EDWIN       TRINITA       2   ERIC       16
                              SCOTT      11

FIND FAMILIES WITH ANY KIDS WITH AGE>25
[7 records found]
PRINT ALL SKIP, PARENTS, ALL KIDS SORTED BY AGE

                          KID
  FATHER      MOTHER      NAME    AGE

JIM         LOUISE      ROBERT     16
                        DAVID      24
                        ELLEN      26
                        JIM        29
                        ANNE       31

JOHN        JULIE       JEAN       26
                        ANN        29

BASIL       MERIDETH    WREN       17
                        JILL       20
                        JAY        22
                        ROBIN      24
                        BROOKS     26
                        BEAU       28
```

```
JEROME     RUTH       MICHAEL    20
                      NANCY      22
                      CISSY      24
                      ERIC       32

TOM        BETTY      TOM        27
                      MARTHA     30

GEORGE     LOIS       LAURA      21
                      JEFF       23
                      FRED       26

HAROLD     SARAH      SARAH      27
                      CHARLIE    31
                      HAROLD     35

FINISH
!
! DEFINE A VIEW OF THE DOMAIN YACHTS
!
DEFINE DOMAIN KETCHES
 OF YACHTS BY
01 KETCH OCCURS FOR YACHTS WITH RIG EQ "KETCH".
  03 TYPE FROM YACHTS.
  03 LOA FROM YACHTS.
  03 PRICE FROM YACHTS.
;
!
! SHOW OFF KETCHES
!
READY KETCHES
PRINT KETCHES

                       LENGTH
                        OVER
MANUFACTURER   MODEL     ALL    PRICE

 ALBERG      37 MK II    37    $36,951
 CHALLENGER  41          41    $51,228
 FISHER      30          30
 FISHER      37          37
 GRAMPIAN    34          33    $29,675
 GULFSTAR    41          41    $41,350
 I. TRADER   37          36    $39,500
 IRWIN       37 MARK II  37    $36,950
 ISLANDER    FREEPORT    41    $54,970
 NORTHERN    37          37    $50,000
 OLYMPIC     ADVENTURE   42    $80,500
 PEARSON     365         36
 PEARSON     419         42
```

```
FINISH
!
! DEFINE A DOMAIN AND FILE OF SAILBOAT OWNERS
!
DEFINE DOMAIN OWNERS
 USING OWNER-RECORD ON OWNER.DAT;
DEFINE RECORD OWNER-RECORD
01 OWNER.
   03 NAME PIC X(10) QUERY-HEADER IS "OWNER"/"NAME"
      EDIT-STRING IS X(5).
   03 BOAT-NAME PIC X(17) QUERY-HEADER IS "BOAT NAME".
   03 TYPE.
      06 BUILDER PIC X(10).
      06 MODEL PIC X(10).
;
[Record OWNER_RECORD is 47 bytes long]
DEFINE DOMAIN OWNERS-SEQUENTIAL USING OWNER-RECORD ON LB:[1,2]OWNER.SEQ;
DEFINE FILE FOR OWNERS KEY=TYPE(DUP), SUPERSEDE
READY OWNERS WRITE
READY OWNERS-SEQUENTIAL
!
! ************ NOTE  ***********
! *** The following STORE will take about 1/2 minute. ***
! ******************************
!
FOR OWNERS-SEQUENTIAL STORE OWNERS USING OWNER=OWNER
FINISH OWNERS-SEQUENTIAL
!
! PRINT OUT THE OWNERS FILE
!
PRINT OWNERS

OWNER
NAME      BOAT NAME      BUILDER     MODEL

SHERM MILLENNIUM FALCON ALBERG     35
STEVE DELIVERANCE       ALBIN      VEGA
HUGH  IMPULSE           ALBIN      VEGA
JIM   EGRET             C&C        CORVETTE
ANN   EGRET             C&C        CORVETTE
BOB   FIESTA            CAL        28
JIM   REGRET            CHEAP      DINK
NEIL  JARGES PRIDE      CROCKER    33
GERAR KESTREL           ERICSON    39
ARNE  CHIMERA           HINKLEY    BERMUDA 40
JIM   POTEMKIN          ISLANDER   BAHAMA
ANN   POTEMKIN          ISLANDER   BAHAMA
STEVE POTEMKIN          ISLANDER   BAHAMA
HARVE MANANA            ISLANDER   BAHAMA
TOM   LONE TRAVELLER    PEARSON    10M
DICK  PURSUIT           PEARSON    26
CHRIS VANITY            PEARSON    ARIEL
JOHN  STRIDER           RHODES     SWIFTSURE
```

```
FINISH
!
! DEFINE THE MIGHTY, MULTIPLE FILE VIEW OF YACHTS AND OWNERS
!
DEFINE DOMAIN SAILBOATS
 OF YACHTS, OWNERS BY
01 SAILBOAT OCCURS FOR YACHTS.
   03 BOAT FROM YACHTS.
   03 SKIPPERS OCCURS FOR OWNERS WITH TYPE EQ BOAT.TYPE.
      05 NAME FROM OWNERS.
;
!
! EXERCISE SAILBOATS A LITTLE
!
READY SAILBOATS
SHOW FIELDS
SAILBOATS
    SAILBOAT
        BOAT
            TYPE [Indexed field]
                MANUFACTURER (BUILDER) [Character string, indexed key]
                MODEL [Character string, indexed key]
            SPECIFICATIONS (SPECS)
                RIG   [Character string]
                LENGTH_OVER_ALL (LOA)  [Character string]
                DISPLACEMENT (DISP)    [Number]
                BEAM    [Number]
                PRICE   [Number]
        SKIPPERS [List]
            NAME        [Character string]
PRINT FIRST 5 SAILBOATS

                              LENGTH
                               OVER                          OWNER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  NAME

 ALBERG      37 MK II   KETCH   37    20,000  12  $36,951
 ALBIN       79         SLOOP   26     4,200  10  $17,900
 ALBIN       BALLAD     SLOOP   30     7,276  10  $27,500
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600 STEVE
                                                           HUGH
 AMERICAN    26         SLOOP   26     4,000  08   $9,895

FIND SAILBOATS WITH ANY SKIPPERS
[7 records found]
PRINT ALL

                              LENGTH
                               OVER                          OWNER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  NAME
```

```
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600 STEVE
                                                          HUGH
 C&C         CORVETTE   SLOOP   31     8,650  09          JIM
                                                          ANN
 HINKLEY     BERMUDA 40 YAWL    40    20,000  12  $82,000 ARNE
 ISLANDER    BAHAMA     SLOOP   24     4,200  08   $6,500 JIM
                                                          ANN
                                                          STEVE
                                                          HARVE
 PEARSON     10M        SLOOP   33    12,441  11          TOM
 PEARSON     26         SLOOP   26     5,400  08          DICK
 RHODES      SWIFTSURE  SLOOP   33    14,000  10          JOHN

!
! CHECK OUT TABLES
!
DEFINE TABLE RIG-TABLE
"SLOOP" : "ONE MAST",
"KETCH" : "TWO MASTS, BIG ONE IN FRONT",
"YAWL"  : "SIMILAR TO KETCH",
"M/S"   : "SAILS AND BIG MOTOR",
ELSE "SOMETHING ELSE"
END-TABLE
!
READY YACHTS
FIND YACHTS WITH RIG IN RIG-TABLE
[109 records found]
PRINT ALL TYPE, RIG, RIG VIA RIG-TABLE USING X(30)

MANUFACTURER   MODEL     RIG                RIG

 ALBERG      37 MK II   KETCH  TWO MASTS, BIG ONE IN FRONT
 ALBIN       79         SLOOP  ONE MAST
 ALBIN       BALLAD     SLOOP  ONE MAST
 ALBIN       VEGA       SLOOP  ONE MAST
 AMERICAN    26         SLOOP  ONE MAST
 BAYFIELD    30/32      SLOOP  ONE MAST
 BLOCK I.    40         SLOOP  ONE MAST
 BOMBAY      CLIPPER    SLOOP  ONE MAST
 BUCCANEER   270        SLOOP  ONE MAST
 BUCCANEER   320        SLOOP  ONE MAST
 C&C         CORVETTE   SLOOP  ONE MAST
 CABOT       36         SLOOP  ONE MAST
 CAL         2-27       SLOOP  ONE MAST
 CAL         2-34       SLOOP  ONE MAST
 CAL         29         SLOOP  ONE MAST
 CAL         3-30       SLOOP  ONE MAST
 CAL         35         SLOOP  ONE MAST
 CAPE DORY   25         SLOOP  ONE MAST
 CAPE DORY   28         SLOOP  ONE MAST
 CAPE DORY   TYPHOON    SLOOP  ONE MAST
 CAPITAL     NEWPORT    SLOOP  ONE MAST
 CARIBBEAN   35         SLOOP  ONE MAST
 CHALLENGER  32         SLOOP  ONE MAST
 CHALLENGER  35         SLOOP  ONE MAST
 CHALLENGER  41         KETCH  TWO MASTS, BIG ONE IN FRONT
 CHRIS-CRAF  CARIBBEAN  SLOOP  ONE MAST
 COLUMBIA    35         SLOOP  ONE MAST
 COLUMBIA    41         SLOOP  ONE MAST
 COLUMBIA    PAYNE 9.6  SLOOP  ONE MAST
```

```
DOUGLAS     32          SLOOP  ONE MAST
DOWN EAST   32          SLOOP  ONE MAST
DOWN EAST   38          SLOOP  ONE MAST
DUFOUR      25          SLOOP  ONE MAST
ENCHILADA   20          SLOOP  ONE MAST
ENDEAVOUR   32          SLOOP  ONE MAST
ERICSON     23/ SPECIA SLOOP  ONE MAST
ERICSON     CRUISING/3 SLOOP  ONE MAST
FISHER      30          KETCH  TWO MASTS, BIG ONE IN FRONT
FISHER      37          KETCH  TWO MASTS, BIG ONE IN FRONT
GRAMPIAN    2-34        SLOOP  ONE MAST
GRAMPIAN    26          SLOOP  ONE MAST
GRAMPIAN    28          SLOOP  ONE MAST
GRAMPIAN    30          SLOOP  ONE MAST
GRAMPIAN    34          KETCH  TWO MASTS, BIG ONE IN FRONT
GULFSTAR    41          KETCH  TWO MASTS, BIG ONE IN FRONT
HINKLEY     BERMUDA 40 YAWL   SIMILAR TO KETCH
HUNTER      27          SLOOP  ONE MAST
HUNTER      30          SLOOP  ONE MAST
I. TRADER   37          KETCH  TWO MASTS, BIG ONE IN FRONT
IRWIN       25          SLOOP  ONE MAST
IRWIN       30          SLOOP  ONE MAST
IRWIN       37 MARK II KETCH  TWO MASTS, BIG ONE IN FRONT
IRWIN       HALF TON    SLOOP  ONE MAST
ISLANDER    28          SLOOP  ONE MAST
ISLANDER    30          SLOOP  ONE MAST
ISLANDER    36          SLOOP  ONE MAST
ISLANDER    BAHAMA      SLOOP  ONE MAST
ISLANDER    FREEPORT    KETCH  TWO MASTS, BIG ONE IN FRONT
MARIEHOLD   32          SLOOP  ONE MAST
METALMAST   GALAXY      SLOOP  ONE MAST
MOODY       33          SLOOP  ONE MAST
NAUTOR      SWAN 41     SLOOP  ONE MAST
NEWPORT     27S         SLOOP  ONE MAST
NEWPORT     30 II       SLOOP  ONE MAST
NEWPORT     41 S        SLOOP  ONE MAST
NICHOLSON   33          SLOOP  ONE MAST
NORTHERN    29          SLOOP  ONE MAST
NORTHERN    37          KETCH  TWO MASTS, BIG ONE IN FRONT
O'DAY       27          SLOOP  ONE MAST
O'DAY       32          SLOOP  ONE MAST
OLYMPIC     ADVENTURE   KETCH  TWO MASTS, BIG ONE IN FRONT
ONTARIO     32          SLOOP  ONE MAST
ONTARIO     VIKING      SLOOP  ONE MAST
PACESHIP    PY26        SLOOP  ONE MAST
PEARSON     10M         SLOOP  ONE MAST
PEARSON     26          SLOOP  ONE MAST
PEARSON     26W         SLOOP  ONE MAST
PEARSON     28          SLOOP  ONE MAST
PEARSON     30          SLOOP  ONE MAST
PEARSON     35          SLOOP  ONE MAST
PEARSON     36          SLOOP  ONE MAST
PEARSON     365         KETCH  TWO MASTS, BIG ONE IN FRONT
PEARSON     39          SLOOP  ONE MAST
PEARSON     419         KETCH  TWO MASTS, BIG ONE IN FRONT
RANGER      26          SLOOP  ONE MAST
RANGER      28          SLOOP  ONE MAST
RANGER      29          SLOOP  ONE MAST
RANGER      33          SLOOP  ONE MAST
```

```
 RHODES      SWIFTSURE  SLOOP  ONE MAST
 ROBERTS     29         SLOOP  ONE MAST
 ROBERTS     36         SLOOP  ONE MAST
 RYDER       S. CROSS   SLOOP  ONE MAST
 S2          8M AFT     SLOOP  ONE MAST
 S2          8M MID     SLOOP  ONE MAST
 SABRE       28         SLOOP  ONE MAST
 SALT        19         SLOOP  ONE MAST
 SAN JUAN    21         SLOOP  ONE MAST
 SAN JUAN    26         SLOOP  ONE MAST
 SCAMPI      30         SLOOP  ONE MAST
 SOLNA CORP  SCAMPI     SLOOP  ONE MAST
 TA CHIAO    FANTASIA   SLOOP  ONE MAST
 TANZER      26         SLOOP  ONE MAST
 TANZER      28         SLOOP  ONE MAST
 VENTURE     21         SLOOP  ONE MAST
 VENTURE     222        SLOOP  ONE MAST
 WESTERLY    CENTAUR    SLOOP  ONE MAST
 WESTSAIL    32         SLOOP  ONE MAST
 WINDPOWER   IMPULSE    SLOOP  ONE MAST
 WRIGHT      SEAWIND II SLOOP  ONE MAST

SHOW TABLES
Tables loaded:
        RIG_TABLE
Tables:
        RIG_TABLE
!
! DECLARE A GLOBAL VARIABLE TO SIMPLIFY TABLE LOOK UP
!

