



Technology Ambassador Program

Using Sphero to Teach Programming Fundamentals



Technology Ambassador
Program



What is TAP?

- The Technology Ambassadors Program (TAP) was created at Georgia Gwinnett College located in Lawrenceville, GA.
- The TAP program addresses the need to increase the number of students who persist in an IT major or IT minor, particularly those underrepresented in computing.
- The TAP program at GGC strives to break the misconceptions of the IT field by providing fun workshops for students of all backgrounds. TAP students design engaging and fun outreach workshops to encourage interest in IT and STEM.

What is programming and block coding?

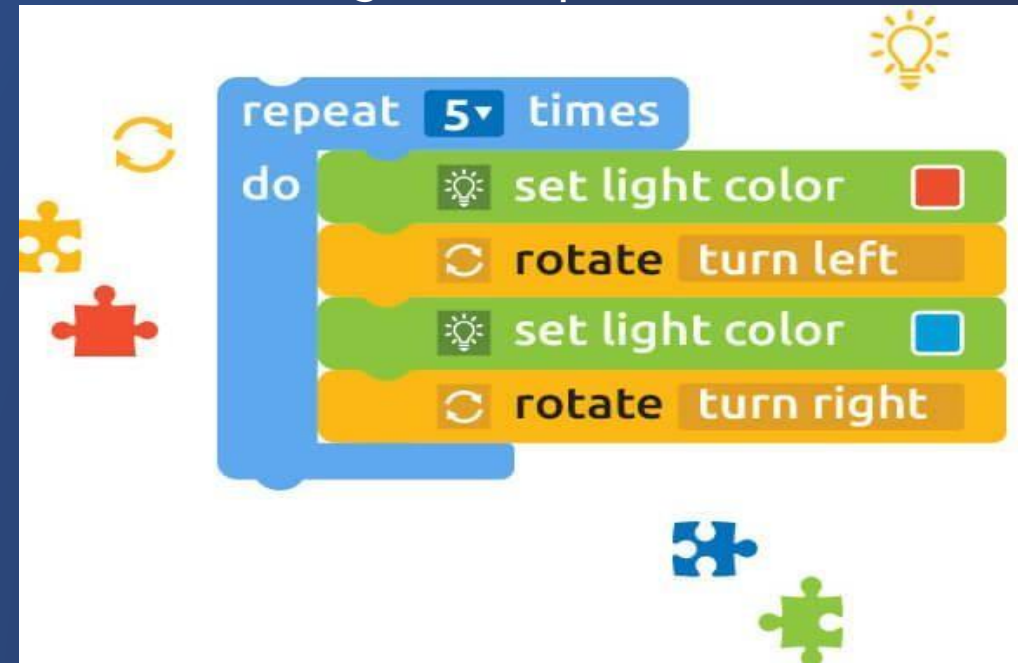
Programming

- ❑ Set of instructions for a computer to execute a certain task(s)
- ❑ Why program? Computers are faster than humans and more efficient.
- ❑ Examples of programming languages are(Java, C#, Python, Javascript, Ruby)
- ❑ Convert algorithms into code

```
async function startProgram() {  
  await roll(0, 100, 5);  
  await delay(3);  
  await roll(270, 100, 5);  
  await delay(3);  
  await roll(0, 100, 5);  
  await delay(3);  
  await roll(90, 100, 5);  
  await delay(3);  
  await roll(180, 100, 5);  
  await delay(3);  
  await roll(270, 100, 5);  
  await delay(3);  
  await roll(180, 100, 5);  
  await delay(3);  
  await roll(90, 100, 5);  
}
```

