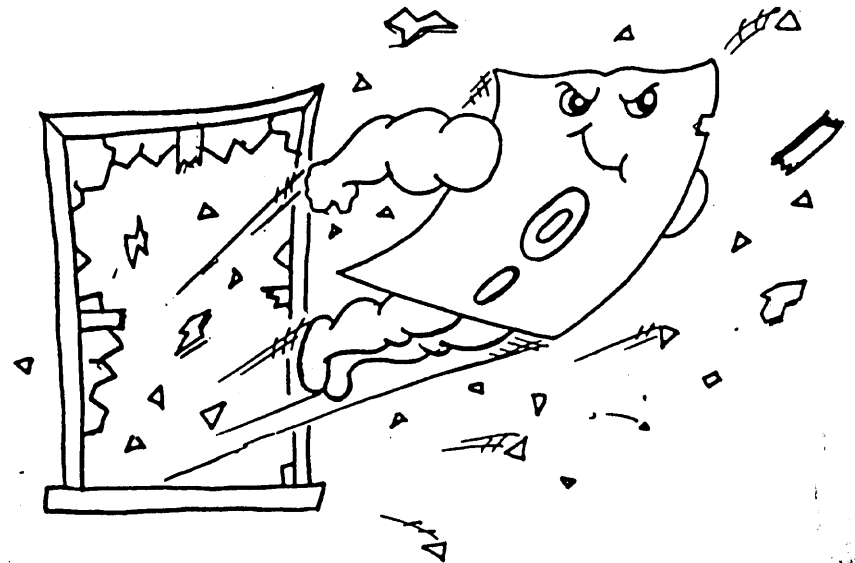


DATA WINDOWS



USER'S MANUAL

Foreword

There are always several problems with software documentation. First, it is always dry, bland, boring, and hard to read. Second, it never gives enough detail on the product. This is somewhat of a dilemma because the more detail that is given, the more bland and boring it becomes!

To help alleviate this problem, this document is divided into two sections, usage and reference.

The usage section describes how to use the program in a non-technical, non-detailed, and somewhat non-bland way. This will hopefully promote more reading and a better understanding of the product.

The reference section describes, bit by bit, in detail, how the system works. It goes menu for menu, option for option, prompt for prompt through the system. This is, of course, bland and boring but necessary.

To use this document most effectively, you should read through the usage sections, then refer to the reference section as necessary. Hopefully this will make this documentation easier to read and the system easier to understand.

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Introduction

Data-Windows is a complete database handling package for the Radio Shack Color Computer III. It requires OS9 Level II and at least 256k of memory. It gives you complete access to all functions necessary in manipulating complex databases.

Data-Windows allows you to create and maintain databases on your COCO. A database is a file system that allows you to store various types of data. Databases are explained further in the following section.

Data-Windows takes an innovative approach to manipulating databases. It allows you to manipulate databases with windows (hence the name). Windows make data handling more attractive and user friendly. A detailed explanation of how windows are used to manipulate database is given in the section on "Windows".

We feel that you have made a wise decision in choosing Data-Windows. We hope to become the database standard for the COCO. We will do this by providing the file formats and data structures used by our database system. This will encourage other vendors to create applications programs that are compatible with Data-Windows database formats. This will mean more and better applications programs for the COCO community. The proper name for the file format used by Data - Windows is "DB9-90". The manual will reference this in several places.

Alpha Software will also be providing a development toolkit for writing files in the DB9-90 format. This will make for speedier development of software that uses the format. If you are interested in developing software for the DB9-90 file format, call or write us here at Alpha Software Technologies and we will update you on the "Data - Developer" software.

Database System Overview

Databases

So what is a database? A database is a collection of data stored in some specific format on some magnetic media (disk). This is a very general description and does not give you any real idea of what a database can do for you.

Basically a database is used to store and retrieve some information. Most database systems are tailored for some specific task, like storing names and addresses. Data-Windows is not tailored to any specific task, you can store almost any kind of information with Data-Windows. YOU define what the data is that you want to store. This means that you can define many different databases for all of your needs. Here are some examples:

A database of names, addresses, and phone numbers of friends and relatives.

A database of all the doctor visits for your family, when they were, what for, and what cost.

A database of the insurance policies your family currently has, when they expire, what the renewal rates are, and how long they last.

A database of club members names, addresses, and phone numbers.