DECLARE RIG-DESCRIPTION COMPUTED BY RIG VIA RIG-TABLE
        EDIT-STRING IS X(30).
!
PRINT TYPE, RIG-DESCRIPTION OF FIRST 10 YACHTS

                                    RIG
MANUFACTURER   MODEL             DESCRIPTION

 ALBERG      37 MK II   TWO MASTS, BIG ONE IN FRONT
 ALBIN       79         ONE MAST
 ALBIN       BALLAD     ONE MAST
 ALBIN       VEGA       ONE MAST
 AMERICAN    26         ONE MAST
 AMERICAN    26-MS      SOMETHING ELSE
 BAYFIELD    30/32      ONE MAST
 BLOCK I.    40         ONE MAST
 BOMBAY      CLIPPER    ONE MAST
 BUCCANEER   270        ONE MAST
```

```
!
! RELEASE TABLE AND GLOBAL COMPUTED BY VARIABLE FROM MEMORY
!
RELEASE RIG-TABLE
FINISH
!
! Define Record for PERSONNEL
!
DEFINE RECORD PERSONNEL_REC USING
01  PERSON.
    05 ID                   PIC IS 9(5).
    05 EMPLOYEE_STATUS      PIC IS X(11)
                            QUERY_NAME IS STATUS
                            QUERY_HEADER IS "STATUS"
                            VALID IF STATUS EQ "TRAINEE","EXPERIENCED".
    05 EMPLOYEE_NAME        QUERY_NAME IS NAME.
        10 FIRST_NAME           PIC IS X(10)
                               QUERY_NAME IS F_NAME.
        10 LAST_NAME            PIC IS X(10)
                               QUERY_NAME IS L_NAME.
    05 DEPT                 PIC IS XXX.
    05 START_DATE           USAGE IS DATE.
    05 SALARY               PIC IS 9(5)
                            EDIT_STRING IS $$$,$$$.
    05 SUP_ID               PIC IS 9(5).
;
[Record PERSONNEL_REC is 58 bytes long]
!
! Define Record for PERSONNEL_SEQ
!
DEFINE RECORD PERSONNEL_SEQ_REC
 USING
01  PERSON.
    05 ID                   PIC IS 9(5).
    05 EMPLOYEE_STATUS      PIC IS X(11)
                            QUERY_NAME IS STATUS
                            QUERY_HEADER IS "STATUS"
                            VALID IF STATUS EQ "TRAINEE","EXPERIENCED".
    05 EMPLOYEE_NAME        QUERY_NAME IS NAME.
        10 FIRST_NAME           PIC IS X(10)
                               QUERY_NAME IS F_NAME.
        10 LAST_NAME            PIC IS X(10)
                               QUERY_NAME IS L_NAME.
    05 DEPT                 PIC IS XXX.
    05 START_DATE           PIC IS X(11).
    05 SALARY               PIC IS 9(5)
                            EDIT_STRING IS $$$,$$$.
    05 SUP_ID               PIC IS 9(5).
;
[Record PERSONNEL_SEQ_REC is 60 bytes long]
!
! Define Domain for PERSONNEL
!
DEFINE DOMAIN PERSONNEL USING PERSONNEL_REC ON PERSON.DAT;
!
! Define Domain for PERSONNEL_SEQ
!
DEFINE DOMAIN PERSONNEL_SEQ USING PERSONNEL_SEQ_REC ON LB:[1,2]PERSON.SEQ;
!
```

```
! Define File for PERSONNEL
!
DEFINE FILE FOR PERSONNEL KEY=ID, SUPERCEDE;
!
! Copy Data from Sequential to Indexed File.
!
READY PERSONNEL WRITE
SHOW FIELDS
PERSONNEL
    PERSON
        ID     [Number, indexed key]
        EMPLOYEE_STATUS (STATUS)      [Character string]
        EMPLOYEE_NAME (NAME)
            FIRST_NAME (F_NAME) [Character string]
            LAST_NAME (L_NAME)  [Character string]
        DEPT   [Character string]
        START_DATE    [Date]
        SALARY [Number]
        SUP_ID [Number]
Global variables:
    RIG_DESCRIPTION  [Computed value]
READY PERSONNEL_SEQ
SHOW READY
Ready domains:
        PERSONNEL_SEQ: RMS SEQUENTIAL, PROTECTED READ
        PERSONNEL: RMS INDEXED, PROTECTED WRITE
!
!
! ************ NOTE  ***********
! *** The following STORE will take about 1/2 minute. ***
! ******************************
!
FOR PERSONNEL_SEQ STORE PERSONNEL USING PERSON=PERSON
!
FINISH PERSONNEL_SEQ;
!
! Check out PERSONNEL
!
READY PERSONNEL
FIND PERSONNEL
[23 records found]
PRINT
No record selected, printing whole collection

                    FIRST       LAST            START             SUP
 ID     STATUS       NAME       NAME    DEPT    DATE     SALARY   ID
```

```
00012 EXPERIENCED CHARLOTTE  SPIVA      TOP  12-Sep-1972 $75,892 00012
00891 EXPERIENCED FRED       HOWL       F11  9-Apr-1976  $59,594 00012
02943 EXPERIENCED CASS       TERRY      D98  2-Jan-1980  $29,908 39485
12643 TRAINEE     JEFF       TASHKENT   C82  4-Apr-1981  $32,918 87465
32432 TRAINEE     THOMAS     SCHWEIK    F11  7-Nov-1981  $26,723 00891
34456 TRAINEE     HANK       MORRISON   T32  1-Mar-1982  $30,000 87289
38462 EXPERIENCED BILL       SWAY       T32  5-May-1980  $54,000 00012
38465 EXPERIENCED JOANNE     FREIBURG   E46  20-Feb-1980 $23,908 48475
39485 EXPERIENCED DEE        TERRICK    D98  2-May-1977  $55,829 00012
48475 EXPERIENCED GAIL       CASSIDY    E46  2-May-1978  $55,407 00012
48573 TRAINEE     SY         KELLER     T32  2-Aug-1981  $31,546 87289
49001 EXPERIENCED DAN        ROBERTS    C82  7-Jul-1979  $41,395 87465
49843 TRAINEE     BART       HAMMER     D98  4-Aug-1981  $26,392 39485
78923 EXPERIENCED LYDIA      HARRISON   F11  19-Jun-1979 $40,747 00891
83764 EXPERIENCED JIM        MEADER     T32  4-Apr-1980  $41,029 87289
84375 EXPERIENCED MARY       NALEVO     D98  3-Jan-1976  $56,847 39485
87289 EXPERIENCED LOUISE     DEPALMA    G20  28-Feb-1979 $57,598 00012
87465 EXPERIENCED ANTHONY    IACOBONE   C82  2-Jan-1973  $58,462 00012
87701 TRAINEE     NATHANIEL  CHONTZ     F11  28-Jan-1982 $24,502 00891
88001 EXPERIENCED DAVID      LITELLA    G20  11-Nov-1980 $34,933 87289
90342 EXPERIENCED BRUNO      DONCHIKOV  C82  9-Aug-1978  $35,952 87465
91023 TRAINEE     STAN       WITTGEN    G20  23-Dec-1981 $25,023 87289
99029 EXPERIENCED RANDY      PODERESIAN C82  24-May-1979 $33,738 87465

FINISH
!
! AS A KIND GESTURE, MAKE ALL OF THE EXAMPLES SHARABLE
!
DEFINEP RIG-TABLE 2,UIC,[*,*],RE
DEFINEP FAMILIES 2,UIC,[*,*],R
DEFINEP FAMILY-REC 2,UIC,[*,*],RE
DEFINEP KETCHES 2,UIC,[*,*],R
DEFINEP OWNERS 2,UIC,[*,*],R
DEFINEP OWNER-RECORD 2,UIC,[*,*],RE
DEFINEP LOA-REPORT 2,UIC,[*,*],RE
DEFINEP SAILBOATS 2,UIC,[*,*],R
DEFINEP PERSONNEL 2,UIC,[*,*],R
DEFINEP PERSONNEL_REC 2,UIC,[*,*],RE
!
! Completion of DATATRIEVE-11 V3.3 Installation Test
EXIT

  End of Datatrieve-11 Installation Verification

Installation of DTR (DTR) ending at 02-MAY-89 09:57:50.

Installation of DTR (DTR) successful.

Auto-Install ended on 02-MAY-89 at 09:57:55.
```

Appendix B

Sample RSTS/E Installation Log

```
RSTS/E Auto-Install Procedure V1.0
     25-Apr-89 10:02

Type "?" for help; CTRL/Z to end; or valid input.
Which product(s) do you want to install? DTR
Type "?" for help; CTRL/Z to exit Auto-Install; or valid input.
Where are the update files located <PATCH$:>?
Type "?" for help; CTRL/Z to skip this product; or valid input.
Which device are the distribution files for DTR (DTR) located on (include colon)? MS0:
Products being installed:
    Device      Product Task name
    ------      ------- ---------
    MS0:        DTR     (DTR)
Determining system configuration.
WARNING -- no updates found for configuration data file; procedure continuing.
Do you want to customize DTR (DTR) (Y/N) <N>? Y
Final holding area for kit files after instal <DTR$:>?
Name and location of dictionary <LB:QUERY.DIC>?
Name and location of message file <LB:QUERY.MSG>?
Name and location of startup command file <SY:QUERY.INI>?
Name and location of DDMF.LOG <SY:DDMF.LOG>?
Issue error messages for record too short <1=yes,0=no> <1>?
Interpret input date<1= 1/6 as Jan 6, 0= 1/6 as Jun 1> <1>?
Control spooling <0=send directly to LP:, 1=spool output> <1>?
Divided by 0 warning <-1=yes, 0=no warning given> <-1>?
Terminal type <0=ask terminal at runtime, 1=VT52, 2=VT100> <0>?
```

```
Controls ADT <0=ADT enabled, 1=ADT disabled> <0>?
Set the default COLUMNS-PAGE <80>?
Message file organization <0=Fixed, 1=Variable> <0>?
Default size of dictionaries <200>?
Default protection <-1 [*,*], 0 [grp,*], 1 [grp,prgm]> <0>?
Stack size <minimum 256> <256>?
Link against Supervisor Mode library <NO, YES> <NO>?
Is DECnet available (YES/NO) <YES>?
(1)Flt_pt Softw, (2)FPP Hardw, (3)Machine hardw decides at instal <3>?
Allow future customization of this file <YES>?
Print release notes automatically <NO>?
Print the installation log automatically <NO>?
Do you want to customize DTR (DTR) again (Y/N) <N>?
Installation of DTR (DTR) beginning at 25-Apr-89 10:06
Reading [1,125]DTRDTR.CFG.
Transferring kit files to work area.
Updating kit files.
WARNING -- update file DTR303.DAT not found at PATCH$:.
           Kit files not updated; procedure continuing.
Building product DTR (DTR).

 Run pre_processing for QD

 Determining system configuration


 Building DATATRIEVE-11

 Build the dictionary and message file

 Task-build DATATRIEVE-11

 Task-build the Local Call Interface

 Task-build Remote Call Interface

Copying DATATRIEVE-11 to SY:[1,2]

Copying DDMF to SY:[1,2]

Copying REMDTR to SY:[1,2]

Copying QCPRS to SY:[1,2]
```

```
Copying QXTR to SY:[1,2]

Copying Local Server to SY:[1,2]

        DATATRIEVE V3.3 is now built.

 DATATRIEVE-11 installation procedure ended
Transferring files from work area.

Running IVP command procedure DTRIVP.COM.

!
!  Start of DATATRIEVE-11 V3.3 Installation Test
!
!
! ****************************** N O T E ************************************
! *
! * This verification procedure will scroll on the screen for about 7 minutes. *
! *           ( No input is required from you during this time. )
! *
! ***************************************************************************
!
! PRINT TODAY'S DATE
!
PRINT "TODAY" USING DD-MMM-YYYYBBW(9)
25-Apr-1989  Tuesday

!
! CLEAN UP FROM POSSIBLE PREVIOUS RUNS OF TEST
!
DELETE FAMILIES;
DELETE FAMILY-REC;
DELETE KETCHES;
DELETE OWNERS-SEQUENTIAL;
DELETE OWNERS;
DELETE OWNER-RECORD;
DELETE SAILBOATS;
DELETE YACHTS-SEQUENTIAL;
DELETE YACHTS;
DELETE YACHT;
DELETE PRICE-PER-POUND;
DELETE VERIFY;
DELETE LOA-REPORT;
DELETE RIG-TABLE;
DELETE PERSONNEL;
DELETE PERSONNEL_SEQ;
DELETE PERSONNEL_REC;
DELETE PERSONNEL_SEQ_REC;
!
! DEFINE RECORD
!
DEFINE RECORD YACHT USING
01 BOAT.
  03 TYPE.
     06 MANUFACTURER PIC X(10)
        QUERY-NAME IS BUILDER.
     06 MODEL PIC X(10).
  03 SPECIFICATIONS
     QUERY-NAME SPECS.
```

```
     06 RIG PIC X(6)
        VALID IF RIG EQ "SLOOP","KETCH","MS","YAWL".
     06 LENGTH-OVER-ALL PIC XXX
        VALID IF LOA BETWEEN 15 AND 50
        QUERY-NAME IS LOA.
     06 DISPLACEMENT PIC 99999
        QUERY-HEADER IS "WEIGHT"
        EDIT-STRING IS ZZ,ZZ9
        QUERY-NAME IS DISP.
     06 BEAM PIC 99.
     06 PRICE PIC 99999
        VALID IF PRICE>DISP*1.3 OR PRICE EQ 0
        EDIT-STRING IS $$$,$$$.
;
[Record YACHT is 41 bytes long]
!
! DEFINE DOMAINS
!
DEFINE DOMAIN YACHTS-SEQUENTIAL USING YACHT ON LB:[1,2]YACHT.SEQ ;
DEFINE DOMAIN YACHTS USING YACHT ON YACHT.DAT;
!
! DEFINE THE ACTUAL FILE FOR YACHTS
!
DEFINE FILE YACHTS KEY=TYPE(NO DUP),KEY=MODEL(DUP,NO CHANGE),
       ALLOCATION=30, SUPERSEDE
!
! MAKE YACHTS ACCESSABLE BY OTHERS
!
DEFINEP YACHTS 2,PW,"SHHHH",W  ! PASSWORD FOR WRITE
DEFINEP YACHTS 3,UIC,[*,*],R   ! EVERYONE ELSE GETS READ
DEFINEP YACHT  2,UIC,[*,*],RE  ! GIVE ACCESS TO RECORD DEFINITION, TOO
SHOWP YACHTS
        1,UIC, [1,*], "RWMEC"
        2,PW, "SHHHH", "W"
        3,UIC, [*,*], "R"
!
! DEFINE PROCEDURES
!
DEFINE PROCEDURE PRICE-PER-POUND
PRICE/DISP ("PRICE"/"PER"/"POUND") USING $$.99
END-PROCEDURE
DEFINEP PRICE-PER-POUND 2,UIC,[*,*],RE
!
DEFINE PROCEDURE VERIFY
VERIFY USING
  BEGIN
     PRINT
     DISPLAY "CONFIRM WITH Y IF OK"
     IF *.CONFIRM NOT CONTAINING "Y" THEN ABORT "UPDATE ABORTED"
  END
END-PROCEDURE
DEFINEP VERIFY 2,UIC,[*,*],RE
!
! COPY DATA FROM SEQUENTIAL TO INDEXED FILE
!
READY YACHTS WRITE
SHOW FIELDS
YACHTS
    BOAT
```

