

Learning to Say Good-bye

When you want to leave Logo, type BYE. Some Logo versions use GOODBYE

A message box is displayed asking if you really want to leave Logo.

You can also select File/Exit to leave Logo. If you have not saved your workspace, the message box is displayed asking if you really want to leave Logo or not.

Writing Your Own Logo Journal

As you explore Logo, you're going to discover all sorts of things. There are some spaces in this book to write things. But it is also a good idea to have your own book where you can write down ideas and other things you want to remember.

That's how Logy did it. She did the exercises in the book and then went off and made up lots of other things all on her own. Along the way, she wrote down her ideas so she could work on them again whenever she wanted.

That's important!

Take your time. Let the exercises in this book be the stepping stone to the many other things you can enjoy on your own

Great Logo Adventure!

Printing and Saving Your Pictures

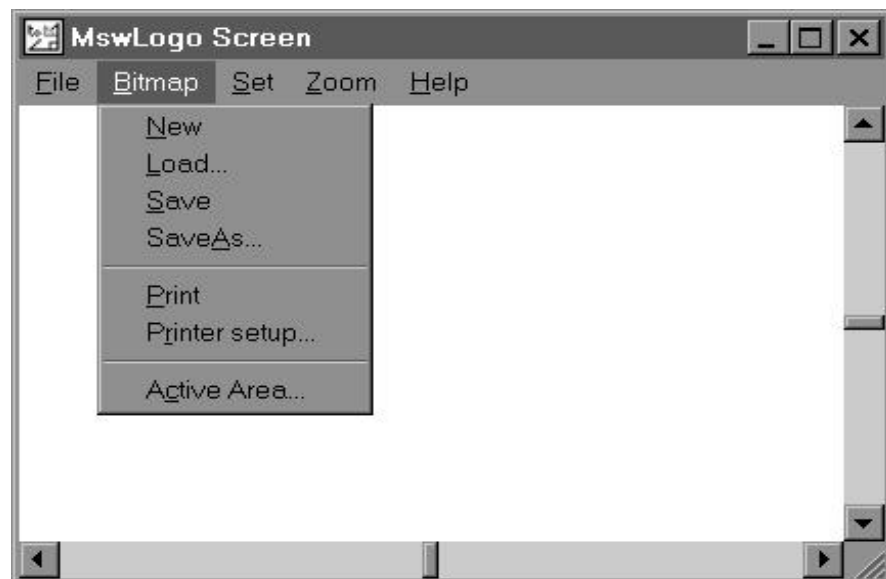
Everyone wants to see their work in print, right? That's very important, especially if you're working at school and you want your parents to see what you're doing.

All you need is a printer that is set up to print in your version of Windows. If you don't have a printer available at school, you can save your pictures and print them at home. Of course, you have to have a computer and a printer at home.

To print pictures:

The easiest way to print your pictures is to open the **Bitmap** menu and select **Print**.

Your picture is printed on your Windows printer.



To save pictures:

You have a choice: you can open the Bitmap menu and select Save or you can use the BITSAVE command. In either case, give your picture a name and type

`BITSAVE "<picture name>.BMP`

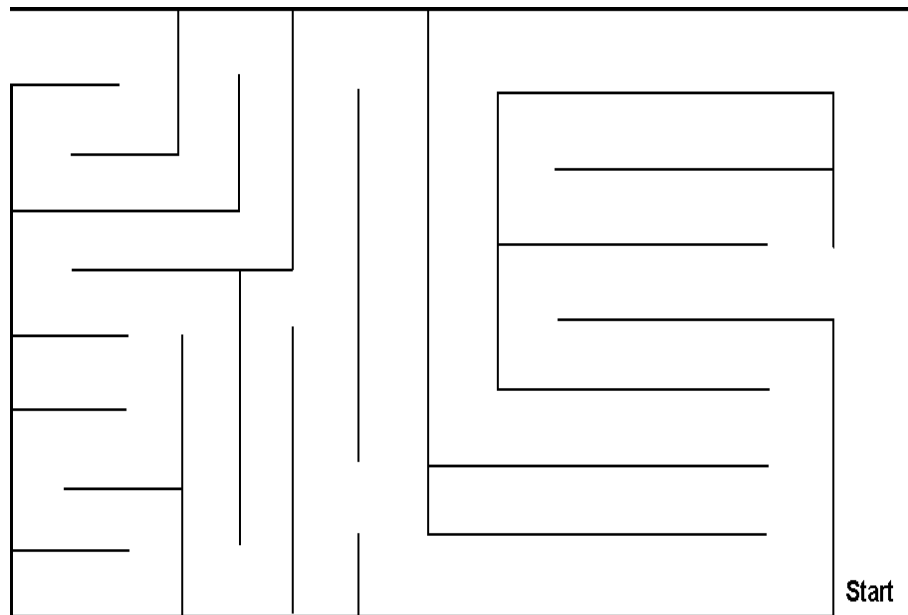
Your picture is saved in the MSW Logo directory.

Getting Started

You can use this maze on the screen. Or why not make up your own maze.

Pick up the pen and move the turtle to where it says Start. Then put the pen down and see if you can move the turtle through the maze to the opening in the upper left corner.

If you want to make it tough for your friends, use colored erasable markers to draw pieces the turtle has to pick up before she leaves the maze. Erase each piece as the turtle lands on that spot.



Another challenge is to see who can get through the maze in the least number of moves.

All of these things are great practice using the turtle's direction and turning commands.

Go on, see what else you can do!

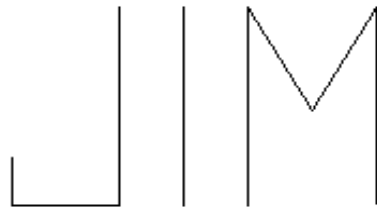
Get your soccer fans to draw a soccer field on the Logo screen. Then save it as a picture. Now you can pick up teams to play soccer, or “football” as they call it in other countries.

You can use the same rules for Logo Soccer as you use for Logo Football. Or you can get as realistic as you want. That’s up to you. If a player gets through the defense, he or she has to “shoot the turtle” through the goal.

You can make up the same type of game for ice hockey, too. We already have a basketball game that you’ll discover later on.

Make Up Your Own Adventures

Now, why not make up some adventures of your own? To get you started, why not draw the letters of your name.



There are all sorts of things you can dream up, I’ll bet.

Did you ever play “Blind Man’s Bluff?”

Clear the screen. Then put a cover over it so you can’t see what the turtle’s doing. Then give the turtle some commands to draw a letter maybe. When you’re finished, take the cover away and see how you did. Is the picture what you thought it would be?

There’s a picture on the diskette that came with your book called MAZE.PCX. It’s shown on the next page.

Getting Started

How to Play Football

To play football, you need two teams. One team is the offense and one is the defense. The team that is on defense must place eleven small stickers on the screen to stop the offense from getting a touchdown. They can place the stickers anywhere on the screen. However, there must be enough room between the defense stickers to allow the turtle to go through without touching any of the defensive players.

The defense can also draw their defensive players on a piece of clear plastic taped over the screen, using an erasable marker. When the defense becomes the offense, all you have to do is wipe off the plastic and redraw the defense wherever you want it.

What about the offense?

The offense has to move the turtle from their goal line through the defense to the goal line on the other side of the screen without touching a defense sticker. The offense gets four downs, or four chances to make a touchdown. If they don't, they have to turn the ball over to the defense who then gets their chance to make a touchdown.

Logo football is a lot of fun, especially if you live in a big football town.

“But what about the extra point?”

“Well, why don't you make up your own rules about extra points after the touchdown.”

Logo Soccer

There are all sorts of sports games you can think up for Logo practice.

Now go to Second Base in three moves or less. Then go to Third. And now go back Home plate.

Get some friends together and see who can run the bases in the fewest number of moves. To add some more fun to your game, move the stickers to different spots on the screen.

Logo Football

If you don't like baseball, why not try Logo Football? Logo and Morf live near Dallas, Texas, the home of the Dallas Cowboys. They're really big football fans.

Here's how to play Logo Football.

Draw a football field on the screen or on a sheet of clear plastic taped to the screen.

This picture of a football field is on the diskette that came



with this book. To load it into MSW Logo, make sure your diskette is in drive a: and type:

```
BITLOAD "A:\\PCX\\FOOTBALL.PCX"
```

Getting Started

Put a small reward on each dot — maybe a prize or a piece of candy. Then you can see who can collect the most prizes or candy.

You know, this is sort of like a game of golf. In fact, when you get through this book, you can create your own Logo golf game.