A database of customers and their purchases, credit histories, etc. for small businesses.

A database of video tapes, magazine articles, recipes, mixed-drinks, high game scores, the list goes on and on!

You define what data you want to store by describing what "fields" you want in your database. A field is some small portion of your data, like a name, or an address. For each database you must define what "fields" of information you want to store. The database will then store many sets of these fields. Each set of fields is a record.

As an example, lets look at a phone database. The fields for this database could be "name" and "number". Each record in the database would hold one person's name and phone number.

Another important aspect of databases is their ability to locate data quickly. This ability is handled through indexes. An index is a separate file that stores only enough information to locate a record in the database. A separate index must be made for each field in a database that might be used to search for records. Once

again let's use the phone database as an example. The database could be indexed on both name and phone number. If you want to lookup a number for a name, use the name index. If you want to find a name from a number, use the number index.

Indexes are stored on disk in a special way. This storage method, called a B-tree, allows for quick searching of data. B-trees do, however, have some limitations. One of these limitations is that the key must be limited by some length. This does not mean that the key field is limited to this length, it only means that the SIGNIFICANCE of the key is limited. In Data-Windows the maximum key significance is 32 characters. Any characters after that length are not recognized by the index (although they are stored in the database). This will not cause problems as even if two keys match, you can scroll until the right key is found.

As you can see, there are many things that can be stored in a database. The other function of a database system is retrieving data. Data-Windows allows 3 different ways to retrieve your data. You can view the data on the screen in a data window, you can get a report of your data (either on screen, printer or file), and you can put the data onto mailing labels (for mailing lists).

With all of these capabilities, you can do just about anything you want to do with your COCO.

Windows

So what does a window have to do with a database?

There must be some way for the user to view, change, and add data to a database. This is all done through a Data-Window.

When you create a database, you must also create at least one window with which to manipulate the data. It is through this window that all modifications of data will take place. A Data-Window is basically an OS9 window with some fields of data placed in it. Data fields are explained further in the section on setting up a database, but basically a field is some element of data to be stored, like a name, or an address.

In addition to defining what field of data will be displayed, you can also define how that data will look. This is called a data picture. The data picture formats the data in some specific way. This formatting can include things such as dashes and colons in certain positions of the data, decimal points, parenthesis, or even mandatory text. The data can also be forced to uppercase or numbers. Data pictures are described in more detail in the section on creating a Data-Window.

Another powerful feature of Data-Windows is that more than one window can be created for each database. This allows different users to view and edit different parts of the database. As an example, a window can be created for club members that does not allow them to change the amount of dues they have paid, and a separate window for the club treasurer that does allow the dues to be changed.

Windows are a powerful mechanism for manipulating data. They make the modification of data a simple task, while still providing all capabilities needed in data manipulation. They also allow some controls to be established on how data looks and how it can be manipulated.

Data Output

With any database system, it is important to have some reasonable way to retrieve the data. In Data-Windows the main interaction between the user (you) and the data is through windows as explained in the section on windows. Other types of data output are also required with any database system. The most commonly needed data output mechanisms are reports and mailing labels.

Data-Windows can generate both reports and mailing labels from any database. You are given the ability to create these reports and labels, and to determine what they look like. The method used for designing both reports and labels is quite similar to the method used for designing windows. The same method of defining pictures for your data apply to reports and labels.

For a report, you must define the width of the report and the number of lines per record on the report. Most reports will only require 1 line per record, but some reports have information such as addresses that require multiple lines. Once the parameters for the report are defined, the data elements to be placed on the report can be defined. The editing of the report is just like the editing of a window. Picture elements are used to define what each record will look like on paper. In addition to pictures, report break fields and report total fields can be defined. These will be explained further in the section on reports.

For a mailing label, as with the report, a width and height must be defined. This width and height can be calculated by measuring the mailing label you wish to use. Once again, the editing is just like editing a window. Pictures are used to define what the data on the mailing label will look like. Each mailing label can almost be considered a window.

As can be seen, the picture method of defining data is very useful. It allows the user to know exactly how things will look, before any actual data is seen. Pictures are also very easy to use, once you get used to them.

Data - Windows System Description

Installation

With the Data - Windows system you should get 2 35 track single sided floppy disks. These are the distribution disks. The first thing that you should do before starting is make a backup of these disks. I know it's a pain, BUT DO IT!!!

