Technology Ambassador Program

Using Sphero to Teach Programming Fundamentals

Georgia Gwinnett COLLEGE

Technology Ambassador Program

TAP@GGC

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.

TAP GGC
TECHNOLOGY AMBASSADOR PROGRAM

What is programming and block coding?

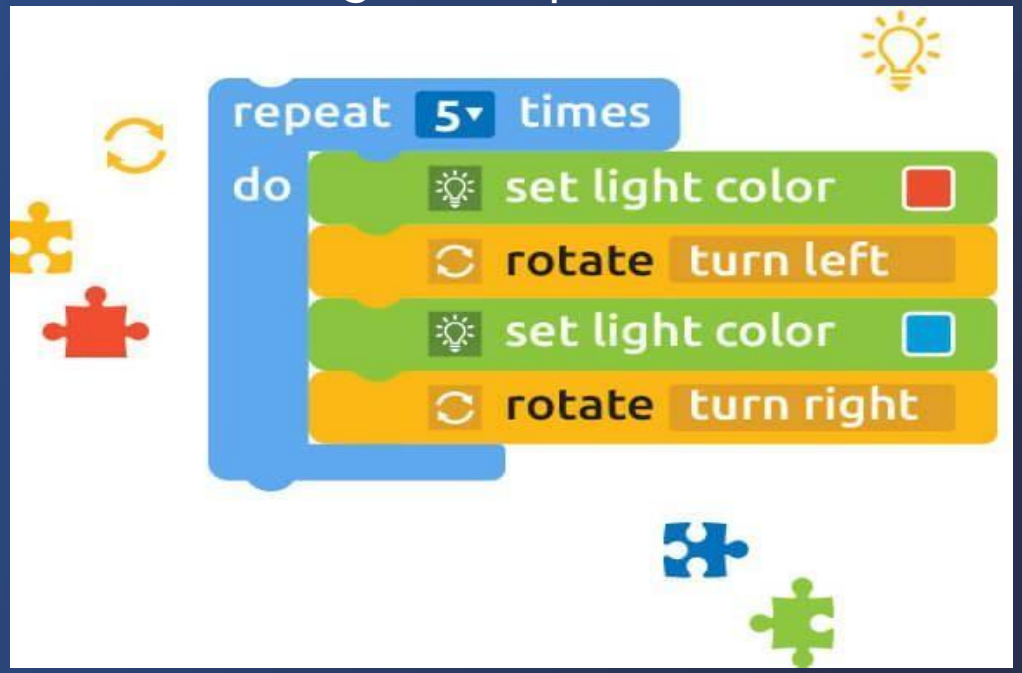
Programming

- 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



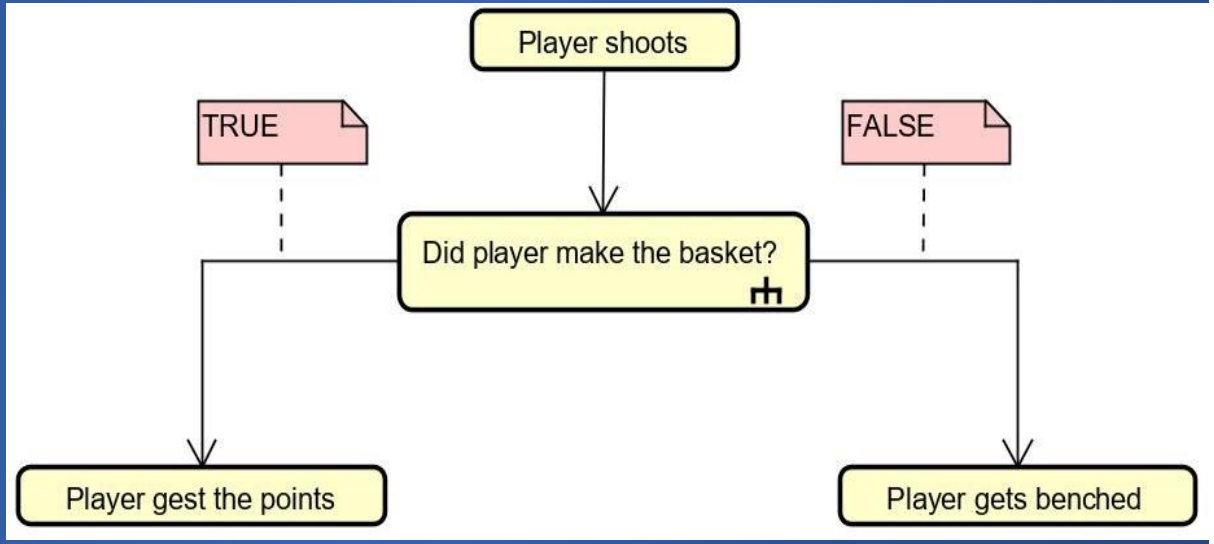
Mission

