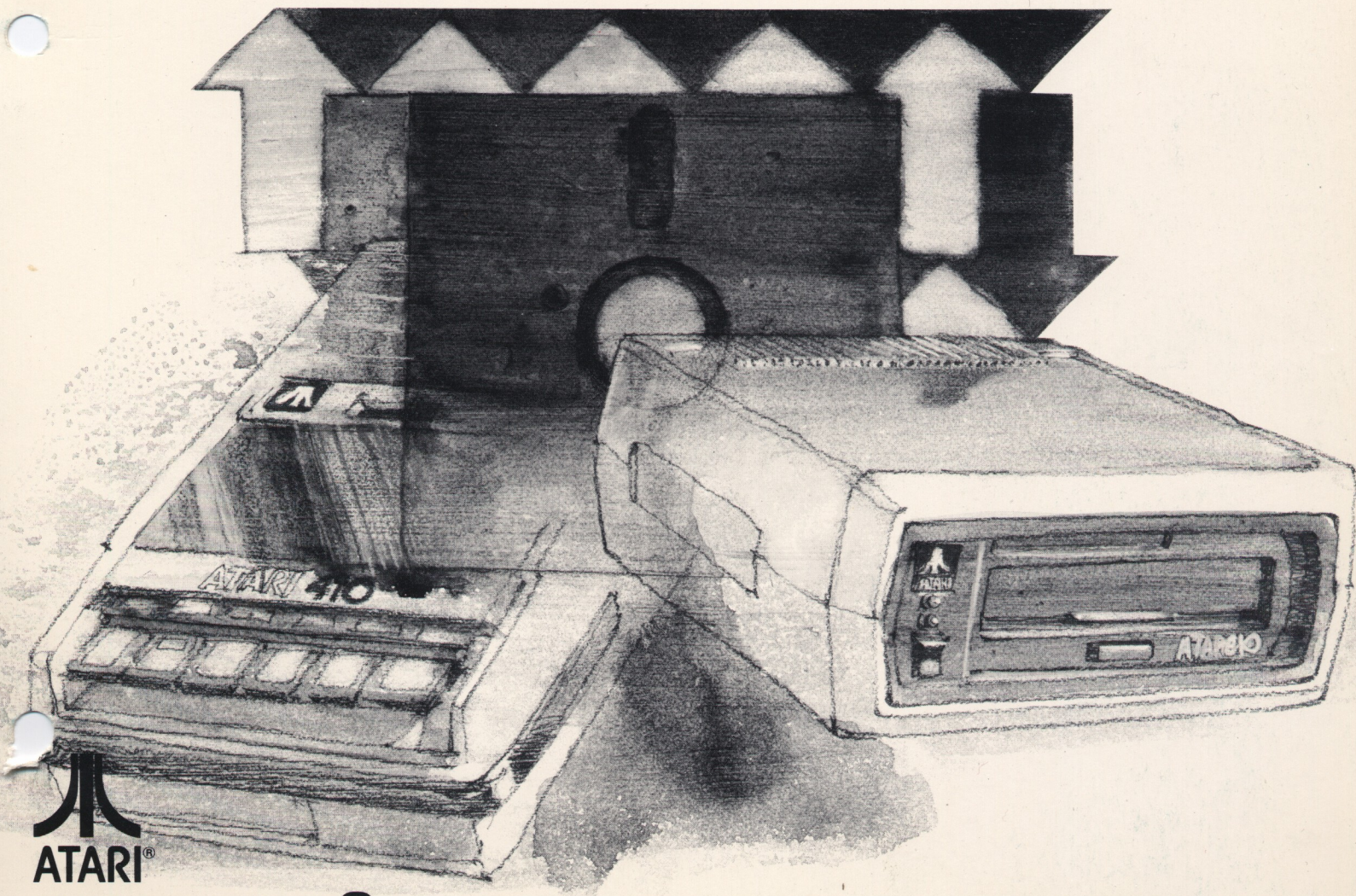# ATARI® 810™

DISK DRIVE OPERATORS MANUAL

# INTRODUCTION

NOTE: Please take time to carefully study the contents of this manual before attempting to connect or use your new ATARI® 810™ Disk Drive and Diskettes!