To make the backup follow this procedure:

Boot up OS9
type:backup /d0 /d0 #56k
follow the prompts

Once you have a backup, you can put the distribution disks away and use the backup for the rest of the installation.

Data - Windows requires that you have the drive /dd installed in your system. Whatever drive is installed as /dd will be the main Data - Windows drive. If you have not installed a /dd drive, use CONFIG and select one of the "dddX.dd" options (where x is the drive number). You can also refer to the appendix on configuring your system for more information.

OS9 supports many different types of drives. For this reason, there are different ways that you might want to install and use Data - Windows.

If you have only single sided 35 track disk drives, you will probably want to use the backup of the distribution disks as-is. For those who want to do this, or for those who want to get up and running as fast as possible, skip to the RUNNING DATA WINDOWS section.

If you want to install Data - Windows for a different type of disk drive, you will want to read on.

NOTE: you may have a double sided disk drive, but OS9 must KNOW that you have it. If you have a double sided disk drive, you must tell OS9 from within CONFIG. If you did not do this, you should. You should also see the appendix on configuring your system for more information.

To install Data - Windows, follow this procedure:

Boot up your OS9 system.
Replace the disk in drive 0 with the Data - Windows disk #2.
type:chd /d0
type:chx /d0/cmds

type:Install
Follow the prompts.

The Data - Windows installation program will prompt you for all of the information that it needs to install the Data - Windows system. This includes:

The names of the source and destination drives to be used for the installation process.

The type of drives that Data - Windows will be installed for (single or double sided/ hard).

After answering these questions, you will be prompted to swap disks, etc as necessary.

NOTE:

Before executing the installation program you should have formatted disks ready. 1 formatted disk is required for double sided drives, 2 disks for single sided drives.

Execution

After Data – Windows is installed, you will want to run it. To do this there are several options:

If you want to use Multi – Vue, follow this procedure:

Boot up your Multi – Vue System

Remove your Multi – Vue disk from the drive (if your using floppies) and insert your installed Data – Windows disk into drive 0.

Use the Change Execution menu option to change your execution directory to the Data – Windows disk drive.

Double click on the Data – Windows ICON.

If you want to use Data – Windows in Multi – Vue mode, but do not want to use GShell, create a graphics window (using Wereate) and fork a shell to it. Then follow the procedure below.

If you want to use Data – Windows in text mode, create an 80 column window and fork a shell to it. Then follow the procedure below.

If you have single sided floppy drives, or have not installed Data – Windows onto a double sided floppy or hard disk, follow this procedure:

Insert the Data – Windows Disk #1 into the default drive (/dd)

type:chd /d0

type:chx /d0/cmds

type:Dwindows -L

Follow the prompts

When the system is loaded, Insert Data – Windows disk #2 into the default drive

You are now running Data – Windows

If you have double sided floppy drives or a hard drive, follow this procedure:

Insert the Data – Windows disk #1 into the desired drive

type:chd /dx (where /dx = desired drive)

type:chx /dx/cmds

type:Dwindows

You are now running Data – Windows

NOTE: If desired, the -L option may be used for double sided drives also. It will take more memory, but it will run faster. The -L option loads part of the Data – Windows system into memory on startup.

Executables

Data Windows is not a single program, but a set of executable programs that interact together. The executables and their functions are as follows:

Executable Function

Dwindows	Main program, executes all other programs
Dw_wind	Data - Window handling program
Dw_defwin	Data window creating/editing program
Dw_defdb	Database creating/editing program
Dw_report	Report printing program
Dw_defrpt	Report creating/editing program
Dw_labels	Mailing label printing program
Dw_deflbl	Mailing label creating/editing program

Dwindows is the main executable program. All other programs will be executed by the Dwindows program. Dwindows is therefore the only required program to execute. It is possible, however, for you to execute the other programs separately from Dwindows. For this reason, the syntax and meaning of each program will be given.

Because Data - Windows consists of several executable programs that can be executed, under Multi - Vue Data - Windows consists of several ICONS. Under GShell, these ICONS can be used to execute the separate Data - Windows programs without executing Dwindows. This allows GShell to be used as a front-end to Data - Windows as well as the Dwindows program.

The Data - Windows executables are described in detail below. If you do not wish to use these separately, ignore this section.

Program:Dwindows

Syntax:Dwindows [-L]

Options: The -L option is used to determine if the Data - Windows system will be loaded when Dwindows is executed. If specified, Dwindows will load the "Dw_wind", "Dw_defwin", and "Dw_defdb" programs when it is started. This is useful for single-drive users and for users that want more speed.

