

# Getting Started with Blue-Bot and Logo

[Terrapin Logo](#) and [Blue-Bot](#) are the perfect combination for exploring coding and robotics.

This guide will help you get started. Have fun!



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## 1. First Steps

- a. Take Blue-Bot out of its box. Be sure to store Blue-Bot in the box when not in use.
- b. Make sure that Blue-Bot's power and sound switches are turned off when charging. The switches are on the underside of Blue-Bot.
- c. Plug the square end of the charging cable into Blue-Bot. The charging port is on its underside.
- d. Plug the USB end of the charging cable into a USB port on any device. Blue-Bot will shine a red light.
- e. The Blue-Bot will charge for about two hours. When it is fully charged, the red light will go out.

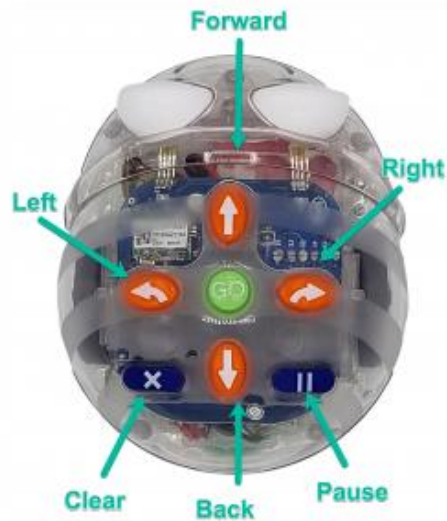
For more information about charging, see Section 12.

## 2. Meet Blue-Bot

While you wait for Blue-Bot to finish charging, let's look at some of its features.

Just as with Bee-Bot, you can press Blue-Bot's buttons to move it Forward or Back and turn it Right or Left.

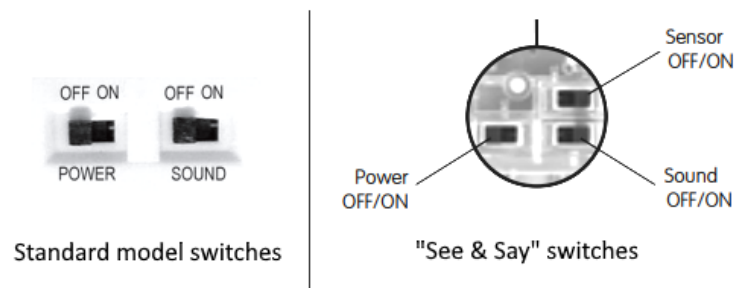
The Clear button erases the commands it is storing. The Pause button makes it stop for 2 seconds.



There are two Blue-Bot models. The Standard model has 2 switches underneath it for Power and Sound.

The newer "See & Say" model has a third switch for its sensors.

You can activate or deactivate these switches by sliding them to the On or Off positions.



Why is Blue-Bot named Blue-Bot? The Blue part indicates that it is Bluetooth compatible. That is how it connects to Logo.

### *What can Blue-Bot do? It can:*

- follow commands and procedures that you enter in Logo
- turn at different angles and move any distance
- detect another Blue-Bot or Bee-Bot (if it has a Sensor switch)
- offer endless fun and challenging programming opportunities

*Let's get started!*



### 3. Launching the Logo Program

Terrapin Logo runs in a browser.



To start up Logo, go to [logo6.terrpinlogo.com](http://logo6.terrpinlogo.com).

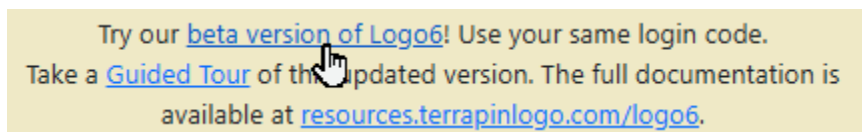
(Be sure to use the Chrome browser, as it can connect to Blue-Bot via Bluetooth.)

You will see the opening screen shown at the left.

