MAZETALK ADVENTURES

Getting Ready for Computer Languages

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Table of Contents

Mazetalk Adventures

Contents of Package

- One self-booting double-sided disk
- User's Manual with pull-out reproducible mazes
- Blank disk for storing files

Equipment Needed

- 48K Apple II+, 64K Apple IIe, or 128K Apple IIc microcomputer
- Single disk drive with 16 sector control card, or 2 drive system
- Monitor or TV receiver (color or monochrome)

Introducing *Mazetalk Adventures*

Mazetalk Adventures is a beginner's introduction to programming languages. Included are eight adventures in which you guide an animated, on-screen robot through many different mazes. At first the mazes are empty, and it is easy to guide Mazie the robot to an exit. When objects and monsters appear, guiding Mazie becomes more challenging.

You guide Mazie by giving instructions in Mazetalk, a special programming language. While using this language, you will be learning to use these important computing tools:

- System commands—Catalog, Initialize, Save, Load, Run
- Editor commands—Insert, Delete, Modify
- Programming commands—Repeat...Until, If...then, For...times do
- Using a structured programming format
- Using procedures in programs
- Debugging programs

The system commands are similar to commands used in many operating systems. You use those commands to save your work on a storage or file disk and call it back into the computer later.

The editor commands are similar to those used in word processing programs and other programming languages. You use them to write programs and make changes in them.

The Mazetalk commands and structure are similar to those used in other programming languages, such as Logo, Structured BASIC, and Pascal.

The notes below show what you will be learning in each adventure.

Adventure 1: Mazes—Simple directions for moving Mazie through the maze rooms

Adventure 2: Trap Doors—Instructions for writing Mazetalk programs, using the Editor

Adventure 3: Paths & Exits—Repeating instructions, using the **Repeat...Until** command

Adventure 4: Objects—Instructing Mazie to get objects

Adventure 5: Fire Monsters—Getting Mazie past fires made by the fire monster using the **Repeat...Until** command

Adventure 6: Spring Monsters—Forming "branches," using the **If...then** command

Adventure 7: Number Monsters—Forming "loops," using the **For...times do** command

Adventure 8: Many Monsters—Writing procedures and using them in programs

Using *Mazetalk Adventures*

Mazetalk Adventures begins with an Introduction, followed by the Adventures. It is important that you work through the Introduction and the Adventures in the order in which they are presented, because each adventure uses what you have learned in the previous one. If you work through them in this way, you will be prepared to guide Mazie safely past the monsters in the final adventures.

The menus will give you help as you go through the adventures. The menus, which always appear in the bottom left-hand corner of the screen, will let you know what choices you can make for moving on through the adventures. A box in the bottom right-hand corner will also be helpful. It will let you know what adventure and what maze room you are in.

This opening screen display for Adventure 5 is an example of what the screens look like in *Mazetalk Adventures:*

→ Quit
Select new room
Write/Edit Program
Run program
See correct example
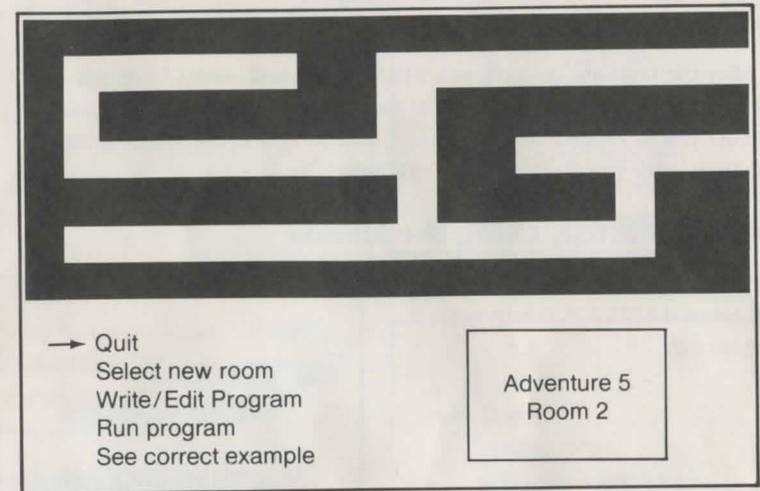
Adventure 5
Room 2

Each adventure includes Instructions, which explain the new Mazetalk commands that you will be using in the adventure. Beginning with Adventure 2, each adventure also includes a Correct Example Program. You can look at that program and watch what it instructs the robot to do when you run the program. Examining the Correct Example Program carefully will help you write your own programs (instructions) for the robot.

A special feature of *Mazetalk Adventures* allows you to save your programs on your own storage disk. When you want to use or finish a program at a later time, you can save it on the storage disk and load it back into the computer whenever you want to.

When you are writing programs in Mazetalk, you can press **T** to get to the maze screen. To return to the Editor and your program, you press **T** again. You may also look at the mazes on the pages in the center of this booklet. Every maze room in the adventures is shown on paper there.

If you forget which keys will move you around the screen, press ? to see the Help screen. Then press RETURN to go back where you were.

Loading the Program

Follow these steps to load *Mazetalk Adventures* into the computer:

1. Turn on the monitor or TV set. (DO NOT TURN ON THE COMPUTER YET).

2. Open the door to the disk drive. Hold the disk with Side A facing up and push the disk into the drive carefully. Close the disk drive door.