- 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

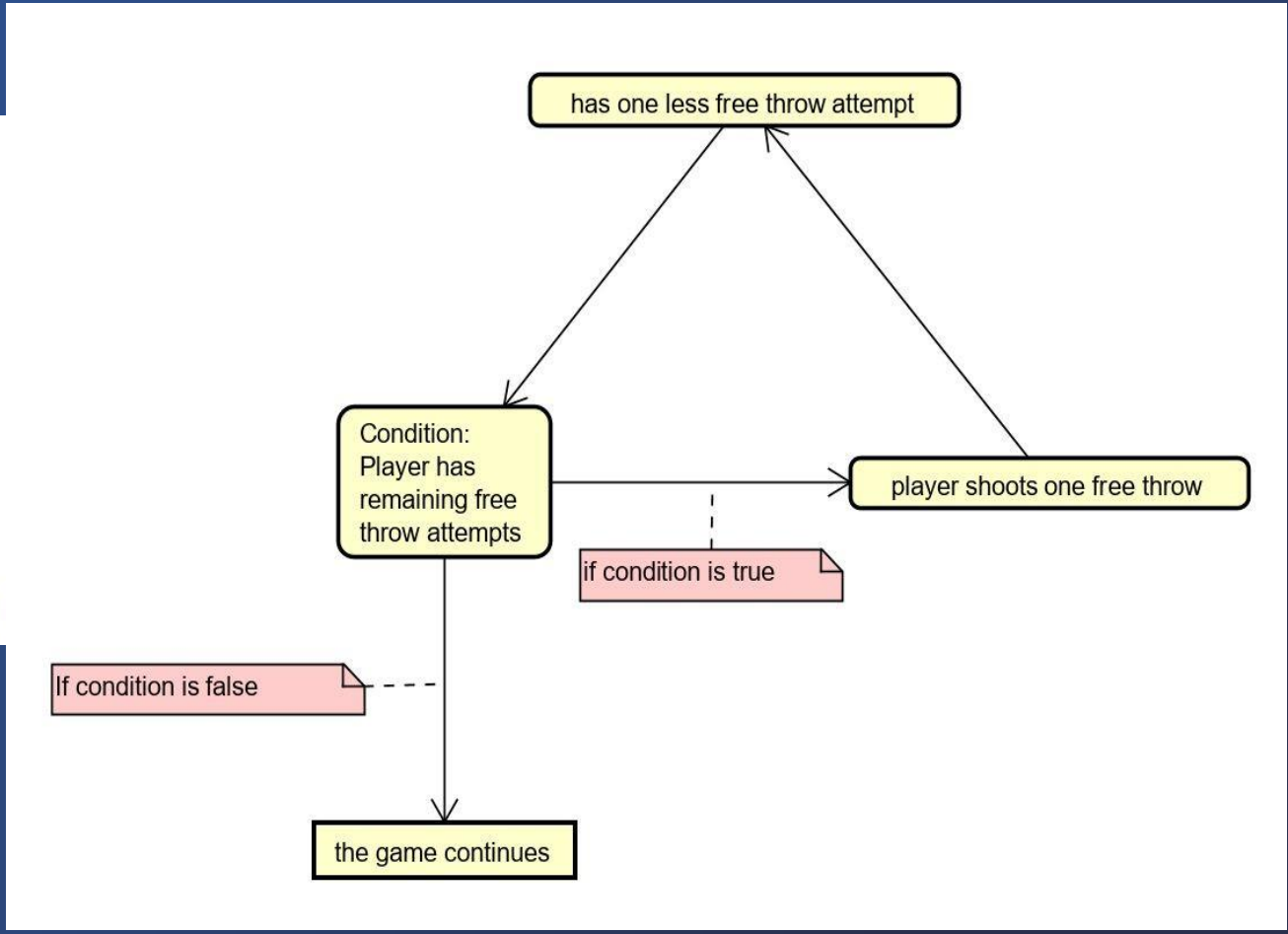
TAP 093C
TECHNOLOGY AMBASSADOR PROGRAM

If / Else, Loops, Functions

If/Else



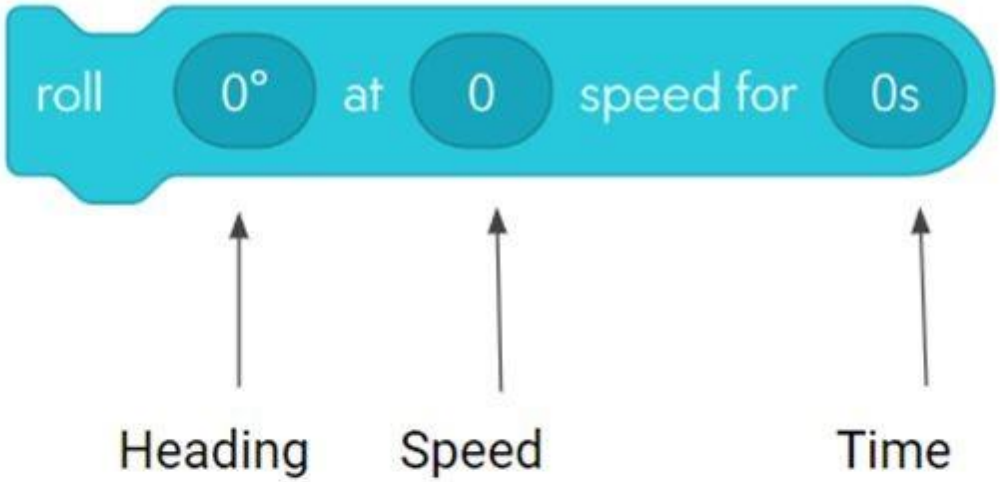
Loop