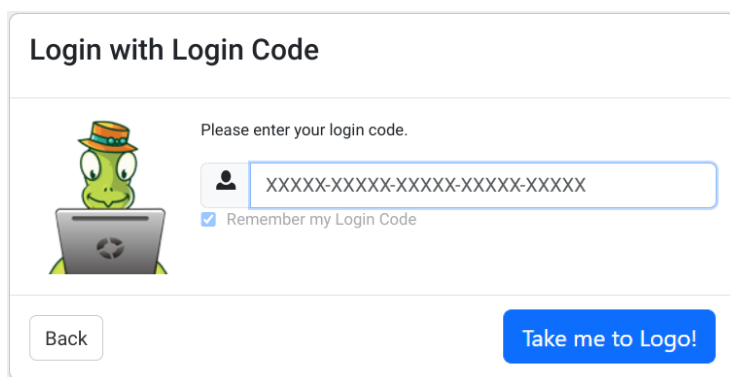
The icon on the left is for a Household license. The one on the right is for a Multi-User or School License.

Click one of the Login options, depending on your version.

If you have the 14-day Free Trial Version of Logo, the login screen will be for Logo5, but will include this information at the bottom. Click to try the beta version of Logo6, as that will provide you with the best Blue-Bot experience.



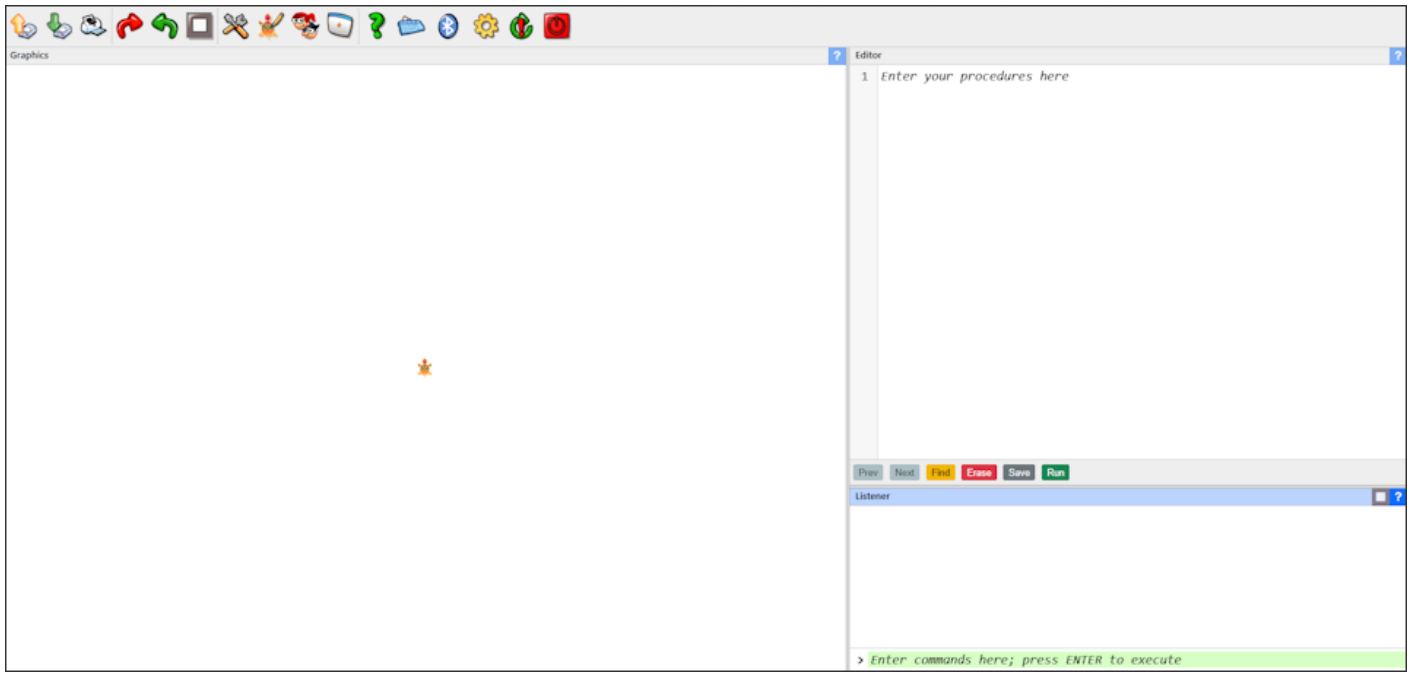
Then enter your login code and click the blue 'Take me to Logo!' button.