Block Coding

- ❑ Simplified programming language.
- ❑ Great for beginners
- ❑ Drag and drop

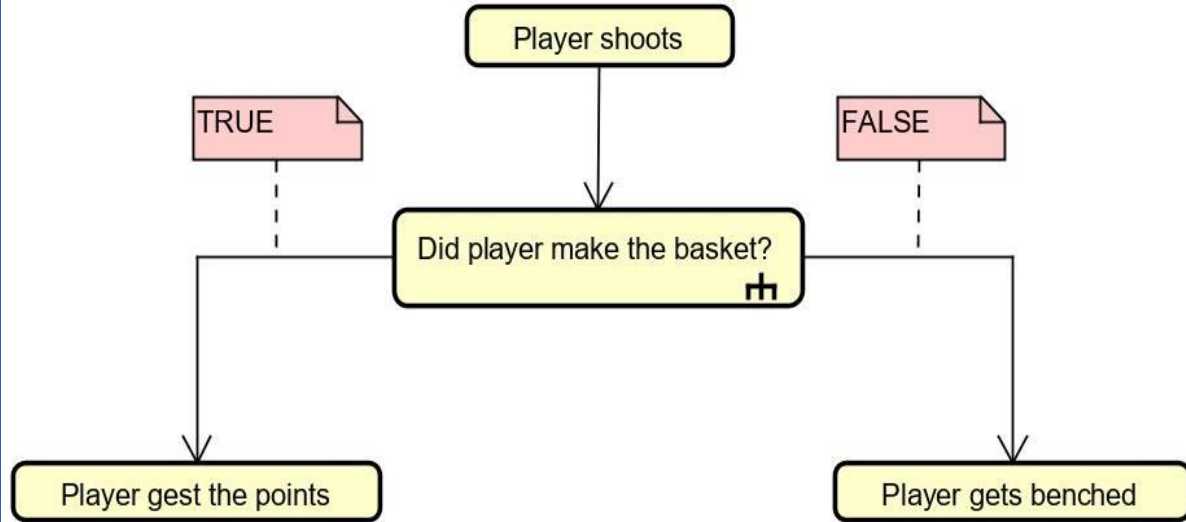


Mission

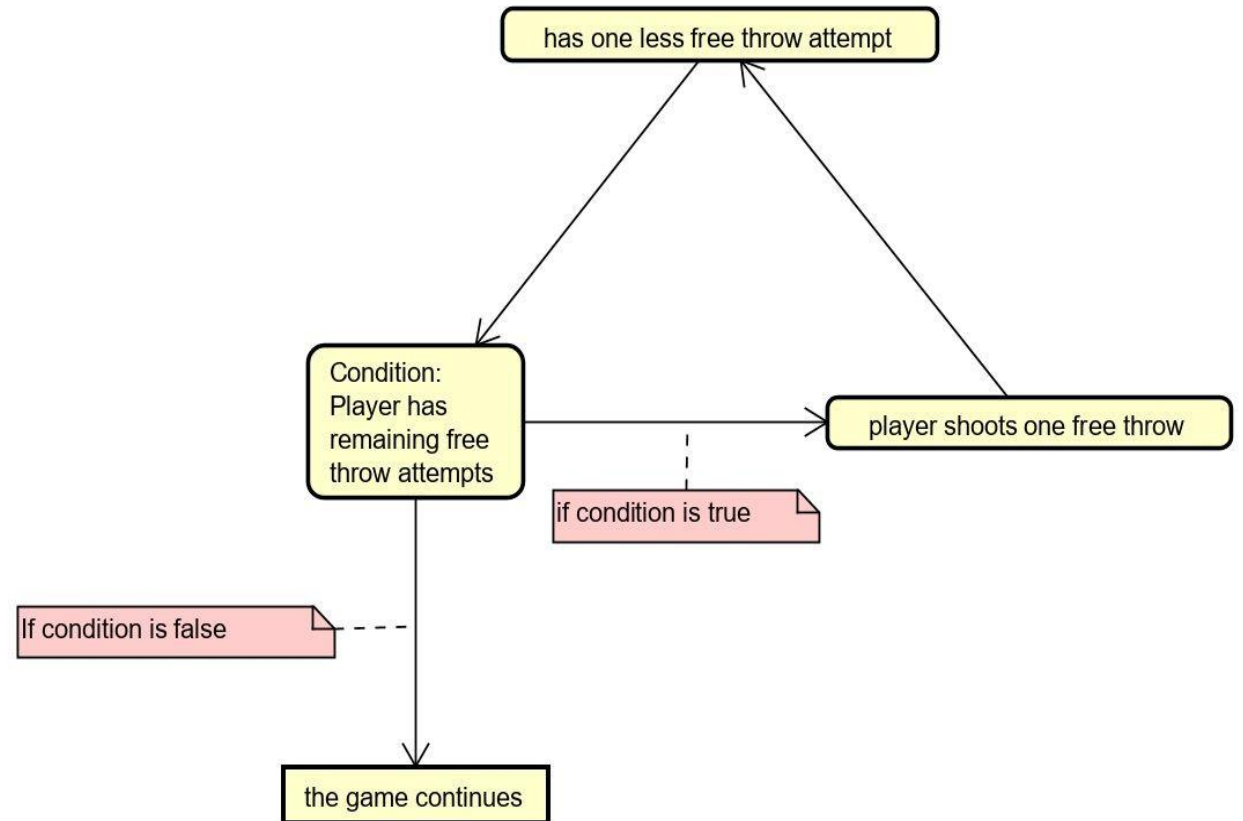
- ❑ Developing an easier way to teach programming fundamentals (loops, functions, if-statements)
- ❑ Spread interest, and knowledge about Information Technology
- ❑ Break down popular culture stigma around programming: (hacking scenes)
- ❑ Using a familiar activity to accelerate learning in programming