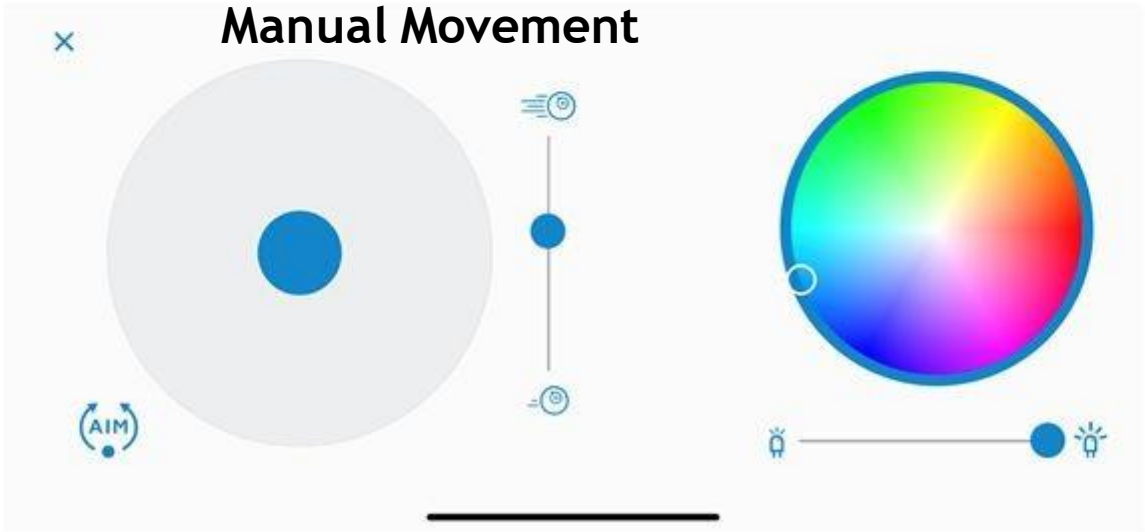
Our Technology

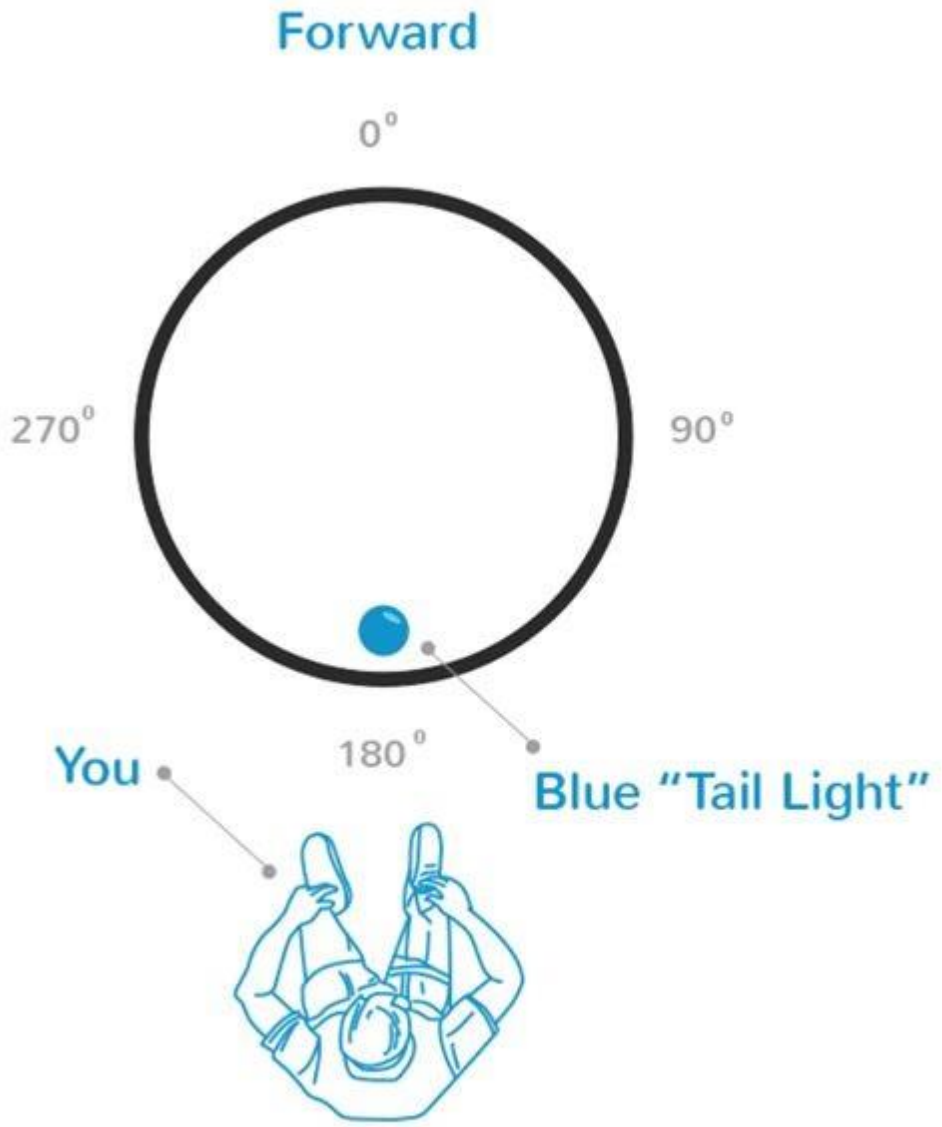
A programmable robot sphere that can spin, glow different colors, and detect whether it is falling or has hit something.

