

Sphero Treasure Hunt

Overview:

In this activity, participants will use functions to build programs to help the Sphero navigate an obstacle course and reach the treasure.

Goals:

- Learn how to use functions to build a program.

Time Required: 1 hour

Materials:

For each student (or pair of students):

- Sphero BOLT Robot
- iPad or other compatible device
- Ruler, meterstick, or measuring tape
- Objects to set up an obstacle course or Pirate Code Mat.

Vocab: Function

Procedures:

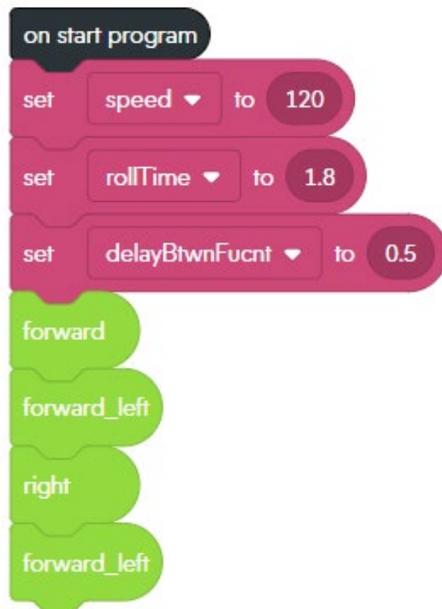
1. Start by setting up a small obstacle course. Remember X marks the spot! For even more fun, you could include a “treasure chest” at the end with a treat or pirate treasure (plastic rings, Mardi-gras beads, etc.) for students to choose from as a reward for completing the course. You could also use the Pirate themed Code Mat for this activity.
2. Tell students:

“Today we are going to learn how to use functions. Functions let you define a reusable group of blocks that you can reuse anywhere in the program. This program has 8 functions: forward, backward, right, left, forward-left, forward-right, back-left, and back-right. In this activity, the functions are already defined and ready for you to use. Each of these functions contains a sound, color, and movement.”
3. Pass out the iPads – but not the Spheros yet. Instruct students to open the Sphero Edu app. Follow the following directions to open the sample program:
 - a. Go to “Programs”
 - b. Click on “Sphero Programs”
 - c. Click on the magnifying glass to open the search box.
 - d. Type “Treasure Hunt” and click “search”.
 - e. Click on the “#ThursdayLearnDay Treasure Hunt” program.
 - f. If prompted, click “View Program”



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- g. This will open up your programming canvas with the function and program blocks pre-loaded.
4. On your programming canvas, you will see a sample program already set up:



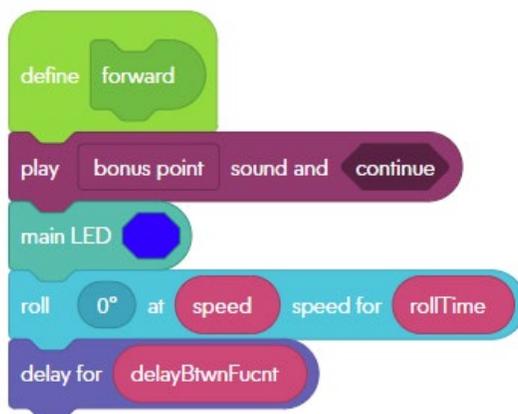
on start program – program blocks should all be connected to this starting block

Red blocks – define parameters for the functions...these blocks show up in the define function blocks

Green blocks – functions, when these blocks come up on the code, the robot complete all the actions attached under the define block for that function

You may want to connect to a Sphero BOLT and demo this program for students to see how it works. You can also show the Intro video for this activity from Sphero (embedded in the slideshow).

You should notice the 8 Functions are defined below the “on start program” block. Notice that each function includes a sound, LED color, and movement instructions. Sample Function defined:



Green define block – starting point for the instructions associated with the function listed

Maroon blocks – plays sound

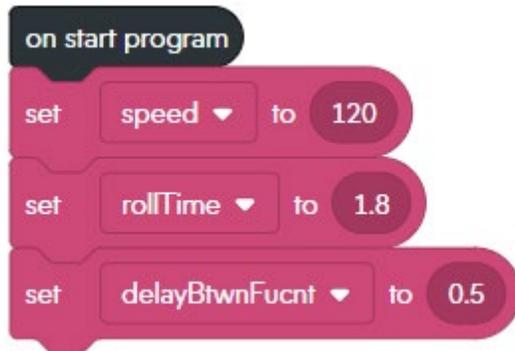
Teal block – changes main LED color

turquoise blocks – movement block – notice the Red parameters that go with the values set under the “on start program” block

“One of the first things you need to decide on are values for speed and roll-time. Once you have decided on those values, come up with a plan to navigate your Sphero through the Obstacle Course. It might be helpful to draw out a picture and use arrows to plot out your course. Before beginning

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your program, delete the green function blocks attached under the “on start program” block. Then add in the functions you determined you need to reach the treasure.”



5. Encourage students to build their best code, test and then refine. Determine how far the robot travels at a given speed and roll time, take measurements of the course, and use that information to write the code. Try to avoid “trial and error” coding – where they just randomly put in numbers and guess.
6. Use the Exit Program block (purple) to end or stop the program once you have reached the treasure.

Reflection:

1. Do you think using Functions made coding easier or harder? Why?
2. What are some other ways Functions could be used?

Extensions:

1. Create your own function to add to the program.

Adapted from the following lessons:

Sphero. “BOLT Blocks 7: Flashlight Function Tug o’ War.” *Sphero Edu*, 2023, edu.sphero.com/cwists/preview/67305x.

Sphero. “Treasure Hunt.” *Sphero Edu*, 2023, edu.sphero.com/program/2043970.