Your new **ATARI® 810™ Disk Drive** is a record/playback device that allows you to store and retrieve large amounts of computer data quickly and accurately. The actual recording is much like a tape recording process, and is done on similar material. However the oxide material on which the data is magnetically recorded is applied on a 5¼-inch diameter diskette instead of on mylar tape. The diskette is contained in a fairly stiff jacket with openings in it for the read/record heads, and this entire package is inserted through a door in the front panel of the drive unit. One to four drives may be used simultaneously with a single **ATARI 800™ Personal Computer** with a minimum of 16K of RAM memory installed. Each diskette can store 88K bytes of programs and/or data, but on the master disk about 8K of this is used by the control software and operating system. Preprogrammed and blank diskettes are available from your **ATARI** dealer.
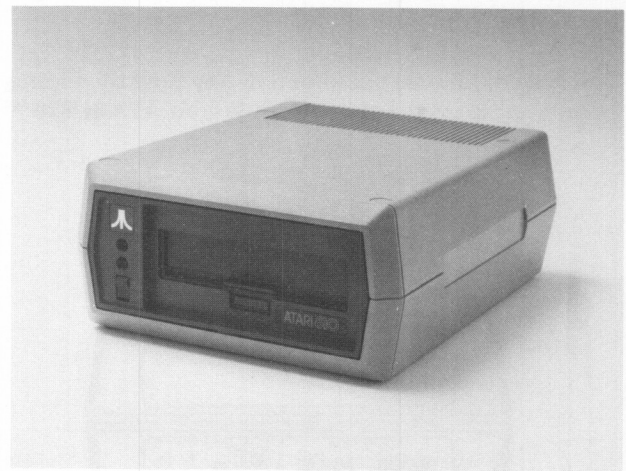
UNPACKING

As you unpack your **ATARI 810** from its carton, you should verify that the following items are included:

* Disk Drive
* Data Cord (round cord with identical plugs on the ends)
* AC Power Adapter (like the one supplied with the Computer)
* Disk Drive Owner's Manual (this book)
* Disk File Manager Diskette (Disk operating program included)

We recommend saving all original packing materials for reuse in the event that you wish to ship your equipment or store it away for prolonged periods.

SYSTEM REQUIREMENTS

The **ATARI 810 Disk Drive** may be used with many combinations of **ATARI** devices. However, the **ATARI 800™ Personal Computer** with 16K (minimum) of RAM memory is required to operate the disk system. All required "hardware" and instructions are included with your Computer or Disk Drive, and nothing else need be purchased to get the system "up and running".

The system may be expanded at any time by adding additional **RAM** memory modules, an **ATARI 820™**

Printer, and up to three more **ATARI Disk Drives**. When you purchase **ATARI** Software, whether on cartridge, cassette, or diskettes, be sure to check the back of the Software package(s) to determine the system hardware needed to "run" the particular programs. As you create your own software (programs), you should bear in mind the possible improvements in program utility and flexibility that you may gain by investing in additional Disk Drives or other peripherals for use with your **ATARI 800 Personal Computer** system.

I/O CONNECTOR
(Use either one)