Moving with Code



Manual Movement

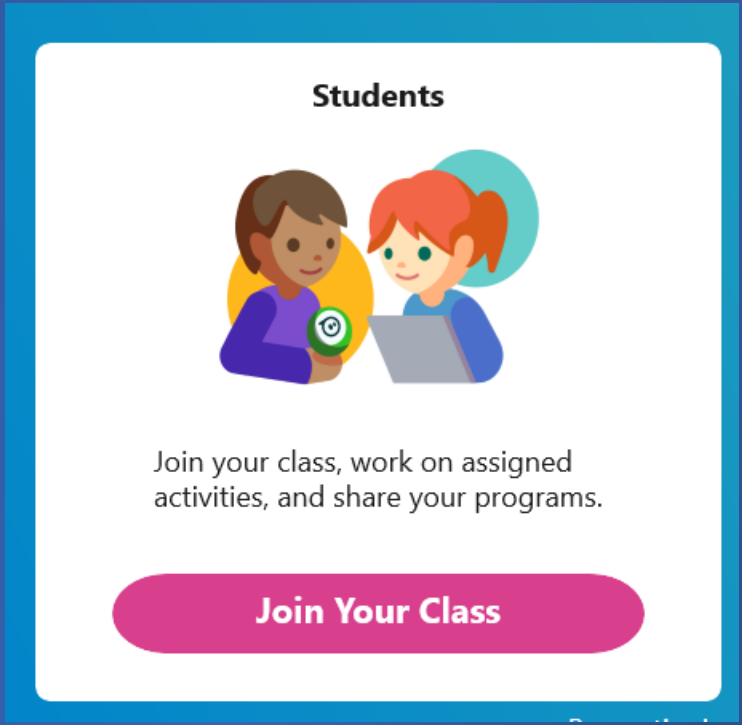


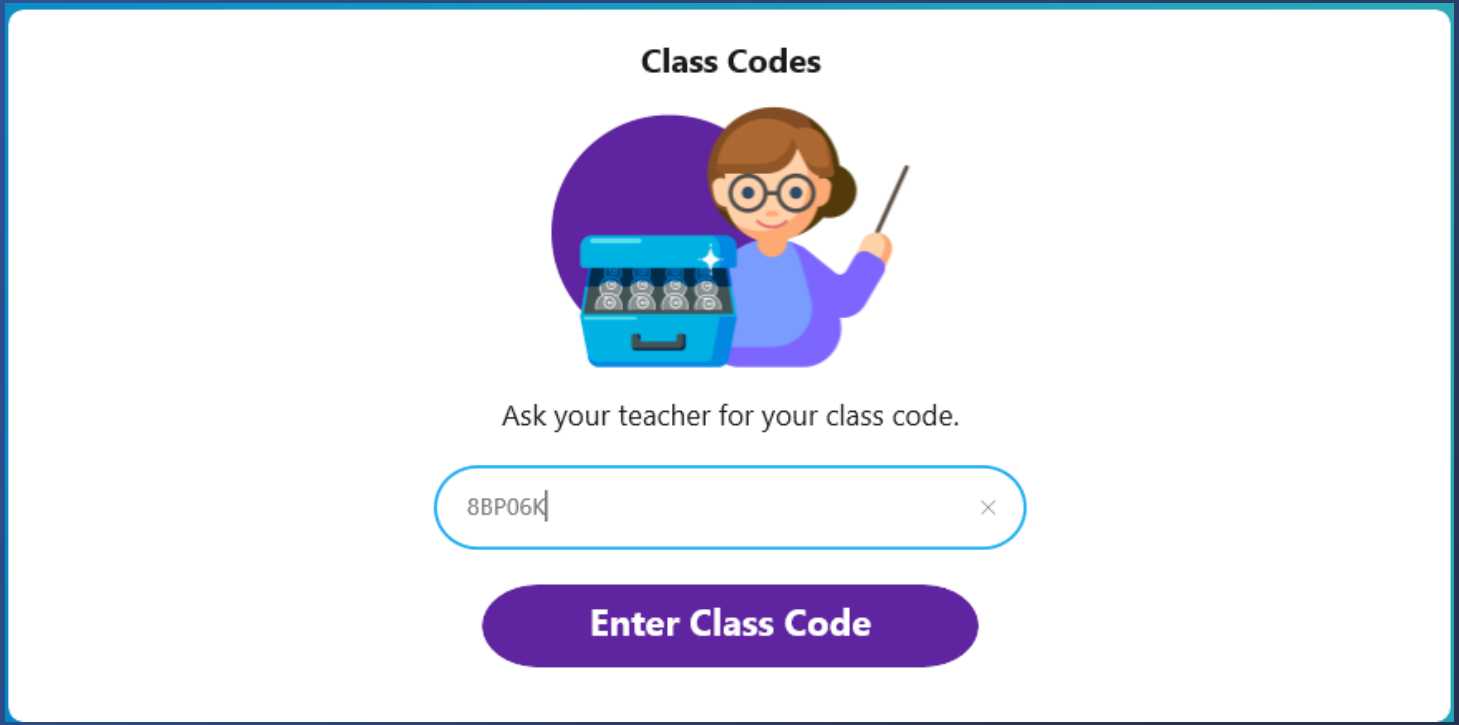