```
        TYPE [Indexed field]
            MANUFACTURER (BUILDER)     [Character string, indexed key]
            MODEL    [Character string, indexed key]
        SPECIFICATIONS (SPECS)
            RIG [Character string]
            LENGTH_OVER_ALL (LOA)      [Character string]
            DISPLACEMENT (DISP) [Number]
            BEAM        [Number]
            PRICE       [Number]
READY YACHTS-SEQUENTIAL
SHOW READY
Ready domains:
        YACHTS_SEQUENTIAL: RMS SEQUENTIAL, PROTECTED READ
        YACHTS: RMS INDEXED, PROTECTED WRITE
!
! ************ NOTE  ***********
! *** The following STORE will take 1 - 2 minutes. ***
! ******************************
!
FOR YACHTS-SEQUENTIAL STORE YACHTS USING BOAT=BOAT
!
FINISH YACHTS-SEQUENTIAL;
!
! TEST STORE
!
! PLEASE SUPPLY THE FOLLOWING VALUES:
!    MANUFACTURER:       HINKLEY
!    MODEL:              BERMUDA 40
!    RIG:                YAWL
!    LENGTH-OVER-ALL:    140
!    LENGTH-OVER-ALL:    40
!    DISPLACEMENT:       20000
!    BEAM:               12
!    PRICE:              82000 AND XX/100
!    PRICE:              $82,000
!    CONFIRM:            N
!
STORE YACHTS USING BEGIN
       MANUFACTURER= "HINKLEY"
       MODEL = "BERMUDA 40"
       RIG = "YAWL"
       LENGTH-OVER-ALL = 40
       DISPLACEMENT= 20000
       BEAM = 12
       PRICE = 82000
       END
!
!
! CHANGE READY MODE FOR READ ACCESS
!
READY YACHTS
FIND YACHTS WITH PRICE NE 0
[51 records found]
SORT BY LOA,DESC DISPLACEMENT
SHOW ALL
Domains:
        YACHTS          YACHTS_SEQUENTIAL
Records:
        YACHT
```

```
Procedures:
        PRICE_PER_POUND VERIFY
Tables:
The current dictionary is SY:[1,1]QUERY.DIC
Collections:
        CURRENT
Ready domains:
        YACHTS: RMS INDEXED, PROTECTED READ
SHOW CURRENT
Collection CURRENT
        Domain: YACHTS
        Number of records: 51
        No selected record
        Sort order: LENGTH_OVER_ALL,DISPLACEMENT
PRINT ALL
```

MANUFACTURER	MODEL	RIG	LENGTH OVER ALL	WEIGHT	BEAM	PRICE
WINDPOWER	IMPULSE	SLOOP	16	650	07	$3,500
CAPE DORY	TYPHOON	SLOOP	19	1,900	06	$4,295
VENTURE	21	SLOOP	21	1,500	07	$2,823
VENTURE	222	SLOOP	22	2,000	07	$3,564
EASTWARD	HO	MS	24	7,000	09	$15,900
ISLANDER	BAHAMA	SLOOP	24	4,200	08	$6,500
IRWIN	25	SLOOP	25	5,400	12	$10,950
CAPE DORY	25	SLOOP	25	4,000	07	$8,995
SALT	19	SLOOP	25	2,600	07	$6,590
WESTERLY	CENTAUR	SLOOP	26	6,700	08	$15,245
GRAMPIAN	26	SLOOP	26	5,600	08	$11,495
AMERICAN	26-MS	MS	26	5,500	08	$18,895
TANZER	26	SLOOP	26	4,350	09	$11,750
ALBIN	79	SLOOP	26	4,200	10	$17,900
AMERICAN	26	SLOOP	26	4,000	08	$9,895
HUNTER	27	SLOOP	27	6,500	09	$14,999
ALBIN	VEGA	SLOOP	27	5,070	08	$18,600
CAPE DORY	28	SLOOP	28	9,000	09	$21,990
SABRE	28	SLOOP	28	7,400	09	$22,000
GRAMPIAN	28	SLOOP	28	6,900	10	$14,475
TANZER	28	SLOOP	28	6,800	10	$17,500
ISLANDER	28	SLOOP	28	5,994	10	$15,908
NORTHERN	29	SLOOP	29	7,250	09	$20,975
IRWIN	30	SLOOP	30	10,000	10	$19,950
HUNTER	30	SLOOP	30	9,500	10	$21,500
GRAMPIAN	30	SLOOP	30	8,600	09	$17,775
ISLANDER	30	SLOOP	30	8,600	10	$20,990
ALBIN	BALLAD	SLOOP	30	7,276	10	$27,500
RYDER	S. CROSS	SLOOP	31	13,600	00	$32,500
BOMBAY	CLIPPER	SLOOP	31	9,400	11	$23,950
WRIGHT	SEAWIND II	SLOOP	32	14,900	00	$34,480
CHALLENGER	32	SLOOP	32	12,800	11	$31,835
O'DAY	32	SLOOP	32	11,000	00	$29,500
BAYFIELD	30/32	SLOOP	32	9,500	10	$32,875
GRAMPIAN	34	KETCH	33	12,000	10	$29,675
GRAMPIAN	2-34	SLOOP	34	11,800	10	$29,675
CARIBBEAN	35	SLOOP	35	18,000	11	$37,850
CHRIS-CRAF	CARIBBEAN	SLOOP	35	18,000	11	$37,850
CHALLENGER	35	SLOOP	35	14,800	12	$39,215

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 I. TRADER   37          KETCH   36    18,600  12  $39,500
 ISLANDER    36          SLOOP   36    13,450  11  $31,730
 ALBERG      37 MK II    KETCH   37    20,000  12  $36,951
 IRWIN       37 MARK II  KETCH   37    20,000  11  $36,950
 NORTHERN    37          KETCH   37    14,000  11  $50,000
 LINDSEY     39          MS      39    14,500  12  $35,900
 HINKLEY     BERMUDA 40  YAWL    40    20,000  12  $82,000
 CHALLENGER  41          KETCH   41    26,700  13  $51,228
 GULFSTAR    41          KETCH   41    22,000  12  $41,350
 ISLANDER    FREEPORT    KETCH   41    22,000  13  $54,970
 COLUMBIA    41          SLOOP   41    20,700  11  $48,490
 OLYMPIC     ADVENTURE   KETCH   42    24,250  13  $80,500

SELECT FIRST
PRINT

                                LENGTH
                                 OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 WINDPOWER   IMPULSE    SLOOP   16       650  07   $3,500

SELECT
PRINT BOAT,:PRICE-PER-POUND

                                LENGTH                    PRICE
                                 OVER                      PER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  POUND

 CAPE DORY   TYPHOON    SLOOP   19     1,900  06   $4,295 $2.26

!
!
! DEFINE REPORT PROCEDURE
!
DEFINE PROCEDURE LOA-REPORT
REPORT ON TI:
   SET REPORT-NAME="JIM'S VERY OWN LISTING"/"OF"/"INTERESTING SAILBOATS"/
       "(BY LENGTH)"
   SET LINES-PAGE=55, COLUMNS-PAGE=72
   AT TOP OF LOA PRINT LOA("LENGTH")
   PRINT TYPE, RIG, DISP, BEAM USING Z9 , PRICE
   AT BOTTOM OF LOA PRINT SKIP, COL 32, "*** AVERAGE ***",
      AVERAGE DISP, AVERAGE BEAM, AVERAGE PRICE
   AT BOTTOM OF REPORT PRINT SKIP, "REPORT AVERAGES",
      AVERAGE DISP, AVERAGE BEAM, AVERAGE PRICE
   AT BOTTOM OF PAGE PRINT SKIP, COL 20,
      """ANOTHER SERVICE OF QUERY ENTERPRISES"""
END-REPORT
END-PROCEDURE
!
! INVOKE REPORT (SUGGEST OUTPUT ON TI:)
!
:LOA-REPORT


                        JIM'S VERY OWN LISTING
                                 OF
                        INTERESTING SAILBOATS                25-Apr-89
                             (BY LENGTH)                     Page 1
```

LENGTH	MANUFACTURER	MODEL	RIG	WEIGHT	BEAM	PRICE
16	WINDPOWER	IMPULSE	SLOOP	650	7	$3,500
		*** AVERAGE ***		650	07	$3,500
19	CAPE DORY	TYPHOON	SLOOP	1,900	6	$4,295
		*** AVERAGE ***		1,900	06	$4,295
21	VENTURE	21	SLOOP	1,500	7	$2,823
		*** AVERAGE ***		1,500	07	$2,823
22	VENTURE	222	SLOOP	2,000	7	$3,564
		*** AVERAGE ***		2,000	07	$3,564
24	EASTWARD	HO	MS	7,000	9	$15,900
	ISLANDER	BAHAMA	SLOOP	4,200	8	$6,500
		*** AVERAGE ***		5,600	08	$11,200
25	IRWIN	25	SLOOP	5,400	12	$10,950
	CAPE DORY	25	SLOOP	4,000	7	$8,995
	SALT	19	SLOOP	2,600	7	$6,590
		*** AVERAGE ***		4,000	08	$8,845
26	WESTERLY	CENTAUR	SLOOP	6,700	8	$15,245
	GRAMPIAN	26	SLOOP	5,600	8	$11,495
	AMERICAN	26-MS	MS	5,500	8	$18,895
	TANZER	26	SLOOP	4,350	9	$11,750
	ALBIN	79	SLOOP	4,200	10	$17,900
	AMERICAN	26	SLOOP	4,000	8	$9,895
		*** AVERAGE ***		5,058	08	$14,196
27	HUNTER	27	SLOOP	6,500	9	$14,999
	ALBIN	VEGA	SLOOP	5,070	8	$18,600
		*** AVERAGE ***		5,785	08	$16,799
28	CAPE DORY	28	SLOOP	9,000	9	$21,990
	SABRE	28	SLOOP	7,400	9	$22,000
	GRAMPIAN	28	SLOOP	6,900	10	$14,475
	TANZER	28	SLOOP	6,800	10	$17,500
	ISLANDER	28	SLOOP	5,994	10	$15,908
		*** AVERAGE ***		7,218	09	$18,374
29	NORTHERN	29	SLOOP	7,250	9	$20,975
		*** AVERAGE ***		7,250	09	$20,975
30	IRWIN	30	SLOOP	10,000	10	$19,950
	HUNTER	30	SLOOP	9,500	10	$21,500
	GRAMPIAN	30	SLOOP	8,600	9	$17,775

"ANOTHER SERVICE OF QUERY ENTERPRISES"

JIM'S VERY OWN LISTING
OF
INTERESTING SAILBOATS 25-Apr-89
(BY LENGTH) Page 2

LENGTH	MANUFACTURER	MODEL	RIG	WEIGHT	BEAM	PRICE
	ISLANDER	30	SLOOP	8,600	10	$20,990
	ALBIN	BALLAD	SLOOP	7,276	10	$27,500

		*** AVERAGE ***		8,795	09	$21,543
31	RYDER	S. CROSS	SLOOP	13,600	0	$32,500
	BOMBAY	CLIPPER	SLOOP	9,400	11	$23,950
		*** AVERAGE ***		11,500	05	$28,225
32	WRIGHT	SEAWIND II	SLOOP	14,900	0	$34,480
	CHALLENGER	32	SLOOP	12,800	11	$31,835
	O'DAY	32	SLOOP	11,000	0	$29,500
	BAYFIELD	30/32	SLOOP	9,500	10	$32,875
		*** AVERAGE ***		12,050	05	$32,172
33	GRAMPIAN	34	KETCH	12,000	10	$29,675
		*** AVERAGE ***		12,000	10	$29,675
34	GRAMPIAN	2-34	SLOOP	11,800	10	$29,675
		*** AVERAGE ***		11,800	10	$29,675
35	CARIBBEAN	35	SLOOP	18,000	11	$37,850
	CHRIS-CRAF	CARIBBEAN	SLOOP	18,000	11	$37,850
	CHALLENGER	35	SLOOP	14,800	12	$39,215
		*** AVERAGE ***		16,933	11	$38,305
36	I. TRADER	37	KETCH	18,600	12	$39,500
	ISLANDER	36	SLOOP	13,450	11	$31,730
		*** AVERAGE ***		16,025	11	$35,615
37	ALBERG	37 MK II	KETCH	20,000	12	$36,951
	IRWIN	37 MARK II	KETCH	20,000	11	$36,950
	NORTHERN	37	KETCH	14,000	11	$50,000
		*** AVERAGE ***		18,000	11	$41,300
39	LINDSEY	39	MS	14,500	12	$35,900
		*** AVERAGE ***		14,500	12	$35,900
40	HINKLEY	BERMUDA 40	YAWL	20,000	12	$82,000
		*** AVERAGE ***		20,000	12	$82,000
41	CHALLENGER	41	KETCH	26,700	13	$51,228
	GULFSTAR	41	KETCH	22,000	12	$41,350
	ISLANDER	FREEPORT	KETCH	22,000	13	$54,970
	COLUMBIA	41	SLOOP	20,700	11	$48,490
		*** AVERAGE ***		22,850	12	$49,009

"ANOTHER SERVICE OF QUERY ENTERPRISES"

JIM'S VERY OWN LISTING
OF
INTERESTING SAILBOATS 25-Apr-89
(BY LENGTH) Page 3

LENGTH	MANUFACTURER	MODEL	RIG	WEIGHT	BEAM	PRICE
42	OLYMPIC	ADVENTURE	KETCH	24,250	13	$80,500
		*** AVERAGE ***		24,250	13	$80,500
REPORT AVERAGES				10,597	09	$26,498