3. Turn on the computer. The red light on the disk drive will come on and you will hear the drive motor running. *Mazetalk Adventures* loads automatically. While the program is loading the title screen and credit screen will appear.

4. After the red light goes off, you will be asked how many drives you are using. Follow the instructions on the screen. Then the program will instruct you to remove the disk, turn it over to Side B, and insert it into the drive. After you do that, press RETURN.

Getting Started, Using the Menus

After you have inserted Side B and pressed RETURN, this menu will appear.

```
  → Introduction
    Start the Adventures
```
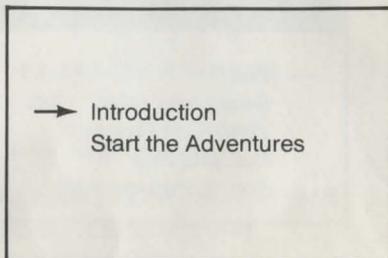
You move through *Mazetalk Adventures* by making choices from menus. You place the arrow next to the line that shows your choice and press RETURN. You can move the arrow up by typing **I** (up-arrow on Apple IIe and IIc), and down by typing **M** (down-arrow on Apple IIe and IIc).

Menus are like road signs because they tell you where you can go from where you are. Some menus may give you only one or two choices; others may give you many choices.

The Introduction

If this is the first time you are using *Mazetalk Adventures,* you will want to begin with the Introduction and work through the Adventures in the order in which they are presented.

When you choose **Introduction** a picture will appear, followed by the first page of the Introduction. This menu will come on the screen.

```
  → Quit
    Next page
    Previous page
```
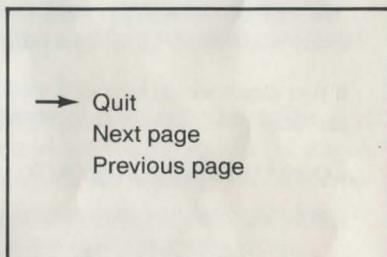
Choosing **Next page** will take you forward to the next page. Choosing **Previous page** will take you back a page. If you are on the last page of the Introduction when you choose **Next page,** you will hear a beep. This lets you know you are at the end of the Introduction.

Choose **Quit** to go on to the Adventures.

The Adventures

When you choose **Quit** from the Introduction Menu, or choose **Start the Adventures** from the first menu, the Menu of Adventures will appear on the screen.

MENU OF ADVENTURES

```
  → 1: Mazes
    2: Trap Doors
    3: Paths & Exits
    4: Objects
    5: Fire Monsters
    6: Spring Monsters
    7: Number Monsters
    8: Many Monsters
```
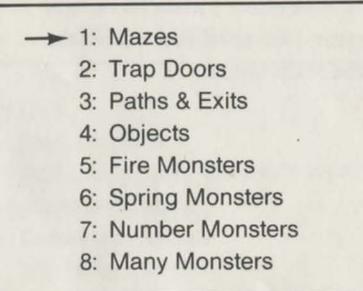
Let's say that you choose **1: Mazes.** The Adventure 1 Opening Menu will appear on the screen, under the picture for Adventure 1.

If you choose **Quit,** the Menu of Adventures will appear on the screen again.

ADVENTURE 1 OPENING MENU

```
  → Quit
    Instructions
    Start the Adventure
```
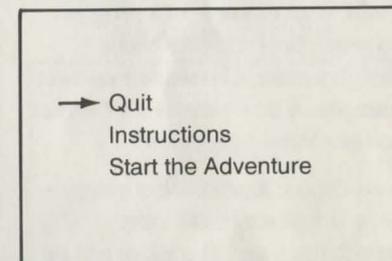
If you are just beginning the adventure, you will want to choose **Instructions.** The Instructions will give you hints about how to move Mazie the robot safely through the maze rooms, and will introduce new commands for moving Mazie.

If you choose **Start the Adventure,** the Adventure 1 Main Menu will appear on the screen.

ADVENTURE 1 MAIN MENU

```
  → Quit
    Move north
    Move south
    Move east
    Move west
    Select new room
```
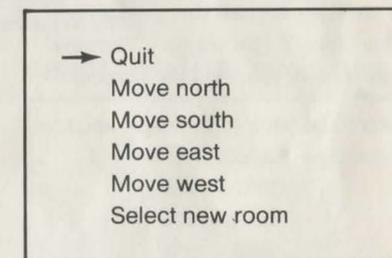
Let's say that you have completed Adventure 1 and you choose **2: Trap Doors** from the Menu of Adventures. The Adventure 2 Opening Menu will appear.

After you have read the Instructions, you will choose **Start the Adventure.**

ADVENTURE 2 OPENING MENU

```
  → Quit
    Instructions
    Start the Adventure
```
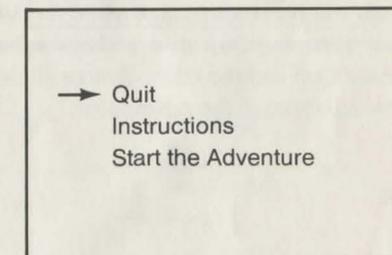
The Adventure 2 Main Menu will appear. (Adventures 2-8 have the same Main Menu.)

```
  → Quit
    See correct example
    Write/Edit program
    Run program
    Select new room
```

A good way to start this adventure is to look at an example of a program and watch how it moves Mazie through a maze. Choose **See correct example.** A new maze and a Correct Example Menu will appear.