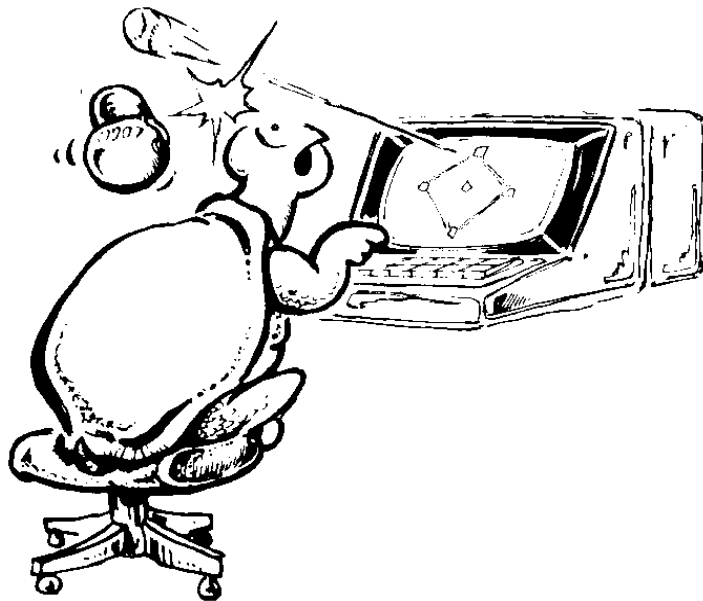
Rabbit Trail 5. Logo Sports



Everybody likes baseball. Well, just about everybody.

Anyway, you'll find that playing baseball on the computer can be lots of fun.

Put four small stickers on the screen for bases. If you don't have stickers, use tape. Don't press too hard. You want the sticker or tape bases to stick but you also want to be able to unstick them.



Can you put the turtle on First Base in no more than three moves? (That's like three strikes.) Good, you're safe.

streets and making all those turns. (All they had to do was lift the pen up.)

Working with maps and developing games leads to all sorts of wonderful possibilities. Hopefully the ideas offered here will lead to many more of your own.

Connect the Dots

Have you ever played “Connect the Dots?” There are many different versions of this game. Let’s make up a Logo version.

Draw some “dots” on the computer screen using an erasable marker. Then use the Logo commands you know to draw lines that connect the dots.

What did you draw? A crazy animal? Or just a crazy mess of lines?

OK, maybe your artwork isn’t a masterpiece. But you can get some good practice with Logo commands this way.

A Dot Challenge

Clear the screen to erase the dots. Now draw some new dots in different places and number them. Can you move to Dot #1 in just one move? Can you guess the angle to turn to get to Dot #2? Can you guess how far it is?

This game is fun to play off the computer with a group. Use chalk marks or tape on the floor as the dots.

How about making it more interesting?

Getting Started

Fun With Game Design

Now back to Turtle Town and other games. We talk a lot about games in our books. Games are fun, aren't they? Who ever said that learning can't be just as much fun?

Designing games can be lots of fun, too. Not only does it make you think through a whole series of Logo commands, it means you have to plan your game carefully so that players will understand what they have to do — and that it'll be fun!

What makes one game fun and another not so much fun? A good game is a challenge. It makes you feel good when you finish it, especially if you win.

A good game makes you think. If the game is too easy, it's not much fun, is it? After all, if you win all the time, that get's boring.

A good game is easy to understand. If you don't know what you're supposed to do, how can you win? So make sure that the rules to your game are clear.

What about playing a game?

Well, the same goes for players. They have to think very carefully to play and win! They have to plan their moves or they may find themselves getting lost or confused. It's good practice — and fun, too!

Here are some ideas some other players came up with when playing a Turtle Town game:

- One team added the feature that any player who drove off the road had to go to jail and miss three turns.
- Another team developed a game winning strategy when they turned the turtle into a helicopter so they could get across town directly, rather than move through the

To change the Windows 95/Windows NT screen:

Those using Windows NT 3.5.1 or an earlier version need to follow the instructions for Windows 3.1. If you're using Windows NT 4.0, follow the instructions below.

1. Right-click (press the right mouse key) on the **Start** button in the lower right corner of your screen.

Left-click on Open from the small menu that is displayed.

2. Double-click (press the left mouse key two times very quickly) on the **Programs** icon or folder.

A list of program folders is displayed.

3. Right-click on the **MSW Logo** folder.

Another Open menu is displayed.

4. Left-click on **Properties** to open the MSW Logo Properties dialog.

The MSW Logo Properties dialog is displayed.

5. Left-click on the **Shortcut** tab at the top of the dialog.

The Shortcut page is displayed.

6. Add the height and width of your screen to the Target field following **logo.exe** using **-h** and **-w** as Logy and Morf did above. Left-click on OK to close the dialog.

The MSW Logo Properties dialog is closed.

7. Close the other windows and then click on the MSW Logo icon.

MSW Logo starts with your new screen dimensions active.

Turn on the Fence and check to make sure Ernestine goes out of bounds at the edge of the screen.

Getting Started

Fencing In Your Screen

"Logy, the screen on my notebook computer is much smaller than the screen on your computer. Ernestine may think that the screen is 500 steps from the center of the screen to the edge. But If I go forward more than 200 steps, the turtle disappears off my screen. How come?"

The size of your screen really has nothing to do with the size of the MSW Logo window. That window simply goes beyond the edge of your screen. If you want to change your screen so that it is the size of your screen, that's easy enough. But, first you have to measure your screen.

Morf found that the screen on his notebook computer was 660 steps wide by 400 steps high. Logy's screen is 970 steps wide by 660 steps high.

To change the Windows 3.1 screen:

1. Open the **File** menu and left-click on **Exit** to leave Logo.

The MSW Logo screen closes.

2. Left-click once on the MSW Logo icon to highlight it.

The icon changes color.

3. Open the Windows **File** menu and select **Properties**.

The Properties dialog box is displayed.

4. Logy would change the Command line to read:

```
logo.exe -h 660 -w 970
```

Morf would type:

```
logo.exe -h 400 -w 660
```

Type the height (-h) and width (-w) of your screen.

5. Left-click on OK to change the settings for your computer.

at coordinates 0, 0. Don't worry about the SHOW and POS commands right now — or about coordinates. You won't need them for a while. Now type

```
FD 1000 (Don't forget to press Enter.)
```

Wow! There's a line drawn up and down the screen. Now type

```
SHOW POS (Press Enter here, too.)
```

Where are you? Does it say [0 0] again? Just so you know that Ernestine isn't teasing you, type

```
FD 100 SHOW POS
```

Now what does it say in the Commander window? Morf got [0 100]. What did you get? This shows that you changed your coordinates to 0, 100. You went FD 100.

Now clear the screen — you remember how to do that don't you? Let's try the same thing in the other direction. Type

```
RT 90 FD 1000 SHOW POS
```

Yes, you can type more than one command on one line. Just remember to press Enter when you want Ernestine to do her thing.

What happened? Are you back HOME again? If it says [0 0] in the Commander window, that's exactly where you are.

Getting Started

It's right back HOME, isn't it? It only went to the edge of the screen and then printed the message

The turtle is out of bounds.

One more test — type

WINDOW

Type FD 2100 one more time. Where'd the turtle go? To find out type

BK 1000 Nothing yet.

BK 1000 There it is, but it's not HOME. Try

BK 100 Where's the turtle now?

Type HOME just to be sure. Go ahead and play with these commands a bit. The next project is a good place to start.

How Big Is Your Screen

Here's a fun-type project for you. How big is your screen?

When MSW Logo was installed, it set the screen to 1000 turtle steps high and 1000 turtle steps wide. If you want to prove this, here's something to try. Type

SHOW POS

and then press **Enter**.

[0 0] is printed, or shown, in the Commander window. That tells you that the turtle is HOME in the center of the screen

During that period of time, you couldn't travel from Alaska to Russia. It was like there was a Fence between the two countries.

Here's something to try. Bring the turtle HOME and then drive back up to Alaska on the map. Just before you cross over into Russia, type

FENCE

Now when try to cross into Russia, what happens?

It's like there's a fence that runs around the edge of the screen. You can't move beyond it. Logo gives you a message:

The turtle is out of bounds.

Check It Out

Now let's check this out to make sure you know just how these three commands work. Type

WRAP

Now type FD 2100.

The turtle draws a trail from bottom to top of the screen, stopping a ways up from HOME. The turtle WRAPped around the screen. Now type

FENCE

Now type FD 2100 again.

What happened this time? To find out, type BK 500. Now where's the turtle?

Getting Started

the globe, you'll see that it is only about 40 miles from Alaska to Russia.

So what happened here?