"ANOTHER SERVICE OF QUERY ENTERPRISES"

```
!
! RATTLE UPDATE
!
FIND YACHTS WITH BEAM=0
[5 records found]
PRINT ALL

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 TA CHIAO    FANTASIA   SLOOP   35    23,200  00
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480

SELECT FIRST;PRINT

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00

READY YACHTS MODIFY
!
! RESPOND WITH 47 (OR SOMETHING)
!
MODIFY USING BEAM = 47
PRINT TYPE,BEAM

MANUFACTURER   MODEL    BEAM

 METALMAST   GALAXY      47

!
! RESPOND WITH 48 (OR SOMETHING)
!
MODIFY ALL USING  BEAM = 48
!
PRINT ALL BEAM

BEAM

 48
 48
 48
 48
 48

!
! RESPOND EACH TIME WITH 0 (PLEASE)
!
FOR CURRENT PRINT TYPE THEN MODIFY USING BEAM = 0

MANUFACTURER   MODEL

 METALMAST   GALAXY
 O'DAY       32
 RYDER       S. CROSS
 TA CHIAO    FANTASIA
 WRIGHT      SEAWIND II
```

```
READY YACHTS READ
PRINT ALL

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 TA CHIAO    FANTASIA   SLOOP   35    23,200  00
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480

!
! CHECK MULTIPLE COLLECTIONS AND STATISTICAL FUNCTIONS
!
FIND SMALLS IN YACHTS WITH LOA<24 AND PRICE NE 0
[4 records found]
!
FIND BIGGIES IN YACHTS WITH LOA>40 AND PRICE NE 0
[5 records found]
!
SHOW COLLECTIONS
Collections:
        BIGGIES (also CURRENT)
        SMALLS
!
PRINT AVERAGE DISP

WEIGHT

23,130

!
PRINT MAX DISP

WEIGHT

26,700

!
PRINT AVERAGE PRICE OF BIGGIES,AVERAGE PRICE OF SMALLS

 PRICE   PRICE

$55,307  $3,545

!
SORT SMALLS BY LOA,DISP
SORT BIGGIES BY LOA,DISP
SELECT FIRST SMALLS
SELECT LAST BIGGIES
PRINT SMALLS.BOAT,SKIP,BIGGIES.BOAT

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 WINDPOWER   IMPULSE    SLOOP   16       650  07   $3,500
 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500

!
!
PRINT YACHTS WITH LOA EQ MAX LOA OF YACHTS
```

```
                                LENGTH
                                 OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500
 PEARSON     419        KETCH   42    21,000  13

!
! TEST OF HIERARCHIES AND VIEW
!
DEFINE DOMAIN FAMILIES
 USING FAMILY-REC ON LB:[1,2]FAMILY.DAT;
DEFINE RECORD FAMILY-REC
01 FAMILY.
   03 PARENTS.
      06 FATHER PIC X(10).
      06 MOTHER PIC X(10).
   03 NUMBER-KIDS PIC 99 EDIT-STRING IS Z9.
   03 KIDS OCCURS 0 TO 10 TIMES DEPENDING ON NUMBER-KIDS.
      06 EACH-KID.
         09 KID-NAME PIC X(10) QUERY-NAME IS KID.
         09 AGE PIC 99 EDIT-STRING IS Z9.
;
[Record FAMILY_REC is 142 bytes long]
!
! PERFORM A FEW NIFTY OPERATIONS ON FAMILIES
!
READY FAMILIES
SHOW FIELDS FOR FAMILIES
 FAMILY
     PARENTS
         FATHER [Character string]
         MOTHER [Character string]
     NUMBER_KIDS    [Number]
     KIDS [List]
         EACH_KID
             KID_NAME (KID)  [Character string]
             AGE             [Number]
PRINT FAMILIES

                      NUMBER    KID
  FATHER     MOTHER    KIDS     NAME    AGE
```

```
JIM         ANN           2   URSULA      7
                              RALPH       3
JIM         LOUISE        5   ANNE       31
                              JIM        29
                              ELLEN      26
                              DAVID      24
                              ROBERT     16
JOHN        JULIE         2   ANN        29
                              JEAN       26
JOHN        ELLEN         1   CHRISTOPHR  0
ARNIE       ANNE          2   SCOTT       2
                              BRIAN       0
SHEARMAN    SARAH         1   DAVID       0
TOM         ANNE          2   PATRICK     4
                              SUZIE       6
BASIL       MERIDETH      6   BEAU       28
                              BROOKS     26
                              ROBIN      24
                              JAY        22
                              WREN       17
                              JILL       20
ROB         DIDI          0
JEROME      RUTH          4   ERIC       32
                              CISSY      24
                              NANCY      22
                              MICHAEL    20
TOM         BETTY         2   MARTHA     30
                              TOM        27
GEORGE      LOIS          3   JEFF       23
                              FRED       26
                              LAURA      21
HAROLD      SARAH         3   CHARLIE    31
                              HAROLD     35
                              SARAH      27
EDWIN       TRINITA       2   ERIC       16
                              SCOTT      11

FIND FAMILIES WITH ANY KIDS WITH AGE>25
[7 records found]
PRINT ALL SKIP, PARENTS, ALL KIDS SORTED BY AGE

                          KID
  FATHER      MOTHER      NAME    AGE

JIM         LOUISE      ROBERT     16
                        DAVID      24
                        ELLEN      26
                        JIM        29
                        ANNE       31

JOHN        JULIE       JEAN       26
                        ANN        29

BASIL       MERIDETH    WREN       17
                        JILL       20
                        JAY        22
                        ROBIN      24
                        BROOKS     26
                        BEAU       28
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JEROME     RUTH       MICHAEL    20
                      NANCY      22
                      CISSY      24
                      ERIC       32

TOM        BETTY      TOM        27
                      MARTHA     30

GEORGE     LOIS       LAURA      21
                      JEFF       23
                      FRED       26

HAROLD     SARAH      SARAH      27
                      CHARLIE    31
                      HAROLD     35

FINISH
!
! DEFINE A VIEW OF THE DOMAIN YACHTS
!
DEFINE DOMAIN KETCHES
 OF YACHTS BY
01 KETCH OCCURS FOR YACHTS WITH RIG EQ "KETCH".
  03 TYPE FROM YACHTS.
  03 LOA FROM YACHTS.
  03 PRICE FROM YACHTS.
;
!
! SHOW OFF KETCHES
!
READY KETCHES
PRINT KETCHES

                       LENGTH
                        OVER
MANUFACTURER   MODEL     ALL    PRICE

 ALBERG      37 MK II    37    $36,951
 CHALLENGER  41          41    $51,228
 FISHER      30          30
 FISHER      37          37
 GRAMPIAN    34          33    $29,675
 GULFSTAR    41          41    $41,350
 I. TRADER   37          36    $39,500
 IRWIN       37 MARK II  37    $36,950
 ISLANDER    FREEPORT    41    $54,970
 NORTHERN    37          37    $50,000
 OLYMPIC     ADVENTURE   42    $80,500
 PEARSON     365         36
 PEARSON     419         42
```

```
FINISH
!
! DEFINE A DOMAIN AND FILE OF SAILBOAT OWNERS
!
DEFINE DOMAIN OWNERS
 USING OWNER-RECORD ON OWNER.DAT;
DEFINE RECORD OWNER-RECORD
01 OWNER.
   03 NAME PIC X(10) QUERY-HEADER IS "OWNER"/"NAME"
      EDIT-STRING IS X(5).
   03 BOAT-NAME PIC X(17) QUERY-HEADER IS "BOAT NAME".
   03 TYPE.
      06 BUILDER PIC X(10).
      06 MODEL PIC X(10).
;
[Record OWNER_RECORD is 47 bytes long]
DEFINE DOMAIN OWNERS-SEQUENTIAL USING OWNER-RECORD ON LB:[1,2]OWNER.SEQ;
DEFINE FILE FOR OWNERS KEY=TYPE(DUP), SUPERSEDE
READY OWNERS WRITE
READY OWNERS-SEQUENTIAL
!
! ************ NOTE  ***********
! *** The following STORE will take about 1/2 minute. ***
! ******************************
!
FOR OWNERS-SEQUENTIAL STORE OWNERS USING OWNER=OWNER
FINISH OWNERS-SEQUENTIAL
!
! PRINT OUT THE OWNERS FILE
!
PRINT OWNERS

OWNER
NAME      BOAT NAME      BUILDER     MODEL

SHERM MILLENNIUM FALCON ALBERG     35
STEVE DELIVERANCE       ALBIN      VEGA
HUGH  IMPULSE           ALBIN      VEGA
JIM   EGRET             C&C        CORVETTE
ANN   EGRET             C&C        CORVETTE
BOB   FIESTA            CAL        28
JIM   REGRET            CHEAP      DINK
NEIL  JARGES PRIDE      CROCKER    33
GERAR KESTREL           ERICSON    39
ARNE  CHIMERA           HINKLEY    BERMUDA 40
JIM   POTEMKIN          ISLANDER   BAHAMA
ANN   POTEMKIN          ISLANDER   BAHAMA
STEVE POTEMKIN          ISLANDER   BAHAMA
HARVE MANANA            ISLANDER   BAHAMA
TOM   LONE TRAVELLER    PEARSON    10M
DICK  PURSUIT           PEARSON    26
CHRIS VANITY            PEARSON    ARIEL
JOHN  STRIDER           RHODES     SWIFTSURE
```

```
FINISH
!
! DEFINE THE MIGHTY, MULTIPLE FILE VIEW OF YACHTS AND OWNERS
!
DEFINE DOMAIN SAILBOATS
 OF YACHTS, OWNERS BY
01 SAILBOAT OCCURS FOR YACHTS.
   03 BOAT FROM YACHTS.
   03 SKIPPERS OCCURS FOR OWNERS WITH TYPE EQ BOAT.TYPE.
      05 NAME FROM OWNERS.
;
!
! EXERCISE SAILBOATS A LITTLE
!
READY SAILBOATS
SHOW FIELDS
SAILBOATS
    SAILBOAT
        BOAT
            TYPE [Indexed field]
                MANUFACTURER (BUILDER) [Character string, indexed key]
                MODEL  [Character string, indexed key]
            SPECIFICATIONS (SPECS)
                RIG     [Character string]
                LENGTH_OVER_ALL (LOA)   [Character string]
                DISPLACEMENT (DISP)     [Number]
                BEAM    [Number]
                PRICE   [Number]
        SKIPPERS [List]
            NAME        [Character string]
PRINT FIRST 5 SAILBOATS

                              LENGTH
                               OVER                          OWNER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  NAME

 ALBERG      37 MK II   KETCH   37    20,000  12  $36,951
 ALBIN       79         SLOOP   26     4,200  10  $17,900
 ALBIN       BALLAD     SLOOP   30     7,276  10  $27,500
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600 STEVE
                                                           HUGH
 AMERICAN    26         SLOOP   26     4,000  08   $9,895

FIND SAILBOATS WITH ANY SKIPPERS
[7 records found]
PRINT ALL

                              LENGTH
                               OVER                          OWNER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  NAME
```

```
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600 STEVE
                                                          HUGH
 C&C         CORVETTE   SLOOP   31     8,650  09          JIM
                                                          ANN
 HINKLEY     BERMUDA 40 YAWL    40    20,000  12  $82,000 ARNE
 ISLANDER    BAHAMA     SLOOP   24     4,200  08   $6,500 JIM
                                                          ANN
                                                          STEVE
                                                          HARVE
 PEARSON     10M        SLOOP   33    12,441  11          TOM
 PEARSON     26         SLOOP   26     5,400  08          DICK
 RHODES      SWIFTSURE  SLOOP   33    14,000  10          JOHN

!
! CHECK OUT TABLES
!
DEFINE TABLE RIG-TABLE
"SLOOP" : "ONE MAST",
"KETCH" : "TWO MASTS, BIG ONE IN FRONT",
"YAWL"  : "SIMILAR TO KETCH",
"M/S"   : "SAILS AND BIG MOTOR",
ELSE "SOMETHING ELSE"
END-TABLE
!
READY YACHTS
FIND YACHTS WITH RIG IN RIG-TABLE
[109 records found]
PRINT ALL TYPE, RIG, RIG VIA RIG-TABLE USING X(30)

MANUFACTURER   MODEL     RIG                RIG

 ALBERG      37 MK II   KETCH  TWO MASTS, BIG ONE IN FRONT