**Tip:** It's easier to log on the next time if you check the 'Remember my Login Code' box.

You will see a screen like the one on the next page, with a colorful turtle in the center of the large Graphics window. The Editor is at the upper right, and the Listener window, where you type commands, is below it.

You can write procedures in the Editor, but you may want to just use the Listener window to type commands at first.



Click the 'Select a View' button in the top menu to choose a different layout, you prefer.



## 4. Pairing Blue-Bot to Logo

Before Blue-Bot can run your commands, it needs to connect to Logo using Bluetooth.

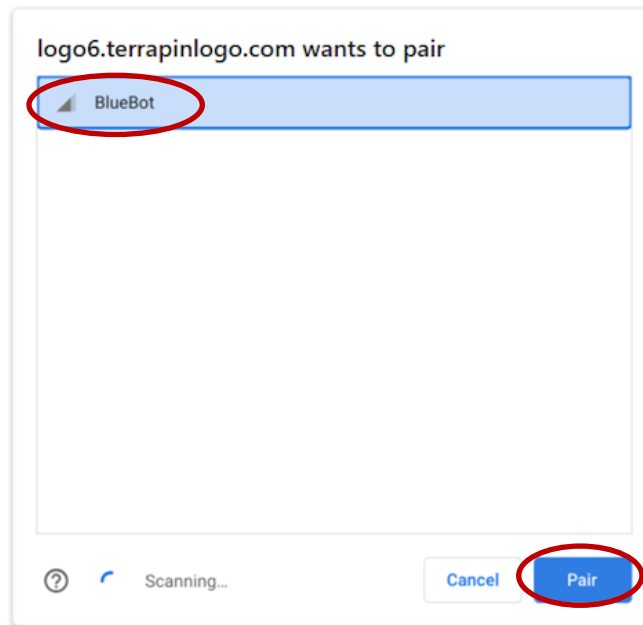
>> **Note: Only the Chrome web browser supports Bluetooth.**  
**You will need to run Logo in a Chrome browser to control Blue-Bot.**

First, turn on Blue-Bot. The On/Off switch is located on the underside of Blue-Bot. Slide the switch to the On position. A small blue light will blink on Blue-Bot.

Click the Bluetooth icon in the graphical menu at the top of the Logo screen. It looks like this: If your computer does not support Bluetooth, you will not see this icon.



After you click the Bluetooth icon, you will see the screen shown below. Bluetooth will scan for available devices and find Blue-Bot. Click the word Blue-Bot and then click Pair. Doing this connects Blue-Bot to Logo.



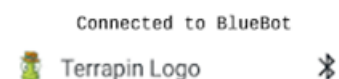
If you see the message **No compatible devices found**, Blue-Bot's power switch is probably turned off. Turn the Power switch to On and try again.

If you stop using Blue-Bot for a while, it may become unpaired. Click the Bluetooth icon again. Even though it says that Blue-Bot is paired, click its name and then Pair to reconnect it.

Is Blue-Bot connected? To find out, type this: `BLUEBOT?`  
The result will be either `TRUE` or `FALSE`.

When Blue-Bot connects to Logo via Bluetooth, three things happen:

- Blue-Bot headlights shine with blue lights.
- A message in the Listener window tells you that Blue-Bot is connected.
- The browser tab that Logo is in shows the Bluetooth icon.



You're now ready to start giving Blue-Bot commands from Logo.