DATA CORD

AC ADAPTOR

PERIPHERAL
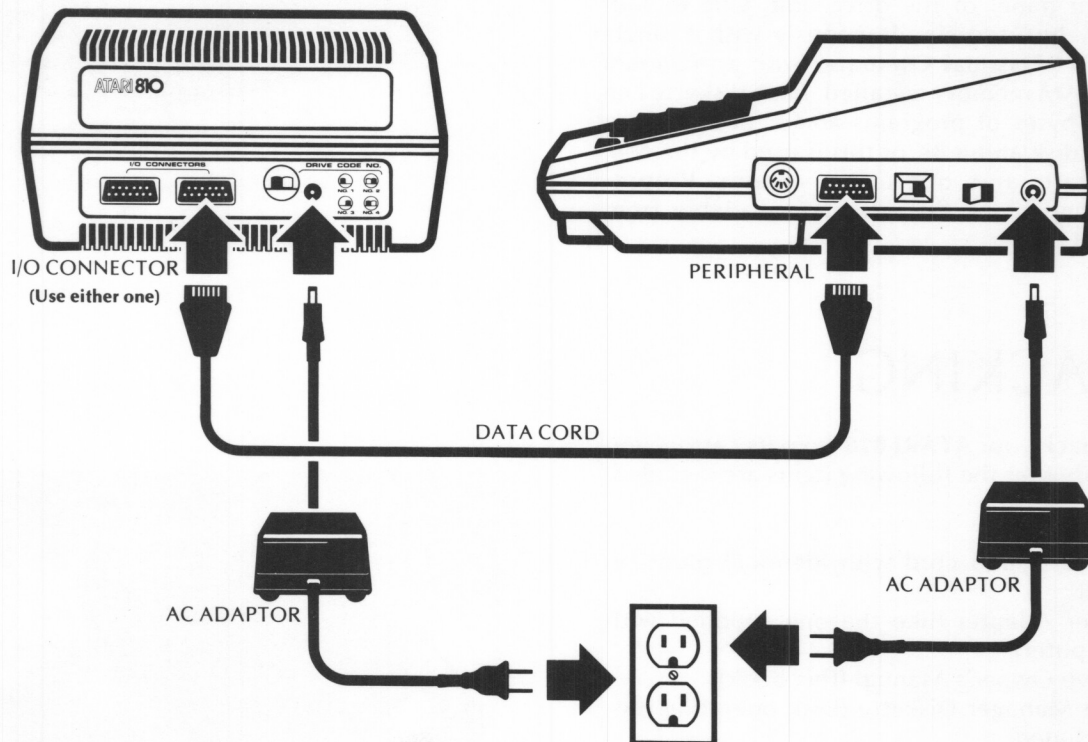
AC ADAPTOR

SETTING UP THE DISK DRIVE

- First verify that all switches (computer power AND Disk Drive) are "**off**".
- Plug one AC Power Adapter into an AC outlet (wall plug), and then plug its small plug into the **ATARI 800** Console.
- Plug the other Power Adapter into the wall plug,

and its small plug into your Disk Drive.
- Plug one end of the Data Cord furnished with your Disk Drive into the plug labeled **PERIPHERAL** on the console, and the other end into either of the jacks labeled **I/O CONNECTORS** on the back of the Disk Drive unit.

- Additional external system parts can now be connected by using the unused **I/O CONNEC-TOR** position on the back of the **Disk Drive**. Follow instructions provided with the additional peripherals to be used.
- If only one **Disk Drive** is to be used, set the device code switch on the Drive to position number 1. (See diagram on back of Drive.)

- If more than one Drive is to be used, the switches should be appropriately set (1, 2, 3, or 4.) You may find it useful to label the Disk Drives by number for easy location of a particular unit... NOTE: THE DEVICE SWITCH ON EACH DRIVE IS NORMALLY SET TO POSITION "1" BEFORE SHIPMENT FROM ATARI.

FRONT VIEW

Door Release Lever - Press to open door.

Door Handle - Push down here to close door after diskette is in drive. Latch will click when shut.

Power ON/OFF Switch - Always turn power on before inserting diskette into drive and remove the diskette BEFORE turning the power off.

Power Indicator Light - Lights to indicate that power is ON.

Disk Drive Busy Indicator Light - Glows red when drive is reading from or writing to the diskette. DO NOT OPEN DRIVE DOOR, TURN POWER OFF, OR ATTEMPT TO REMOVE THE DISKETTE WHEN THIS LIGHT IS ON!

## BACK VIEW

Drive Code Switch Positions

Power Jack - For the AC Power Adapter.

Drive Code Switch - 4-position switch indicates to the computer which disk drive it is communicating with. File Manager Diskette is ALWAYS mounted in Disk Drive #1.

I/O Connectors - Identical jacks accommodate data cords from Console or other peripheral components. Connections may be made in any order with either jack.

There are two Drive Code switches: a black one is visible in the circular cutout; a white one is observed just behind it. Use a pen or screwdriver to move the switches into the positions shown on the Drive Code diagram for the desired Drive Code Number. ALWAYS SET THE DRIVE NUMBER WITH THE POWER OFF.