Simple, if you are mapping out your trip on the map, you have to "wrap" from the point where you leave the map on one side to where you pick it up again on the other side. If you want to see how this works on the computer, load the map that's on the diskette that came with this book. Type

```
BITLOAD "A:\\PCX\\MAP.PCX
```

Pick up the turtle's pen and drive the turtle up to Alaska and across to Russia. What happened?

The turtle wrapped around to the opposite side of the screen and appeared in Russia.

WRAP is the Logo command. It is usually ON when you load Logo. However, there may be times when you don't want the turtle to wrap around. Rather than wrap around the globe, maybe you want the turtle to fly off into space. If that's the case, use the command

```
WINDOW
```

This command opens the window so the turtle can escape. The only way you can get the turtle back is to turn it around or just clear the screen.

It wasn't that many years ago that Russia and the United States were in a cold war. The two countries didn't like each other. But at least they weren't shooting at each other.

You can use your Pencil Turtle to play. Or why not try a Walnut Turtle?

Carefully crack open a walnut so that you don't break the shell. You can then glue the walnut shell to the pencil turtle shape and move it around to try out different actions.

If you don't have any walnuts, try cutting an egg carton apart. The sections that the eggs sit in make good turtle shells too.

Wrapping, Windows, Fences

No, you're not going to wrap fences around windows. This refers to three new commands you need to know about, especially when you're talking about Logo Geography.

Let's take a look at Wrapping first.



Let's say you're going on a trip. You're going to leave the continental United States and travel to Alaska. From there, you're going to make the short jump across the Bering Sea to Russia and then travel across Russia to Europe.

The only problem is that on this map, the jump from Alaska to Russia is no small jump. However, if you look at

Getting Started

If you leave HOME and turn East on Main Street, what direction do you turn? Give yourself a big Gold Star if you said turn RIGHT.

Go East on Main Street to Pine Avenue and then turn South. Do you turn LEFT or RIGHT?

Go West on Elm Street to Maple Avenue.

Go North on Maple Avenue to Main Street.

What direction must you turn to find the skyscraper at the corner of Main and Oak Streets?

What else can you do with your Turtle Town map?

To get you started, add some puzzles to the map such as temporary construction barriers that you have to go around.

Turn the map into a maze.

Create a Turtle Town Game

Divide a group of friends into several teams. Each team must then design it's own turtle town game. When completed, teams play the games developed by each other and vote on which is the best game. This is also an activity that can be shared with other classes in the same or another school.

It's better if you draw your town on a large sheet of paper. You can make it a bigger and better game that way. If you need to find big sheets of paper, ask a local printer or newspaper if they have "proof sheets" or other scrap sheets or rolls you can have. Proof sheets will have printing on one side but you can use the other side for your game.

After you have had some fun moving around Turtle Town, why not get some friends together and see who can complete a trip in the least number of moves. For example:

1. Go to Morf's house. That's at the corner of Pine Avenue and Elm Street.
 2. Take lunch to your Morf's father who works at the factory.
 3. Go to see your cousin who lives in the apartments on Main Street.
 4. Go get some candy at the candy store.
 5. Go back home.
-

Rabbit Trail 4. Turtle Geography



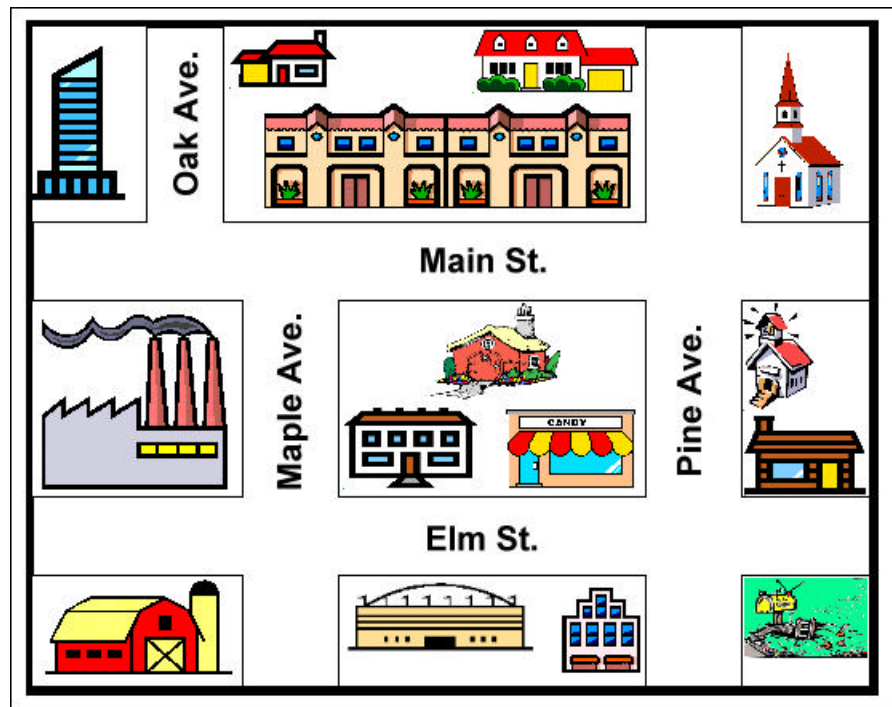
Here's something else you can do with a group of friends or your class. Print the Turtle Town map. Then you can use your Pencil Turtle to move around Turtle Town. Or why not draw a map of your neighborhood and move your Pencil Turtle around on that.

Now let's get on with some Turtle Geography.

You've been moving around the Turtle Town map by going FORWARD, BACK, LEFT and RIGHT. Are these the directions you use to move around a map of the world, a map of your state, or your home town?

These other maps use the four directions, North, South East, and West. We'll talk more about these directions when we explore circles, clocks, and compasses. But for now, let's see what we can do with them using our map.

Getting Started



There is a copy of this map on the diskette that came with this book. Why not load the drawing into Logo? Then we'll have some fun with it.

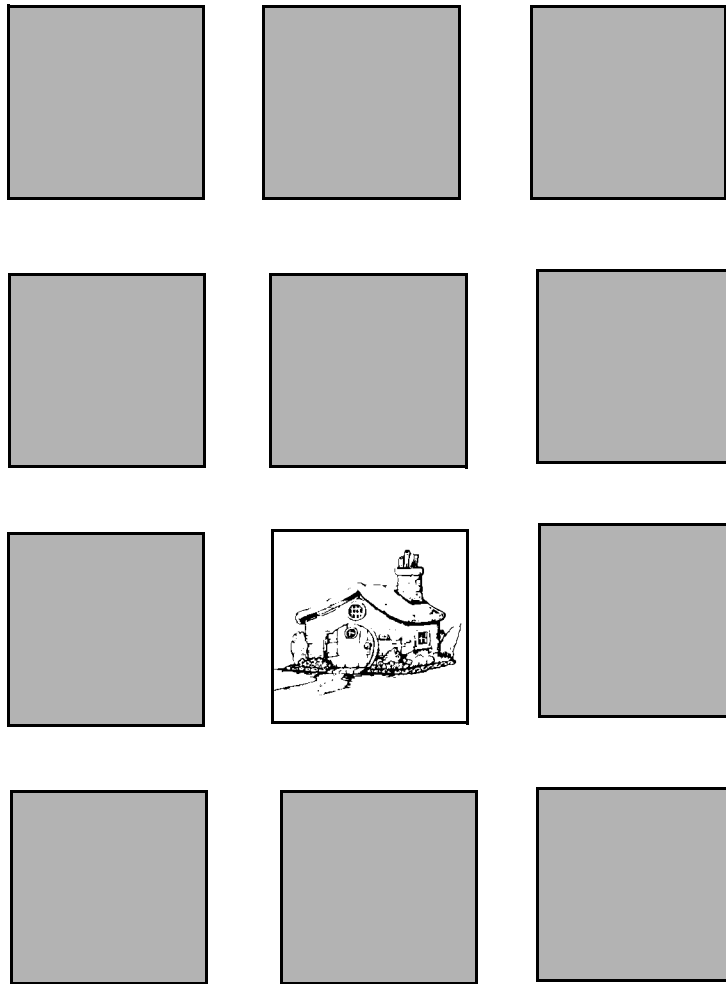
To load the Turtle Town map:

1. Make sure that Logo is running and that the Sourcebook Book diskette is in drive A.
2. Type `BITLOAD "A:\\PCX\\TOWN.PCX` and press **Enter**.

The Turtle Town map is displayed.

Now let's have some fun moving around town. Start by lifting the pen up. You remember how to do that, don't you.

1. Start from your home and find the farm.
2. Now find the factory.
3. Now it's time to go to school.



Working with maps can be lots of fun, especially when they are done on the computer. There's a map of Turtle Town on the next page that shows where Logy and Morf live.