If / Else, Loops, Functions

If/Else



Loop

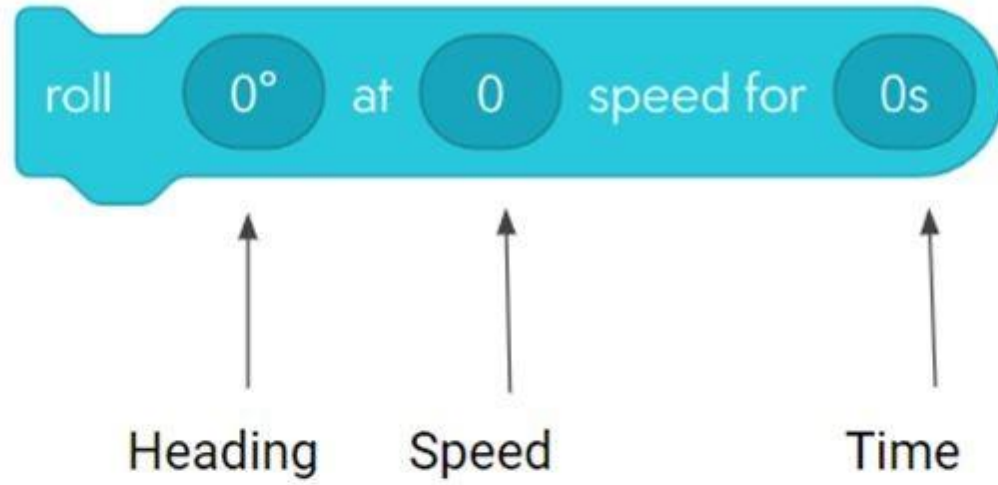


Our Technology

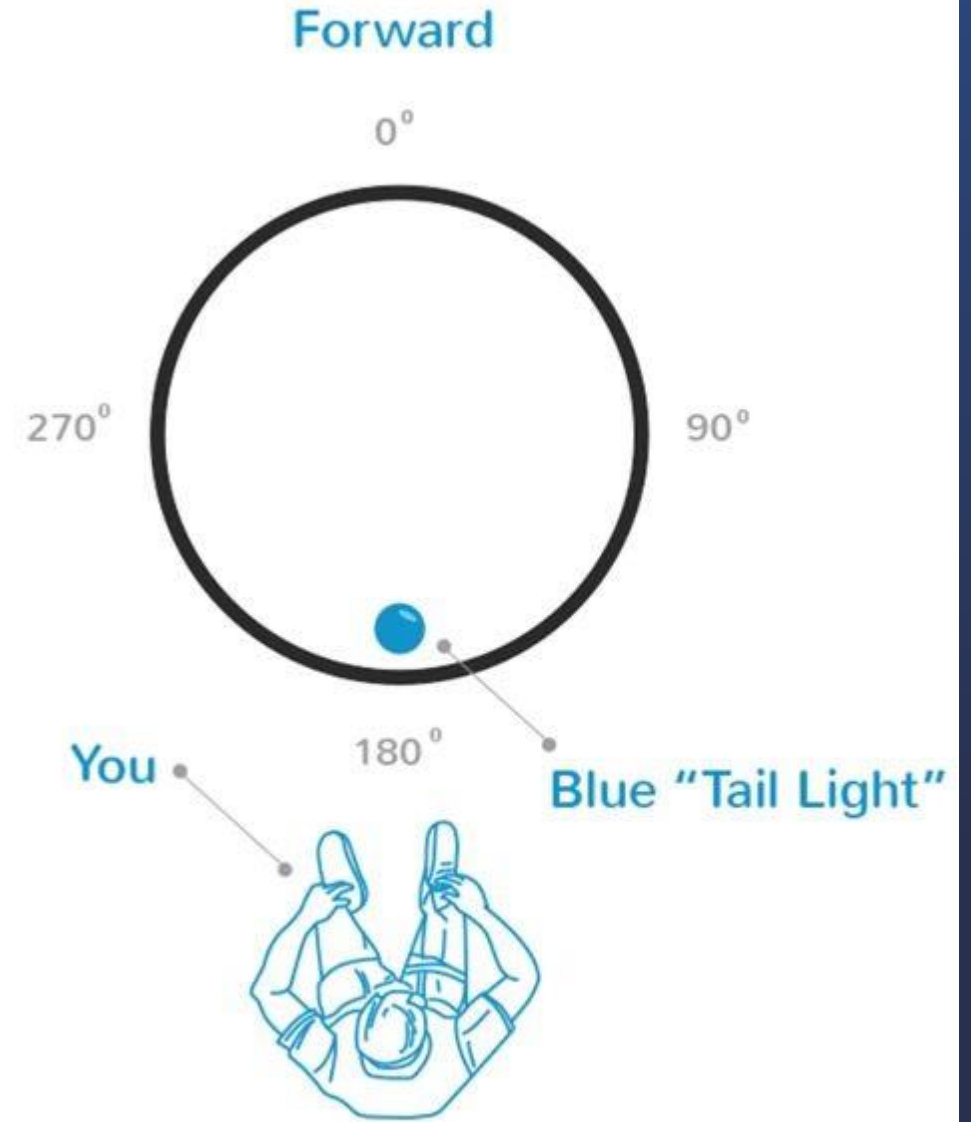
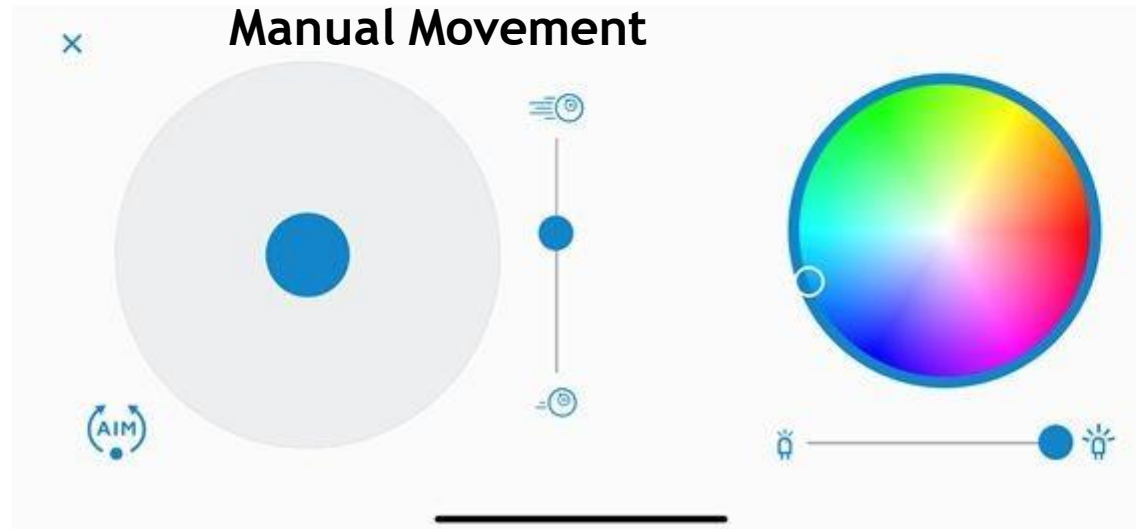


A programmable robot sphere that can spin, glow different colors, and detect whether it is falling or has hit something.

Moving with Code



Manual Movement



Split Into Groups

Join The Class

Students



Join your class, work on assigned activities, and share your programs.