## DRIVE CODE NO.

NO. 1   NO. 2

PWR.   NO. 3   NO. 4
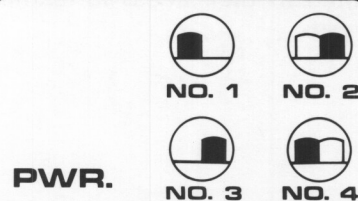
POWERING UP THE SYSTEM

First be sure that all installation and hookup procedures have been correctly accomplished. Check to make sure that AT LEAST 16K of RAM memory has been installed. Check to make sure that the **ATARI 800** console has been set up correctly...see the **ATARI 800** Operator's Manual, Section 5.

DON'T TURN ANYTHING ON YET! (Soon, but not quite yet!). It is very important that the following steps be followed IN SEQUENCE!

- Turn the **Disk Drive** power switch **ON**.
- Open the door in the front of the Disk Drive and insert the **DOS/FMS** diskette with the label facing up and the notch on the **left.**
  NOTE: Care MUST BE TAKEN to avoid touching the disk media (inner part of the disk surface inside the protective jacket) with the fingers through the openings (windows) in the jacket.
- Plug the **ATARI BASIC** cartridge into your **ATARI 800 Personal Computer.**
- Turn the computer Console power switch **ON**. You will hear a series of beeps and other tones, and some whirring noises and a few clicks from
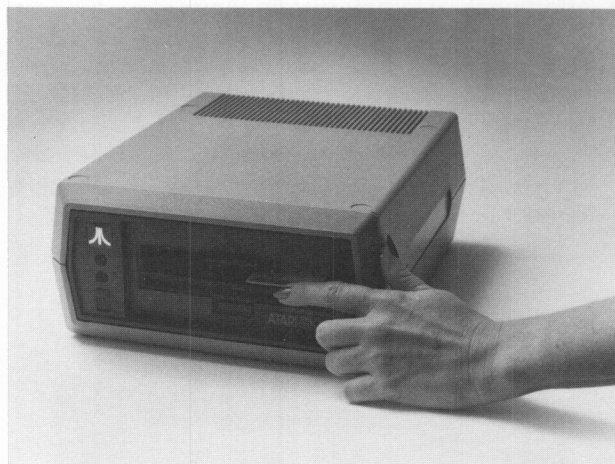
the **Disk Drive** that are entirely normal. The screen will remain blank during this process. (The pre-recorded system data and file manager program is being copied from the diskette into RAM memory, and this takes a few seconds.) When the loading process (also called "booting") is complete, the screen will display a "READY" message, and you are in business!

DOS AND FMS DISK SOFTWARE

The DOS (ATARI File Manager and Disk Operating System) Diskette is designed to extend the capabilities of the **ATARI BASIC** cartridge so that you can "communicate" with your new **Disk Drive** equipment. It includes both DOS and the File Management System (FMS), as well as a number of other useful programs. The Disk Operating System Manual contains complete instructions for making best use of the features of this software.
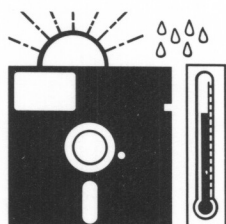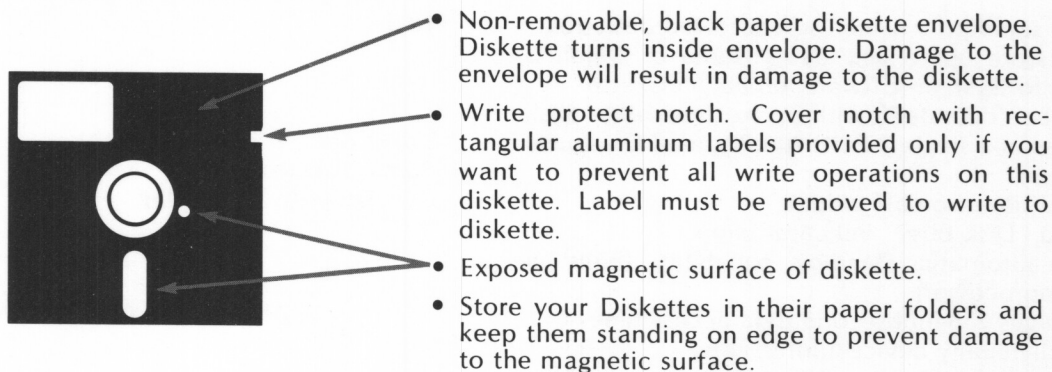
Beginners in **BASIC** programming should consult **ATARI BASIC - A Self-Teaching Guide** for painless programming proficiency. Those who are already familiar with **BASIC** and with file handling routines may find the **BASIC REFERENCE MANUAL** better suited to their needs in learning the **ATARI** commands.