Rabbit Trail 3. Exploring Turtle Town



Think about this for a moment. Where does your best friend live? From the front of your house, which direction do you turn to go to your friend's house, right or left? After you turn, how far do you go before you turn again?

Can you draw a map to his or her house?

Why not draw a turtle trail from the front of your house to the front of your friend's house. Pretend that each block is 100 turtle steps long and that each street is 10 turtle steps wide. After you have drawn the turtle trail, write down the Logo commands to make the trip.

Here's another challenge for you. Can you draw the map that would use the following commands?

```
RT 90 FD 50  
RT 90 FD 100  
LT 90 FD 110  
RT 90 FD 100  
RT 90 FD 30
```

Pretend you are drawing a map to a friend's house. Once you get there, you can draw a picture of what your friend's house looks like.

Here are a few blocks to give you a start. Use these or draw and color your own map.

Since the turtle is moving down the paper, the turtle turns to its left but your right. If you've turned the Pencil Turtle like Ernestine would turn, you can check this out by looking at the front legs of the turtle. They tell you which direction is which.

Remember, when you want to plan a drawing on paper, your Pencil Turtle can help you think about the moves the turtle will have to make on the screen.

To help you even more while you're making your drawing on paper, make a list of the commands you give your pencil. This makes it easy to remember when you type the commands on the computer.

Let's Review

You know how to tell the turtle to go FORWARD, BACK, LEFT, and RIGHT. You can tell the turtle to draw with the PENUP or the PENDOWN.

Remember where HOME is?

What happens when you tell the turtle PENREVERSE?

What about CLEARSCREEN? CLEARTEXT?

CLEAN? PENPAINT?

OK! Time to do some more exploring off the computer!

Getting Started

When that's done, slide the turtle up near the top of your pencil so you can hold it underneath the turtle. If it seems to slide around too much, use a piece of cellophane tape to hold it in place.

Ready to go? Make sure the turtle is looking at the top of the paper. Then give the Pencil Turtle a command like:

FD 50

When you want the Pencil Turtle to turn, turn your pencil so the turtle is facing where you want to draw your next line.

RT 90 FD 50

LT 90 FD 50

Get the idea!

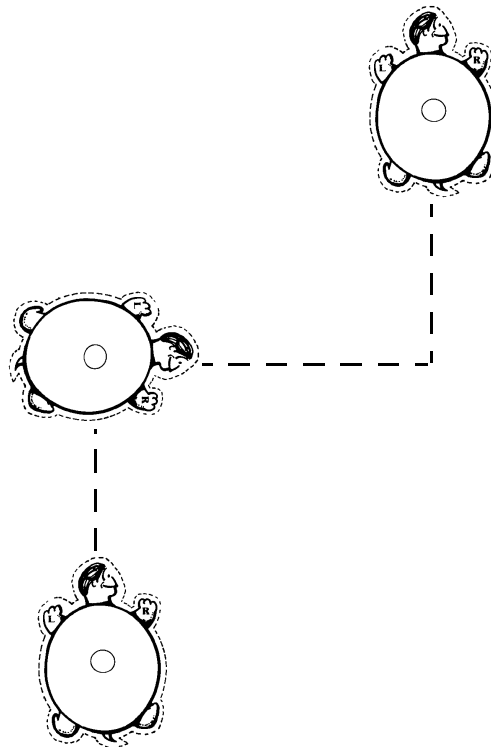
Now try this.

RT 180

FD 100

LT 90

The turtle's going to turn to its left. But which direction is that to you?



Your right? Or your left?

Rabbit Trail 2. Making a Pencil Turtle



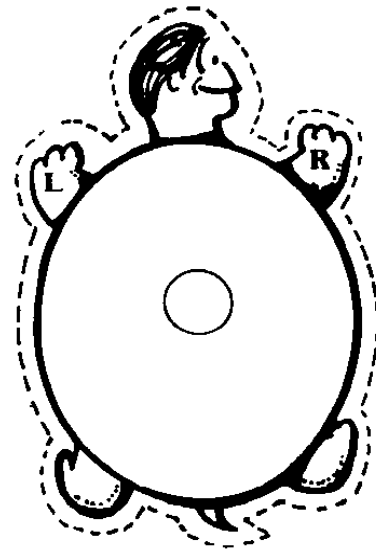
Sometimes it's hard to see how things work on the computer screen. To get things clear in your mind, you just have to go back to the good old pencil and paper.

But the pencil isn't the same as a turtle.

Here's an idea to help you make a turtle drawing on paper. Let's make a turtle for your pencil. You can use the one we did or you can make your own turtle.

Using your pencil, make a drawing of an egg on a piece of heavy paper or cardboard.

If you're at home, maybe you could ask your Mom or your Dad for help tracing a real egg.



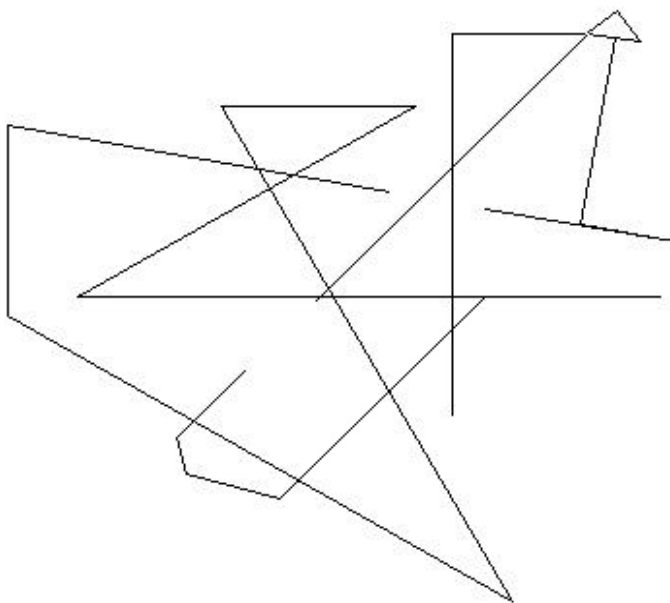
But be careful, you don't want egg all over your drawing.

Hold the egg carefully and then trace around the egg to draw an oval shape. This looks like a turtle shell, doesn't it?

Now put a small circle, about the size of your pencil, in the middle of your turtle shell. At the top of the shell, draw the turtle's head. Then draw the turtle's right legs. Then draw the turtle's left legs.

To help keep directions straight, put R on the right front leg and L on the left front leg. Now you're ready to carefully cut out your turtle.

Sometimes it's fun to just play around on the screen to see what you can do. At other times, it's fun to plan a drawing on paper first, and then put it on the screen.

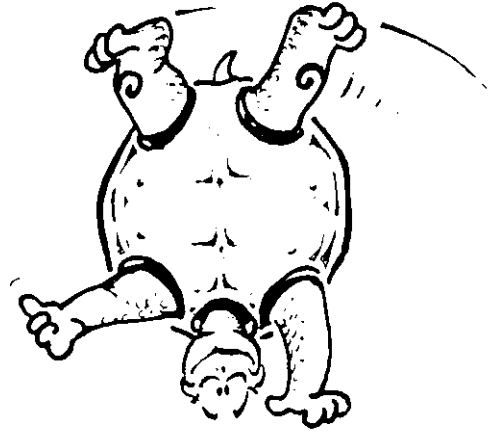


Why not give that a try — first on paper, then on the screen.

If you run into a bit of trouble trying to figure out the Logo commands for your drawing, Morf has some ideas for you in his next Rabbit Trail.

What happened? Just as important, what do you do now?

If you said to tell the turtle to put her pen back down, CONGRATULATIONS! That's the kind of answer that sends Logy into tailspins.



Give yourself a huge Gold Star! And throw in a double-dip ice cream cone too!

To stop erasing, tell the turtle to PENPAINT.

OK, now type FD 50. Now what do you see? It looks better, doesn't it.

Try this:

FD 50

RT 45

FD 75

PE

BK 75

Now try this:

RT 90

FD 75

LT 90

FD 100

PD

Getting Started

But what about things you draw?



Think about this.

You have just finished a great drawing when you see a line that's too long. You don't want to start all over again. All you want to do is erase that one line.

Let's try it and see what happens. Draw this shape.

```
FD 50      RT 120
```

```
FD 50      RT 120
```

```
FD 60
```

Rather than erase the entire drawing because the last line is too long, just change what the pen is doing. Since you want to erase that last line, you just move the turtle back over it.