Join Your Class

Class Codes



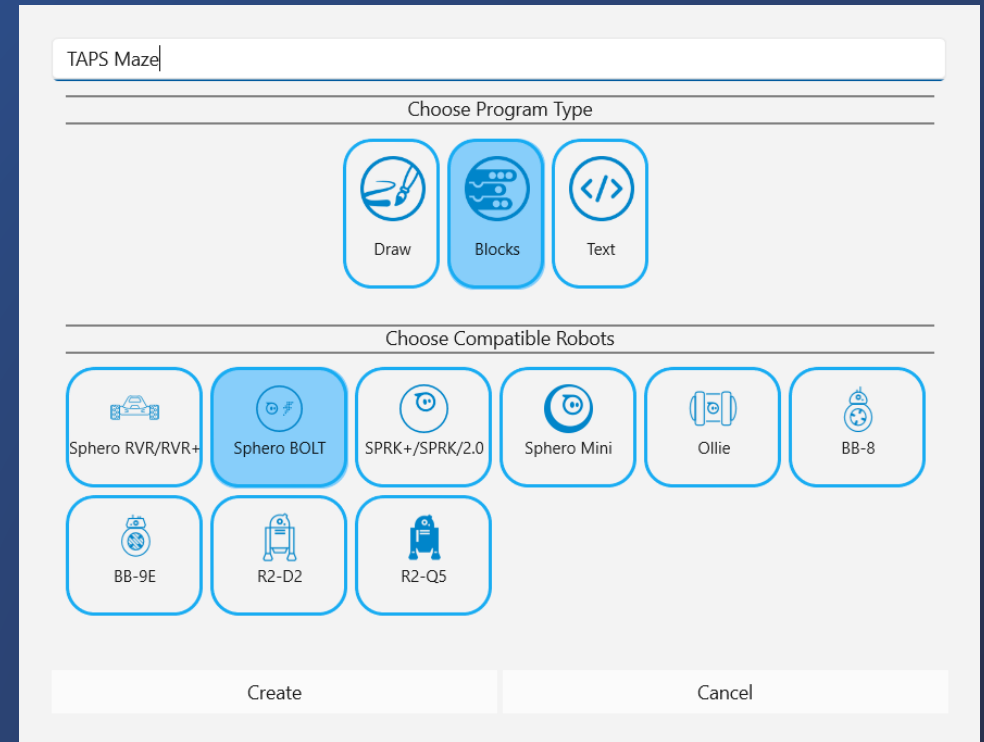
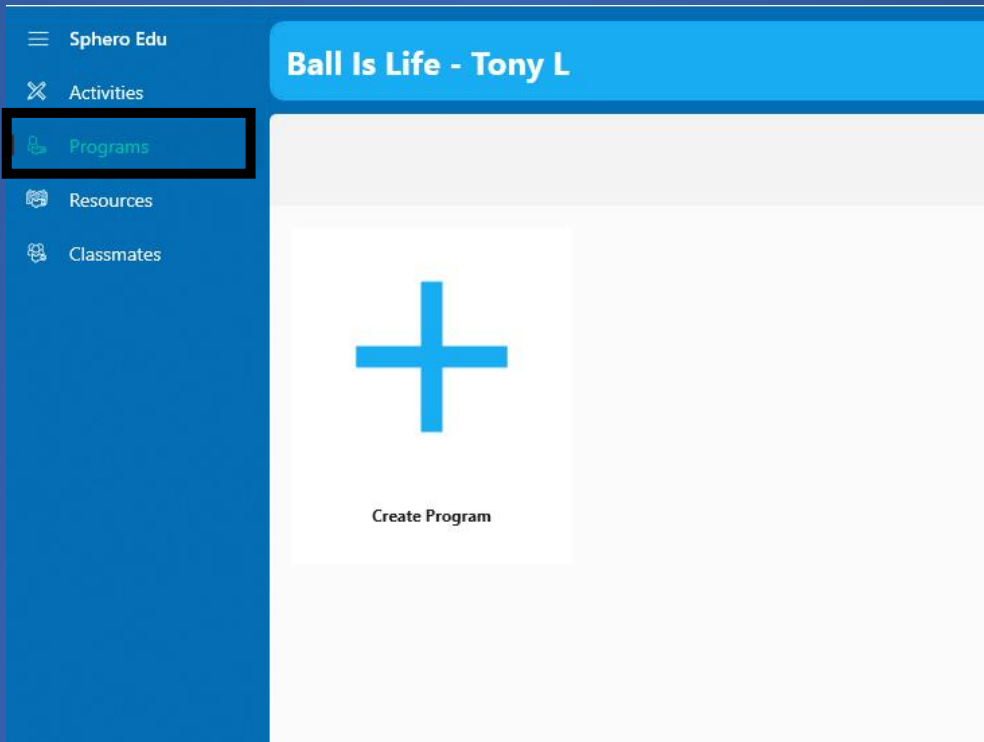
Ask your teacher for your class code.