If you choose **Run correct example,** you will see Mazie move through the maze. The robot will be following the instructions given in a program.

CORRECT EXAMPLE MENU

```
  → Quit
    Run correct example
```

To see the program that is moving Mazie, type **T** (for toggle). The program will be listed on the screen.

Then to go back to the maze and the menu, type **T** again.

PROGRAM LISTING

```
    Program
    Begin
    Repeat
    Move north
    Until wall
    Repeat
    Move east
```

When you are ready to go back to the Adventure 2 Main Menu, choose **Quit.** Choosing **Quit** always takes you back to the previous menu. In menus, Quit and the other choices allow you to move backwards and forwards through the Adventures.

## Writing Mazetalk Programs, Using the Editor

When you want to write your own program for moving Mazie through the maze, choose **Write/Edit program** from the Adventure 2-8 Main Menu. The Editor Main Menu will come on the screen.

EDITOR MAIN MENU

```
  → Quit
    Start program
    Add procedure (Adventure 8 only)
    Insert before line
    Delete current line
    Modify current line
    Disk commands
```

The top of the screen will be blank until you choose **Start program.** Then this program outline will appear above the Editor Main Menu.

PROGRAM OUTLINE

```
    Program
    Begin
  → End
```

The program arrow will be next to End. You move the program arrow up by typing **E,** and down by typing **X.** It is very important to have the arrow in the right place when you are adding lines to a program (inserting) or when you are erasing lines from a program (deleting).

When you choose **Insert before line** from the Editor Main Menu, the Insert Menu will replace the Editor Menu. The Insert Menu shows you what program lines you can choose to put into your program.

INSERT MENU FOR ADVENTURE 2

```
  → Quit
    Move north
    Move south
    Move east
    Move west
```

You make your choice and press RETURN. The program line you choose will appear in your program. Let's say that you chose **Move east.** This is what your program would look like.

```
    Program
    Begin
    Move east
  → End
```

Let's say that you want to insert another line: **Move west.** If you wanted Mazie to move west before moving east, you would put the line in the program before **Move east.**

You would move the arrow next to **Move east** in the program outline, and then choose **Move west** from the Insert Menu. This is what your program would look like.

```
Program
Begin
Move west
➡ Move east
End
```

While you are writing your programs for moving Mazie through the mazes, you may forget what a maze room looks like and which direction you want Mazie to move. You can press **T** (for toggle) to see the maze. Then you can press **T** again to get back to your program.

You will probably make some mistakes when you write your programs and will want to correct the errors. The Editor Main Menu gives you three choices for doing that: **Insert before line, Delete current line** and **Modify current line.** If you choose **Delete current line,** the program line next to the arrow will be erased. There are certain lines that you cannot delete, such as Begin and End.

EDITOR MAIN MENU

```
➡ Quit
Start program
Add procedure (Adventure 8 only)
Insert before line
Delete current line
Modify current line
Disk commands
```

When you choose **Delete current line** and hear a beep, you will know that line can't be erased. If you choose **Modify current line,** the program line next to the arrow will be replaced by whatever new line you choose from the Insert Menu.

When you want to see if your program will move Mazie the way you want it to, you must run the program. Choose **Quit** to go back to the Adventure 2-8 Main Menu. Then choose **Run program** and watch Mazie move through the maze. If there are errors (bugs) in your program, Mazie will stop or have some kind of problem moving through the maze. You can choose **Write/Edit program** and go back to your program to debug it. Getting rid of errors is called debugging. If your program has no errors in it and Mazie moves safely through the maze, you may want to go on to another maze room. Choose **Select new room** and a new maze will appear on the screen. You can write another program to guide Mazie through it.

Maze #7
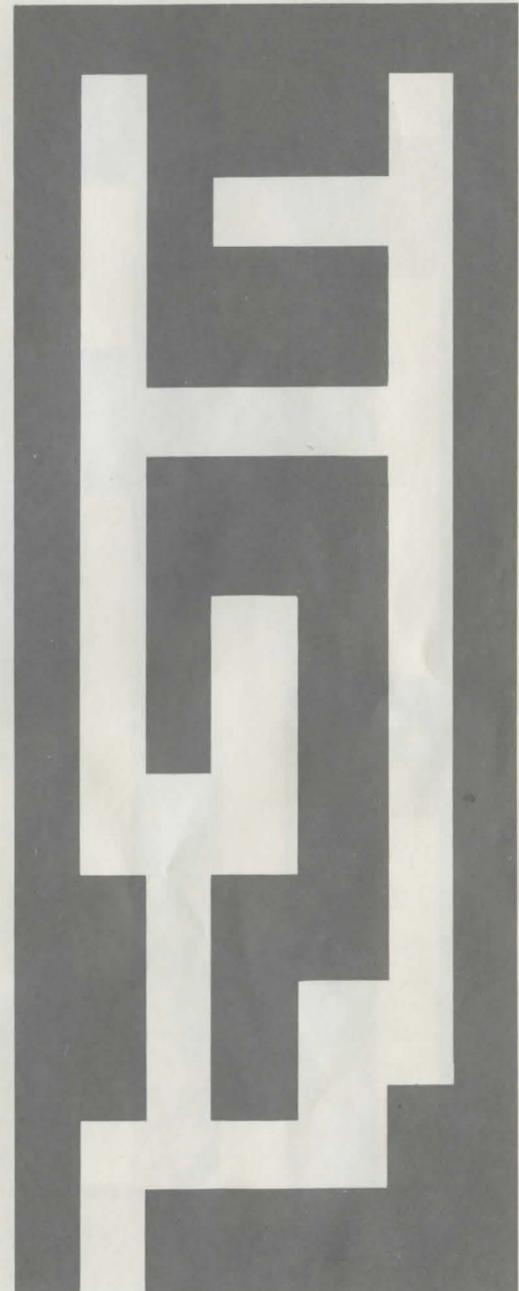
Adventure 1: Room 2
Adventure 3: Room 3
Adventure 5: Room 3