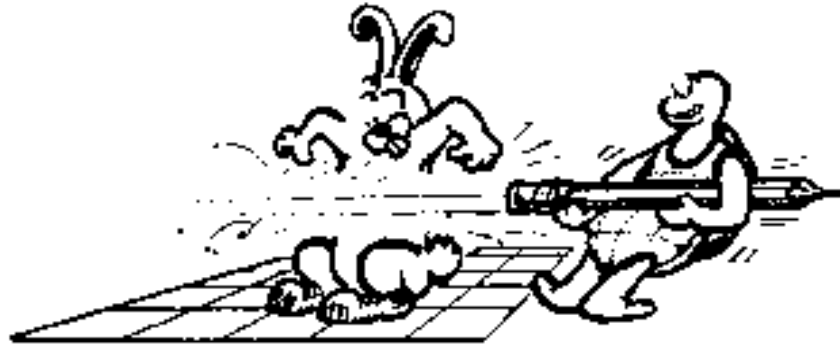
Try this:

```
PENERASE or PE in shorthand
```

```
BACK or BK 60
```

Erasing

Did you ever type something you didn't mean to type? Sure you did! Well, all you have to do to change it is to back up and type over what you want to change.



You can use the Backspace key to back up. It's the one with the arrow pointing to the left. Put the cursor after the letters you want to erase. Then press the Backspace key. It moves to the left erasing one letter each time you press the key.

You can use the Delete key. The cursor stays in one place while it erases the letter to right. Go ahead, give both keys a try. You'll see the difference.

The other way to erase is to drag the mouse over the text you want to change. Drag means to put the cursor in front of the section you want to change. Press and hold the left mouse button. Then drag the cursor (move the mouse) over the letters to change. The section you marked reverses color. Then release the left mouse button. To change what you've marked, just start typing. The marked section disappears.

OK, you know you can erase things that you type.

Getting Started

PENREVERSE

If there's a line in the turtle's path, it is erased. If there is no line, the turtle draws one.



Why don't you put these commands to work. Make up some things to do and experiment.

Hiding the Turtle

If you want to get the turtle out of the way, type `HIDETURTLE` and press **Enter**. Ernestine disappears!



You can abbreviate `HIDETURTLE` by typing `HT`

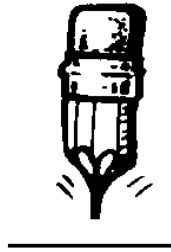
To see the turtle again, what do you think the command will be? Sure, it's `SHOWTURTLE` or `ST` in shorthand.



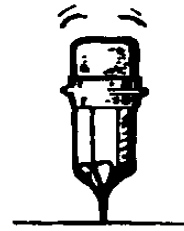
`SHOWTURTLE` or `ST`



`HIDETURTLE` or `HT`



PENUP or PU



PENDOWN or PD

To tell the turtle to start drawing, tell her to put the pen down.

PENDOWN or PD in shorthand

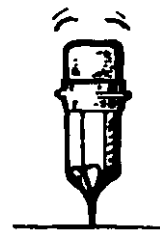
FD 50

Awfully simple? Or simply awful?

But don't think you're going to get off this easy! There's more to it than that. In MSW Logo, the turtle can do three things with the pen when it is down: paint (when the turtle's drawing), erase, and reverse lines.

PENPAINT

The turtle draws lines.



PENERASE

The turtle erases its steps.



Getting Started

Learning Turtle Shorthand

Now that you know what the basic turtle commands are and what they will do, let's make things easy. Let's try turtle shorthand:

FD	is the same as	FORWARD
BK	is the same as	BACK
RT	is the same as	RIGHT
LT	is the same as	LEFT
CS	is the same as	CLEARSCREEN

Get the idea?

Good, then let's try a few. Here's a list of commands. Some are already done for you. Why don't you fill in the blanks? Then type your own commands on the computer.

FD 100	RT 120	FD 60	BK 30
LT ____	FD ____	RT ____	BK ____

The Turtle's Pen

So far we've been talking about the turtle drawing all the time. Ernestine always has her pen down to draw on the screen.

But what if you want the turtle to move without drawing a line? What do you do to make that happen?

You guessed it! You tell the turtle to pick up the pen.

PENUP or PU in shorthand

FD 100 RT 90

FD 10 - 5 Subtraction
FD 10/5 Division
FD 10 * 5 Multiplication

Now back to your experiment — what happened?

The shape got bigger. But it still looks like the letter N doesn't it. So I guess that means that turtle steps and turtle turns really *are* different!

- Changing the number of turtle steps changes the size of the shape. But it's still the same basic shape.
- Changing the number of turtle turns changes the shape itself without changing the size of the lines.

Go ahead, change the number of turtle turns. Change 150 to 120. What happens when you change it to 180? Why not try 310? As you play around with numbers, you'll begin to see how you can make the turtle do just what you want it to do.

Now, think about this.

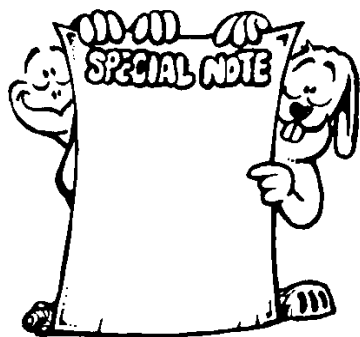
What would happen if you changed the $10 * 5$ to a $10 * 8$? No, don't do it on the computer. Draw the change you think this might make. Then do it on the computer to see if you were right.

Don't worry about what you're drawing or what the turtle's trail looks like. This is the time to explore, to discover what the turtle can do with the four commands FORWARD, BACK, RIGHT, and LEFT.

Getting Started

What letter does this shape look like? How would you make this shape bigger on the screen?

If you make the turtle move five times as many turtle steps forward, do you have to make the turtle do five times as many turns?



SPECIAL NOTE: The words you type — FORWARD, RIGHT, BACK, and LEFT — are Logo “primitives.” Primitives are the action words, the instructions or commands that Logo already knows. You use primitives to write procedures. They’re the things you will teach Logo to do in Chapter 4.

Let’s experiment. Morf just loves experimenting.

Try this. And don’t forget to press Enter when you’re done.

```
FORWARD 10 * 5  
RIGHT 150  
FORWARD 11 * 5  
LEFT 150  
FORWARD 10 * 5
```



The * sign tells the turtle to multiply 10 times 5 and move that many turtle steps. You’ll learn more about Logo arithmetic later on. If you want to practice a little now, try working with these arithmetic signs.

FD 10 + 5

Addition

For another change, let's take a turtle walk that's a lot like these games. This one is fun to play with your class in school or with your family or friends at home.

One player is the turtle and one is the computer operator. The idea is to tell the turtle how to walk through a big letter or shape. The others in the room have to guess what the turtle is drawing.

The turtle starts in the middle of the room. The operator then tells the turtle how to move. The commands listed below will give you an idea.

FORWARD 10 turtle steps. Make them little steps if you are in a small space.

RIGHT 150 turtle turns.

Remember how you turned right before? You tried RIGHT 90 to turn to the side. Then you tried RIGHT 180 and you turned around to face the opposite direction. 150 is closer to 180 than it is to 90. So you can make a good guess about how far to turn. It will do just fine.

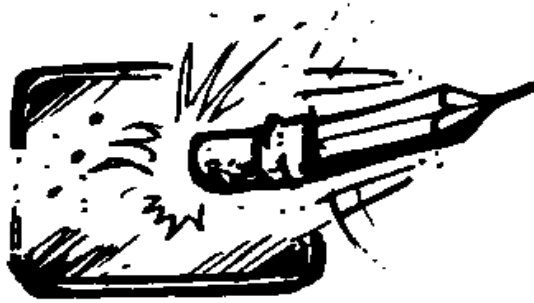
FORWARD 11 turtle steps

LEFT 150 turtle turns.

You don't have to be reminded about this one, do you? I bet you know which direction you should be heading.

FORWARD 10 turtle steps

Now type these steps on the computer. Of course, you don't need to type the "turtle steps" or "turtle turns."



To clear the screen but leave the turtle in the same place, type `CLEAN`. This cleans the screen, but the turtle stays where she was.

"That's fine, but what about erasing all the typing in the Commander window?"

Just type `CLEARTEXT`. The text disappears.

Rabbit Trail 1. Turtle Games Off the Computer



Now it's my turn to shine! Logy likes doing things at the computer. But I have to get away every once in a while and do things off the computer. So join me on my Rabbit Trails throughout these books. Here's one to get you started.

Have you ever played *Simon Sez* or *Mother, May I?* Why not try these games using Logo commands instead of the regular things you do. Logo commands add some new fun to the old game.