8BP06K



Enter Class Code

Create a new program

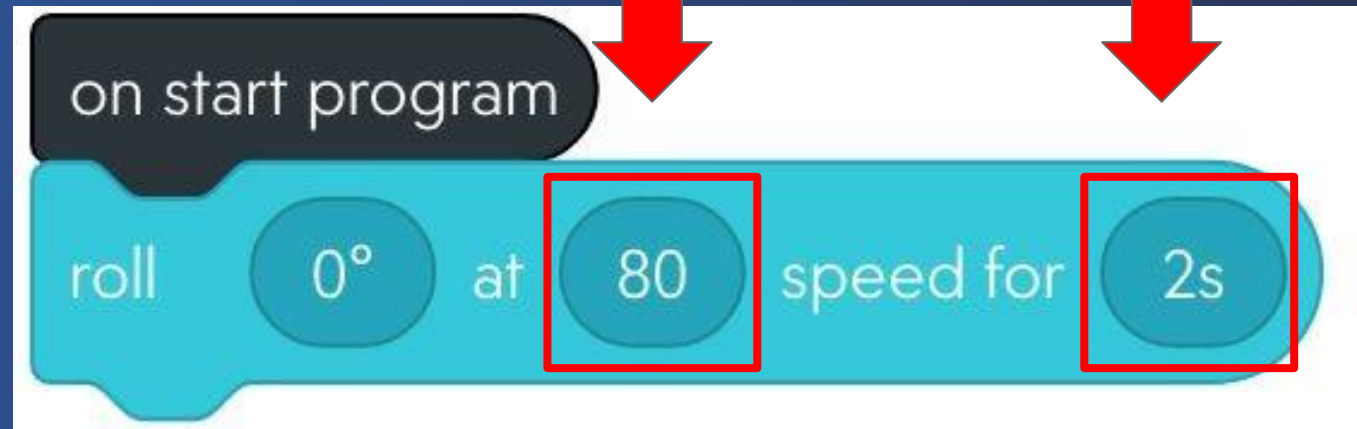
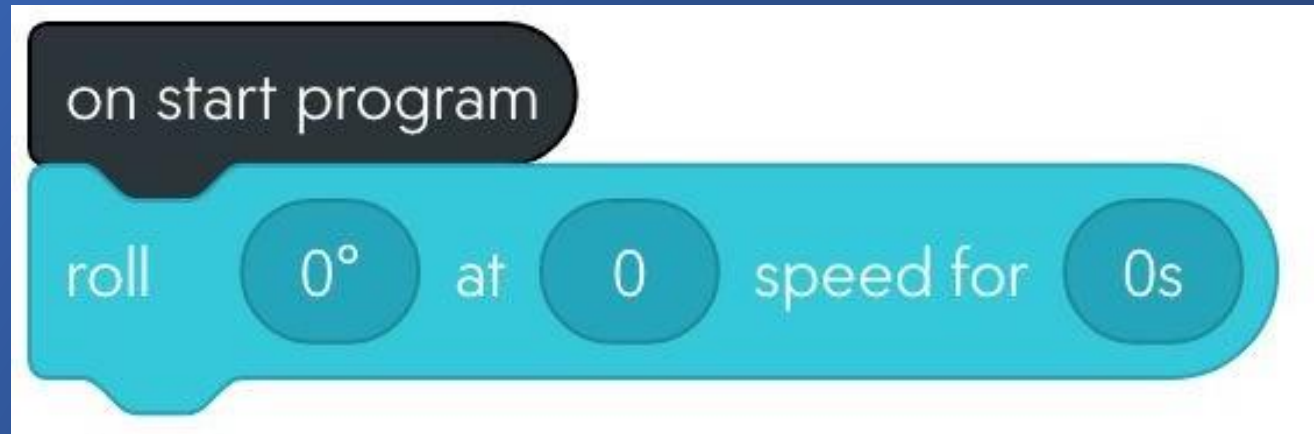


Welcome to the Canvas

The screenshot displays the Sphero Edu web interface. At the top, a blue header bar contains a back arrow, a green 'Start' button with a play icon, and icons for AIM, a menu, and a settings gear. The main canvas area is white and contains a single black block labeled 'on start program'. The bottom of the interface features a light blue toolbar with various blocks: 'roll' (0° at 0 speed for 0s), 'stop', 'speed' (0), 'heading' (0°), 'spin' (0° for 0s), 'raw motor left' (0 right 0 for 0s), 'stabilization' (on), 'reset aim', and 'main LED' (yellow). Below the toolbar is a navigation bar with tabs for Movements, Lights, Sounds, Controls, Operators, Comparators, Sensors, Events, Variables, and Functions. The 'Movements' tab is currently selected.