Maze #5

Adventure 3: Room 2
Adventure 4: Room 2
Adventure 5: Room 2

Maze #3

Adventure 1: Room 1
Adventure 4: Room 1
Adventure 6: Room 2
Adventure 7: Room 3
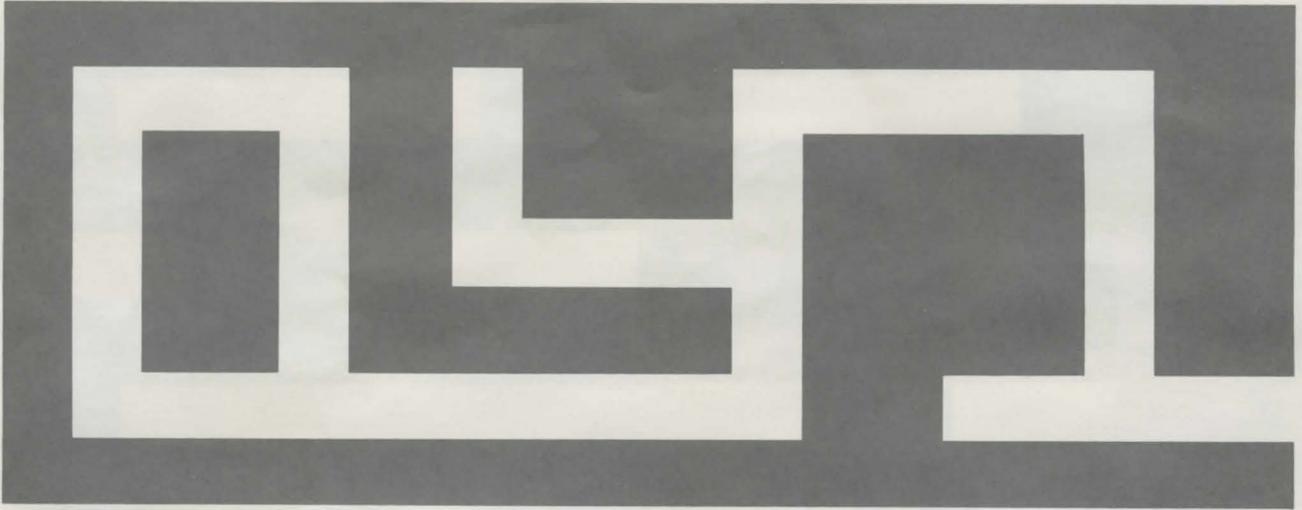
Maze #1

Adventure 2: Room 1
Adventure 5: Room 1
Adventure 7: Room 1
Adventure 8: Room 1
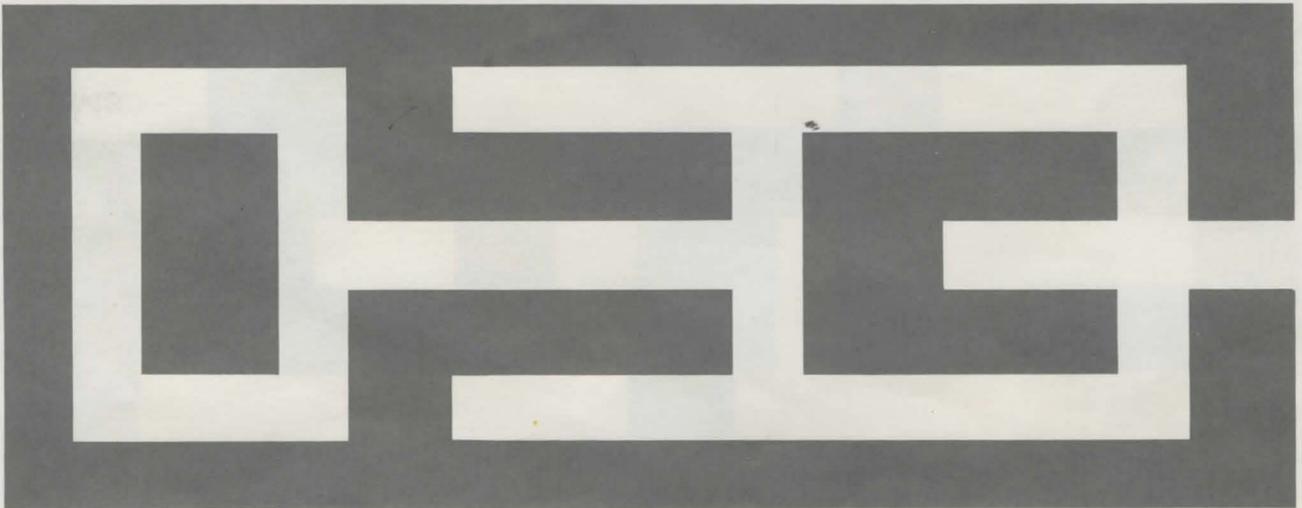
Maze #2