## 5. Block Programming with Blue-Bot

You can control Blue-Bot using block commands. Logo Blocks is a set of blocks that contain commands. You can snap them together to create code. Logo6 has a section devoted to Blue-Bot commands to use.

First, choose a layout that includes blocks. Click the 'Select a View' button in the menu at the top. Choose either one.

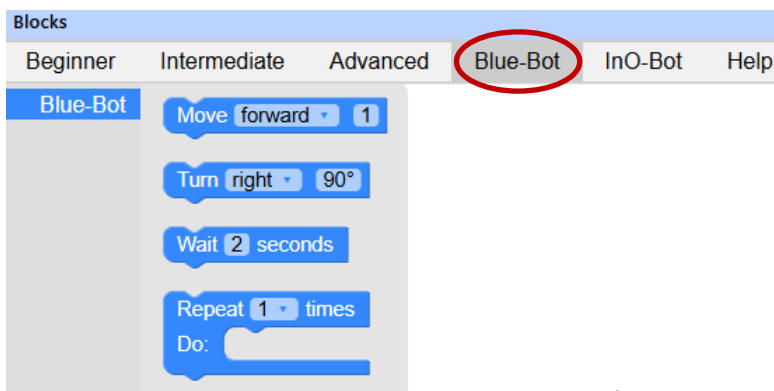


Blocks, Graphics, Editor and Listener (BS)



Blocks, Graphics, Editor and Listener (alternate) (BSV)

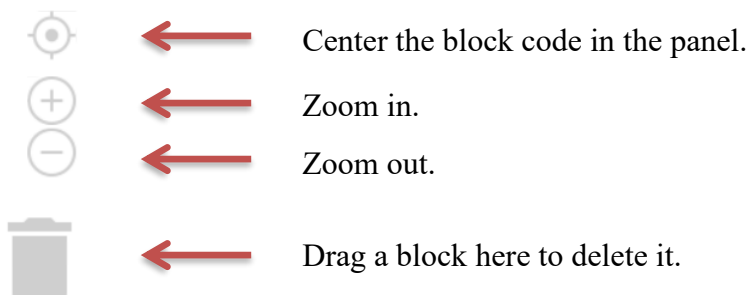
Then click the Blue-Bot tab above the blocks.



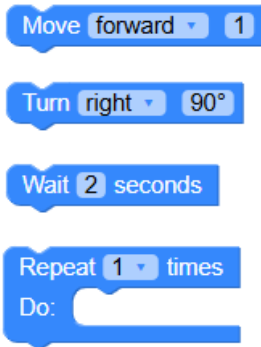
You will see the Blue-Bot commands that are available.

To use a Blue-Bot command, drag it to the white area to the right of the blocks. This is called the workspace.

At the bottom of the workspace are these icons that help you organize your commands.



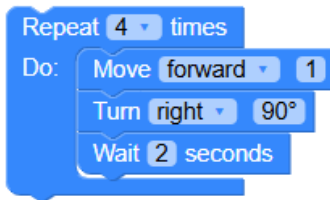
There are four commands in the Blue-Bot area:



*Note that the Wait block needs an input that is a multiple of 2.*

The Wait block is the same as Blue-Bot's Pause button.

You could combine them, like this, for example:



The code in the Editor shows the instructions Logo will run when you click the Run button.

```
Editor
1 BLUEBOT.RUN [
2   REPEAT 4 [
3     FORWARD 1
4     RIGHT 90
5     WAIT 2000
6   ]
7 ]
```

When you change the values in the code, the commands in the Editor update to match the block code.

Note that Forward 1 is the length of Blue-Bot. Using Forward 1 is the same as pressing Blue-Bot's forward arrow.

Turns must be multiples of 45 degrees. If you enter a different number, such as 30, you will see this message in the Listener window:

```
> Error: The input to RIGHT must be
a multiple of 45 degrees
```

Keep your eye on the Listener window, which is where any error messages will be displayed.

The next section shows you how to use regular Logo commands to control Blue-Bot.

## 6. Entering Logo Commands

Now we will try entering some Logo commands and watch what Blue-Bot does!

