

Logo Activity 5

Writing Procedures

All of the images you have created so far have been done by typing commands in the Command Center. When you quit Logo, your graphics window and commands are gone.

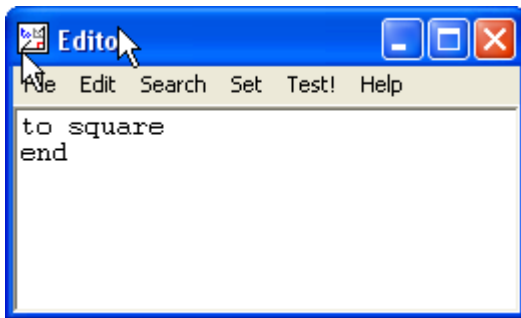
So far, each time you wanted to draw the same design, you had to retype all of the commands. To draw a square, for example, you used either eight commands (i.e. FD, RT) or one long REPEAT statement. It would be easier and faster to type one word, such as SQUARE, to command the turtle to draw a square. There is a way to save a set of commands that creates a graphics image.

You can define your own new commands, called procedures. A procedure allows you to enter a set of commands into an editor. After you have defined your commands in the editor and saved your work, you can execute the procedure by typing the name of the procedure in the Commander Window. Let's try it!

Let's create a command called SQUARE. To enter the editor type ...

EDIT "SQUARE

Don't forget to type the double quotes before the name of the procedure. This will bring up the Logo Editor.



Be sure and open up a blank line between the "to square" and the "end". When you type a procedure in the edit mode, your commands WILL NOT immediately be followed (executed). The ENTER key will only move the cursor to the next line.

Type in the following:

```
to square
  cs
  repeat 4 [fd 100 rt 90]
  ht
end
```

You save your work by selecting "SAVE AND EXIT" from the FILE menu. To execute the new command type SQUARE. A square should appear on your graphics window.

A procedure is a collection of Logo commands. Procedures must begin with the word TO and end with the word END. The name of the procedure will describe the action being taken. Careful thought should be given to naming your Logo procedures. The body of the procedure may be any set of commands you would like executed. The editor can contain as many procedures as the memory of the computer allows. Each of the procedures must have a unique name.

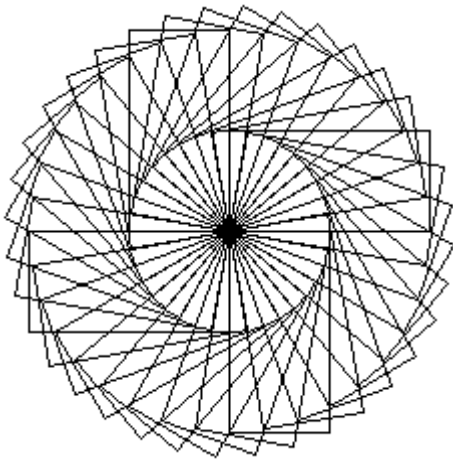
While the mechanics of procedure writing is rather simple, its potential is profound. When you create a series of instructions to complete a particular task and then put them into a named procedure, you have "taught" Logo a new word. This new word behaves exactly as if it were any other command. The fact that you can easily create procedures that function exactly like other commands is what makes Logo a language with many extensions.

Let's go one step further. Remove the CS and HT from Square and create a procedure called FANCY.

```
To Square  
  Repeat 4 [fd 100 rt 90]  
End
```

```
To Fancy  
  Repeat 36 [ Square rt 10]  
End
```

Save your procedures and you can view the results by typing Fancy. This example demonstrates the fact that one procedure can be called within another procedure.



Steps To Create a Procedure

- 1) Type <EDIT > followed by the procedure's name
- 2) Enter the body of the commands for the procedure between the TO and the END.
- 3) Select SAVE AND EXIT from the FILE menu.

Testing a Procedure

Test a procedure by simply typing the procedure's name in the command center.

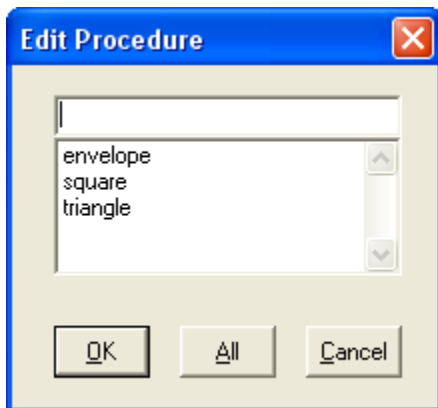
Debugging and Editing a Procedure

Mistakes in computer programs are called "bugs." The process of removing them is called "debugging." At first you may spend a lot of time debugging your Logo programs. As you gain experience and give careful thought to your design you will find yourself spending less time debugging procedures.

- 1) In the Command Center type EDIT "Name of your procedure
- 2) Use word processing techniques to make the desired changes.
- 3) Select SAVE AND EXIT from the FILE menu.
- 4) In the Command Center type the name of the procedure.

Editing ALL Procedures Together

After creating several procedures you may wish to edit them at the same time. This can be done by selecting EDIT from the FILE menu.



This will display a list of all of the procedures you have created. If you want to edit a particular procedure select it, or select All to view all of the procedures at the same time.

Saving Your Work For Another Day

Up to this point you have only been saving your work to memory. If you want to save your work to a file, you must select SAVE from the FILE menu of the MSWLogo window. Logo files have an LGO file extension.

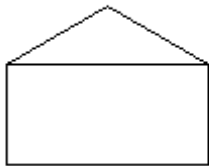
“How To” Movie

[Writing Procedures](#)

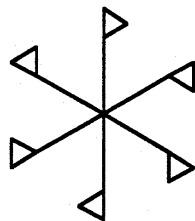
Logo Assignment #5

Name _____

- 1) Since your commands are not followed immediately in the edit mode, some people like to try their commands in the Command Center first. This way they can test their commands and immediately see the results. Then they copy the commands into the procedure. Others prefer to think about what their commands will do and type them in procedure first. How you do it is up to you. In this exercise you will create a procedure that will create a red hexagon. Please copy and paste your **procedure** below.
- 2) In this problem you will create an envelope similar to the picture shown below. You will only get credit if you create three procedures named: Rectangle, Triangle, and Envelope. The Rectangle procedure will make the body of the envelope. The Triangle will make the top part. The Envelope procedure will contain Rectangle, commands (FD, RT, etc.) to position the cursor as needed, and a call to Triangle. Test your program carefully and then paste your **procedures** below.



- 3) The key to making complex designs is: a) make sure your simple design begins and ends in the same place, b) points in the same direction in which it started, 3) use another procedure to rotate the simple design using the repeat command.



Design a procedure called FLAG that will make a single flag similar to those shown below. Then create a second procedure called "SPIN" that is used to rotate and draw the flag in the six different positions shown below. **Report each procedure here.**