Adventure 2: Room 2
Adventure 6: Room 1
Adventure 7: Room 2

Maze #4

Adventure 3: Room 1
Adventure 6: Room 3
Adventure 8: Room 2

Maze #6

Correct Example Maze

Maze #8

Adventure 1: Room 3
Adventure 2: Room 3
Adventure 4: Room 3
Adventure 8: Room 3

Adventure 8 has a special addition to the Editor Main Menu, Add procedure. A procedure is a group of instructions which tell Mazie to complete one task. If Mazie has to do the task more than once, the procedure can be used again and again in the program. Each procedure has a name. When the name is used in the main program the instructions in the procedure are "called" into the program.

PROCEDURE OUTLINE

When you choose **Add procedure** from the Editor Main Menu, you will get a procedure outline at the beginning of your program.

Procedure
Begin
Endproc

As your programs get more complicated, they will get longer. There is a limit of 128 lines for a Mazetalk program.

Saving and Loading Programs, Using Disk Commands

If you want to save your programs and procedures so that you can use them again later, you will need your own storage disk. Follow these steps to prepare a disk for storing your programs.

For One-Drive System

DISK COMMANDS MENU

1. Choose **Disk commands** from the Editor Menu. The Disk Commands Menu will appear on the screen.

→ Quit
Instructions
Catalog
Save current program
Load disk program
Initialize disk
Save current procedure
Load disk procedure

2. Take the *Mazetalk Adventures* disk out of the disk drive.

3. Put your storage disk into the disk drive.

4. Choose **Initialize disk** from the Disk Commands Menu. The light on the disk drive will come on and the motor will run. When the light goes off, your disk will be ready for storing information in files.

For Two-Drive System

1. Choose **Disk Commands** from the Editor Menu. The Disk Commands Menu will appear on the screen.

2. Put your storage disk in drive 2.

3. Choose **Initialize disk** from the Disk Commands Menu. The light on the disk drive will come on and the motor will run. When the light goes off, your disk will be ready for storing information in files.

Before you begin using the disk commands, you may want to look at the **Instructions,** which will tell you how to use the commands.

When you are ready to save a program on your storage disk, choose **Save current program** from the Disk Commands Menu. (Make sure that your prepared storage disk is in the drive if you are using a one-drive system; or in drive 2 if you are using a two-drive system.) This message will appear on the screen:

    FILENAME:

This message is asking you to give your program file a name. You can type in any name, up to six characters long. Then press RETURN. The disk drive light will come on and the motor will run. When the light goes off, your program will be saved on the disk.

You can check to be sure that your program has been saved. Choose **Catalog** from the Disk Commands Menu. (Make sure your storage disk is in the correct drive.) The name of your file will appear on the screen, with some numbers that tell what track the file has been stored on and how much space was taken by the file. For example, let's say that you named your file "TEST." This information might appear on the screen:

    NAME   T S
    TEST   1 1

This tells you that the file named "TEST" was stored on track 1, and used one sector of space. There are 35 tracks on a disk and each track has 13 sectors. At a later time, when you want to see file TEST again, choose **Load disk program** from the Disk Commands Menu. (Make sure your storage disk is in the correct drive.) This message will appear on the screen:

    FILENAME:

This message is asking you to type in the name of the file that you want to use. After you type the name of the file and press RETURN, the program or procedure stored in that file will appear on the screen.

A GUIDE THROUGH THE ADVENTURES

Adventure 1: Mazes

In this adventure, you move the robot in what is called the "immediate" mode. When you choose a direction and press RETURN, the robot moves in that direction immediately.

Robot steps are small, so you will have to press RETURN many times to get Mazie out of the maze room. If you use the REPEAT key or hold down the RETURN, she will move faster.

Mazetalk vocabulary: Move north, Move south, Move east, Move west

Adventure 2: Trap Doors

In this adventure, you begin writing programs in the Editor. Programs are sets of instructions that tell Mazie what to do. You write simple programs to move Mazie to a trap door in the maze. A program looks like this:

        Program
        Begin
        Move north
        Move north
        Move north
        End

Mazie won't move far with this program because each **Move north** command moves Mazie one robot step, which is very small.

Mazetalk vocabulary: Program, Begin, End

Adventure 3: Paths and Exits

This adventure shows you an easier way to send Mazie through the mazes. You use the **Repeat...Until** command. This keeps her moving until she reaches whatever you name after the command: a wall, an intersection, or an exit. You place other commands between **Repeat** and **Until.** Here is a sample program:

        Program
        Begin
        Repeat
        Move north
        Until wall
        Repeat
        Move east
        Until exit
        End

Mazetalk vocabulary: Repeat...Until, wall, intersection, exit

Adventure 4: Objects

In this adventure, objects appear in the maze corridors. These objects may be useful to Mazie; they may also be something that Mazie must avoid. You learn to instruct Mazie to get the objects that will be useful to her at a later time.