To get Logo to talk to Blue-Bot, you need to use the `BLUEBOT.RUN` command.

The `BLUEBOT.RUN` command takes a list of commands. Put the list inside square brackets: `[ ]`

When you type the opening square bracket, Logo automatically adds the closing bracket so you don't forget to do it.

### Try it!

Try a command like this: `BLUEBOT.RUN [FD 2]`

Blue-Bot should move forward 30 centimeters, or about 12 inches.  
Each unit is about the length of Blue-Bot.

Did Blue-Bot move as you expected it to?

### Now let's turn!

Blue-Bot turns in degrees. Each unit is a single degree, so the command `BLUEBOT.RUN [RT 45]` turns Blue-Bot right 45 degrees. You need to use numbers that are multiples of 45 (45, 90, 135, 180, 225, 270, 315).

If you are not familiar with Logo or would like a list of Logo commands to use with Blue-Bot, see the next section.

### Oops! What do I do now?

What happens if you enter a large number after a `FD` command?

There is no way to stop Blue-Bot while it is following a command from Logo. Instead try one of these:

- Carefully pick up Blue-Bot and wait for the instructions to be finished.
- Turn off Blue-Bot's power button. If you do this, you will have to pair Blue-Bot to Bluetooth again.

## 7. List of Blue-Bot Commands to Try in Logo

The following is a list of Logo drawing commands that work with Blue-Bot. The input, when listed, is what type of information needs to follow the command for Logo and Blue-Bot to understand and execute it.

Command	Input	What Blue-Bot Does
BLUEBOT?		Returns TRUE if Blue-Bot is connected, otherwise FALSE
BLUEBOT.GO		Acts as though you pressed Blue-Bot's GO button
BLUEBOT.CLEAR		Clears all commands from Blue-Bot, as its CLEAR button would
BLUEBOT.BATTERY		Reports the battery level. 1.0 is full charged, 0.5 is half-charged, etc.
BLUEBOT.RUN	[ <i>commandlist</i> ]	Takes a list of commands, sends it to Blue-Bot and runs the commands.
BLUEBOT.WRITE	[ <i>commandlist</i> ]	Takes a list of commands and sends it to Blue-Bot, but doesn't run the commands. Use BLUEBOT.GO to run them.

### Try these commands!

Use BLUEBOT.RUN with these commands inside square brackets [ ] to run them.

For example: BLUEBOT.RUN [FD 2 RT 45]

Command	Input	What Blue-Bot Does
FORWARD or FD	<i>number</i>	moves forward that number of centimeters
BACK or BK	<i>number</i>	moves backward that number of centimeters
RIGHT or RT	<i>number</i> (multiple of 45)	turns that many degrees to the right (clockwise)
LEFT or LT	<i>number</i> (multiple of 45)	turns that many degrees to the left (counterclockwise)
REPEAT	<i>number</i> [ <i>commandlist</i> ]	runs the list of commands as many times as <i>number</i>
WAIT	<i>number</i>	inserts a pause before the next instruction runs; 2000 is two seconds (the input to WAIT must be a multiple of 2)

To use REPEAT to move around the shape of a square, try this:

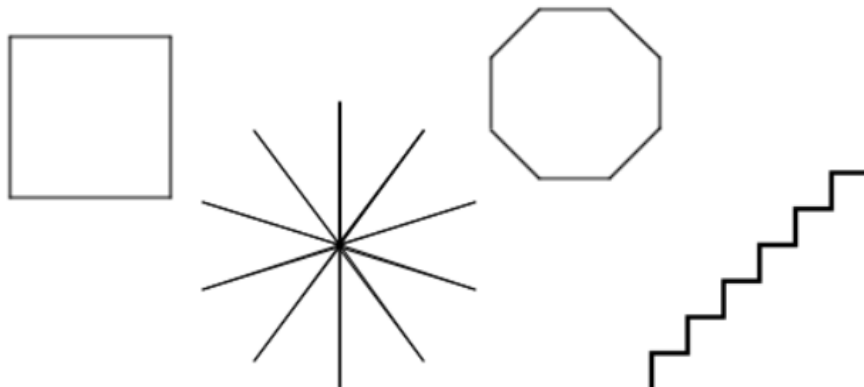
```
BLUEBOT.RUN [REPEAT 4 [FD 2 RT 90]]
```

### Figure it out!

Although Blue-Bot doesn't draw lines, you can program it to move around the outlines of various shapes and designs. You can see the turtle draw the shape in Logo's Graphics window.