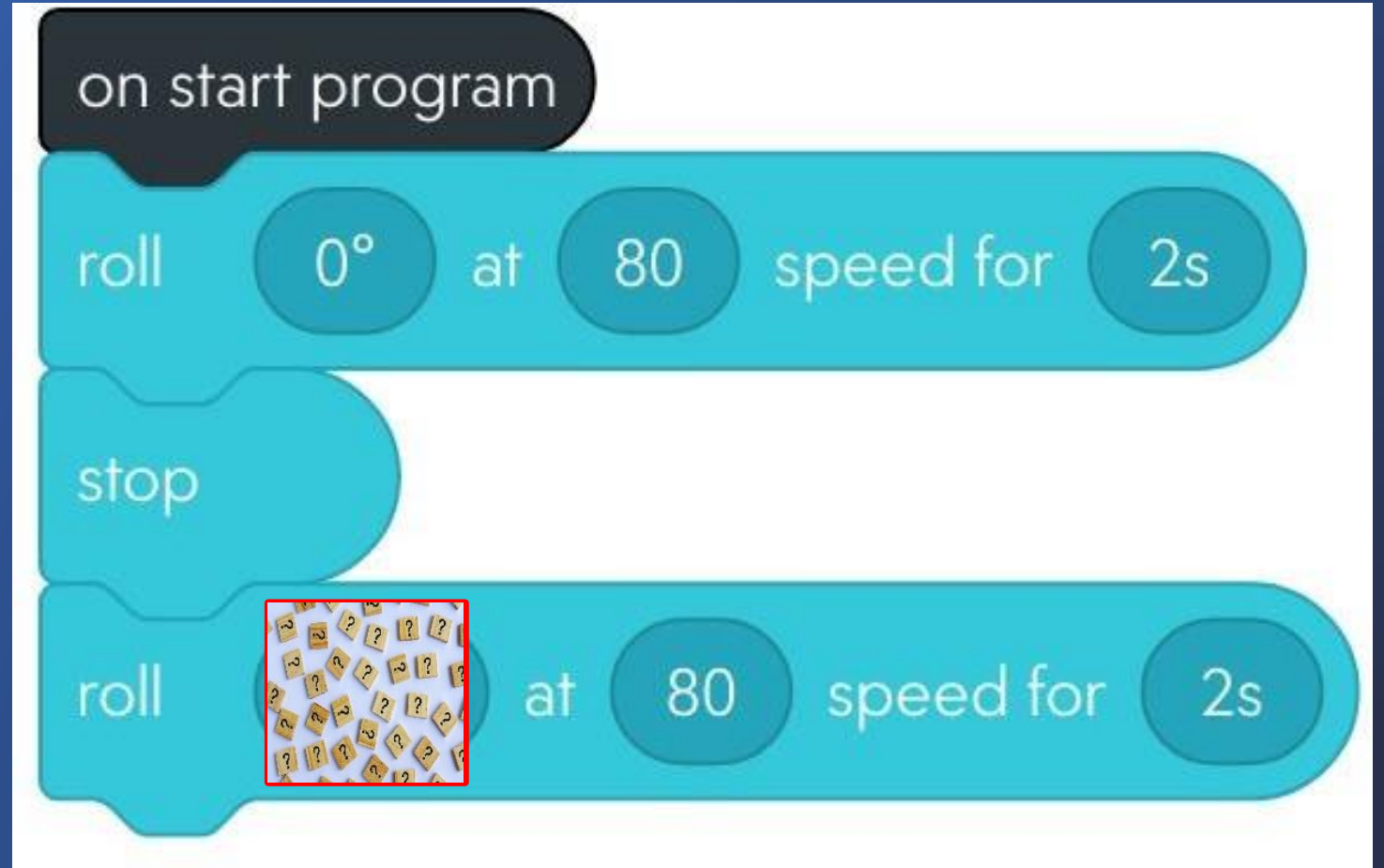
Make Sphero move Forward

- ❑ Click on movements tab
- ❑ Drag Roll function onto canvas
- ❑ Adjust parameters



Now Backwards

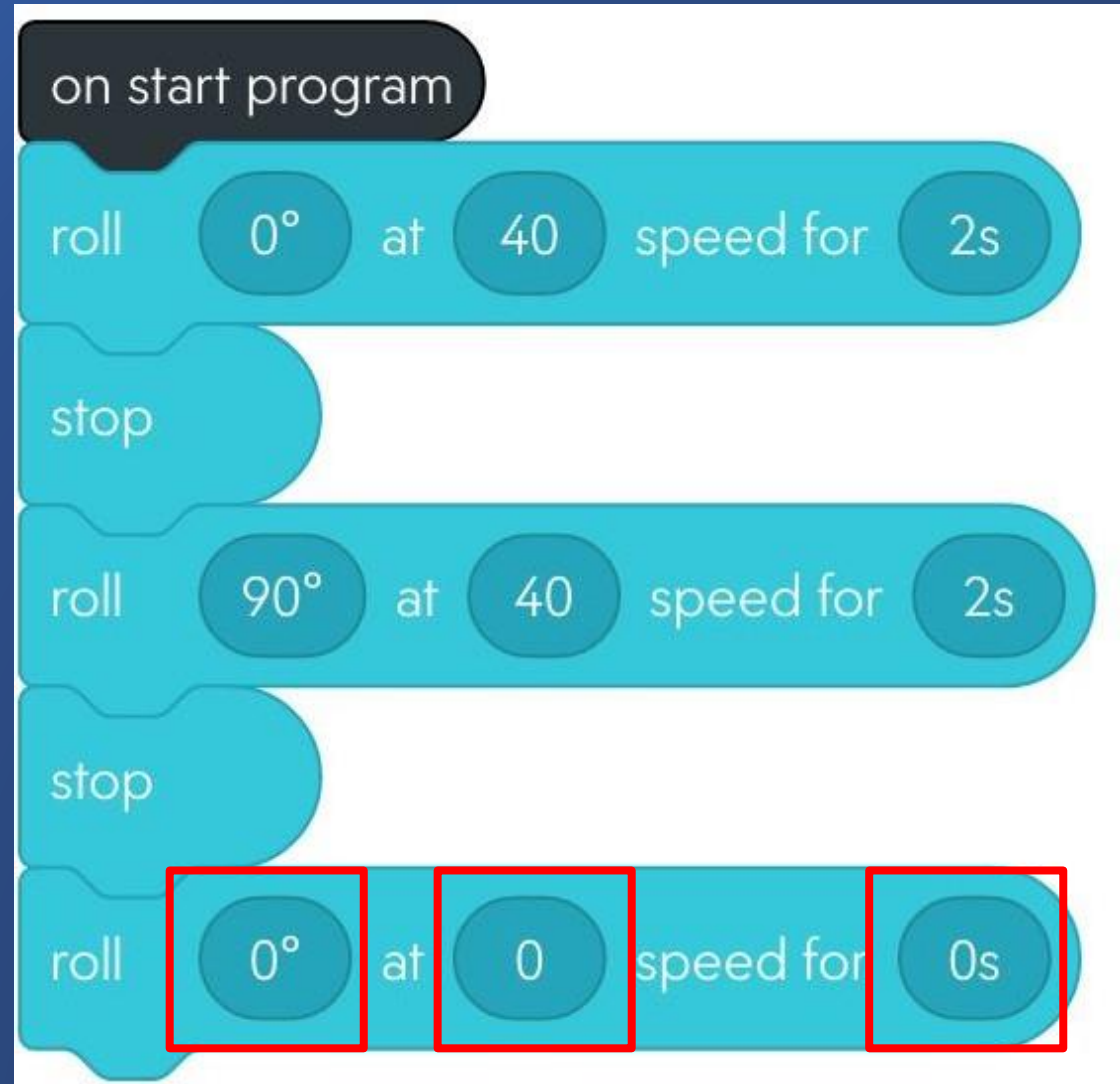
- Adjust the first box to allow Sphero to change direction



Now you try!