First, you move Mazie with the command, **Repeat...Until** object. Then you give her the comand, **Get object.** This piece of a program shows how these instructions are given:

```
Repeat
Move north
Until object
Get object
```

Mazetalk vocabulary: Get object, Until object

Adventure 5: Fire Monsters.

Fire objects are dangerous! Fire Monsters leave fires in the maze corridors. The only way that Mazie can pass is by putting out the fire. She needs a bucket to throw water on the fire.

First, you instruct Mazie to get a bucket. Then you move her to the fire and tell her to throw water until the fire is out. This program shows how these instructions are given.

```
Repeat
Move east
Until object  ◄────────  This is the bucket.
Get object
Repeat
Move east
Until wall
Repeat
Move south
Until wall
Repeat
Move south
Until object  ◄────────  This is the fire.
Repeat
Throw water
Until fire out
```

Mazetalk vocabulary: Throw water, Until fire out

Adventure 6: Spring Monsters

In this adventure, spring monsters appear in the mazes. They may block intersections and exits. The only way Mazie can pass a spring monster is by giving it a banana.

First, you instruct Mazie to get a banana so that she will be prepared. Then you use the **If...Then** command to tell Mazie to give the banana to the monster if she meets one. This piece of a program shows how the instructions are written:

```
Repeat
Move north
Until object ]  ◄────── This is the banana.
Get object
Repeat
Move north
Until wall
Repeat
Move east
If object then  ◄──────  This means, "if you meet a spring
Give banana              monster, then..."
Endif  ◄──────           This means, "End of If...Then
Until exit               instruction."
```

You can put commands inside other commands, this is called "nesting." In the example above, notice that the If...then command is inside the Repeat...Until loop.

Mazetalk vocabulary: Give banana, If object then, Endif

Adventure 7: Number Monsters

In this adventure, number monsters appear in the mazes. A number monster carries a number on its tail. The number shows how many cookies Mazie must give to the monster before she will be allowed to pass.

You instruct Mazie to toss cookies to the monster. You use the **For...times do** command to tell her how many cookies to toss. For example, if there is a number 6 on the tail of the monster, you write the instructions this way:

```
Repeat
Move north
Until object  ◄──────  This is the monster.
For 6 times do ]  ◄──────  This tells how many cookies Mazie
Toss cookie    ]           must toss.
```

Endfor ◄——————— This means, "End of **For**...**times do**
instruction."
Repeat
Move east
Until wall

Mazetalk vocabulary: For...times do, Toss cookie, Endfor

Adventure 8: Many Monsters

In this adventure, you learn how to write procedures. A procedure is a group of instructions. Each procedure instructs Mazie to complete one task. If Mazie must complete the same task more than one time, the same procedure can be used again and again in the program. Here is an example of a procedure:

```
Repeat
Move north
If object then
Get object
Endif
Until wall
```

Let's say that Mazie has to get objects in a corridor heading north. Then she has to do the same task again later. You would write the group of instructions for that task in a procedure and give the procedure a name. This is what it would look like:

```
Procedure ObjectN
Begin
Repeat
Move north
If object then
Get object
Endif
Until wall
Endproc
```

You would list the procedure at the beginning of your program, right after the word Program and before the main program. This is what it would look like:

```
Procedure Object N
Begin                    ◄— This is the procedure.
Repeat
Move north
If object then
Get object
Endif
Until wall
Endproc
```

```
Program
Begin
Repeat
Move east              ◄— This is the main program
Until wall
ObjectN                ◄——————— This "calls" the procedure
Repeat
Move east
If object then
Repeat
Throw water
Until fire out
Endif
Until wall
ObjectN                ◄——————— This "calls" the procedure
```

Notice that "ObjectN," the name of the procedure, is written in the main program. When you write the name of a procedure in the main program, you "call" all of the instructions of the procedure into the program. Mazie will follow all of the instructions of the procedure, and then she will go back to following the instructions given in the main program.

You can "call" a procedure as many times as you want to in a program. You can also write more than one procedure at the beginning of a program, and "call" each procedure by writing its name in the main program.

Mazetalk vocabulary: Procedure, Begin, Endproc

Suggestions for Teachers

Using the Pull-out Mazes

When students are writing a program, they can press **T** to see the maze, then press **T** again to go back to the Editor. It may be easier for students to have a paper copy of the maze so that they can mark the location of monsters and objects on it. As they write their programs, they can refer to the copy of the maze.

Copies of the mazes also allow students to write their programs away from the computer. They can take time to study escape routes and write various procedures. This can maximize their time on the computer.

Students Working Together

This program lends itself to cooperative efforts. If students work in pairs, one can make notes for the program they want to construct, and the other can enter the program. They can plan together the fastest route out of the maze.

Checking Student Progress

If students save their programs as they move through Mazetalk Adventures, you can have them run the programs for you. In this way, you will be able to check the students' understanding of the concepts presented.

Suggestions for Further Study

The following books and software will introduce you to programming languages which use many of the commands that you learned in *Mazetalk Adventures*. These products are available from Creative Publications.