Simon sez `FORWARD 5`

Simon sez `RIGHT 90`

`FORWARD 5`

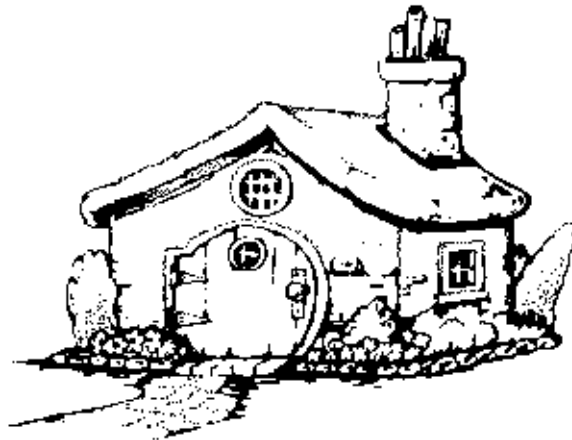
That's it. Now just mess up the screen with turtle trails. As you type in numbers, watch what the turtle does. Pretty soon, you'll be able to tell the turtle just where you want her to go.

Cleaning Up After Yourself

By now the screen is either a work of art or a big mess. So you'd better clean it off. To clear the screen, type:

CLEARSCREEN

Everything on the graphics screen is erased and the turtle goes HOME.



Yep, that's the turtle's home, right there in the middle of the Graphics window. OK, so maybe HOME on the screen doesn't look exactly like our picture. But you get the idea.

When you tell the turtle to go HOME, she goes back to the middle of the screen and faces the top of the screen.

Remember this! You'll use the HOME command a lot.

Getting Started

RIGHT 90 RIGHT 90 (Yes, you can type more than one command on a line. Just remember to press **Enter** when you're done!)

That should work, shouldn't it?

What would happen if you add the 90 and 90 together? Did you get 180? Morf did. Why not give that a try.

RIGHT 180 Then press **Enter**.

That did it! There's the turtle facing in the opposite direction.

Things to Remember

So, when tell the turtle to go FORWARD or BACK, the turtle moves forward or back the number of turtle steps you tell her to go. When you tell the turtle RIGHT or LEFT, she turns the number of turtle turns you tell her to turn — but she doesn't move.

Get the idea? Try a few moves on your own.

FORWARD 100 RIGHT 90

FORWARD 100 RIGHT _____

BACK _____ RIGHT _____

BACK _____ LEFT _____

LEFT _____ FORWARD _____

_____ was too _____ (too big or too little?)

_____ was too _____

_____ was too _____

_____ was too _____

The answer is _____!

This is the cool part of Logo. You get to discover all sorts of new things all by yourself. You found that the turtle had to turn 90 turtle turns to look at the side of the screen.

Now, turn the turtle back to the top of the screen. What do you have to type to do that?

If you said LEFT 90, give yourself a double-dip ice cream cone!



Turning Around

Now, what do you have to do to get the turtle to face the bottom of the screen?

Well, you could tell the turtle to face the side twice, right?

Getting Started

If you accidentally hit the wrong key and end up with something like FORWRD 200, the turtle sends you a message such as:

I don't know how to FORWRD

She's nice about it. So just type the command again, but without any more accidents.

Turning the Turtle

To turn the turtle, tell her to turn RIGHT or LEFT. Again, just as you have to tell her how many steps to move forward or back, you have to tell her how many turtle turns to make.

RIGHT _____

Go ahead! Type in a number — not an itty-bitty number. Make it a pretty big one.

What happened? The turtle turned to look in another direction, right?

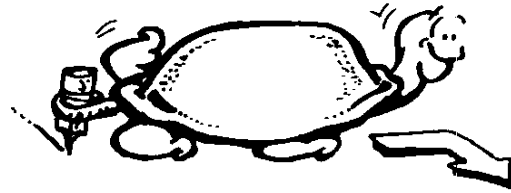
OK, now turn her back to the direction she was heading before.

Type LEFT _____ and use the same number of turtle turns that you used before. Remember to press **Enter**.

Now the turtle is looking up toward the top of the screen again. How many turns does the turtle have to make to look at the side of the screen?

What do you think? Why not write down your answers?

RIGHT

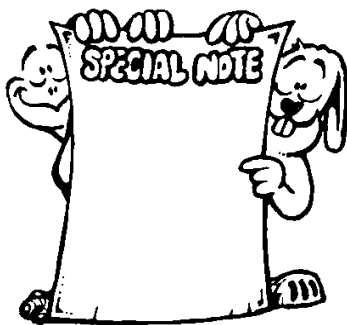
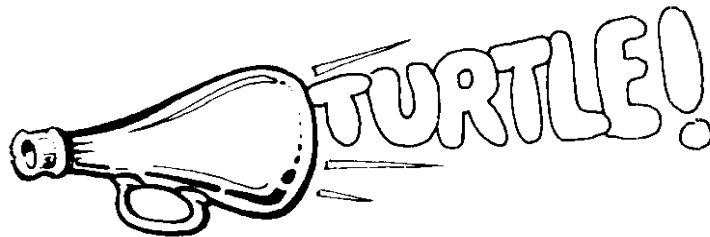


When you tell the turtle to move, you have to tell her how many turtle steps to take. Go ahead. Try it.

1. Type FORWARD.

In this book, we sometimes use italics like this to make sure you know what's going on. However, we type commands in UPPERCASE so you'll know what's a command and what's not. When typing MSW Logo commands on the computer, you can use either upper or lower case letters, or both.

2. Press the **Space** bar.
3. Then type a pretty big number, like 200 maybe.
4. For the turtle to hear you, you have to press **Enter**.

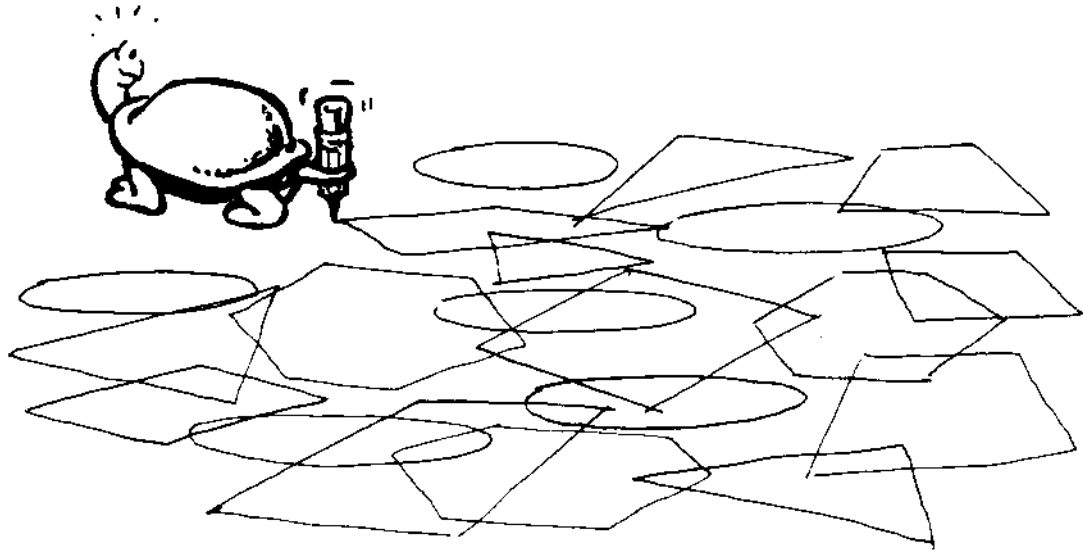


SPECIAL NOTE: If you see the name of a key printed in bold, like Press **Enter**, you had better pay attention.

That means press that key *now*.

If we don't want you to press the key right then — you can do it the next time you use that instruction or command — then the key is displayed in regular type.

Getting Started

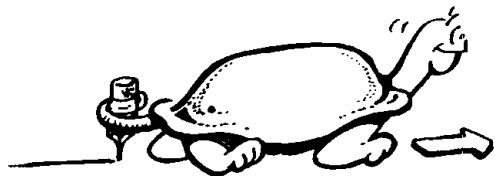


But remember, you are the one who has to tell her exactly what to do.

