

This is the first of three ‘Skill Builders’ in Unit 1. At the end of this unit, you will use the skills you have learned in these Skill Builders to create a more complex program. This is your first lesson in learning to code with TI Basic.

TI Basic is a programming language that can be used to program on the TI calculators. While the structure and syntax (grammar) of TI Basic is simpler than other modern languages, it provides a great starting point for learning the basics of coding. Let’s get started!

Objectives:

- Use the TI Basic Program Editor to create and run a simple program.
- Use the program menus to select and paste commands into a program.
- Run a program.

Turn on your TI-84 Plus CE and press the **PRGM** key.

Select **NEW** using the arrow keys.

Select **Create New** by pressing **ENTER**.



Name your program.

Our program name will be **HELLOXY**. It can be any legal name*. Press **ENTER** after typing the name. You are now in the Program Editor. Each line begins with the colon character (:).

**A legal name must: be up to 8 characters long, start with a letter, include only uppercase letters and numbers, with no spaces; and be unique.*



This program will display a simple message on the home screen of your calculator.

Selecting a programming command from the Program Menu.

The **PRGM** key now contains new menus that contain the commands that are used in TI Basic. If you want to use one of the commands, you *must* select it from this menu rather than type it on the screen.

1. Press the **PRGM** key
2. Choose the **I/O** menu using the arrow keys. This menu contains all of the commands affecting Input and Output.
3. Select **Disp**. The word will be pasted into your program at the current cursor position. The **Disp** command will display something on the HOME screen.





10 Minutes of Code

TI-84 PLUS FAMILY

Type a greeting in double quotation marks.

This greeting is called a *string*, which is a group of characters that are “strung together”.

- Your string must start and end with quotation marks. Without the quotes, the program thinks you mean something completely different.
- Make your life easier: Press **2nd** **ALPHA** to turn on the alpha-lock while you type in the string.

UNIT 1: SKILL BUILDER 1

STUDENT ACTIVITY



```
NORMAL FLOAT AUTO REAL RADIAN MP
PROGRAM:HELLOXY
:Disp "U R SO COOL"
```

Your program is complete! Let’s run it now. There is no need to ‘save’ with TI Basic; the program is preserved as you type it in. That’s why we named the program first.

To run the program:

Press **quit** (**2nd** **MODE**) to return to the HOME screen.

1. Press **PRGM**.
2. Under the **EXEC** (‘execute’) menu, select your program.
3. Press **ENTER** to paste the program name on the HOME screen.
4. Press **ENTER** again to begin the run.

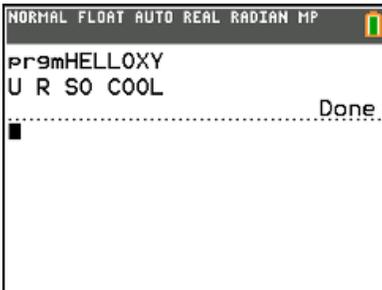


```
NORMAL FLOAT AUTO REAL RADIAN MP
EXEC EDIT NEW
1:HELLOXY
```

Your text message is displayed on the HOME screen.

You can edit your program, too:

1. Press **PRGM**.
2. Choose the **EDIT** menu using the arrow keys.
3. Select your program and press **ENTER**.



```
NORMAL FLOAT AUTO REAL RADIAN MP
PRgmHELLOXY
U R SO COOL
..... Done
█
```

In this second of the three Skill Builders in Unit 1 you will practice editing a simple program and learn how to clear the HOME screen of your TI-84 Plus CE. We will use and add to the same program that you started in Skill Builder 1.

Objectives:

- Use the TI Basic Program Editor to add to and edit a simple program.
- Use the program menus to select and paste commands into a program.
- Use simple editing features to insert and delete things.
- Learn how to clear the HOME screen.

Turn on your TI-84 Plus CE and press the `[PRGM]` key.

Select **EDIT** using the arrow keys.

Select the program you started earlier. We used **HELLOXY** in that lesson so our screen shows that program name.



```
NORMAL FLOAT AUTO REAL RADIAN MP
EXEC EDIT NEW
HELLOXY
```

In the Program Editor the cursor is blinking at the beginning of the first statement in the program. Use the arrow keys to move the cursor.



```
NORMAL FLOAT AUTO a+bl RADIAN MP
PROGRAM:HELLOXY
:DISP "U R SO COOL"
```

We are going to *edit* this program and add more Disp statements to it.