Books

BASIC Discoveries, by Jerry Johnson and Linda Malone (Catalog No. 90101)
Logo Discoveries, by Margaret Moore (Catalog No. 90193)
Mazetalk Discoveries, by Judy Goodnow (Catalog No. 90190)
Pascal Discoveries, by Stan Krute (Catalog No. 90107)

Software

Computer Connection: A Beginner's Guide to BASIC, by Linda Holden and Judy Goodnow (Catalog No. 90265)

Trouble-shooting

On occasion you may encounter difficulties with the *Mazetalk Adventures* diskette, either immediately after purchase or at a later date. To minimize the possibilities of such errors, your diskette has been "write protected" so that you cannot accidentally destroy the program. However, through use or handling beyond your control, data may be destroyed or become garbled.

The most frequent symptom of a damaged diskette is that the program will not load, meaning that the title page will not appear on the screen. If this occurs the first time you try the diskette, it is possible that your disk drive is not in perfect alignment to read the programs from the diskette. Try switching disk drives if you have more than one, or try the diskette on another Apple. If all of this fails, return the original disk to Creative Publications, Customer Service, P.O. Box 10328, Palo Alto, California 94303 for a free replacement. If the disk has been physically damaged, include $10 per disk for replacement.

Glossary of Mazetalk Commands

Commands Used Only in *Mazetalk Adventures*

Move south
Move north
Move east
Move west
Get object
Until exit
Until wall
Until intersection
Until object
Until fire out
Throw water
Give banana
Toss cookie

Commands Common to Many Programming Languages and Operating Systems

Programming Commands:

Repeat...until
If...then
For...times do
Procedure
Program, Begin/End

System Commands:
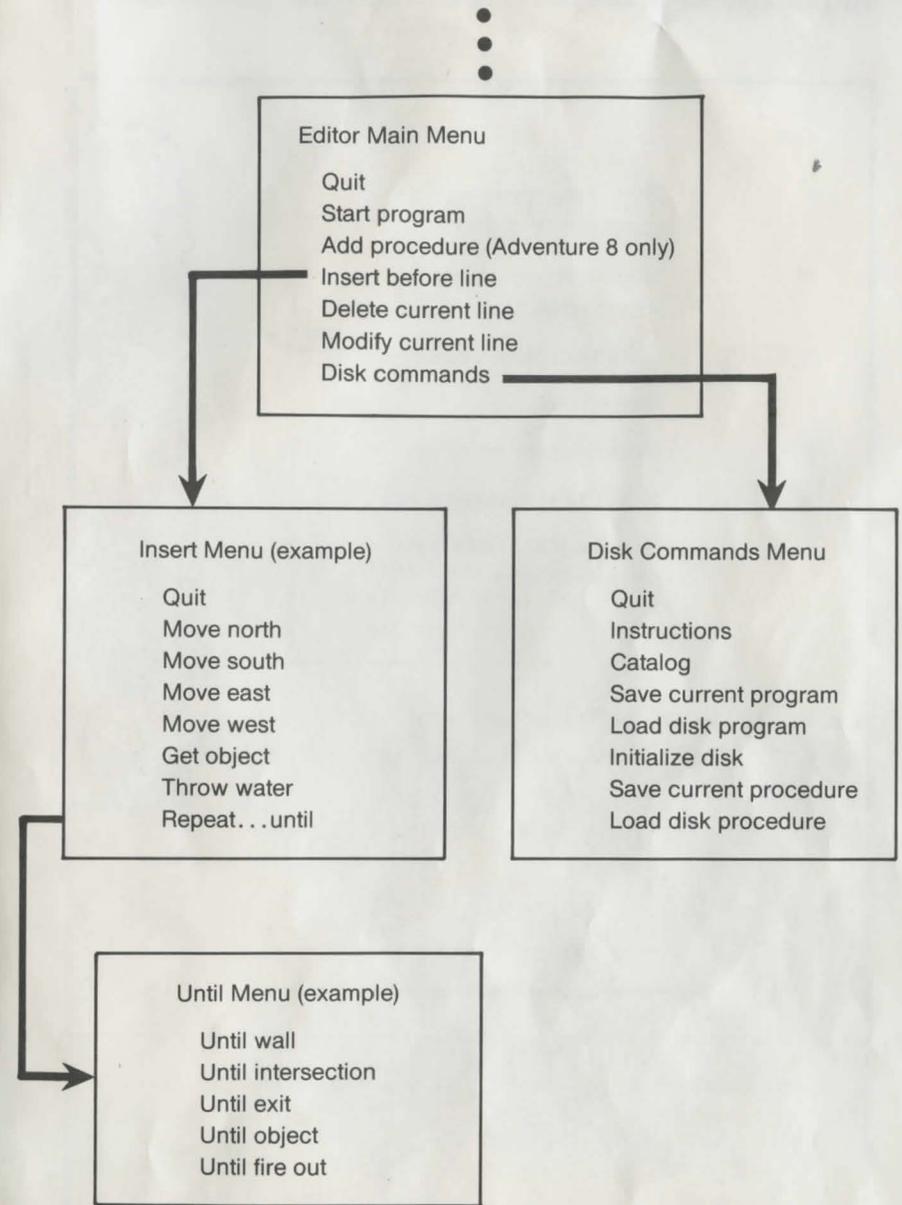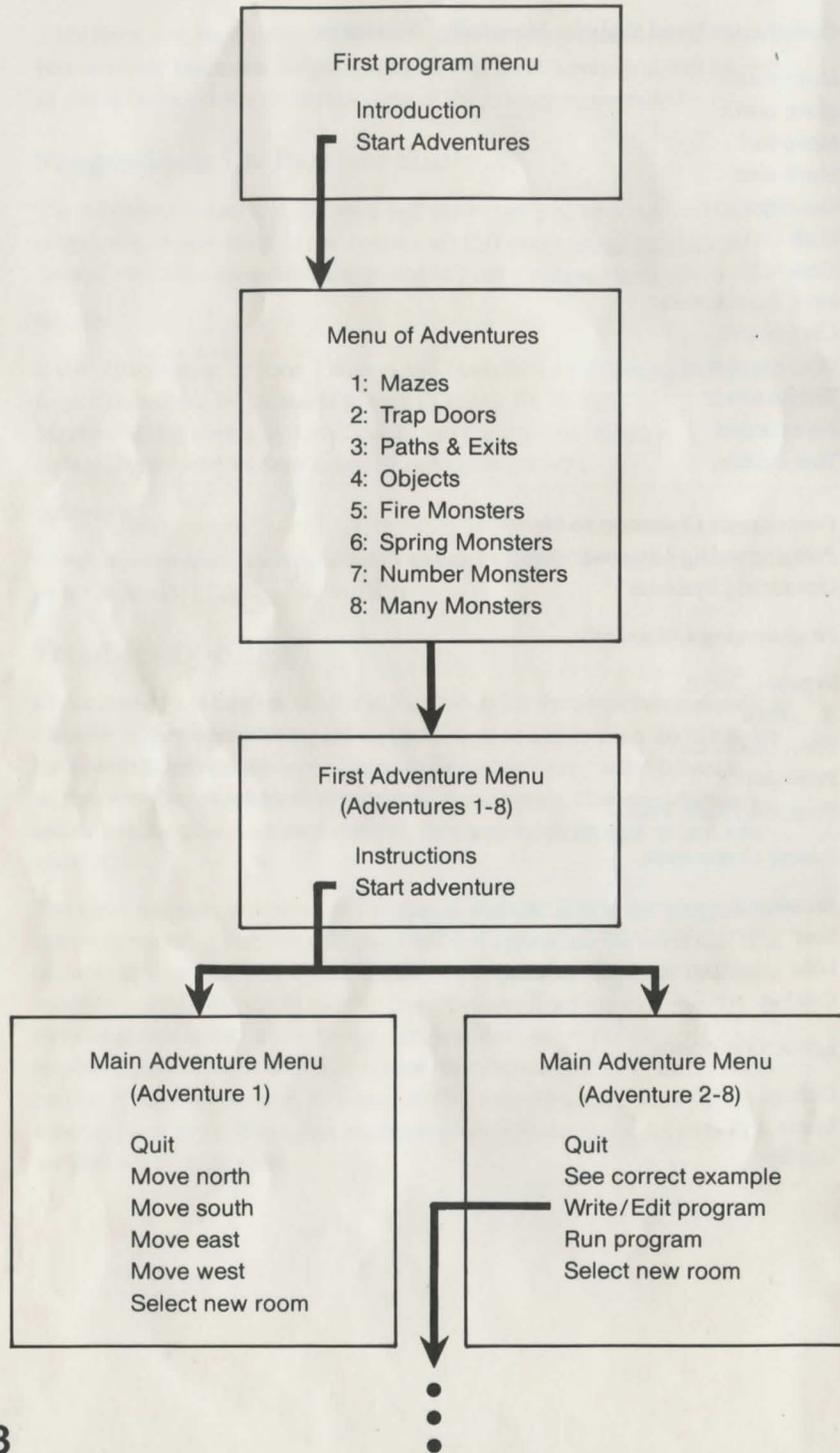
Initialize
Save
Load
Catalog

Editor Commands:

Delete
Insert
Modify

Menu Map

First program menu

Introduction
Start Adventures

↓

Menu of Adventures

1: Mazes
2: Trap Doors
3: Paths & Exits
4: Objects
5: Fire Monsters
6: Spring Monsters
7: Number Monsters
8: Many Monsters

↓

First Adventure Menu
(Adventures 1-8)

Instructions
Start adventure

Main Adventure Menu
(Adventure 1)

Quit
Move north
Move south
Move east
Move west
Select new room

Main Adventure Menu
(Adventure 2-8)

Quit
See correct example
Write/Edit program
Run program
Select new room

Editor Main Menu

Quit
Start program
Add procedure (Adventure 8 only)
Insert before line
Delete current line
Modify current line
Disk commands

Insert Menu (example)

Quit
Move north
Move south
Move east
Move west
Get object
Throw water
Repeat...until

Disk Commands Menu

Quit
Instructions
Catalog
Save current program
Load disk program
Initialize disk
Save current procedure
Load disk procedure

Until Menu (example)

Until wall
Until intersection
Until exit
Until object
Until fire out

Important Keys for Moving in *Mazetalk Adventures*

I	Move menu arrow up (up-arrow IIe & IIc)
M	Move menu arrow down (down-arrow IIe & IIc)
RETURN	Carries out Menu choice
?	Help screen
E	Move program arrow up
X	Move program arrow down
T	Move back and forth from program to maze