Split Into Groups

TAP osc
TECHNOLOGY AMBASSADOR PROGRAM

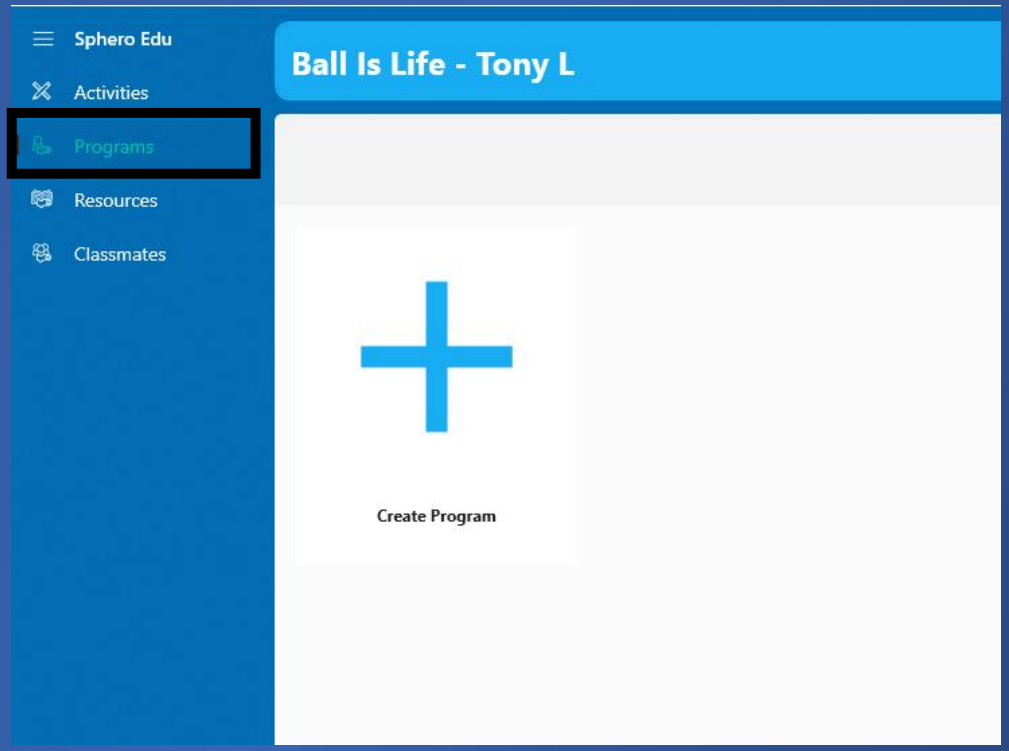
Join The Class

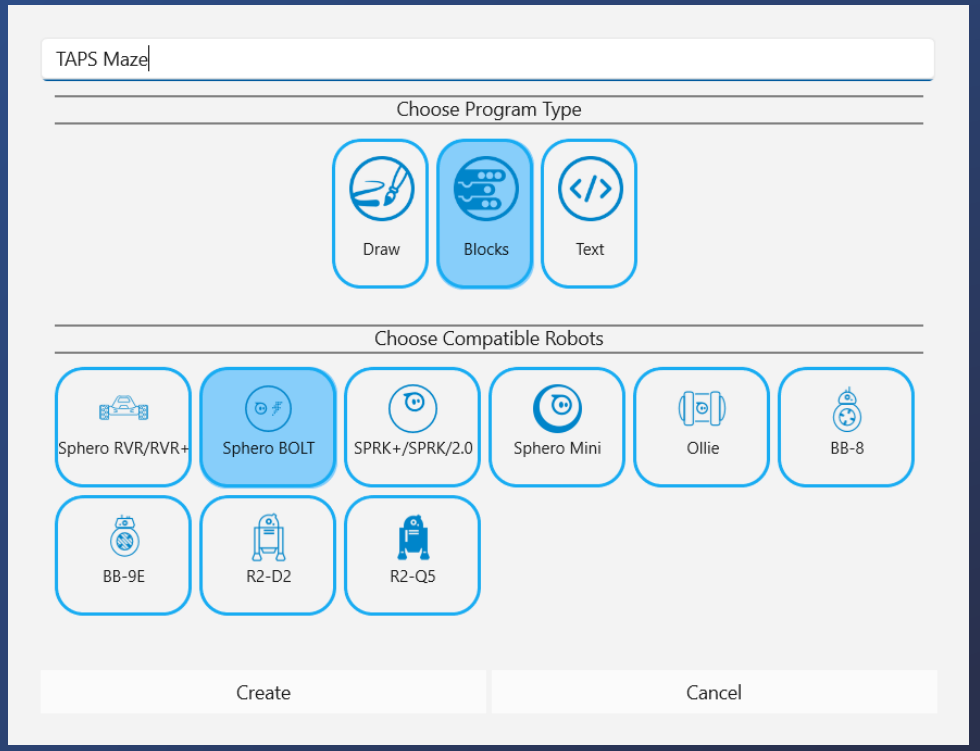