Move the cursor to the *end* of the first line of the program and press `[ENTER]`. A second colon will appear. This is the second line of the program.

1. Press the `[PRGM]` key.
2. Choose the **I/O** menu using the arrow keys. This menu contains all of the commands affecting Input and Output.
3. Select **Disp** again. The word will again be pasted into your program at the current cursor position as shown in the figure to the right.



```
NORMAL FLOAT AUTO a+bl RADIAN MP
PROGRAM:HELLOXY
:DISP "U R SO COOL"
:DISP █
```

Type another message in quotation marks.

Remember to press `[2nd]` `[ALPHA]` to turn on 'alpha-lock' while you type in the string. Note the change in the appearance of the cursor when alpha-lock is active.

Press `[ENTER]` again at the end of the second line and add more Disp statements.

You can add as many statements as you like, but it's possible that you could add so many that the resulting text won't fit on the screen all at once.



```
NORMAL FLOAT AUTO a+bl RADIAN MP
PROGRAM:HELLOXY
:DISP "U R SO COOL"
:DISP "WISH U WERE HERE"
:DISP "I LUV CODING"
:█
```



10 Minutes of Code

TI-84 PLUS FAMILY

Your program is complete. Let's run it by pressing [quit] and selecting it from the EXEC menu of the [PRGM] key.

UNIT 1: SKILL BUILDER 2

STUDENT ACTIVITY

```

NORMAL FLOAT AUTO a+bl RADIAN HP
prgmHELLOXY
U R SO COOL
WISH U WERE HERE
I LUV CODING
..... Done

```

Editing your program

To change the "U" in the second statement to "YOU", use the arrow keys to place the cursor on the U, press [INS] (2nd [DEL]) so that you see a blinking underscore cursor. Type the Y and the O characters, then press an arrow key.

To delete a character, press the [DEL] key on the character.

To clear an entire statement, press the [CLEAR] key anywhere in the statement. This clears the line of code and leaves a blank line (a colon with nothing after it). Blank lines have no effect on the running of the program; they are ignored. If you want to delete the blank line, you can press [DEL] while the cursor is on the blank line.

When you are done (or if you just want to test what you have so far), press [quit] and run the program.

```

NORMAL FLOAT AUTO a+bl RADIAN HP
PROGRAM:HELLOXY
:Disp "U R SO COOL"
:Disp "WISH _ WERE HERE"
:Disp "I LUV CODING"
:

```

Clearing the HOME screen

The **ClrHome** statement clears the HOME screen but we want this statement to be at the *top* of the program.

1. While editing your program place your cursor at the top of the program (on the "D" of the first **Disp** statement).
2. Press [INS] and then press [ENTER] to make a new, blank line above the **Disp** statement.
3. Press the up arrow key to place your cursor on that blank line.
4. Press [PRGM] and use the right arrow key to see to the **I/O** menu and select the **ClrHome** statement.
5. Quit the editor and run the program. You will see your text displayed on a clean HOME screen.

```

NORMAL FLOAT AUTO a+bl RADIAN HP
CTL 1/20 COLOR EXEC
1:Input
2:Prompt
3:Disp
4:DispGraph
5:DispTable
6:Output(
7:setKey
8:ClrHome
9:ClrTable

```

```

NORMAL FLOAT AUTO a+bl RADIAN HP
PROGRAM:HELLOXY
:ClrHome
:Disp "U R SO COOL"
:Disp "WISH U WERE HERE"
:Disp "I LUV CODING"
:

```



In this third of the three Skill Builders in Unit 1 you will practice editing a simple program and learn how to place text anywhere on the HOME screen using the **Output** statement.

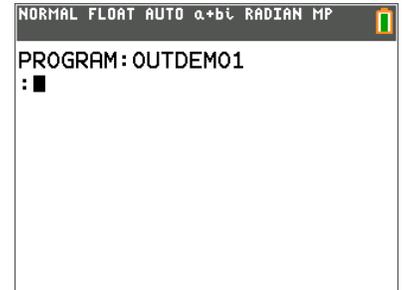
Objectives:

- Use the TI Basic **Output** statement to control the position of text displayed on the HOME screen.
- Use the **Pause** statement to prevent a program from ending too soon.

Turn on your TI-84 Plus CE and press the **PRGM** key.

Select **NEW** using the arrow keys.

Press **ENTER** to create a new program and enter a name for the program. We will use OUTDEMO1 here. Note that to type the digit "1" we have to press **ALPHA** to turn alpha mode *off*.