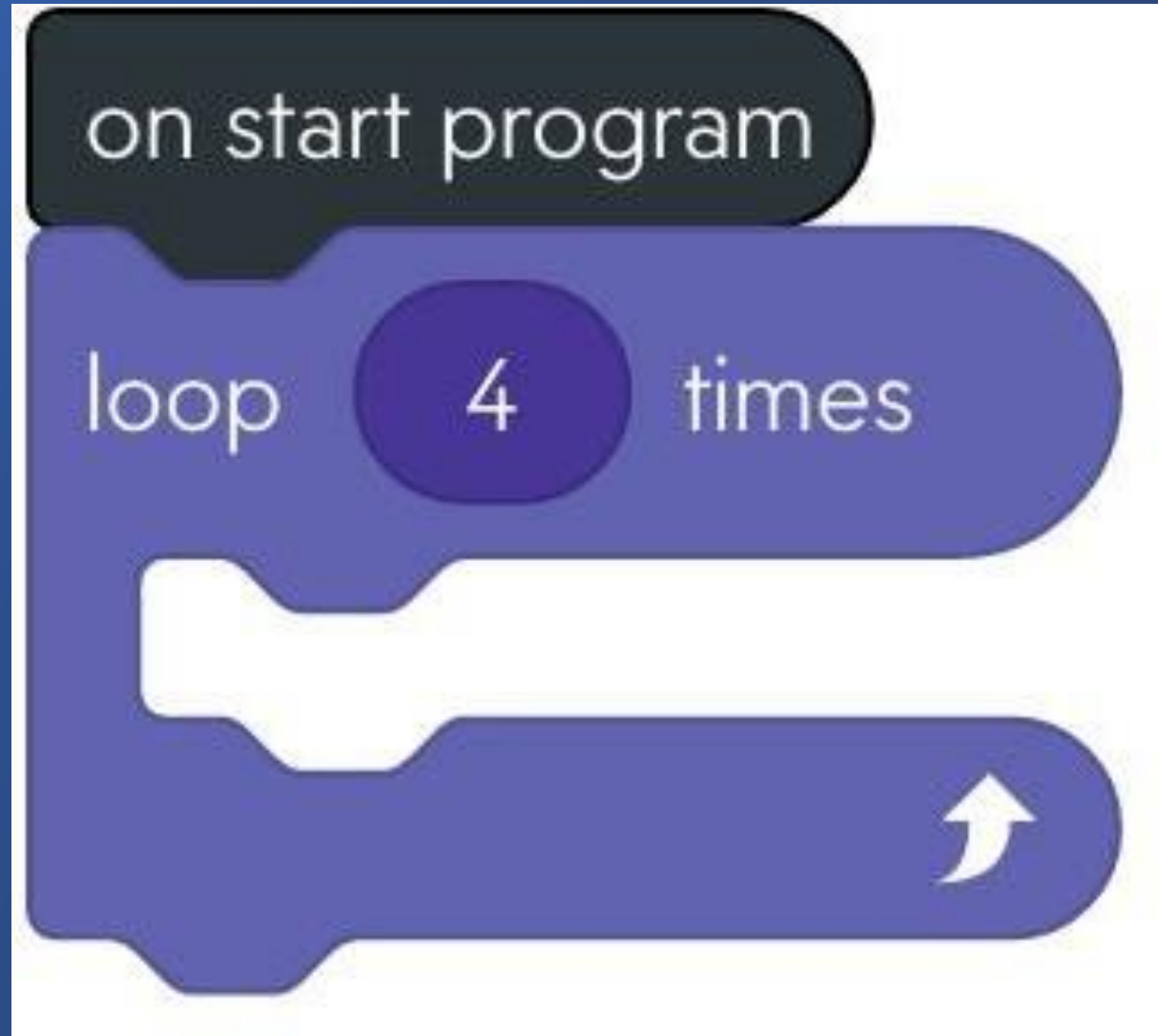
Let's make a Square

- Using what we have here, can you finish the square?