 ALBIN       79         SLOOP  ONE MAST
 ALBIN       BALLAD     SLOOP  ONE MAST
 ALBIN       VEGA       SLOOP  ONE MAST
 AMERICAN    26         SLOOP  ONE MAST
 BAYFIELD    30/32      SLOOP  ONE MAST
 BLOCK I.    40         SLOOP  ONE MAST
 BOMBAY      CLIPPER    SLOOP  ONE MAST
 BUCCANEER   270        SLOOP  ONE MAST
 BUCCANEER   320        SLOOP  ONE MAST
 C&C         CORVETTE   SLOOP  ONE MAST
 CABOT       36         SLOOP  ONE MAST
 CAL         2-27       SLOOP  ONE MAST
 CAL         2-34       SLOOP  ONE MAST
 CAL         29         SLOOP  ONE MAST
 CAL         3-30       SLOOP  ONE MAST
 CAL         35         SLOOP  ONE MAST
 CAPE DORY   25         SLOOP  ONE MAST
 CAPE DORY   28         SLOOP  ONE MAST
 CAPE DORY   TYPHOON    SLOOP  ONE MAST
 CAPITAL     NEWPORT    SLOOP  ONE MAST
 CARIBBEAN   35         SLOOP  ONE MAST
 CHALLENGER  32         SLOOP  ONE MAST
 CHALLENGER  35         SLOOP  ONE MAST
 CHALLENGER  41         KETCH  TWO MASTS, BIG ONE IN FRONT
 CHRIS-CRAF  CARIBBEAN  SLOOP  ONE MAST
 COLUMBIA    35         SLOOP  ONE MAST
 COLUMBIA    41         SLOOP  ONE MAST
 COLUMBIA    PAYNE 9.6  SLOOP  ONE MAST
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DOUGLAS     32          SLOOP  ONE MAST
DOWN EAST   32          SLOOP  ONE MAST
DOWN EAST   38          SLOOP  ONE MAST
DUFOUR      25          SLOOP  ONE MAST
ENCHILADA   20          SLOOP  ONE MAST
ENDEAVOUR   32          SLOOP  ONE MAST
ERICSON     23/ SPECIA SLOOP  ONE MAST
ERICSON     CRUISING/3 SLOOP  ONE MAST
FISHER      30          KETCH  TWO MASTS, BIG ONE IN FRONT
FISHER      37          KETCH  TWO MASTS, BIG ONE IN FRONT
GRAMPIAN    2-34        SLOOP  ONE MAST
GRAMPIAN    26          SLOOP  ONE MAST
GRAMPIAN    28          SLOOP  ONE MAST
GRAMPIAN    30          SLOOP  ONE MAST
GRAMPIAN    34          KETCH  TWO MASTS, BIG ONE IN FRONT
GULFSTAR    41          KETCH  TWO MASTS, BIG ONE IN FRONT
HINKLEY     BERMUDA 40 YAWL   SIMILAR TO KETCH
HUNTER      27          SLOOP  ONE MAST
HUNTER      30          SLOOP  ONE MAST
I. TRADER   37          KETCH  TWO MASTS, BIG ONE IN FRONT
IRWIN       25          SLOOP  ONE MAST
IRWIN       30          SLOOP  ONE MAST
IRWIN       37 MARK II KETCH  TWO MASTS, BIG ONE IN FRONT
IRWIN       HALF TON    SLOOP  ONE MAST
ISLANDER    28          SLOOP  ONE MAST
ISLANDER    30          SLOOP  ONE MAST
ISLANDER    36          SLOOP  ONE MAST
ISLANDER    BAHAMA      SLOOP  ONE MAST
ISLANDER    FREEPORT    KETCH  TWO MASTS, BIG ONE IN FRONT
MARIEHOLD   32          SLOOP  ONE MAST
METALMAST   GALAXY      SLOOP  ONE MAST
MOODY       33          SLOOP  ONE MAST
NAUTOR      SWAN 41     SLOOP  ONE MAST
NEWPORT     27S         SLOOP  ONE MAST
NEWPORT     30 II       SLOOP  ONE MAST
NEWPORT     41 S        SLOOP  ONE MAST
NICHOLSON   33          SLOOP  ONE MAST
NORTHERN    29          SLOOP  ONE MAST
NORTHERN    37          KETCH  TWO MASTS, BIG ONE IN FRONT
O'DAY       27          SLOOP  ONE MAST
O'DAY       32          SLOOP  ONE MAST
OLYMPIC     ADVENTURE   KETCH  TWO MASTS, BIG ONE IN FRONT
ONTARIO     32          SLOOP  ONE MAST
ONTARIO     VIKING      SLOOP  ONE MAST
PACESHIP    PY26        SLOOP  ONE MAST
PEARSON     10M         SLOOP  ONE MAST
PEARSON     26          SLOOP  ONE MAST
PEARSON     26W         SLOOP  ONE MAST
PEARSON     28          SLOOP  ONE MAST
PEARSON     30          SLOOP  ONE MAST
PEARSON     35          SLOOP  ONE MAST
PEARSON     36          SLOOP  ONE MAST
PEARSON     365         KETCH  TWO MASTS, BIG ONE IN FRONT
PEARSON     39          SLOOP  ONE MAST
PEARSON     419         KETCH  TWO MASTS, BIG ONE IN FRONT
RANGER      26          SLOOP  ONE MAST
RANGER      28          SLOOP  ONE MAST
RANGER      29          SLOOP  ONE MAST
RANGER      33          SLOOP  ONE MAST
```

```
 RHODES      SWIFTSURE  SLOOP  ONE MAST
 ROBERTS     29         SLOOP  ONE MAST
 ROBERTS     36         SLOOP  ONE MAST
 RYDER       S. CROSS   SLOOP  ONE MAST
 S2          8M AFT     SLOOP  ONE MAST
 S2          8M MID     SLOOP  ONE MAST
 SABRE       28         SLOOP  ONE MAST
 SALT        19         SLOOP  ONE MAST
 SAN JUAN    21         SLOOP  ONE MAST
 SAN JUAN    26         SLOOP  ONE MAST
 SCAMPI      30         SLOOP  ONE MAST
 SOLNA CORP  SCAMPI     SLOOP  ONE MAST
 TA CHIAO    FANTASIA   SLOOP  ONE MAST
 TANZER      26         SLOOP  ONE MAST
 TANZER      28         SLOOP  ONE MAST
 VENTURE     21         SLOOP  ONE MAST
 VENTURE     222        SLOOP  ONE MAST
 WESTERLY    CENTAUR    SLOOP  ONE MAST
 WESTSAIL    32         SLOOP  ONE MAST
 WINDPOWER   IMPULSE    SLOOP  ONE MAST
 WRIGHT      SEAWIND II SLOOP  ONE MAST

SHOW TABLES
Tables loaded:
        RIG_TABLE
Tables:
        RIG_TABLE
!
! DECLARE A GLOBAL VARIABLE TO SIMPLIFY TABLE LOOK UP
!

DECLARE RIG-DESCRIPTION COMPUTED BY RIG VIA RIG-TABLE
        EDIT-STRING IS X(30).
!
PRINT TYPE, RIG-DESCRIPTION OF FIRST 10 YACHTS

                                    RIG
MANUFACTURER   MODEL             DESCRIPTION

 ALBERG      37 MK II   TWO MASTS, BIG ONE IN FRONT
 ALBIN       79         ONE MAST
 ALBIN       BALLAD     ONE MAST
 ALBIN       VEGA       ONE MAST
 AMERICAN    26         ONE MAST
 AMERICAN    26-MS      SOMETHING ELSE
 BAYFIELD    30/32      ONE MAST
 BLOCK I.    40         ONE MAST
 BOMBAY      CLIPPER    ONE MAST
 BUCCANEER   270        ONE MAST
```

```
!
! RELEASE TABLE AND GLOBAL COMPUTED BY VARIABLE FROM MEMORY
!
RELEASE RIG-TABLE
FINISH
!
! Define Record for PERSONNEL
!
DEFINE RECORD PERSONNEL_REC USING
01  PERSON.
    05 ID                   PIC IS 9(5).
    05 EMPLOYEE_STATUS      PIC IS X(11)
                            QUERY_NAME IS STATUS
                            QUERY_HEADER IS "STATUS"
                            VALID IF STATUS EQ "TRAINEE","EXPERIENCED".
    05 EMPLOYEE_NAME        QUERY_NAME IS NAME.
        10 FIRST_NAME           PIC IS X(10)
                                QUERY_NAME IS F_NAME.
        10 LAST_NAME            PIC IS X(10)
                                QUERY_NAME IS L_NAME.
    05 DEPT                 PIC IS XXX.
    05 START_DATE           USAGE IS DATE.
    05 SALARY               PIC IS 9(5)
                            EDIT_STRING IS $$$,$$$.
    05 SUP_ID               PIC IS 9(5).
;
[Record PERSONNEL_REC is 58 bytes long]
!
! Define Record for PERSONNEL_SEQ
!
DEFINE RECORD PERSONNEL_SEQ_REC
 USING
01  PERSON.
    05 ID                   PIC IS 9(5).
    05 EMPLOYEE_STATUS      PIC IS X(11)
                            QUERY_NAME IS STATUS
                            QUERY_HEADER IS "STATUS"
                            VALID IF STATUS EQ "TRAINEE","EXPERIENCED".
    05 EMPLOYEE_NAME        QUERY_NAME IS NAME.
        10 FIRST_NAME           PIC IS X(10)
                                QUERY_NAME IS F_NAME.
        10 LAST_NAME            PIC IS X(10)
                                QUERY_NAME IS L_NAME.
    05 DEPT                 PIC IS XXX.
    05 START_DATE           PIC IS X(11).
    05 SALARY               PIC IS 9(5)
                            EDIT_STRING IS $$$,$$$.
    05 SUP_ID               PIC IS 9(5).
;
[Record PERSONNEL_SEQ_REC is 60 bytes long]
!
! Define Domain for PERSONNEL
!
DEFINE DOMAIN PERSONNEL USING PERSONNEL_REC ON PERSON.DAT;
!
! Define Domain for PERSONNEL_SEQ
!
DEFINE DOMAIN PERSONNEL_SEQ USING PERSONNEL_SEQ_REC ON LB:[1,2]PERSON.SEQ;
!
```

```
! Define File for PERSONNEL
!
DEFINE FILE FOR PERSONNEL KEY=ID, SUPERCEDE;
!
! Copy Data from Sequential to Indexed File.
!
READY PERSONNEL WRITE
SHOW FIELDS
PERSONNEL
    PERSON
        ID    [Number, indexed key]
        EMPLOYEE_STATUS (STATUS)    [Character string]
        EMPLOYEE_NAME (NAME)
            FIRST_NAME (F_NAME)  [Character string]
            LAST_NAME (L_NAME)   [Character string]
        DEPT    [Character string]
        START_DATE      [Date]
        SALARY  [Number]
        SUP_ID  [Number]
Global variables:
    RIG_DESCRIPTION   [Computed value]
READY PERSONNEL_SEQ
SHOW READY
Ready domains:
        PERSONNEL_SEQ: RMS SEQUENTIAL, PROTECTED READ
        PERSONNEL: RMS INDEXED, PROTECTED WRITE
!
!
! ************ NOTE  ***********
! *** The following STORE will take about 1/2 minute. ***
! ******************************
!
FOR PERSONNEL_SEQ STORE PERSONNEL USING PERSON=PERSON
!
FINISH PERSONNEL_SEQ;
!
! Check out PERSONNEL
!
READY PERSONNEL
FIND PERSONNEL
[23 records found]
PRINT
No record selected, printing whole collection
                    FIRST       LAST            START             SUP
 ID     STATUS       NAME       NAME    DEPT    DATE     SALARY   ID
```

```
00012 EXPERIENCED CHARLOTTE  SPIVA      TOP  12-Sep-1972 $75,892 00012
00891 EXPERIENCED FRED       HOWL       F11  9-Apr-1976  $59,594 00012
02943 EXPERIENCED CASS       TERRY      D98  2-Jan-1980  $29,908 39485
12643 TRAINEE     JEFF       TASHKENT   C82  4-Apr-1981  $32,918 87465
32432 TRAINEE     THOMAS     SCHWEIK    F11  7-Nov-1981  $26,723 00891
34456 TRAINEE     HANK       MORRISON   T32  1-Mar-1982  $30,000 87289
38462 EXPERIENCED BILL       SWAY       T32  5-May-1980  $54,000 00012
38465 EXPERIENCED JOANNE     FREIBURG   E46  20-Feb-1980 $23,908 48475
39485 EXPERIENCED DEE        TERRICK    D98  2-May-1977  $55,829 00012
48475 EXPERIENCED GAIL       CASSIDY    E46  2-May-1978  $55,407 00012
48573 TRAINEE     SY         KELLER     T32  2-Aug-1981  $31,546 87289
49001 EXPERIENCED DAN        ROBERTS    C82  7-Jul-1979  $41,395 87465
49843 TRAINEE     BART       HAMMER     D98  4-Aug-1981  $26,392 39485
78923 EXPERIENCED LYDIA      HARRISON   F11  19-Jun-1979 $40,747 00891
83764 EXPERIENCED JIM        MEADER     T32  4-Apr-1980  $41,029 87289
84375 EXPERIENCED MARY       NALEVO     D98  3-Jan-1976  $56,847 39485
87289 EXPERIENCED LOUISE     DEPALMA    G20  28-Feb-1979 $57,598 00012
87465 EXPERIENCED ANTHONY    IACOBONE   C82  2-Jan-1973  $58,462 00012
87701 TRAINEE     NATHANIEL  CHONTZ     F11  28-Jan-1982 $24,502 00891
88001 EXPERIENCED DAVID      LITELLA    G20  11-Nov-1980 $34,933 87289
90342 EXPERIENCED BRUNO      DONCHIKOV  C82  9-Aug-1978  $35,952 87465
91023 TRAINEE     STAN       WITTGEN    G20  23-Dec-1981 $25,023 87289
99029 EXPERIENCED RANDY      PODERESIAN C82  24-May-1979 $33,738 87465

FINISH
!
! AS A KIND GESTURE, MAKE ALL OF THE EXAMPLES SHARABLE
!
DEFINEP RIG-TABLE 2,UIC,[*,*],RE
DEFINEP FAMILIES 2,UIC,[*,*],R
DEFINEP FAMILY-REC 2,UIC,[*,*],RE
DEFINEP KETCHES 2,UIC,[*,*],R
DEFINEP OWNERS 2,UIC,[*,*],R
DEFINEP OWNER-RECORD 2,UIC,[*,*],RE
DEFINEP LOA-REPORT 2,UIC,[*,*],RE
DEFINEP SAILBOATS 2,UIC,[*,*],R
DEFINEP PERSONNEL 2,UIC,[*,*],R
DEFINEP PERSONNEL_REC 2,UIC,[*,*],RE
!
! Completion of DATATRIEVE-11 V3.3 Installation Test
!
EXIT
 End of Datatrieve Installation Verification

Installation of DTR (DTR) ending at 25-Apr-89 10:50

Installation of DTR (DTR) successful.

Auto-Install ended at 25-Apr-89 10:50   .
```