To see the DOS software in action, just type DOS and hit the **RETURN** key. A list of the choices you may make as the machine's master will be displayed. This is called the "Menu". The Menu is "self prompting," that is, it allows the user to enter commands to the system by typing the letter that precedes the command he wishes to execute. All of the options shown on the Menu are fully explained in the **Disk Operating System Manual**, and some are also included in the **ATARI BASIC Reference Manual**. To return full control of the Computer to you in **BASIC**, just type the letter **B**. This command, you will notice, is the one next to the prompt message "Run Cartridge", so should you have a cartridge other than **BASIC** plugged into your console, the Computer will run that cartridge!

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DISKETTE HANDLING PROCEDURES

Your Diskettes are precision parts of your **ATARI 800 Personal Computer** system. Carefully following these procedures for use, handling, and storage of your Diskettes will make them last longer and will minimize the chance of losing valuable data stored on the diskettes:

- Non-removable, black paper diskette envelope. Diskette turns inside envelope. Damage to the envelope will result in damage to the diskette.

- Write protect notch. Cover notch with rectangular aluminum labels provided only if you want to prevent all write operations on this diskette. Label must be removed to write to diskette.

- Exposed magnetic surface of diskette.

- Store your Diskettes in their paper folders and keep them standing on edge to prevent damage to the magnetic surface.

- **Never** wet or wash a Diskette. Dust it with a soft brush if necessary. Compressed air in a spray can may also be used to blow dust away.

- Heat is one of your Diskettes' worst enemies. Never store a Diskette in direct sunlight. Keep it away from excessive heat in general.
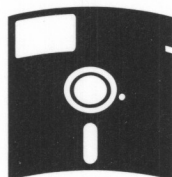
- **Never** BEND the Diskette. Handle your Diskettes with care, especially when loading or unloading them into the Disk Drive.
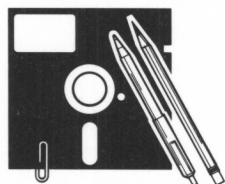
- **Never** attach paper clips to a Diskette.

- **Never** write on a Diskette or on the identification label of a Diskette with an erasable pencil or a ball-point pen. A fiber-tip pen is recommended for writing on the label.

- Magnetic Fields are another of your Diskettes' worst enemies. A Diskette exposed to a magnetic field will lose data. Keep Diskette away from magnets and electrical equipment (even telephones).
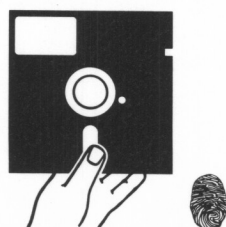
- **Never** touch the Diskette itself where it is exposed through the small "windows" in its protective envelope. It is not necessary to turn a Diskette in its envelope, the Disk Drive will take care of that.

TECHNICAL SPECIFICATIONS

Each **ATARI 810 Disk Drive** unit:

- Uses standard 5¼-inch soft-sectored diskettes.
- Can store up to 88K bytes (some of which is used for system software) on each diskette.
- Can be "operated" with up to three other Disk Drives in a single **ATARI 800 Personal Computer** system.
- Has a power on/off switch.
- Has a "Disk Busy" indicator lamp.
- Has automatic stand-by capability (built in microprocessor).
- Averages 236-millisecond data access time.
- Is individually device-addressable.
- Averages 6,000 bits per second data transfer rate.
- Divides each diskette into 128 bytes per sector with 709 sectors on each diskette.

TROUBLESHOOTING

If you do not follow the procedures described, your Disk Drive may not operate as you expect. Here are some of the most common mistakes:

- Did you forget to load a Diskette into the drive or close the door?
- Did you load the correct disk? Is the proper software on the one you did load?
- Did you attempt to address a drive or other peripheral that is not properly connected to the Computer or set to correct drive number?