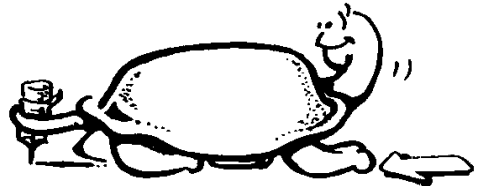
Turtle Directions

The turtle can go

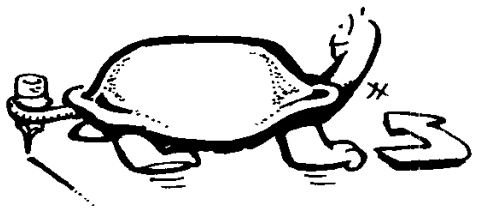
FORWARD



BACK

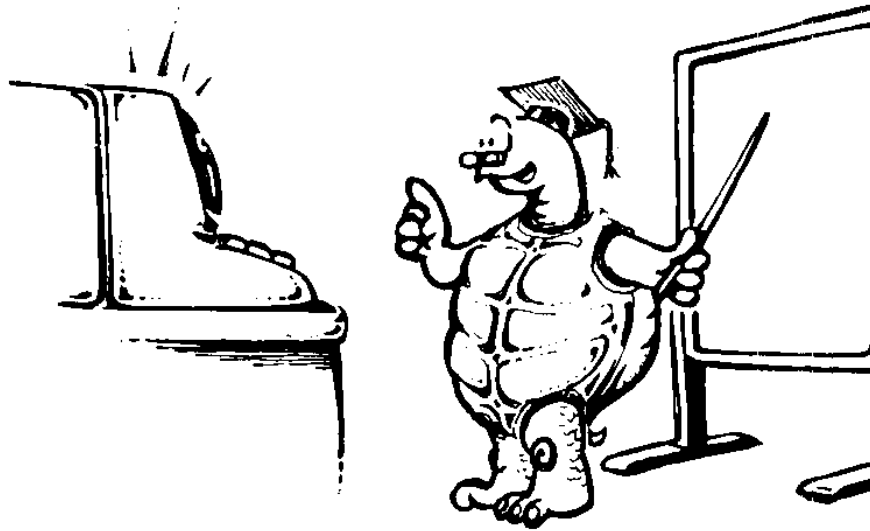


LEFT

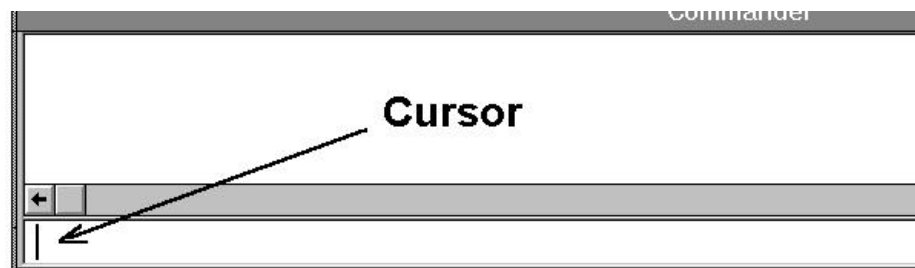


Meet the Turtle

It's also time to get down to business!

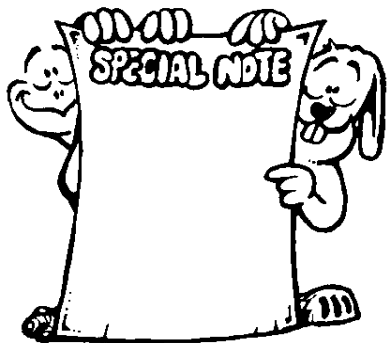


Look in the Commander window. If you don't see a blinking line over on the left side, left-click (that means press the left button on your mouse) in the Input Box. That blinking line you see is "the cursor." It moves every time you type something in a window, dialog, or text box.



But you probably knew that already. So, let's get on with the fun!

Ernestine carries a pen that she uses to create all sorts of colorful drawings. Sometimes we call the lines that she draws turtle trails.



SPECIAL NOTE: When we want you to pay special attention to something, we use this Special Note box. These are things you really need to know.

Right now, we have a special note about this book that we want you to read before we get started.

When reading about menus and the things you can do with them in this book, you may see things like **File/Edit** or **Edit/Copy**. This is just a short way of saying open the File menu and left-click on Edit, or open the Edit menu and left-click on Copy.

Sometimes you may see instructions like **File/Edit/All**. You got it. That means open the **File** menu, select **Edit**, and then left-click on **All** in the box that appears.

Ready to Start

Ready to get started? Fine, it's time to...

Demo: Select Demo to see a neat demonstration of some of the things that MSW Logo can do.

Examples: Examples are just that, examples of MSW Logo procedures. Study these procedures after you finish this book to discover lots of other things you can do with MSW Logo.

Release Notes: This tells you all about the things that MSW Logo has to offer. It's the same as the MSWLOGO.TXT file in your MSW Logo directory.

About Logo: This tells you who developed MSW Logo. It also provides e-mail addresses where you can contact the developers.

Commander Buttons

Morf loves buttons and things. So here's a list of the Commander buttons. We'll talk more about them later as we go along.

Halt: This stops all the Logo action right away. It does the same thing that the HALT command does.

Trace: This turns the Trace command on. Left-click on it to turn the Untrace command on.

Pause: Logo stops the action temporarily and waits for the Continue command.

Status: The Status button brings up a Status window that tells you what's going on.

Yield: This tells Logo not to allow other programs to run while Logo is running.

Reset: This button is like the Clearscreen command. It resets or clears the screen.

Execute: This is like pressing the Enter key. It tells the turtle to execute your procedure.

Getting Started

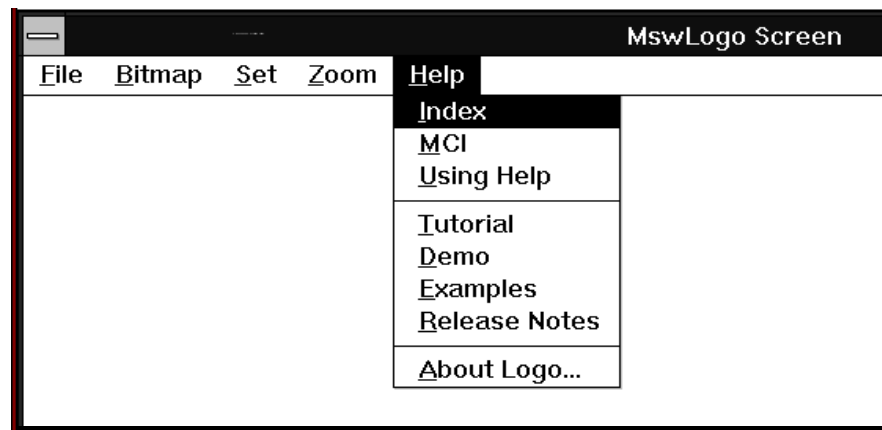
Set: You can change the type of letters and numbers that Logo uses by setting the “font” in this menu. You can also set colors.

Zoom: You can Zoom in on your pictures to make them bigger. Or you can Zoom out to make them smaller.

Help: This is real important. So we give you an entire section on it.

Where to Go For Help

If you have questions about how to do something in MSW Logo, you can left-click on Help. The Help Menu pops up and gives you some choices.



The Help Menu gives you some choices:

Index: Left-click on Index to see a list of the chapters in the MSW Logo On-line Help.

MCI: This is for Multimedia programmers, something we won't be covering in this book.

Using Help: This is a neat section. It will help you if you need help using Help.

Does that make sense?

Tutorial: That didn't make it in this version. This book will have to do. You'll find the tutorial on CompuServe and on the MSW Logo home page at <http://www.softronix.com>. That's also a great place for help.

1. Left-click in the **Title Bar** where you see the word, Commander.

The title bar of the Commander window changes color.

2. Press and hold the left mouse key down. Then drag the Commander window around the screen.

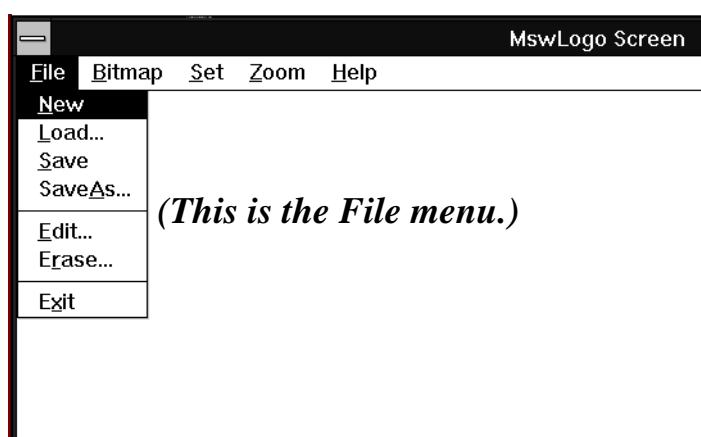
The Commander window moves as you move the mouse.

3. Move the Commander window back where it is supposed to be and release the mouse button.

You're back where you started.

MSW Logo Menus

There are five menus in the Menu Bar. You know what a Menu is, don't you? You left-click on the word and up pops a list of choices.



File: This gives you a list of things you can do with your procedures; things like Load them into your workspace, Save them, Save them using another name, Edit them, and Erase them.