Can you use REPEAT to:

- move around a square shape
- move around an octagon shape
- move in a sunburst pattern
- move in a staircase pattern



## 8. Logo Challenges

Try these challenges. Also, visit the [Turtle Tuesdays webpage](#) for more projects and their solutions.

### *Playing with Letters*

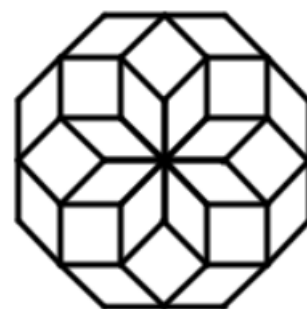
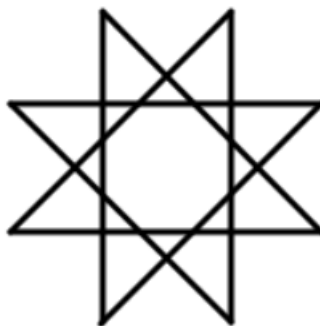
Try moving Blue-Bot in the shape of some letters of the alphabet. Some are easy to draw, and some present more of a challenge.



Write instructions to draw a letter. Test it to make sure it works, but don't show anyone your code. When Blue-Bot moves to make that shape, see if people can figure out what letter it is. Try to figure out the code to make the letter before starting to type it in Logo. Keep a record of how you made each letter.

### *Playing with Shapes*

- The first shape is an octagon. How could you code that?
- The second shape is a special star. Can you figure out how to code that?
- The third shape is made up of lots of octagons, with a turn between them. In Logo, you could draw that using nested REPEATs, with one REPEAT inside another one, but you can't send a nested REPEAT instruction to Blue-Bot.



### *Do a Dance!*

Can you create a program that makes Blue-Bot do a fun dance? Keep a record of your instructions.

### *Logo and Blue-Bot Tips*

As you try these challenges or, better yet, think up your own projects to try, keep these tips in mind:

- Create your drawing first in Logo before pairing Blue-Bot. That will help you perfect your project.
- When you are ready for Blue-Bot to draw it, pair it to Logo and run (and debug) your instructions.
- Keep a record of the Logo commands and procedures you have created. (Save your Logo files!)

## 9. Writing a Procedure and Sending It to Blue-Bot

Did you know that you can write a procedure in Logo and then send it to Blue-Bot to run it?

First of all, what is a procedure? A procedure is a set of instructions that you give a name to.

You enter the name and instructions in the Editor window in Logo.

Instructions to draw a square might look like this:

```
Editor *
1 TO SQUARE
2 REPEAT 4 [FD 2 RT 90]
3 END
```

To get Logo to learn the Square procedure, click the **Run** button at the bottom of the Editor window.

```
Editor *
1 TO SQUARE
2 REPEAT 4 [FD 2 RT 90]
3 END
```

Prev Next Find Erase Save Run

Then, to get Logo to run the program, type: SQUARE

To get Blue-Bot to run the program, type: BLUEBOT.RUN [SQUARE]

To send the program to Blue-Bot, but not run it yet, type: BLUEBOT.WRITE [SQUARE]

To have Blue-Bot run a program you have sent to it, type: BLUEBOT.GO

Do you see the star, or asterisk, after the word Editor at the top of its window (as shown below)? This means that the program in the Editor window has not been saved.