Description:

Dwindows is the main executable program for Data - Windows. It is the module that calls all other modules. It also performs the database

options for Merge/Purge/Pack database as well as Import/Export data.

Program:Dw_wind

Syntax:Dw_wind [<windowname>]

Description:

The Dw_wind program handles all data window handling features. When a data window is opened, this program is executed. It takes care of all record operations. It will also allow you to open other windows or print reports and labels. Note that it performs these by executing the appropriate programs.

Program:Dw_defwin

Syntax:Dw_defwin [<windowname>]

Description:

The Dw_defwin program handles all window creating and editing. If Dw_defwin is executed without a windowname prompt, it will go into create mode. If a windowname is specified it will go into edit mode. NOTE: if you execute Dw_defwin without a name, then type the name of an existing window, the existing window WILL BE OVERWRITTEN!!!

Program:Dw_defdb

Syntax:Dw_defdb [<databasename>]

Description:

The Dw_defdb program will create or edit a database. If a database name is passed, the database will be edited (the database structure). If no database file name is given, a database will be created. When editing the database structure you will be allowed to add, delete, and change fields in the database.

Program:Dw_report

Syntax:Dw_report [<reportname>]

Description:

The Dw_report program is the program used to print reports. If a report name is not passed as a parameter, it will be prompted for. The user will also be allowed to determine what device the report is printed to, as well as a condition to test before printing records.

Program:Dw_defrpt

Syntax:Dw_defrpt [<reportname>]

Description:

The Dw_defrpt program is used to edit and create report definition files. If a report name is given, it will be edited. If the report name is not given, it will be prompted for and it will be created WHETHER IT EXISTS OR NOT!

Program:Dw_labels

Syntax:Dw_labels [<labelname>]

Description:

The Dw_labels program is used to print mailing labels. If the name of a label definition file is not provided, the name will be prompted for. The user will also be prompted for the path to print the labels to and a condition to test for printing.

Program:Dw_deflbl

Syntax:Dw_deflbl [<labelname>]

Description:

The Dw_labels program is used to create and edit labels. If the name of a label file is specified, that file will be edited. If the label file is not specified, the user will be prompted for a name to create, and that label file will be created WHETHER IT EXISTS OR NOT!

ICONS and AIF Files

If you are using Data – Windows under the Multi – Vue environment, there are several ICONS and AIF files provided for use by GShell. GShell will display these ICONS for the Data – Windows files and for the AIF files. There are 3 ICONS to match the 3 file types in Data – Windows and 1 ICON that will execute the Dwindows program

The main program ICON is an empty window. Double clicking on this ICON will pull up the Data – Windows integrated environment.

The next ICON is a window with disks in it. This ICON is the data window ICON. All data windows will have this ICON displayed for it. If you double click on this ICON, the data window will be opened.

The next ICON is a window with a report in it. This ICON is the report generator ICON. This ICON is displayed for all report files. Double clicking on this ICON will print the associated report.

The next ICON is a window with mailing labels in it. This ICON is the mailing label generator ICON. This ICON is displayed for all mailing label files. Double clicking on this ICON will print the associated mailing labels.

Pre – Setup Databases

The Data – Windows system comes with several pre – setup database systems. These include:

Rolodex

A complete rolodex system that allows you to store names, addresses, phone numbers, and comments. This is, of course, indexed by last name.

Magazine

A complete magazine filing system that allows you to store article name, volume number, issue number, date of magazine, a description of the article, and a category. The category and the article name are used as keys. Articles can then be found by going to the proper category and browsing or by entering the article name.

Video

A complete video tape filing system that allows you to store movie name, movie description, movie rating, movie star name, and tape index number. The database is keyed by movie name, movie star, and movie rating. You can then select a movie by name or decide on a movie by a given actor or by rating.

Inventory

A complete home inventory database system that allows you to store item name, value, date purchased, room it's stored in, and description. This database is indexed by name and value, so that you can get to an item by name, or browse items by value.

Medical/Insurance

A complete medical and insurance database that allows you to store name of person, date of doctor visit, reason for visit, doctor name, amount payed by you, amount reimbursed by insurance, insurance company, and policy number. This database is keyed by name of person.