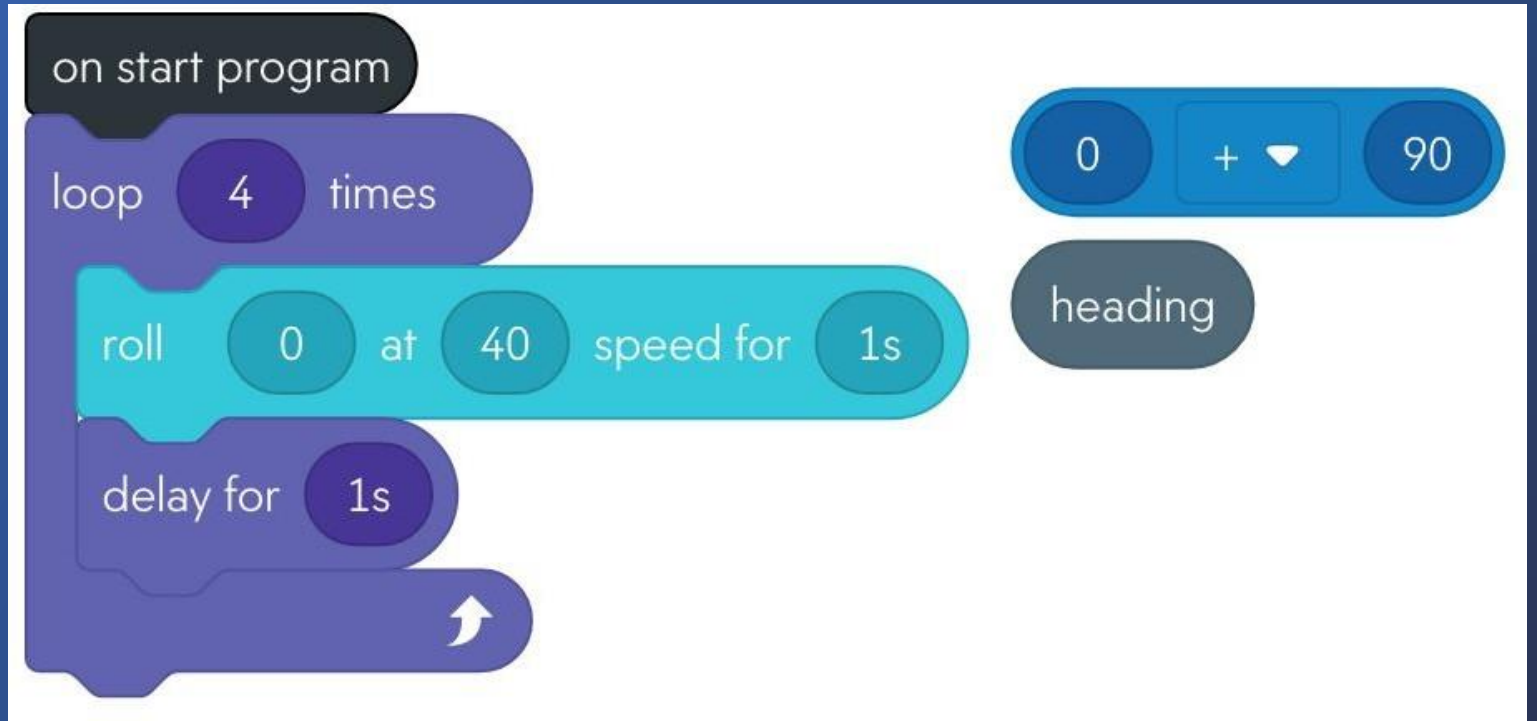
Using loops to make a Square

- ❑ Grab the loop block under Controls



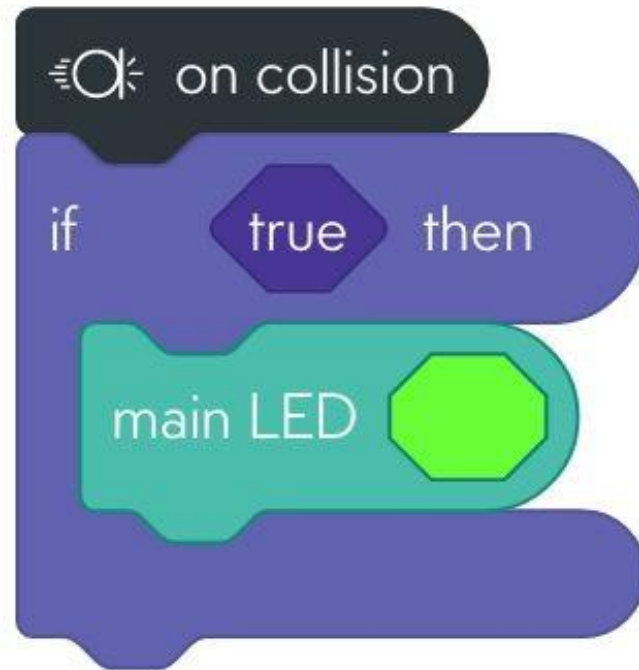
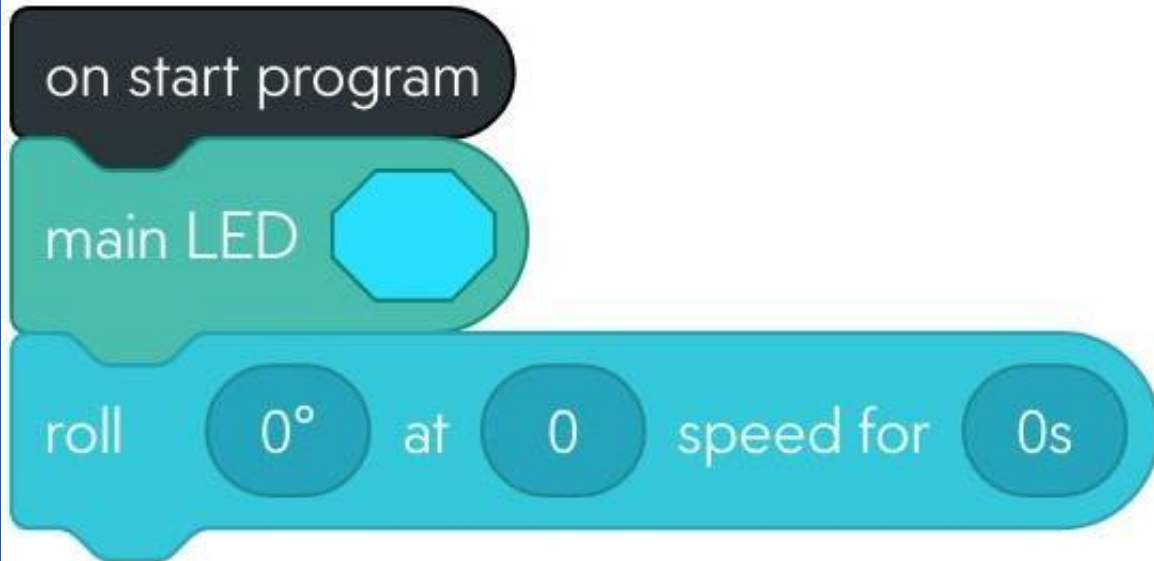
Loops

- ❏ Now grab the **roll** block and **insert** it into the loop
- ❏ Grab the **addition** block from under **operators**
- ❏ Grab **heading** block from under **sensors**



If Else

- ❑ Under the events tab drag on freefall to the canvas
- ❑ on freefall will run alongside on start program
- ❑ If the Sphero falls it will turn from blue to green



Challenge!

- ❑ Create your own program!
- ❑ Grab cones and ramps
- ❑ Team with most creative program wins!