To save your work, click the **Save** button.

```
Editor *
1 TO SQUARE
2 REPEAT 4 [FD 2 RT 90]
3 END
```

Prev Next Find Erase Save Run

Saving to the Downloads folder.

Please enter a file name:

OK Cancel

You can edit the filename and then click **OK** to save the file to your Downloads folder. This saves it as a Logo file.

Next time you want to run it again, click the Load button in the menu. Then you can choose to load it into the workspace or the Editor.

To save a file as a Logo Blocks file, use the Save button in the menu. Then click the 'Save a Blocks file' button.

To get it back later, click the Load button in the menu and then the 'Load a Blocks file' button.



Save a Blocks file

## 10. Changing the Turtle Shape to a Blue-Bot and Command Shortcuts

Do you want the onscreen turtle to look like a Blue-Bot? Here's how!

```
SETSHAPE "~HOME/TOOLBOX/ROBOTS/BLUEBOT
```

Now you have the Blue-Bot on the screen. But, moving the turtle `FORWARD 1` does not really move it, because the turtle would move just one dot or pixel.

However, you can change the number of pixels that the turtle moves by changing the turtle's `STEPSIZE` property. The number stored in this property automatically multiplies the number used in forward and back commands. Usually, this number is 1, but you can change that to any number you like.

The command `PPROP 0 "STEPSIZE 25`, for example, makes turtle 0 (the main turtle) move 25 pixels for each `FORWARD` or `BACK` step.

Blue-Bot's natural step size is about its length, which is 15 centimeters. For a realistic movement, you would need to do the following:

1. Use `LOADSHAPE` to set your turtle to the shape you want it to become.
2. Determine its size by looking at the turtle's `SIZE` property.
3. Set the turtle's `STEPSIZE` property to the shape's height.
4. Optionally alter the turtle's `CRAWL` property to make it move more slowly on the screen.

This procedure does all that for you:

```
TO MAKE.ROBOT :TURTLE :ROBOT
  ASK :TURTLE [LOADSHAPE WORD "~HOME/TOOLBOX/ROBOTS/ :ROBOT]
  ; set the step size
  PPROP :TURTLE "STEPSIZE LAST GPROP :TURTLE "SIZE
  ; have it slow down for realistic movement
  PPROP :TURTLE "CRAWL 0.5
END
```

To run this procedure, type this instruction: `MAKE.ROBOT 0 "BLUEBOT`

### *Command Shortcuts*

If you find that students are having trouble typing commands to Blue-Bot, you can create shortcuts for them.

For example, instead of typing `BLUEBOT.RUN [FD 1 RT 45]`, they could just type `BBR [FD 1 RT 45]`.

For this to work, you can create a set of instructions using the `ALIAS` command and save them to a file. Load the file into the computer's workspace, and the shorter command names will be active.

```
ALIAS "BLUEBOT.RUN "BBR
ALIAS "BLUEBOT.GO "BBG
ALIAS "BLUEBOT.CLEAR "BBC
ALIAS "BLUEBOT.BATTERY "BBB
ALIAS "BLUEBOT? "BB?
```

## 11. How to Learn to Program in Logo

Logo is a fun language to learn. It is very powerful, with and without Blue-Bot.

Terrapin Logo comes with many resources that you can use to learn Logo commands and strategies.

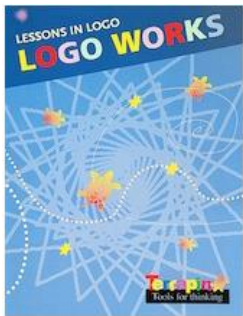


The Resources section of the Terrapin website provides a [Logo manual](#), [reference list of all commands and properties](#), a [list of color values](#), and a [Logo Program Library](#) of projects Logo users have created that you can explore. Why not send us your masterpiece!

[Click here to get started.](#)

## LOGO LEARNING CENTER

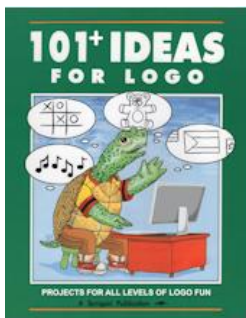
Learn about all the most commonly used commands, with examples to try in the [Logo Learning Center](#).