Data – Windows User Interface Description

The Data – Windows user interface is designed to be as easy to use as possible. The design is similar to other packages that use OS9 as it is compatible with Multi – Vue.

Although the interface is simple to use, there are some concepts that must be learned to use it to its fullest potential. We will attempt to explain these concepts here.

Data – Windows has 2 operating modes, Multi – Vue (Graphics mode), and non Multi – Vue (Text mode). The Multi – Vue mode uses the mouse, pull down menus, etc. to its fullest advantage. The text mode simulates the graphics mode to its best ability, but only uses the keyboard and not the mouse. If you own Multi – Vue you may use either mode. If you do not own Multi – Vue you are restricted to using only the text mode.

If you execute Data – Windows from a graphics screen, it will automatically try to use the Multi – Vue mode. If you execute it from a text screen, it will use the text mode. Note that if the program is launched from Multi – Vue's Gshell it will go into Graphics mode by default. This can be changed by changing the program's aif file. See your Multi – Vue manual for more information about aif files.

We will explain each mode in detail one at a time. There are many similarities between the two modes, so if you know how to operate one mode, the other is almost as easy. It is not like learning two completely different programs.

Graphical User Interface

We will first discuss the graphics (Multi – Vue) mode. If Data – Windows is executed from within a graphics window it will use this mode. In this mode the mouse is used extensively to control the program. When the program is first booted you will be faced with a blank screen and a menu bar at the top.

The Menu Bar

The menu bar is the black bar at the top of the screen. This is where all actions are initiated. To select a menu, move the mouse until the pointer (on the screen) is on the menu that you would like to select. Once the pointer is on the correct menu, simply press the left mouse button. This is the select button. If your mouse only has one button, that is the select button.

After pressing the button, a menu should pop down from the menu bar. To select an option on that menu, drag the mouse pointer down the menu. As you pass selections on the menu they will be highlighted. When the option you want to select is highlighted, press the left (select) button again. That menu item will then be initiated.

Information Prompts

Once a menu item is initiated, it will prompt for all necessary information. There are different ways that you could be prompted for information.

Input fields:

You may be prompted on the screen by input fields. Input fields are fields on the screen that light up and allow you to type data into them. If more than one input field is on the screen at a time, you can move between them with the arrow keys. The up arrow key will go to the previous field and the down arrow key will go to the next field. Pressing enter will terminate the current field and go to the next field. After the last field is entered, the data will be sent to the program for processing.

Simple Prompts:

Another way that you may be prompted for information is with simple prompts. Simple prompts ask you to respond to a question with a single keystroke. A

simple prompt will usually look like this:

[S]ave or [A]bort?

The 'S' in brackets and the 'A' in brackets defines the key to press for that selection. In this case pressing 'S' would save and pressing 'A' would abort.

Filenames:

Data – Windows has a special way of getting file name from the user. Whenever a filename is needed, an open file box will appear. The open file box has a list of the files in the current directory, the name of the current directory, and 3 buttons, OPEN, DIR, and CANCEL.

To select a file that is listed, point to that file with the mouse and click the select button. Then move to the OPEN button (on the screen) and click the select button. This will select the highlighted filename. If the file you want is not on the screen, you can click on the arrows that are by the next to the file names to scroll through all the files in the directory.

The file that you want to select may not be in the current directory. To move to another directory you have two choices. You may either click on the DIR button and type in the directory name. Or you can click on a directory name in the list of files and click on the OPEN button. Note that to change drives you must use the DIR button.

The CANCEL button will allow you to cancel the operation and return to normal operation.

NOTE: Double clicking <click><click> on a filename is the same as clicking on the filename and clicking the OPEN button.

Text User Interface

The textual user interface is designed to be as similar to the graphical user interface as possible. The major difference is that there is no mouse in the text interface, all selections must be made from the keyboard.

In most cases the arrow keys are used where the mouse would be used in the graphical interface.

As in the graphical interface, there is a menu bar at the top of the screen. To pull a menu from the menu bar in text mode you must press the <BREAK> key. This will pull down the current menu from the menu bar and highlight the current item. The left and right arrow keys will now allow you to move from menu to menu. The up and down arrow keys will move from option to option. Pressing <ENTER> will select the highlighted entry.

As with the graphical user interface, you will be prompted for all information necessary to execute the option selected. The methods for obtaining this input are the same for both simple input and field input.