Bitmap: Bitmap is a technical term for picture. This menu includes commands for loading, saving, and printing the pictures that you create. See page 55 for more on printing.

Getting Started

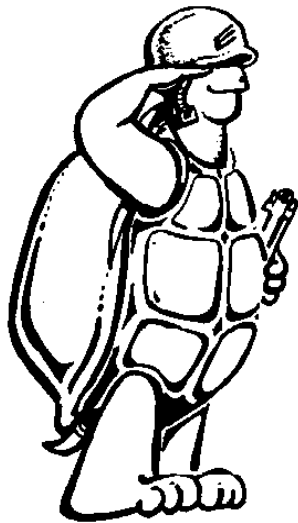
Parts of the Screen

There's Ernestine sitting at right in the middle of her playground. Ernestine looks like a pointed arrow but she's really a turtle who does just about anything you ask her to do. If she doesn't understand, she'll tell you.

Now let's take a look at the rest of the MSW Logo screen.

It's like many Windows screens. The **Title Bar** is at the top. This tells you what window you're looking at.

The **Menu Bar** is right below the Title Bar. It holds the names of menus we'll describe a bit later.



Down below the playground is the **Commander** window. This is where the action is.

The big space in the Commander window is the **Command Box**. This box keeps a list of what's going on. If something goes wrong, you'll see a message here.

Below the Command window is the **Input Box**. This is where you type your instructions to the turtle.

Over on the right side, There are a bunch of buttons that can make things a little easier.

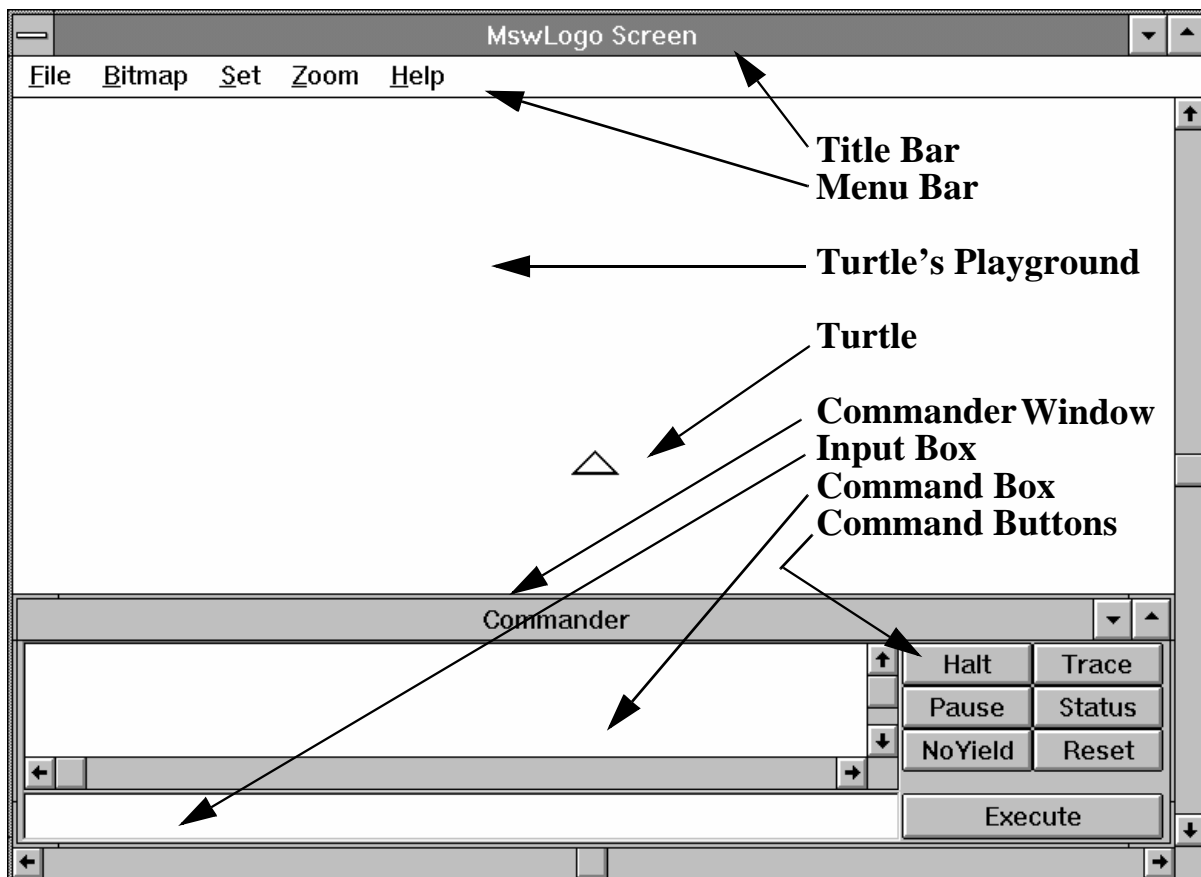
The Commander window is a separate window from the MSW Logo window. That means you can move it around, make it smaller or larger, or you can change it into a little icon. We work with this window a lot. So if you want to practice moving it around or changing its size, go ahead.

Looking at Logo

When you install MSW Logo, Windows puts it in its own program group or folder. Open the program group or folder and there's Logo in its own little window.



Double-click on the Logo icon in that little window to open MSW Logo. The MSW Logo Screen appears.



Getting Started

MSW Logo Directories

When MSW Logo is installed, three directories are set up:

- **Mswlogo:** This is the main directory or folder. Examples and Logolib are subdirectories of the main directory. This is the where you will save your own procedures.
- **Examples:** This directory includes a number of subdirectories with different types of MSW Logo sample procedures. Be sure to read the README.TXT file. This provides a description of all the example procedures. **NOTE:** MSW Logo procedures are standard ASCII text files that you can read using a text editor or word processing software. Just be careful that you don't change them.
- **Logolib:** This is a file of special Logo primitives — that's the Logo word for commands — used by MSW Logo.

To see a few of the things that MSW Logo can do, run the Demo.

1. Left-click on **Help** in the menu bar. (That means to press the left mouse key.)
 2. Select **Demo** to get a preview of MSW Logo.
-

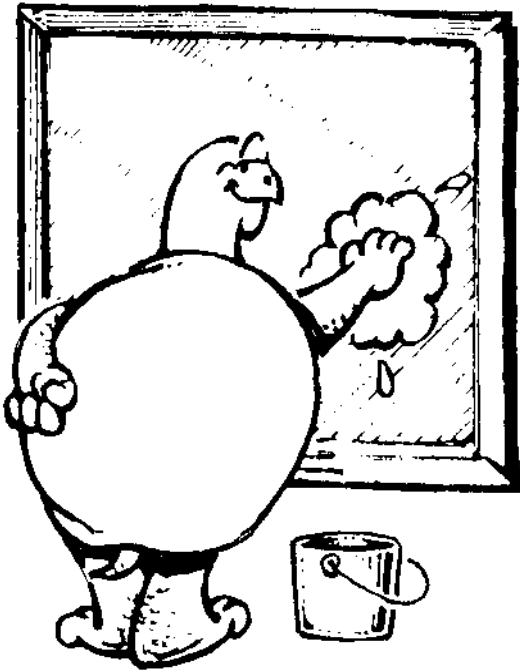
The Procedures Diskette

The procedures diskette that came with this book has four directories.

- Procs:** This directory includes all the procedures from *The Logo Sourcebook*.
- Projects:** Other procedures you may enjoy working with.
- A:** Some text files referred to in the book.
- PCX:** Pictures to use with the activities in this book.

Be sure to read the README file in the A:\ directory. It describes the diskette files.

Chapter 1. Getting Started



“Hey, Logy, whatcha doing?”

“What’s it look like I’m doing. I’m cleaning the windows so we can get started on our new adventure.”

“Can’t you leave the housekeeping until later. We’ve got Logo work to do!”

“I don’t like dirty windows!” replied Logy. “I don’t care if they are on the house or on the computer. If we’re going to discover new things to do with Logo, we’re going to have clean windows.”

“Did you know that Ernestine brought along her whole family, over 1,000 turtles. And you can now play music through your new sound card. You can even use Logo to make up your own Windows stuff for your friends to use. Just wait until you see the trouble you can get into!”

“Yeah, yeah, yeah” Morf said, bounding around excitedly. “What do we have to do? When can we get started. I’ve got lots of ideas I want to try out!”

Installing Logo

The first thing you need to do is install Logo on your computer. Put your MSW Logo diskette in Drive A. To install MSW Logo, just type the name of the MSW Logo file from the DOS prompt or select the RUN command in Windows. Then run A:\SETUP. The rest is automatic.