If this should happen, **DO NOT** TURN OFF THE DRIVE OR OPEN THE DOOR! **DO** press the **SYSTEM RESET** button on the keyboard of the computer. If the system doesn't respond by shutting down the Disk Drive, disconnect the data cord at the drive plug. The Disk Drive will now "timeout" and stop within 20 seconds. After the busy light on the drive goes out, you may remove or insert a Diskette.

In any of these cases, the Disk Drive will try a number of times to follow your instructions! (This is a very loyal computer!) The Disk Drive is equipped with a "timeout" feature that will stop it after approximately 20 seconds. There are some problems, however, that will not activate the "timeout" feature, and the Disk Drive will keep trying to follow your instructions forever!

REORDER INFORMATION

Please use the following part numbers to avoid mistakes when ordering items from your **ATARI** dealer:

Item	Part Number
Data Cord	CA14122
Blank Diskette	CX8100
DOS Diskette (with FMS)	CX8101

HAPPY ATARI COMPUTING!!!

ENTRY LEVEL PRINTER & DISK DRIVE OPERATIONS IN BASIC

When the power is turned OFF on a computer, all programs or data stored in memory are lost. The 810 Disk Drive is used to store programs and to insert (load) programs back into the computer memory bank when required for use.

Reference

I. To store and retrieve programs on diskette:

   A. Power up disk unit
   B. Put diskette in disk unit
   C. Power up computer
   D. To save program on diskette—
      1. Type in program

Sample Program
DO THIS
TYPE

```
100 REM*** INTEREST

110 PRINT "IF YOU TYPE THE AMOUNT OF P
RINCIPAL"
120 PRINT "AND THE INTEREST RATE PER Y
EAR, I WILL"
130 PRINT "SHOW YOU HOW YOUR MONEY GRO
WS, YEAR BY"
140 PRINT "YEAR, TO STOP ME, PRESS THE
BREAK KEY."

150 PRINT
160 PRINT "PRINCIPAL";
165 INPUT P
170 PRINT "INTEREST RATE";
175 INPUT R

180 LET N=1

190 PRINT
200 LET A=P*(1+R/100)^N
210 PRINT "YEAR = ";N
220 PRINT "AMOUNT =";A
230 LET N=N+1
240 GOTO 190

RUN
```

SEE THIS

```
IF YOU TYPE THE AMOUNT OF PRINCIPAL
ANDTHE INTEREST RATE PER YEAR, I WILL
SHOW YOU HOW YOUR MONEY GROWS, YEAR BY
YEAR. TO STOP ME, PRESS THE BREAK KEY.

PRINCIPAL? 1000
INTEREST RATE? 6

YEAR = 1
AMOUNT = 1059.99999

YEAR = 2
AMOUNT = 1123.59997

YEAR = 3
AMOUNT = 1191.01596
```

PUSH
`BREAK` to stop program.

DO THIS
TYPE
```
SAVE "D:INTEREST"
```

   2. Type SAVE "D:NAME"
   3. BASIC will save program NAME on diskette.

Above Program is recorded on Diskette.

Reference

E. To retrieve program from diskette—
1. Type LOAD "D:NAME"
2. Program can now be RUN, changed, etc.
3. Type LIST

F. To RUN program from diskette
1. Type RUN "D:NAME"

If you have a program that you wish to edit (change), use the commands listed below. Or, if you wish to save the original program, as well as the modified version, give the modified program a new name.

G. To save listed version on diskette—
1. Type LIST "D:NAME", N, M Lines N through M will be listed to diskette

H. To retrieve listed version on diskette—
1. Type ENTER "D:NAME"
This will merge diskette file with data which is already in memory.
2. Type LIST

Change name of the revised program if you wish to retain both the original and revised programs.