Appendix C

Sample VAX–11 RSX Installation Log

```
Username: SYSTEM
Password:

       MSD Languages and Tools

    Last interactive login on Wednesday, 10-MAY-1989 16:00
    Last non-interactive login on Friday, 14-APR-1989 12:39

                  ---------------------------------
                  - MSD LANGUAGES CLUSTER NOTICES -
                  ---------------------------------


%CMS-I-LIBIS, library is DISK$USER6:[DTR11.CMS.SOURCE]
%CMS-S-LIBSET, library set

$ set def sys$update
$ @vmsinstal dtr11033 pdp$mua1:

 VAX/VMS Software Product Installation Procedure V5.1

It is 10-MAY-1989 at 16:06.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-NOTSYSTEM, You are not logged in to the SYSTEM account.
%VMSINSTAL-W-LOWQUOTA, The following account quotas may be too low.
        BIOLM
        DIOLM
%VMSINSTAL-W-DECNET, Your DECnet network is up and running.

* Do you want to continue anyway [NO]? yes
* Are you satisfied with the backup of your system disk [YES]?

Please mount the first volume of the set on  PDP$MUA1:.
* Are you ready? y

%MOUNT-I-MOUNTED, DTR11 mounted on _PDP$MUA1:
The following products will be processed:

  DTR11 V3.3

 Beginning installation of DTR11 V3.3 at 16:07
```

```
%VMSINSTAL-I-RESTORE, Restoring product saveset A ...
%VMSINSTAL-I-RELMOVED , The product's release notes have been successfully
 moved to SYS$HELP.

        Product:      PDP11-DTR
        Producer:     DEC
        Version:      3.3
        Release Date: 17-MAY-1989

* Does this product have an authorization key registered and loaded? yes

This kit contains the file, DTR11033.RELEASE_NOTES, which is the release
notes for PDP-11 DATATRIEVE/VAX V3.3.  This file is placed in SYS$HELP after
the installation.

* Do you wish to Edit QD.MAC ? [YES]? no
* Do you want to run the IVP after the installation [YES]?
* Do you want to purge files replaced by this installation [YES]?
Module "QD    " replaced

 Building QUERY.DIC AND QUERY.MSG.  If this procedure fails
 try renaming your QUERY.DIC file.


UNABLE TO CREATE NEW QUERY DICTIONARY.  FILE ALREADY EXISTS.
CREATING MESSAGE FILE
POPULATING MESSAGE FILE
SUCCESSFUL COMPLETION
   Building DATATRIEVE-11...
   Building QCPRS...
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...
!
!  Start of DATATRIEVE-11 V3.3 Installation Test
!
!
! ***************************** N O T E ************************************
! *
! * This verification procedure will scroll on the screen for about 7 minutes. *
! *         ( No input is required from you during this time. )
! *
! ******************************************************************************
!
! PRINT TODAY'S DATE
!
PRINT "TODAY" USING DD-MMM-YYYYBBW(9)
10-May-1989  Wednesday
```

```
!
! CLEAN UP FROM POSSIBLE PREVIOUS RUNS OF TEST
!
DELETE FAMILIES;
DELETE FAMILY-REC;
DELETE KETCHES;
DELETE OWNERS-SEQUENTIAL;
DELETE OWNERS;
DELETE OWNER-RECORD;
DELETE SAILBOATS;
DELETE YACHTS-SEQUENTIAL;
DELETE YACHTS;
DELETE YACHT;
DELETE PRICE-PER-POUND;
DELETE VERIFY;
DELETE LOA-REPORT;
DELETE RIG-TABLE;
DELETE PERSONNEL;
DELETE PERSONNEL_SEQ;
DELETE PERSONNEL_REC;
DELETE PERSONNEL_SEQ_REC;
!
! DEFINE RECORD
!
DEFINE RECORD YACHT USING
01 BOAT.
  03 TYPE.
     06 MANUFACTURER PIC X(10)
        QUERY-NAME IS BUILDER.
     06 MODEL PIC X(10).
  03 SPECIFICATIONS
     QUERY-NAME SPECS.
     06 RIG PIC X(6)
        VALID IF RIG EQ "SLOOP","KETCH","MS","YAWL".
     06 LENGTH-OVER-ALL PIC XXX
        VALID IF LOA BETWEEN 15 AND 50
        QUERY-NAME IS LOA.
     06 DISPLACEMENT PIC 99999
        QUERY-HEADER IS "WEIGHT"
        EDIT-STRING IS ZZ,ZZ9
        QUERY-NAME IS DISP.
     06 BEAM PIC 99.
     06 PRICE PIC 99999
        VALID IF PRICE>DISP*1.3 OR PRICE EQ 0
        EDIT-STRING IS $$$,$$$.
;
[Record YACHT is 41 bytes long]
!
! DEFINE DOMAINS
!
DEFINE DOMAIN YACHTS-SEQUENTIAL USING YACHT ON LB:[1,2]YACHT.SEQ ;
DEFINE DOMAIN YACHTS USING YACHT ON YACHT.DAT;
!
! DEFINE THE ACTUAL FILE FOR YACHTS
!
DEFINE FILE YACHTS KEY=TYPE(NO DUP),KEY=MODEL(DUP,NO CHANGE),
       ALLOCATION=30, SUPERSEDE
!
! MAKE YACHTS ACCESSABLE BY OTHERS
```

```
!
DEFINEP YACHTS 2,PW,"SHHHH",W   ! PASSWORD FOR WRITE
DEFINEP YACHTS 3,UIC,[*,*],R    ! EVERYONE ELSE GETS READ
DEFINEP YACHT  2,UIC,[*,*],RE   ! GIVE ACCESS TO RECORD DEFINITION, TOO
SHOWP YACHTS
 1,UIC, [1,*], "RWMEC"
 2,PW, "SHHHH", "W"
 3,UIC, [*,*], "R"
!
! DEFINE PROCEDURES
!
DEFINE PROCEDURE PRICE-PER-POUND
PRICE/DISP ("PRICE"/"PER"/"POUND") USING $$.99
END-PROCEDURE
DEFINEP PRICE-PER-POUND 2,UIC,[*,*],RE
!
DEFINE PROCEDURE VERIFY
VERIFY USING
  BEGIN
     PRINT
     DISPLAY "CONFIRM WITH Y IF OK"
     IF *.CONFIRM NOT CONTAINING "Y" THEN ABORT "UPDATE ABORTED"
  END
END-PROCEDURE
DEFINEP VERIFY 2,UIC,[*,*],RE
!
! COPY DATA FROM SEQUENTIAL TO INDEXED FILE
!
READY YACHTS WRITE
SHOW FIELDS
YACHTS
    BOAT
        TYPE [Indexed field]
            MANUFACTURER (BUILDER)      [Character string, indexed key]
            MODEL        [Character string, indexed key]
        SPECIFICATIONS (SPECS)
            RIG [Character string]
            LENGTH_OVER_ALL (LOA)       [Character string]
            DISPLACEMENT (DISP) [Number]
            BEAM        [Number]
            PRICE       [Number]
READY YACHTS-SEQUENTIAL
SHOW READY
Ready domains:
        YACHTS_SEQUENTIAL: RMS SEQUENTIAL, PROTECTED READ
        YACHTS: RMS INDEXED, PROTECTED WRITE
!
! ************ NOTE  ***********
! *** The following STORE will take 1 - 2 minutes. ***
! ******************************
!
FOR YACHTS-SEQUENTIAL STORE YACHTS USING BOAT=BOAT
!
FINISH YACHTS-SEQUENTIAL;
!
! TEST STORE
!
! PLEASE SUPPLY THE FOLLOWING VALUES:
!    MANUFACTURER:       HINKLEY
```

```
!    MODEL:              BERMUDA 40
!    RIG:                YAWL
!    LENGTH-OVER-ALL:    140
!    LENGTH-OVER-ALL:    40
!    DISPLACEMENT:       20000
!    BEAM:               12
!    PRICE:              82000 AND XX/100
!    PRICE:              $82,000
!    CONFIRM:            N
!
STORE YACHTS USING BEGIN
       MANUFACTURER= "HINKLEY"
       MODEL = "BERMUDA 40"
       RIG = "YAWL"
       LENGTH-OVER-ALL = 40
       DISPLACEMENT= 20000
       BEAM = 12
       PRICE = 82000
       END
!
!
! CHANGE READY MODE FOR READ ACCESS
!
READY YACHTS
FIND YACHTS WITH PRICE NE 0
[51 records found]
SORT BY LOA,DESC DISPLACEMENT
SHOW ALL
Domains:
        OCC             YACHTS          YACHTS_SEQUENTIAL
Records:
        OCC_REC         YACHT
Procedures:
        FOO             KEN_RPT         OCC_TEST        PRICE_PER_POUND
        VERIFY          X               Y
Tables:
The current dictionary is SYS$COMMON:[1,2]QUERY.DIC;
Collections:
 CURRENT
Ready domains:
        YACHTS: RMS INDEXED, PROTECTED READ
SHOW CURRENT
Collection CURRENT
        Domain: YACHTS
        Number of records: 51
        No selected record
        Sort order: LENGTH_OVER_ALL,DISPLACEMENT
PRINT ALL
                                LENGTH
                                 OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE
```

```
 WINDPOWER   IMPULSE     SLOOP   16        650  07   $3,500
 CAPE DORY   TYPHOON     SLOOP   19      1,900  06   $4,295
 VENTURE     21          SLOOP   21      1,500  07   $2,823
 VENTURE     222         SLOOP   22      2,000  07   $3,564
 EASTWARD    HO          MS      24      7,000  09  $15,900
 ISLANDER    BAHAMA      SLOOP   24      4,200  08   $6,500
 IRWIN       25          SLOOP   25      5,400  12  $10,950
 CAPE DORY   25          SLOOP   25      4,000  07   $8,995
 SALT        19          SLOOP   25      2,600  07   $6,590
 WESTERLY    CENTAUR     SLOOP   26      6,700  08  $15,245
 GRAMPIAN    26          SLOOP   26      5,600  08  $11,495
 AMERICAN    26-MS       MS      26      5,500  08  $18,895
 TANZER      26          SLOOP   26      4,350  09  $11,750
 ALBIN       79          SLOOP   26      4,200  10  $17,900
 AMERICAN    26          SLOOP   26      4,000  08   $9,895
 HUNTER      27          SLOOP   27      6,500  09  $14,999
 ALBIN       VEGA        SLOOP   27      5,070  08  $18,600
 CAPE DORY   28          SLOOP   28      9,000  09  $21,990
 SABRE       28          SLOOP   28      7,400  09  $22,000
 GRAMPIAN    28          SLOOP   28      6,900  10  $14,475
 TANZER      28          SLOOP   28      6,800  10  $17,500
 ISLANDER    28          SLOOP   28      5,994  10  $15,908
 NORTHERN    29          SLOOP   29      7,250  09  $20,975
 IRWIN       30          SLOOP   30     10,000  10  $19,950
 HUNTER      30          SLOOP   30      9,500  10  $21,500
 GRAMPIAN    30          SLOOP   30      8,600  09  $17,775
 ISLANDER    30          SLOOP   30      8,600  10  $20,990
 ALBIN       BALLAD      SLOOP   30      7,276  10  $27,500
 RYDER       S. CROSS    SLOOP   31     13,600  00  $32,500
 BOMBAY      CLIPPER     SLOOP   31      9,400  11  $23,950
 WRIGHT      SEAWIND II  SLOOP   32     14,900  00  $34,480
 CHALLENGER  32          SLOOP   32     12,800  11  $31,835
 O'DAY       32          SLOOP   32     11,000  00  $29,500
 BAYFIELD    30/32       SLOOP   32      9,500  10  $32,875
 GRAMPIAN    34          KETCH   33     12,000  10  $29,675
 GRAMPIAN    2-34        SLOOP   34     11,800  10  $29,675
 CARIBBEAN   35          SLOOP   35     18,000  11  $37,850
 CHRIS-CRAF  CARIBBEAN   SLOOP   35     18,000  11  $37,850
 CHALLENGER  35          SLOOP   35     14,800  12  $39,215
 I. TRADER   37          KETCH   36     18,600  12  $39,500
 ISLANDER    36          SLOOP   36     13,450  11  $31,730
 ALBERG      37 MK II    KETCH   37     20,000  12  $36,951
 IRWIN       37 MARK II  KETCH   37     20,000  11  $36,950
 NORTHERN    37          KETCH   37     14,000  11  $50,000
 LINDSEY     39          MS      39     14,500  12  $35,900
 HINKLEY     BERMUDA 40  YAWL    40     20,000  12  $82,000
 CHALLENGER  41          KETCH   41     26,700  13  $51,228
 GULFSTAR    41          KETCH   41     22,000  12  $41,350
 ISLANDER    FREEPORT    KETCH   41     22,000  13  $54,970
 COLUMBIA    41          SLOOP   41     20,700  11  $48,490
 OLYMPIC     ADVENTURE   KETCH   42     24,250  13  $80,500

SELECT FIRST
PRINT

                                LENGTH
                                 OVER
MANUFACTURER   MODEL     RIG     ALL    WEIGHT BEAM  PRICE

 WINDPOWER   IMPULSE     SLOOP   16        650  07   $3,500
```

```
SELECT
PRINT BOAT,:PRICE-PER-POUND

                               LENGTH                      PRICE
                                OVER                        PER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE   POUND

 CAPE DORY   TYPHOON    SLOOP   19     1,900  06   $4,295 $2.26

!
!
! DEFINE REPORT PROCEDURE
!
DEFINE PROCEDURE LOA-REPORT
REPORT ON TI:
   SET REPORT-NAME="JIM'S VERY OWN LISTING"/"OF"/"INTERESTING SAILBOATS"/
       "(BY LENGTH)"
   SET LINES-PAGE=55, COLUMNS-PAGE=72
   AT TOP OF LOA PRINT LOA("LENGTH")
   PRINT TYPE, RIG, DISP, BEAM USING Z9 , PRICE
   AT BOTTOM OF LOA PRINT SKIP, COL 32, "*** AVERAGE ***",
      AVERAGE DISP, AVERAGE BEAM, AVERAGE PRICE
   AT BOTTOM OF REPORT PRINT SKIP, "REPORT AVERAGES",
      AVERAGE DISP, AVERAGE BEAM, AVERAGE PRICE
   AT BOTTOM OF PAGE PRINT SKIP, COL 20,
      """ANOTHER SERVICE OF QUERY ENTERPRISES"""
END-REPORT
END-PROCEDURE
!
! INVOKE REPORT (SUGGEST OUTPUT ON TI:)
!
:LOA-REPORT

                        JIM'S VERY OWN LISTING
                                OF
                        INTERESTING SAILBOATS                10-May-89
                             (BY LENGTH)                     Page 1

      LENGTH      MANUFACTURER    MODEL      RIG    WEIGHT  BEAM  PRICE

       16          WINDPOWER     IMPULSE     SLOOP      650    7   $3,500

                                *** AVERAGE ***         650   07   $3,500
       19          CAPE DORY     TYPHOON     SLOOP    1,900    6   $4,295

                                *** AVERAGE ***       1,900   06   $4,295
       21          VENTURE        21         SLOOP    1,500    7   $2,823

                                *** AVERAGE ***       1,500   07   $2,823
       22          VENTURE        222        SLOOP    2,000    7   $3,564

                                *** AVERAGE ***       2,000   07   $3,564
       24          EASTWARD       HO         MS       7,000    9  $15,900
                   ISLANDER       BAHAMA     SLOOP    4,200    8   $6,500

                                *** AVERAGE ***       5,600   08  $11,200
       25          IRWIN          25         SLOOP    5,400   12  $10,950
                   CAPE DORY      25         SLOOP    4,000    7   $8,995
                   SALT           19         SLOOP    2,600    7   $6,590
```

		*** AVERAGE ***		4,000	08	$8,845
26	WESTERLY	CENTAUR	SLOOP	6,700	8	$15,245
	GRAMPIAN	26	SLOOP	5,600	8	$11,495
	AMERICAN	26-MS	MS	5,500	8	$18,895
	TANZER	26	SLOOP	4,350	9	$11,750
	ALBIN	79	SLOOP	4,200	10	$17,900
	AMERICAN	26	SLOOP	4,000	8	$9,895
		*** AVERAGE ***		5,058	08	$14,196
27	HUNTER	27	SLOOP	6,500	9	$14,999
	ALBIN	VEGA	SLOOP	5,070	8	$18,600
		*** AVERAGE ***		5,785	08	$16,799
28	CAPE DORY	28	SLOOP	9,000	9	$21,990
	SABRE	28	SLOOP	7,400	9	$22,000
	GRAMPIAN	28	SLOOP	6,900	10	$14,475
	TANZER	28	SLOOP	6,800	10	$17,500
	ISLANDER	28	SLOOP	5,994	10	$15,908
		*** AVERAGE ***		7,218	09	$18,374
29	NORTHERN	29	SLOOP	7,250	9	$20,975
		*** AVERAGE ***		7,250	09	$20,975
30	IRWIN	30	SLOOP	10,000	10	$19,950
	HUNTER	30	SLOOP	9,500	10	$21,500
	GRAMPIAN	30	SLOOP	8,600	9	$17,775

"ANOTHER SERVICE OF QUERY ENTERPRISES"