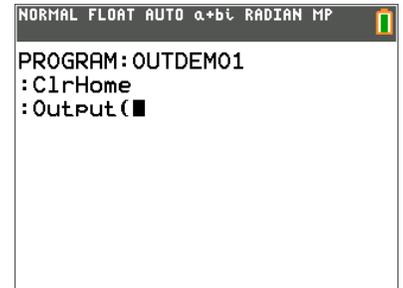


Using Output(Statements

Start your program with the **ClrHome** statement from the **PRGM** key **I/O** menu.

Remember to press **ENTER** at the end of the line.

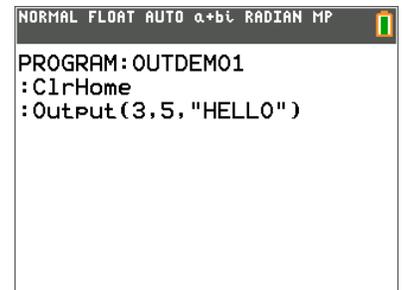
Next, select the **Output(** statement from the same menu.



The HOME screen is divided into an invisible grid of characters. The Output statement will place your text starting at one of these grid positions using the line number and column number of that position. The upper left corner is line 1, column 1.

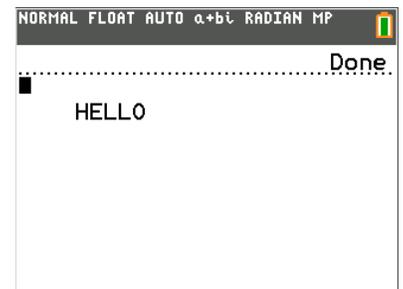
So, after the open parenthesis in the Output statement, type **3,5,"HELLO"**)

Remember to close the parentheses.



Let's run the program. The result should look like the screen to the right if you used the same values.

Notice how 'Done' appears on the top line even though "HELLO" is displayed on the third line. The **Output(** statement has no effect on the current cursor position. The **ClrHome** statement positions the cursor in the top left of the screen, so the 'Done' is then displayed on the top line.





10 Minutes of Code

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Adding the Pause Statement

Edit your program and add the **Pause** statement below the **Output(** statement.

You will find **Pause** on the **PRGM** key **CTL** menu. **CTL** is short for 'Control' and the menu contains statements that *control* the behavior of the program.

Run the program again and see what happens. See that the 'Done' is now missing?

Look closely in the top right of the screen and you'll see the 'busy' indicator. That's the **Pause** statement at work. The program is paused at this point and the user must press **ENTER** to continue. Then the 'Done' message appears at the top of the screen.

Adding More Output(Statements to Your Program

Test to see what happens when there's not enough room to display the message on the line.

Add a statement at the bottom of the program so that you end the program with a clear screen.

UNIT 1: SKILL BUILDER 3

STUDENT ACTIVITY

```
NORMAL FLOAT AUTO a+bi RADIAN MP
PROGRAM: OUTDEMO1
:ClrHome
:Output(3,5,"HELLO")
:Pause
:■
```

```
NORMAL FLOAT AUTO a+bi RADIAN MP
HELLO
```

In this Application for Unit 1 you will make use of the statements learned in this unit to build one (or more) title screen(s).

Objectives:

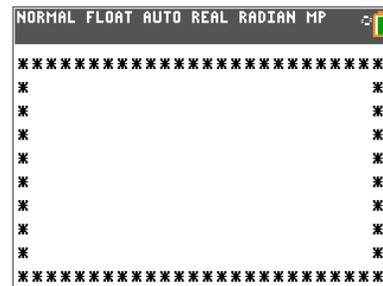
- Use the TI Basic statements learned in Unit 1 to build a title screen for a larger program.

Part 1:

Use **Disp** statements to display a border of asterisks around the screen. Use an **Output** statement to display the bottom line because **Disp** will scroll the whole screen. Remember to clear the HOME screen first and to *pause* the program at this point.

With the *empty* border showing, when the user presses **ENTER**, the text from Part 2 below will appear in the *middle* of the screen.

Note: TI-84 Plus users will have a different number of stars on the screen due to the different screen dimensions.



Part 2:

Use **Output** statements to display a title, date, and author information centered in the border. The screen to the right is not very good because the text is not neatly centered.

After the text is displayed the user will need to press **ENTER** again to continue. At this point the program should clear the screen and then end.