Sample Program

DO THIS
TYPE
`LOAD "D:INTEREST"`
SEE THIS

```
100 REM*** INTEREST

110 PRINT "IF YOU TYPE THE AMOUNT OF P
RINCIPAL"
120 PRINT "AND THE INTEREST RATE PER Y
EAR, I WILL"
130 PRINT "SHOW YOU HOW YOUR MONEY GRO
WS, YEAR BY"
140 PRINT "YEAR. TO STOP ME, PRESS THE
BREAK KEY."

150 PRINT
160 PRINT "PRINCIPAL";
165 INPUT P
170 PRINT "INTEREST RATE";
175 INPUT R

180 LET N=1

190 PRINT
200 LET A=P*(1+R/100)^N
210 PRINT "YEAR = ";N
220 PRINT "AMOUNT =";A
230 LET N=N+1
240 GOTO 190

RUN
```

DO THIS
TYPE
`RUN "D:INTEREST"`
SEE THIS

```
IF YOU TYPE THE AMOUNT OF PRINCIPAL
ANDTHE INTEREST RATE PER YEAR, I WILL
SHOW YOU HOW YOUR MONEY GROWS, YEAR BY
YEAR. TO STOP ME, PRESS THE BREAK KEY.

PRINCIPAL?
INTEREST RATE?
```

DO THIS
TYPE
`LIST "D:INTEREST" 150,240`
SEE THIS

```
150 PRINT
160 PRINT "PRINCIPAL";
165 INPUT P
170 PRINT "INTEREST RATE";
175 INPUT R

180 LET N=1

190 PRINT
200 LET A=P*(1+R/100)^N
210 PRINT "YEAR = ";N
220 PRINT "AMOUNT =";A
230 LET N=N+1
240 GOTO 190

RUN
```

NOTE: Numbers 100 to 140 were deleted from program.

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Reference

II. To store and retrieve data on diskette from a program:

    A. Power up disk unit
    B. Put diskette in disk unit
    C. Power up computer
    D. To store data on diskette from program—
       1. OPEN #1, 8, 0, "D:DATA"
          tells computer to allow writing to diskette file named DATA

       2. PRINT #1; X; ","; Y; ","; Z
          writes a record that looks like: X, Y, Z (X, Y, & Z are numbers)

       3. CLOSE #1
          When program is done this tells computer that file is finished.
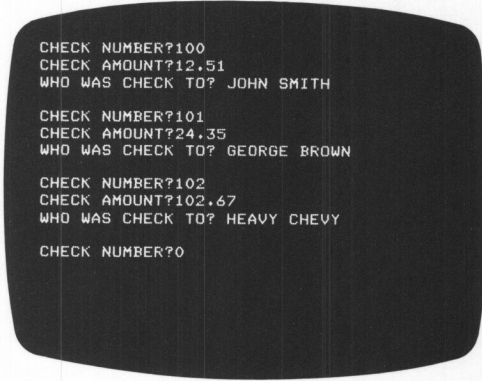
Sample Program
Write

DO THIS
TYPE

```
1 REM THIS PROGRAM WRITES A FILE OF
CHECK NUMBERS AND THEIR AMOUNTS
5 DIM CHECKNAME$(40)
10 OPEN #1, 8, 0, "D:CHECKS"
20 CHECKAMT=0: CHECKNAME$=""
25 PRINT "CHECK NUMBER";
30 INPUT CHECKNUM
35 IF CHECKNUM=0 THEN 80
40 PRINT "CHECK AMOUNT";
50 INPUT CHECKAMT
60 PRINT "WHO WAS CHECK TO";
70 INPUT CHECKNAME$
80 PRINT #1;CHECKNUM;",";CHECKAMT;",";CHECKNAME$
90 IF CHECKNUM>0 THEN PRINT: GOTO 20
100 CLOSE #1
```

This is RUN of above program:

SEE THIS

```
CHECK NUMBER?100
CHECK AMOUNT?12.51
WHO WAS CHECK TO? JOHN SMITH

CHECK NUMBER?101
CHECK AMOUNT?24.35
WHO WAS CHECK TO? GEORGE BROWN

CHECK NUMBER?102
CHECK AMOUNT?102.67
WHO WAS CHECK TO? HEAVY CHEVY

CHECK NUMBER?0
```

This is what the information looks like on disk:

```
100,12.51,JOHN SMITH
101,24.34,GEORGE BROWN
102,102.67,HEAVY CHEVY
0,0
```