JIM'S VERY OWN LISTING
OF
INTERESTING SAILBOATS 10-May-89
(BY LENGTH) Page 2

LENGTH	MANUFACTURER	MODEL	RIG	WEIGHT	BEAM	PRICE
	ISLANDER	30	SLOOP	8,600	10	$20,990
	ALBIN	BALLAD	SLOOP	7,276	10	$27,500
		*** AVERAGE ***		8,795	09	$21,543
31	RYDER	S. CROSS	SLOOP	13,600	0	$32,500
	BOMBAY	CLIPPER	SLOOP	9,400	11	$23,950
		*** AVERAGE ***		11,500	05	$28,225
32	WRIGHT	SEAWIND II	SLOOP	14,900	0	$34,480
	CHALLENGER	32	SLOOP	12,800	11	$31,835
	O'DAY	32	SLOOP	11,000	0	$29,500
	BAYFIELD	30/32	SLOOP	9,500	10	$32,875
		*** AVERAGE ***		12,050	05	$32,172
33	GRAMPIAN	34	KETCH	12,000	10	$29,675
		*** AVERAGE ***		12,000	10	$29,675
34	GRAMPIAN	2-34	SLOOP	11,800	10	$29,675
		*** AVERAGE ***		11,800	10	$29,675
35	CARIBBEAN	35	SLOOP	18,000	11	$37,850
	CHRIS-CRAF	CARIBBEAN	SLOOP	18,000	11	$37,850
	CHALLENGER	35	SLOOP	14,800	12	$39,215
		*** AVERAGE ***		16,933	11	$38,305
36	I. TRADER	37	KETCH	18,600	12	$39,500
	ISLANDER	36	SLOOP	13,450	11	$31,730

```
                              *** AVERAGE ***      16,025   11  $35,615
       37          ALBERG      37 MK II    KETCH   20,000   12  $36,951
                   IRWIN       37 MARK II  KETCH   20,000   11  $36,950
                   NORTHERN    37          KETCH   14,000   11  $50,000

                              *** AVERAGE ***      18,000   11  $41,300
       39          LINDSEY     39          MS      14,500   12  $35,900

                              *** AVERAGE ***      14,500   12  $35,900
       40          HINKLEY     BERMUDA 40  YAWL    20,000   12  $82,000

                              *** AVERAGE ***      20,000   12  $82,000
       41          CHALLENGER  41          KETCH   26,700   13  $51,228
                   GULFSTAR    41          KETCH   22,000   12  $41,350
                   ISLANDER    FREEPORT    KETCH   22,000   13  $54,970
                   COLUMBIA    41          SLOOP   20,700   11  $48,490

                              *** AVERAGE ***      22,850   12  $49,009

                   "ANOTHER SERVICE OF QUERY ENTERPRISES"

                         JIM'S VERY OWN LISTING
                                OF
                         INTERESTING SAILBOATS                10-May-89
                              (BY LENGTH)                     Page 3

      LENGTH      MANUFACTURER    MODEL      RIG    WEIGHT  BEAM  PRICE

       42          OLYMPIC      ADVENTURE   KETCH   24,250   13  $80,500

                              *** AVERAGE ***      24,250   13  $80,500

 REPORT AVERAGES                                   10,597   09  $26,498

                   "ANOTHER SERVICE OF QUERY ENTERPRISES"
!
! RATTLE UPDATE
!
FIND YACHTS WITH BEAM=0
[5 records found]
PRINT ALL

                               LENGTH
                                OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 TA CHIAO    FANTASIA   SLOOP   35    23,200  00
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480

SELECT FIRST;PRINT

                               LENGTH
                                OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
```

```
READY YACHTS MODIFY
!
! RESPOND WITH 47 (OR SOMETHING)
!
MODIFY USING BEAM = 47
PRINT TYPE,BEAM

MANUFACTURER   MODEL    BEAM

 METALMAST   GALAXY      47

!
! RESPOND WITH 48 (OR SOMETHING)
!
MODIFY ALL USING  BEAM = 48
!
PRINT ALL BEAM

BEAM

 48
 48
 48
 48
 48

!
! RESPOND EACH TIME WITH 0 (PLEASE)
!
FOR CURRENT PRINT TYPE THEN MODIFY USING BEAM = 0

MANUFACTURER   MODEL

 METALMAST   GALAXY
 O'DAY       32
 RYDER       S. CROSS
 TA CHIAO    FANTASIA
 WRIGHT      SEAWIND II

READY YACHTS READ
PRINT ALL

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 METALMAST   GALAXY     SLOOP   32     9,500  00
 O'DAY       32         SLOOP   32    11,000  00  $29,500
 RYDER       S. CROSS   SLOOP   31    13,600  00  $32,500
 TA CHIAO    FANTASIA   SLOOP   35    23,200  00
 WRIGHT      SEAWIND II SLOOP   32    14,900  00  $34,480
```

```
!
! CHECK MULTIPLE COLLECTIONS AND STATISTICAL FUNCTIONS
!
FIND SMALLS IN YACHTS WITH LOA<24 AND PRICE NE 0
[4 records found]
!
FIND BIGGIES IN YACHTS WITH LOA>40 AND PRICE NE 0
[5 records found]
!
SHOW COLLECTIONS
Collections:
        BIGGIES (also CURRENT)
        SMALLS
!
PRINT AVERAGE DISP

WEIGHT

23,130

!
PRINT MAX DISP

WEIGHT

26,700

!
PRINT AVERAGE PRICE OF BIGGIES,AVERAGE PRICE OF SMALLS

 PRICE   PRICE

$55,307  $3,545

!
SORT SMALLS BY LOA,DISP
SORT BIGGIES BY LOA,DISP
SELECT FIRST SMALLS
SELECT LAST BIGGIES
PRINT SMALLS.BOAT,SKIP,BIGGIES.BOAT

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 WINDPOWER   IMPULSE    SLOOP   16       650  07   $3,500
 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500

!
!
PRINT YACHTS WITH LOA EQ MAX LOA OF YACHTS

                              LENGTH
                               OVER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE

 OLYMPIC     ADVENTURE  KETCH   42    24,250  13  $80,500
 PEARSON     419        KETCH   42    21,000  13
```

```
!
! TEST OF HIERARCHIES AND VIEW
!
DEFINE DOMAIN FAMILIES
 USING FAMILY-REC ON LB:[1,2]FAMILY.DAT;
DEFINE RECORD FAMILY-REC
01 FAMILY.
   03 PARENTS.
      06 FATHER PIC X(10).
      06 MOTHER PIC X(10).
   03 NUMBER-KIDS PIC 99 EDIT-STRING IS Z9.
   03 KIDS OCCURS 0 TO 10 TIMES DEPENDING ON NUMBER-KIDS.
      06 EACH-KID.
         09 KID-NAME PIC X(10) QUERY-NAME IS KID.
         09 AGE PIC 99 EDIT-STRING IS Z9.
;
[Record FAMILY_REC is 142 bytes long]
!
! PERFORM A FEW NIFTY OPERATIONS ON FAMILIES
!
READY FAMILIES
SHOW FIELDS FOR FAMILIES
 FAMILY
     PARENTS
         FATHER [Character string]
         MOTHER [Character string]
     NUMBER_KIDS     [Number]
     KIDS [List]
         EACH_KID
             KID_NAME (KID)   [Character string]
             AGE     [Number]
PRINT FAMILIES

                      NUMBER    KID
  FATHER     MOTHER    KIDS     NAME    AGE
```

```
JIM         ANN           2   URSULA      7
                              RALPH       3
JIM         LOUISE        5   ANNE       31
                              JIM        29
                              ELLEN      26
                              DAVID      24
                              ROBERT     16
JOHN        JULIE         2   ANN        29
                              JEAN       26
JOHN        ELLEN         1   CHRISTOPHR  0
ARNIE       ANNE          2   SCOTT       2
                              BRIAN       0
SHEARMAN    SARAH         1   DAVID       0
TOM         ANNE          2   PATRICK     4
                              SUZIE       6
BASIL       MERIDETH      6   BEAU       28
                              BROOKS     26
                              ROBIN      24
                              JAY        22
                              WREN       17
                              JILL       20
ROB         DIDI          0
JEROME      RUTH          4   ERIC       32
                              CISSY      24
                              NANCY      22
                              MICHAEL    20
TOM         BETTY         2   MARTHA     30
                              TOM        27
GEORGE      LOIS          3   JEFF       23
                              FRED       26
                              LAURA      21
HAROLD      SARAH         3   CHARLIE    31
                              HAROLD     35
                              SARAH      27
EDWIN       TRINITA       2   ERIC       16
                              SCOTT      11

FIND FAMILIES WITH ANY KIDS WITH AGE>25
[7 records found]
PRINT ALL SKIP, PARENTS, ALL KIDS SORTED BY AGE

                          KID
  FATHER      MOTHER      NAME    AGE

JIM         LOUISE      ROBERT     16
                        DAVID      24
                        ELLEN      26
                        JIM        29
                        ANNE       31

JOHN        JULIE       JEAN       26
                        ANN        29

BASIL       MERIDETH    WREN       17
                        JILL       20
                        JAY        22
                        ROBIN      24
                        BROOKS     26
                        BEAU       28
```

```
JEROME     RUTH       MICHAEL    20
                      NANCY      22
                      CISSY      24
                      ERIC       32

TOM        BETTY      TOM        27
                      MARTHA     30

GEORGE     LOIS       LAURA      21
                      JEFF       23
                      FRED       26

HAROLD     SARAH      SARAH      27
                      CHARLIE    31
                      HAROLD     35

FINISH
!
! DEFINE A VIEW OF THE DOMAIN YACHTS
!
DEFINE DOMAIN KETCHES
 OF YACHTS BY
01 KETCH OCCURS FOR YACHTS WITH RIG EQ "KETCH".
  03 TYPE FROM YACHTS.
  03 LOA FROM YACHTS.
  03 PRICE FROM YACHTS.
;
!
! SHOW OFF KETCHES
!
READY KETCHES
PRINT KETCHES

                       LENGTH
                        OVER
MANUFACTURER   MODEL     ALL    PRICE

 ALBERG      37 MK II    37    $36,951
 CHALLENGER  41          41    $51,228
 FISHER      30          30
 FISHER      37          37
 GRAMPIAN    34          33    $29,675
 GULFSTAR    41          41    $41,350
 I. TRADER   37          36    $39,500
 IRWIN       37 MARK II  37    $36,950
 ISLANDER    FREEPORT    41    $54,970
 NORTHERN    37          37    $50,000
 OLYMPIC     ADVENTURE   42    $80,500
 PEARSON     365         36
 PEARSON     419         42
```

```
FINISH
!
! DEFINE A DOMAIN AND FILE OF SAILBOAT OWNERS
!
DEFINE DOMAIN OWNERS
 USING OWNER-RECORD ON OWNER.DAT;
DEFINE RECORD OWNER-RECORD
01 OWNER.
   03 NAME PIC X(10) QUERY-HEADER IS "OWNER"/"NAME"
      EDIT-STRING IS X(5).
   03 BOAT-NAME PIC X(17) QUERY-HEADER IS "BOAT NAME".
   03 TYPE.
      06 BUILDER PIC X(10).
      06 MODEL PIC X(10).
;
[Record OWNER_RECORD is 47 bytes long]
DEFINE DOMAIN OWNERS-SEQUENTIAL USING OWNER-RECORD ON LB:[1,2]OWNER.SEQ;
DEFINE FILE FOR OWNERS KEY=TYPE(DUP), SUPERSEDE
READY OWNERS WRITE
READY OWNERS-SEQUENTIAL
!
! ************ NOTE  ***********
! *** The following STORE will take about 1/2 minute. ***
! ******************************
!
FOR OWNERS-SEQUENTIAL STORE OWNERS USING OWNER=OWNER
FINISH OWNERS-SEQUENTIAL
!
! PRINT OUT THE OWNERS FILE
!
PRINT OWNERS

OWNER
NAME      BOAT NAME      BUILDER     MODEL

SHERM MILLENNIUM FALCON ALBERG     35
STEVE DELIVERANCE       ALBIN      VEGA
HUGH  IMPULSE           ALBIN      VEGA
JIM   EGRET             C&C        CORVETTE
ANN   EGRET             C&C        CORVETTE
BOB   FIESTA            CAL        28
JIM   REGRET            CHEAP      DINK
NEIL  JARGES PRIDE      CROCKER    33
GERAR KESTREL           ERICSON    39
ARNE  CHIMERA           HINKLEY    BERMUDA 40
JIM   POTEMKIN          ISLANDER   BAHAMA
ANN   POTEMKIN          ISLANDER   BAHAMA
STEVE POTEMKIN          ISLANDER   BAHAMA
HARVE MANANA            ISLANDER   BAHAMA
TOM   LONE TRAVELLER    PEARSON    10M
DICK  PURSUIT           PEARSON    26
CHRIS VANITY            PEARSON    ARIEL
JOHN  STRIDER           RHODES     SWIFTSURE
```

```
FINISH
!
! DEFINE THE MIGHTY, MULTIPLE FILE VIEW OF YACHTS AND OWNERS
!
DEFINE DOMAIN SAILBOATS
 OF YACHTS, OWNERS BY
01 SAILBOAT OCCURS FOR YACHTS.
   03 BOAT FROM YACHTS.
   03 SKIPPERS OCCURS FOR OWNERS WITH TYPE EQ BOAT.TYPE.
      05 NAME FROM OWNERS.
;
!
! EXERCISE SAILBOATS A LITTLE
!
READY SAILBOATS
SHOW FIELDS
SAILBOATS
    SAILBOAT
        BOAT
            TYPE [Indexed field]
                MANUFACTURER (BUILDER) [Character string, indexed key]
                MODEL  [Character string, indexed key]
            SPECIFICATIONS (SPECS)
                RIG    [Character string]
                LENGTH_OVER_ALL (LOA)   [Character string]
                DISPLACEMENT (DISP)     [Number]
                BEAM    [Number]
                PRICE   [Number]
        SKIPPERS [List]
            NAME        [Character string]
PRINT FIRST 5 SAILBOATS

                              LENGTH
                               OVER                          OWNER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  NAME

 ALBERG      37 MK II   KETCH   37    20,000  12  $36,951
 ALBIN       79         SLOOP   26     4,200  10  $17,900
 ALBIN       BALLAD     SLOOP   30     7,276  10  $27,500
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600 STEVE