The filename input is similar, but not exactly the same as that of the graphical interface. A file window will be displayed with all the file names. From within this file window the arrow keys can be used to select the desired file. Pressing the <ENTER> key simulates the OPEN button. Pressing the D key simulates pressing the DIR button. And pressing the <BREAK> key simulates the CANCEL button.

With the information given here you should be able to navigate easily through the menus and prompts of Data – Windows.

Using Data - Windows

Creating a database system

There are basically two steps involved in the creation of a Data - Windows database system:

Create the database

Create the data windows

Luckily, Data - Windows makes both of these steps as easy as possible.

Create the database

The first step, creating the database, is the most difficult. This is not because it is complicated, but because it requires the most thought. The creation of a database is the defining of all information that will need to be stored in that database. This can be accomplished in 3 parts: define the problem, define the data, and finally create the database.

Define the problem:

Defining the problem involves sitting down and deciding what it is you want out of your database. Do you need a customer management database? Do you need an inventory management database? Perhaps a billing database? Perhaps you need to set up an entire accounting system? Or maybe its a home application like a magazine manager, or a video tape library database? Whatever it is, you should have good idea of what it is you want.

Define the data:

Once you know what you want out of the system, you can decide what data should be put into it. This will again require a bit of thinking. You should try to figure out any information that may need to be stored. Customer databases, for example, might store the customers name, address, phone #, account #, credit history, and even comments about the customer.

In addition to deciding what data will be stored, you must figure out what information can be used as a "key". Key information is important, because it

allows you to quickly find your data. Any field in your database can be used as a key. Each database can have any number of keys, but only one key will be used at a time. The data is automatically sorted by the key, and searches can be performed using that key. Keys are not required, but without them only forward and backward searching is available.

After you have decided what information to store into the database, you will have to determine the size and type of the data. This can be somewhat difficult as you have to think of the maximum amount of space that the data might take. Invoice numbers etc. are easy because they are already a certain length, but information like names and addresses are not so easy.

Some general rules that can be followed are:

first names take about 15 characters.

Last names take about 30 character.

Addresses usually require 3 lines of 30 characters each.

Phone numbers require 13 characters (if you include the area code, parenthesis, and dashes).

To calculate the length of numbers, take the length of the highest possible value, add 1 for the decimal point (if one), and add the precision (number of places after the decimal). One additional character must be added if the number can be negative (to store the minus sign).

Create the database:

Once you are finished determining the size and type of your data, you must enter that information into Data - Windows. This is done by selecting the "Create Database" option from the "File" menu. After selecting this option you will be prompted for the name of the database. You type the name that you want to give to the database and press <ENTER>. You will then be given a window that shows all of your field information along with a menu at the bottom of the screen.

You may use the "A" option to add fields to the database. After typing "A" you will be asked for the name of the field, the type of the field, the size of the field, and finally the name of an optional index file.

The name of the field is simply a 10 character name for you to use when referring to the data.

The type of field specifies whether the field will be character or numeric. If the field is to have anything except numbers in it, it should be character. This includes phone numbers if the dashes and parenthesis are used, and invoice

numbers if characters are to be used.

This size of the field specifies how much space to allocate for the data. For character data it is simply the maximum number of characters that you will need to store your data. For numeric data it is the number of digits before the decimal, plus 1 for the decimal, plus the number of digits after the decimal, plus 1 for a minus sign if the data can be negative. Note that numbers are stored exactly like characters.

The final bit of information that you must supply to Data - Windows is the name of a file in which to store the index data for this field. This information should only be given if you wish for the field to be a key field. A key field is one that will be used for sorting and searching.

NOTE: You can make as many index fields as you want, but I recommend the use of as few index fields as possible. The more index fields you have, the more overhead in processing records.

WARNING: Every index field must have a different index file, if you give 2 fields the same index file name, unpredictable results will occur.

For more information on defining a database, see the "DEFINING A DATABASE" section.

Create the data windows

After creating the database, you must create the user interface to the data, the data windows. A data window is a window into the data in the database. It serves as an interface between man and the machine. The machine sees the data in one way, and the user sees data in another, a data window is the communication link between the two.

Define the number of windows:

The first step in creating your data windows is to decide how many windows you need. A different window can be created for each type of user. The different windows can show different parts of the information. Take for example, a payroll database. You would not like the clerk to have access to each person's salary, that could be disastrous. You do, however, need him to have access to information like check #, name, etc. The personnel manager, on the other hand, needs access to each person's salary (if he ever wants to give anyone a raise!). In this situation, two windows can be created, a clerk window and a manager window.