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Reference

E. To retrieve data from diskette from program—

1. OPEN #1, 4, 0, "D:DATA" —————
   tells computer to allow reading from diskette file named DATA

2. INPUT #1, X, Y, Z —————
   Reads a record like the one created in D above.

3. CLOSE #1 —————
   Tells computer you are done with file.

Sample Program
Read

SEE THIS

```
1 REM THIS PROGRAM READS A FILE OF
CHECK NUMBERS AND THEIR AMOUNTS
5 DIM CHECKNAME$(40)
10 OPEN #1,4,0, "D:CHECKS"
15 PRINT "CHECK # AMOUNT WHO TO"
17 PRINT"_____
_____"
20 INPUT #1;CHECKNUM,CHECKAMT,CHECKNAME$

30 IF CHECKNUM=0 THEN 100
40 PRINT CHECKNUM,"$";CHECKAMT,CHECKNAME$
50 GOTO 20
100 CLOSE #1
```

PRINTER
Reference

I. To Print to Printer:

A. Power up computer and Printer

B. Type LPRINT "HELLO" and HELLO will be typed on Printer —————
C. Wherever you can use PRINT you can use LPRINT

Sample Program
Read and print

SEE THIS

```
1 REM THIS PROGRAM READS A FILE OF
CHECK NUMBERS AND THEIR AMOUNTS
5 DIM CHECKNAME$(40)
10 OPEN #1,4,0, "D:CHECKS"
15 LPRINT "CHECK # AMOUNT WHO TO"
17 LPRINT "_____
_____"
20 INPUT #1;CHECKNUM,CHECKAMT,CHECKNAME$

30 IF CHECKNUM=0 THEN 100
40 LPRINT CHECK,"$";CHECKAMT,CHECKNAME$
50 GOTO 20
100 CLOSE #1
```
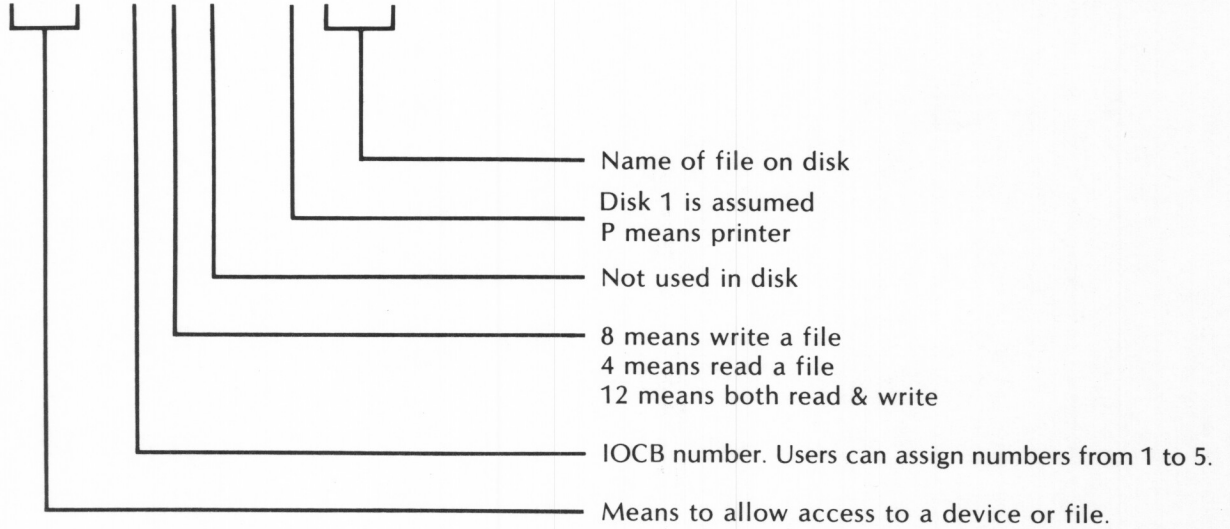
Print-Out of above program:

SEE THIS

```
CHECK #     AMOUNT     WHO TO
----------------------------------
100        $12.51     JOHN SMITH
101        $24.35     GEORGE BROWN
102        $102.67    HEAVY CHEVY
```

See the DISK OPERATING SYSTEM (DOS) manual for complete details.

```
OPEN #1,8,0, "D:DATA"
```

Name of file on disk

Disk 1 is assumed
P means printer

Not used in disk

8 means write a file
4 means read a file
12 means both read & write

IOCB number. Users can assign numbers from 1 to 5.

Means to allow access to a device or file.

NOTES

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