                                                           HUGH
 AMERICAN    26         SLOOP   26     4,000  08   $9,895

FIND SAILBOATS WITH ANY SKIPPERS
[7 records found]
PRINT ALL

                              LENGTH
                               OVER                          OWNER
MANUFACTURER   MODEL     RIG    ALL   WEIGHT BEAM  PRICE  NAME
```

```
 ALBIN       VEGA       SLOOP   27     5,070  08  $18,600 STEVE
                                                          HUGH
 C&C         CORVETTE   SLOOP   31     8,650  09          JIM
                                                          ANN
 HINKLEY     BERMUDA 40 YAWL    40    20,000  12  $82,000 ARNE
 ISLANDER    BAHAMA     SLOOP   24     4,200  08   $6,500 JIM
                                                          ANN
                                                          STEVE
                                                          HARVE
 PEARSON     10M        SLOOP   33    12,441  11          TOM
 PEARSON     26         SLOOP   26     5,400  08          DICK
 RHODES      SWIFTSURE  SLOOP   33    14,000  10          JOHN

!
! CHECK OUT TABLES
!
DEFINE TABLE RIG-TABLE
"SLOOP" : "ONE MAST",
"KETCH" : "TWO MASTS, BIG ONE IN FRONT",
"YAWL"  : "SIMILAR TO KETCH",
"M/S"   : "SAILS AND BIG MOTOR",
ELSE "SOMETHING ELSE"
END-TABLE
!
READY YACHTS
FIND YACHTS WITH RIG IN RIG-TABLE
[109 records found]
PRINT ALL TYPE, RIG, RIG VIA RIG-TABLE USING X(30)

MANUFACTURER   MODEL     RIG                RIG

 ALBERG      37 MK II   KETCH  TWO MASTS, BIG ONE IN FRONT
 ALBIN       79         SLOOP  ONE MAST
 ALBIN       BALLAD     SLOOP  ONE MAST
 ALBIN       VEGA       SLOOP  ONE MAST
 AMERICAN    26         SLOOP  ONE MAST
 BAYFIELD    30/32      SLOOP  ONE MAST
 BLOCK I.    40         SLOOP  ONE MAST
 BOMBAY      CLIPPER    SLOOP  ONE MAST
 BUCCANEER   270        SLOOP  ONE MAST
 BUCCANEER   320        SLOOP  ONE MAST
 C&C         CORVETTE   SLOOP  ONE MAST
 CABOT       36         SLOOP  ONE MAST
 CAL         2-27       SLOOP  ONE MAST
 CAL         2-34       SLOOP  ONE MAST
 CAL         29         SLOOP  ONE MAST
 CAL         3-30       SLOOP  ONE MAST
 CAL         35         SLOOP  ONE MAST
 CAPE DORY   25         SLOOP  ONE MAST
 CAPE DORY   28         SLOOP  ONE MAST
 CAPE DORY   TYPHOON    SLOOP  ONE MAST
 CAPITAL     NEWPORT    SLOOP  ONE MAST
 CARIBBEAN   35         SLOOP  ONE MAST
 CHALLENGER  32         SLOOP  ONE MAST
 CHALLENGER  35         SLOOP  ONE MAST
 CHALLENGER  41         KETCH  TWO MASTS, BIG ONE IN FRONT
 CHRIS-CRAF  CARIBBEAN  SLOOP  ONE MAST
 COLUMBIA    35         SLOOP  ONE MAST
 COLUMBIA    41         SLOOP  ONE MAST
 COLUMBIA    PAYNE 9.6  SLOOP  ONE MAST
```

```
DOUGLAS     32          SLOOP  ONE MAST
DOWN EAST   32          SLOOP  ONE MAST
DOWN EAST   38          SLOOP  ONE MAST
DUFOUR      25          SLOOP  ONE MAST
ENCHILADA   20          SLOOP  ONE MAST
ENDEAVOUR   32          SLOOP  ONE MAST
ERICSON     23/ SPECIA SLOOP  ONE MAST
ERICSON     CRUISING/3 SLOOP  ONE MAST
FISHER      30          KETCH  TWO MASTS, BIG ONE IN FRONT
FISHER      37          KETCH  TWO MASTS, BIG ONE IN FRONT
GRAMPIAN    2-34        SLOOP  ONE MAST
GRAMPIAN    26          SLOOP  ONE MAST
GRAMPIAN    28          SLOOP  ONE MAST
GRAMPIAN    30          SLOOP  ONE MAST
GRAMPIAN    34          KETCH  TWO MASTS, BIG ONE IN FRONT
GULFSTAR    41          KETCH  TWO MASTS, BIG ONE IN FRONT
HINKLEY     BERMUDA 40 YAWL   SIMILAR TO KETCH
HUNTER      27          SLOOP  ONE MAST
HUNTER      30          SLOOP  ONE MAST
I. TRADER   37          KETCH  TWO MASTS, BIG ONE IN FRONT
IRWIN       25          SLOOP  ONE MAST
IRWIN       30          SLOOP  ONE MAST
IRWIN       37 MARK II KETCH  TWO MASTS, BIG ONE IN FRONT
IRWIN       HALF TON    SLOOP  ONE MAST
ISLANDER    28          SLOOP  ONE MAST
ISLANDER    30          SLOOP  ONE MAST
ISLANDER    36          SLOOP  ONE MAST
ISLANDER    BAHAMA      SLOOP  ONE MAST
ISLANDER    FREEPORT    KETCH  TWO MASTS, BIG ONE IN FRONT
MARIEHOLD   32          SLOOP  ONE MAST
METALMAST   GALAXY      SLOOP  ONE MAST
MOODY       33          SLOOP  ONE MAST
NAUTOR      SWAN 41     SLOOP  ONE MAST
NEWPORT     27S         SLOOP  ONE MAST
NEWPORT     30 II       SLOOP  ONE MAST
NEWPORT     41 S        SLOOP  ONE MAST
NICHOLSON   33          SLOOP  ONE MAST
NORTHERN    29          SLOOP  ONE MAST
NORTHERN    37          KETCH  TWO MASTS, BIG ONE IN FRONT
O'DAY       27          SLOOP  ONE MAST
O'DAY       32          SLOOP  ONE MAST
OLYMPIC     ADVENTURE   KETCH  TWO MASTS, BIG ONE IN FRONT
ONTARIO     32          SLOOP  ONE MAST
ONTARIO     VIKING      SLOOP  ONE MAST
PACESHIP    PY26        SLOOP  ONE MAST
PEARSON     10M         SLOOP  ONE MAST
PEARSON     26          SLOOP  ONE MAST
PEARSON     26W         SLOOP  ONE MAST
PEARSON     28          SLOOP  ONE MAST
PEARSON     30          SLOOP  ONE MAST
PEARSON     35          SLOOP  ONE MAST
PEARSON     36          SLOOP  ONE MAST
PEARSON     365         KETCH  TWO MASTS, BIG ONE IN FRONT
PEARSON     39          SLOOP  ONE MAST
PEARSON     419         KETCH  TWO MASTS, BIG ONE IN FRONT
RANGER      26          SLOOP  ONE MAST
RANGER      28          SLOOP  ONE MAST
RANGER      29          SLOOP  ONE MAST
RANGER      33          SLOOP  ONE MAST
```

```
 RHODES      SWIFTSURE  SLOOP  ONE MAST
 ROBERTS     29         SLOOP  ONE MAST
 ROBERTS     36         SLOOP  ONE MAST
 RYDER       S. CROSS   SLOOP  ONE MAST
 S2          8M AFT     SLOOP  ONE MAST
 S2          8M MID     SLOOP  ONE MAST
 SABRE       28         SLOOP  ONE MAST
 SALT        19         SLOOP  ONE MAST
 SAN JUAN    21         SLOOP  ONE MAST
 SAN JUAN    26         SLOOP  ONE MAST
 SCAMPI      30         SLOOP  ONE MAST
 SOLNA CORP  SCAMPI     SLOOP  ONE MAST
 TA CHIAO    FANTASIA   SLOOP  ONE MAST
 TANZER      26         SLOOP  ONE MAST
 TANZER      28         SLOOP  ONE MAST
 VENTURE     21         SLOOP  ONE MAST
 VENTURE     222        SLOOP  ONE MAST
 WESTERLY    CENTAUR    SLOOP  ONE MAST
 WESTSAIL    32         SLOOP  ONE MAST
 WINDPOWER   IMPULSE    SLOOP  ONE MAST
 WRIGHT      SEAWIND II SLOOP  ONE MAST

SHOW TABLES
Tables loaded:
        RIG_TABLE
Tables:
        RIG_TABLE
!
! DECLARE A GLOBAL VARIABLE TO SIMPLIFY TABLE LOOK UP
!

DECLARE RIG-DESCRIPTION COMPUTED BY RIG VIA RIG-TABLE
        EDIT-STRING IS X(30).
!
PRINT TYPE, RIG-DESCRIPTION OF FIRST 10 YACHTS

                                    RIG
MANUFACTURER   MODEL             DESCRIPTION

 ALBERG      37 MK II   TWO MASTS, BIG ONE IN FRONT
 ALBIN       79         ONE MAST
 ALBIN       BALLAD     ONE MAST
 ALBIN       VEGA       ONE MAST
 AMERICAN    26         ONE MAST
 AMERICAN    26-MS      SOMETHING ELSE
 BAYFIELD    30/32      ONE MAST
 BLOCK I.    40         ONE MAST
 BOMBAY      CLIPPER    ONE MAST
 BUCCANEER   270        ONE MAST
```

```
!
! RELEASE TABLE AND GLOBAL COMPUTED BY VARIABLE FROM MEMORY
!
RELEASE RIG-TABLE
FINISH
!
! Define Record for PERSONNEL
!
DEFINE RECORD PERSONNEL_REC USING
01  PERSON.
    05 ID                   PIC IS 9(5).
    05 EMPLOYEE_STATUS      PIC IS X(11)
                            QUERY_NAME IS STATUS
                            QUERY_HEADER IS "STATUS"
                            VALID IF STATUS EQ "TRAINEE","EXPERIENCED".
    05 EMPLOYEE_NAME        QUERY_NAME IS NAME.
        10 FIRST_NAME           PIC IS X(10)
                                QUERY_NAME IS F_NAME.
        10 LAST_NAME            PIC IS X(10)
                                QUERY_NAME IS L_NAME.
    05 DEPT                 PIC IS XXX.
    05 START_DATE           USAGE IS DATE.
    05 SALARY               PIC IS 9(5)
                            EDIT_STRING IS $$$,$$$.
    05 SUP_ID               PIC IS 9(5).
;
[Record PERSONNEL_REC is 58 bytes long]
!
! Define Record for PERSONNEL_SEQ
!
DEFINE RECORD PERSONNEL_SEQ_REC
 USING
01  PERSON.
    05 ID                   PIC IS 9(5).
    05 EMPLOYEE_STATUS      PIC IS X(11)
                            QUERY_NAME IS STATUS
                            QUERY_HEADER IS "STATUS"
                            VALID IF STATUS EQ "TRAINEE","EXPERIENCED".
    05 EMPLOYEE_NAME        QUERY_NAME IS NAME.
        10 FIRST_NAME           PIC IS X(10)
                                QUERY_NAME IS F_NAME.
        10 LAST_NAME            PIC IS X(10)
                                QUERY_NAME IS L_NAME.
    05 DEPT                 PIC IS XXX.
    05 START_DATE           PIC IS X(11).
    05 SALARY               PIC IS 9(5)
                            EDIT_STRING IS $$$,$$$.
    05 SUP_ID               PIC IS 9(5).
;
[Record PERSONNEL_SEQ_REC is 60 bytes long]
!
! Define Domain for PERSONNEL
!
DEFINE DOMAIN PERSONNEL USING PERSONNEL_REC ON PERSON.DAT;
!
! Define Domain for PERSONNEL_SEQ
!
DEFINE DOMAIN PERSONNEL_SEQ USING PERSONNEL_SEQ_REC ON LB:[1,2]PERSON.SEQ;
!
```

```
! Define File for PERSONNEL
!
DEFINE FILE FOR PERSONNEL KEY=ID, SUPERCEDE;
!
! Copy Data from Sequential to Indexed File.
!
READY PERSONNEL WRITE
SHOW FIELDS
PERSONNEL
    PERSON
        ID      [Number, indexed key]
        EMPLOYEE_STATUS (STATUS)      [Character string]
        EMPLOYEE_NAME (NAME)
            FIRST_NAME (F_NAME)       [Character string]
            LAST_NAME (L_NAME)        [Character string]
        DEPT    [Character string]
        START_DATE      [Date]
        SALARY  [Number]
        SUP_ID  [Number]
Global variables:
    RIG_DESCRIPTION      [Computed value]
READY PERSONNEL_SEQ
SHOW READY
Ready domains:
        PERSONNEL_SEQ: RMS SEQUENTIAL, PROTECTED READ
        PERSONNEL: RMS INDEXED, PROTECTED WRITE
!
!
! ************ NOTE  ***********
! *** The following STORE will take about 1/2 minute. ***
! ******************************
!
FOR PERSONNEL_SEQ STORE PERSONNEL USING PERSON=PERSON
!
FINISH PERSONNEL_SEQ;
!
! Check out PERSONNEL
!
READY PERSONNEL
FIND PERSONNEL
[23 records found]
PRINT
No record selected, printing whole collection

                    FIRST       LAST            START             SUP
 ID     STATUS       NAME       NAME    DEPT    DATE     SALARY   ID
```

```
00012 EXPERIENCED CHARLOTTE  SPIVA      TOP  12-Sep-1972 $75,892 00012
00891 EXPERIENCED FRED       HOWL       F11  9-Apr-1976  $59,594 00012
02943 EXPERIENCED CASS       TERRY      D98  2-Jan-1980  $29,908 39485
12643 TRAINEE     JEFF       TASHKENT   C82  4-Apr-1981  $32,918 87465
32432 TRAINEE     THOMAS     SCHWEIK    F11  7-Nov-1981  $26,723 00891
34456 TRAINEE     HANK       MORRISON   T32  1-Mar-1982  $30,000 87289
38462 EXPERIENCED BILL       SWAY       T32  5-May-1980  $54,000 00012
38465 EXPERIENCED JOANNE     FREIBURG   E46  20-Feb-1980 $23,908 48475
39485 EXPERIENCED DEE        TERRICK    D98  2-May-1977  $55,829 00012
48475 EXPERIENCED GAIL       CASSIDY    E46  2-May-1978  $55,407 00012
48573 TRAINEE     SY         KELLER     T32  2-Aug-1981  $31,546 87289
49001 EXPERIENCED DAN        ROBERTS    C82  7-Jul-1979  $41,395 87465
49843 TRAINEE     BART       HAMMER     D98  4-Aug-1981  $26,392 39485
78923 EXPERIENCED LYDIA      HARRISON   F11  19-Jun-1979 $40,747 00891
83764 EXPERIENCED JIM        MEADER     T32  4-Apr-1980  $41,029 87289
84375 EXPERIENCED MARY       NALEVO     D98  3-Jan-1976  $56,847 39485
87289 EXPERIENCED LOUISE     DEPALMA    G20  28-Feb-1979 $57,598 00012
87465 EXPERIENCED ANTHONY    IACOBONE   C82  2-Jan-1973  $58,462 00012
87701 TRAINEE     NATHANIEL  CHONTZ     F11  28-Jan-1982 $24,502 00891
88001 EXPERIENCED DAVID      LITELLA    G20  11-Nov-1980 $34,933 87289
90342 EXPERIENCED BRUNO      DONCHIKOV  C82  9-Aug-1978  $35,952 87465
91023 TRAINEE     STAN       WITTGEN    G20  23-Dec-1981 $25,023 87289
99029 EXPERIENCED RANDY      PODERESIAN C82  24-May-1979 $33,738 87465

FINISH
!
! AS A KIND GESTURE, MAKE ALL OF THE EXAMPLES SHARABLE
!
DEFINEP RIG-TABLE 2,UIC,[*,*],RE
DEFINEP FAMILIES 2,UIC,[*,*],R
DEFINEP FAMILY-REC 2,UIC,[*,*],RE
DEFINEP KETCHES 2,UIC,[*,*],R
DEFINEP OWNERS 2,UIC,[*,*],R
DEFINEP OWNER-RECORD 2,UIC,[*,*],RE
DEFINEP LOA-REPORT 2,UIC,[*,*],RE
DEFINEP SAILBOATS 2,UIC,[*,*],R
DEFINEP PERSONNEL 2,UIC,[*,*],R
DEFINEP PERSONNEL_REC 2,UIC,[*,*],RE
!
! Completion of DATATRIEVE-11 V3.3 Installation Test
!
EXIT
 Installation of DTR11 V3.3 completed at 16:41

 VMSINSTAL procedure done at 16:42
```