Define the user interface:

Once the number of windows to be created has been determined, you must define each window's interface to the user. This includes defining the data positioning, data labelling, data edits, and data access.

Data Positioning

The data positioning is simply where the data is displayed/edited within the window. Care should be taken with the positioning of the data, as a good looking data entry/edit screen is important to users. Users do not like to see ugly, hap-hazard screens. If you are to be the user of the system, this may not be a concern. Data-Windows makes it easy for you to make nice looking windows. It allows you to easily position the window on the screen, and to easily position fields within the window.

Data Labelling

Data labelling refers to placing labels on the screen with your data. Labelling is done with TEXT field. Text fields are output to the window exactly as entered. They are always in the window and can always be seen.

Data Edits

Defining data edits are also important. Data edits allow the data window creator to define a standard uniform method of input from the user. Data edits are defined with pictures. A picture is a string of characters that define how the data for a given field is to be entered. There are 3 special characters that can be used for defining edits, '!', 'X', and '9'. Their meaning is defined as follows:

'!' Specifies only uppercase letters are allowed. If a lowercase letter is entered in an '!' field position, it is converted to uppercase.

An 'X' allows any character to be displayed 'X' Specifies that any alpha-numeric (displayable) character is allowed.

'9' Specifies that any digit, decimal point, or minus-sign is allowed in that position.

Any character in a picture that is not one of these special characters, is forced to be that character in the field. Here are some examples:

A phone number picture : "(999)999-9999"

A name picture : "XXXXXXXXXXXXXX"
A stock number picture : "XX999999-99"
A social security picture: "999-99-9999"

Pictures are really a simple yet powerful way for you to provide a specified way of entering data.

Data Access

After defining the edits to be used on data, you must define the access to be given to the data. Data-Windows provides for 2 methods of data access, GET and PUT. GET data can be both viewed and edited, PUT data can only be viewed. This is very useful, as persons may need access to view the data, but should be restricted from editing it. Take the payroll example used earlier. A payroll clerk may need to see the amount of each person's check, but should not be allowed to change it.

You are also allowed to define not only fields, but entire expressions for PUT data. This means that one output field in your window can consist of a formula that uses several fields in the database. These fields can even be input fields allowing users to immediately identify the results. For example: You may have 2 input fields, quantity and unitcost. You could have a PUT field labelled "total" that was the formula (quantity * unitcost). Similarly you could have a PUT labeled tax that was the formula (quantity * unitcost) * .07.

After making all of these decisions you will be ready to create the data windows. To create a data window, simply select the CREATE WINDOW option from the FILE menu. Once you have done this, you will be prompted for all of the necessary information about the window. This includes all of the information discussed above. For more information on creating the data window, see the section on CREATING DATA WINDOWS.

Once you have created these databases and data windows, you can edit them. Editing them is much like creating them. Simply select the proper item from the EDIT menu and you will be able to edit. For more information on editing see the sections on EDITING DATABASES, and EDITING DATA WINDOWS.

Create the data output

For data output you can generate either mailing labels or reports. Mailing labels are for mass mailings. You can purchase mailing labels from any office supply house. Reports are useful for analyzing data.

Creating Mailing Labels:

Creating labels is simply a matter of defining the label size, and the layout of the label. When you print, each record will be printed with the layout given.

Test Conditions

When you go to print your labels, you will be prompted for a test condition. For this prompt you can enter a condition that will be checked for each record. If the condition is true, the label for that record will be printed. If the condition is not true, the label will not be printed.

Test conditions are logical IF conditions similar to those used in BASIC. IF conditions can contain <, >, <=, >=, and = operators as well as ANDs and ORs. Here are some example conditions:

zipcode = "90125" or zipcode = "90124" or zipcode = "90123"
(quantity * unitcost) > 100.00
(quantity * unitcost) > 100.00 or special = "Y" or special = "y"

Creating Reports:

Creating reports is similar to creating labels, except that each field can be a break field or a total field.

Break Fields

Break fields define where your report will print sub totals. The report will print sub totals wherever a break field changes. Suppose, for example, that you had a database of customers and their purchases. You have one record per customer purchase. For this sales report you would want to use the customer name as the break field, and the customer purchase as the total field.