*Logo Works: Lessons in Logo* gets you started with a step-by-step tutorial.

Click to read the [Table of Contents](#).


To access *Logo Works: Lessons in Logo*, use your Logo login code.




*101+ Ideas for Logo* is divided into 5 levels of difficulty, just right for all students, from those just starting to learn Logo to the most advanced students. It covers graphics, words and lists, multiple turtles, music, and numbers in over 100 engaging Logo activities. Not all of the ideas will work with Blue-Bot, but might inspire ideas for you to try that will.

Click to read the [Table of Contents](#).

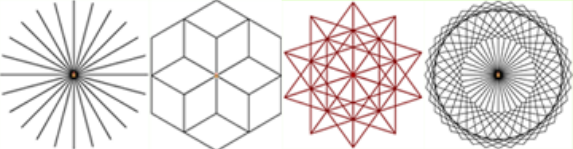
To access *101+ Ideas for Logo*, use your Logo login code.



### Turtle Tuesdays



A weekly Logo (and often Pro-Bot) programming challenge!



Join us for a new coding challenge every Tuesday:

- **Facebook** - @BeeBot.us
- **Instagram** - terrapin.tools.for.thinking

**Turtle Tuesdays:** Every week, Terrapin posts a free challenge for Terrapin Logo users. Some can be done using Blue-Bot and many can be done using Pro-Bot, InO-Bot, or *Kinderlogo*. Solutions are posted the week after the challenge, so if you haven't figured out how to code the challenge, you can see one way to do it. The challenges are also posted every Tuesday morning on Facebook and Instagram.

## 12. Blue-Bot Charging Information & Care & Maintenance

### *Recharging your Blue-Bot*

- Turn off the power before charging Blue-Bot.
- Blue-Bot's eyes light up red to show that Blue-Bot is charging.
- Blue-Bot's eyes change to green when Blue-Bot is fully charged.
- It may take up to 2 hours to fully charge Blue-Bot if the battery has been fully discharged.
- Once fully charged, Blue-Bot will have approximately 6 hours of normal usage and approximately 1.5 hours when in continuous use.
- To get the most out of Blue-Bot's battery life, fully charge it after every use.
- Do not leave Blue-Bot on a continuous charge. Once its eyes turn green, remove it from the charger.
- Give Blue-Bot at least one full charge every 3 months, even if it hasn't been used, to prevent the battery from deteriorating.

### *Blue-Bot's Eye Color*

The color of Blue-Bot's eyes provides basic information.

- Solid Blue - Connected via Bluetooth.
- Solid Red - Charging.
- Flashing Red - Low battery. Blue-Bot needs charging.
- Solid Green - Fully charged.

### *Low Power Sleep Mode*

- If your Blue-Bot is not used for 2 minutes and the sensor switch is in the 'OFF' position, Blue-Bot will play a sound and go into Sleep mode.
- If your Blue-Bot is not used for 4 minutes and the sensor switch is in the 'ON' position, Blue-Bot will play a sound and go into Sleep mode.
- In Sleep mode, very little power is consumed and the batteries will last a long time.
- If you press any button when Blue-Bot is in Sleep mode, Blue-Bot wakes up, plays a sound, and flashes its eyes.
- After waking up from Sleep mode, you will need to pair it to Bluetooth again.

### *Battery Precautions*

- Blue-Bot is powered by a Lithium Polymer battery pack that is not user-replaceable.
- Rechargeable batteries are only to be recharged under adult supervision.

### *Care & Maintenance*

- If necessary, wipe Blue-Bot gently with a clean damp cloth.
- Keep Blue-Bot away from direct sunlight and heat.
- Do not allow Blue-Bot to come into contact with water or other liquids.
- In the event of a static discharge, Blue-Bot may malfunction. If this occurs, switch Blue-Bot off and then back on again to reset it.