This will give you a total of purchases for each customer as well as a grand total of all purchases for all customer.

You should watch the sorting of the report for break fields. Usually you would want your report to break on a key field, because if the report is not sorted by the break field all of the data may not be grouped together.

Total Fields

As you may have figured, total fields are totalled for every report break and grand totalled at the end of the report. This allows you to see the total of any column of records.

Using a database system:

After the database system has been created, it can be used. It may be used by the person who created it, or it may be used by others.

Open the data window

The first step in using a database is opening the data window. To do this simply select the OPEN WINDOW option from the FILE menu. You will be prompted for a file name from a list of files. Select the window file to use from this list. Note that all window files end in ".wdw".

After you have selected the window file, the window will be displayed along with the data from the first record in the database. If there are not records in the database, a blank window will be displayed.

From this point you can add, delete, edit, browse, find, cut, copy, or paste records.

Add Records

To add records, simply select the ADD RECORDS option from the RECORDS menu. After making this selection you will be allowed to enter all data for the record. When finished you will be asked if you would like to add more records. This will allow many records to be added quickly.

Delete Records

To delete a record, simply select the DELETE RECORD option from the RECORDS menu. After selecting this option, the current record will be deleted.

Edit Records

To edit a record, simply select the EDIT RECORD option from the RECORDS menu. After selecting this option you will be allowed to edit the data in the record.

Browse Records

There are several options available for browsing through data. You can select the FIRST, LAST, NEXT, and PREVIOUS options from the RECORDS MENU, or you can use the arrow keys. These are defined as follows:

Shift Up Arrow/FIRST option – Go to first record in database
Shift Down Arrow/LAST option – Go to last record in database
Up Arrow/PREVIOUS option – Go to previous record in database
Down Arrow/NEXT option – Go to next record in database

Find a Record

To quickly locate a record in a database (by key) select the FIND RECORD option from the RECORDS menu. This option will prompt you to enter the data for the key field used for that window. After entering the key field data, that record will be displayed. Note that the entire key does not have to be entered, the first matching record will be selected.

Cut/Copy/Paste Records

The CUT/COPY/PASTE options on the EDIT menu provide a means for quickly moving data from one database to another. If you want to move a record from this database to another, simply select the record to move and select CUT from the EDIT menu. If you want to make a copy of the current record, select COPY instead of CUT.

After a record has been CUT, you can open a different database and select PASTE to put the record in the second database. Note that this will copy all fields in the selected record with the same name as fields in the destination database.

Database Maintenance

From time to time there are things that you may need to do with your database as a whole. These things include merging data from other databases, purging all of the data in a database, packing the data in a database, importing data from another source, and exporting data to another source.

Merging data:

If you need you can merge data from one database into another. This can be done with the cut/copy/paste, but that is for one record only. The merge option will allow you to merge all of the records from one database into another.

Merging data is simple. Simply select the Merge Database option from the database menu, select the source and destination databases, and you are done!

Purging data:

From time to time you may need to purge your database of all data. Purging will permanently remove ALL records from your database. BE CAREFULL!!

To do this, select the Purge database option from the database menu, select the name of the database to purge, and your database is purged.

Packing data:

When records are deleted from a database, they are not actually removed from the database file, they are simply flagged as deleted. From time to time you will want to remove these records so that they do not take up space in your database. To do this use the Pack Database option from the Database menu.

The Pack Database option also re-generates all indexes to your database. This is a useful side-effect, as indexes can get corrupted. If indexes get corrupted the database may be packed to fix the indexes.

The Pack Database option must make a second copy of your database in order to perform the pack. It is therefore necessary that there be enough space on the disk for another copy of the database.

Importing data:

It may be necessary for you to obtain data from an outside source, like another database package. To do this you can use the Import Data option from the Database menu.

Data is imported directly from text files that can be created by you (with a word processor or program) or by another package. The import file must have the format:

"field 1 data", "field 2 data", "field 3 data", . . .

To get data from another database system, use that system to create a report with the above format. Then print the report to disk and import it into Data - Windows.

Exporting data:

You may want to export data from Data - Windows into another program (possibly some BASIC09 program you have written). To do this, use the Export Data option from the Database menu.

When data is exported, it is exported in the same format as that used for import. This format is quite useful, as BASIC09 can read it quite easily.

NOTE: Import/Export files can be moved from OS9 to RSDOS also, because they are text files!

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