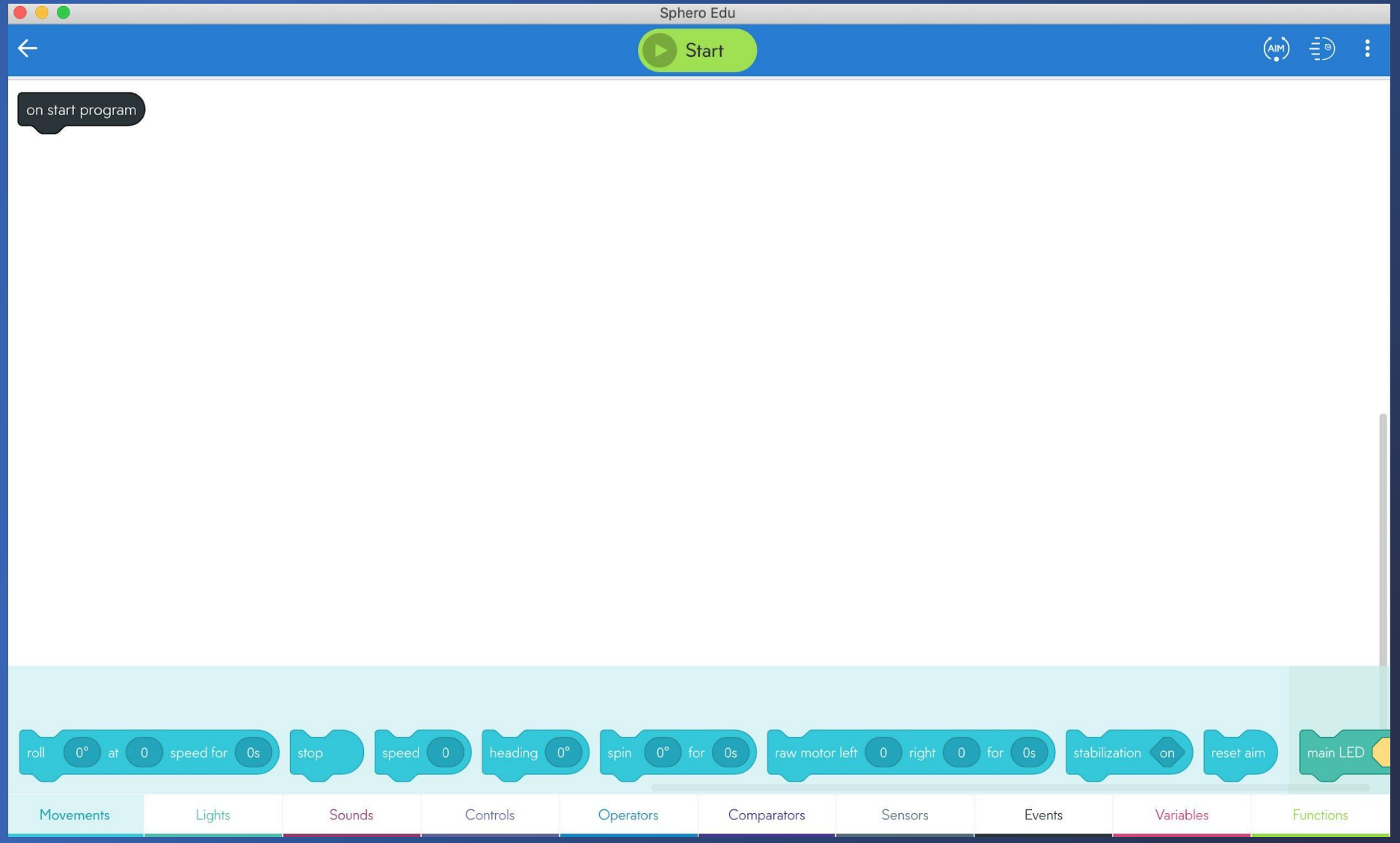
TAP 092C
TECHNOLOGY AMBASSADOR PROGRAM

Create a new program



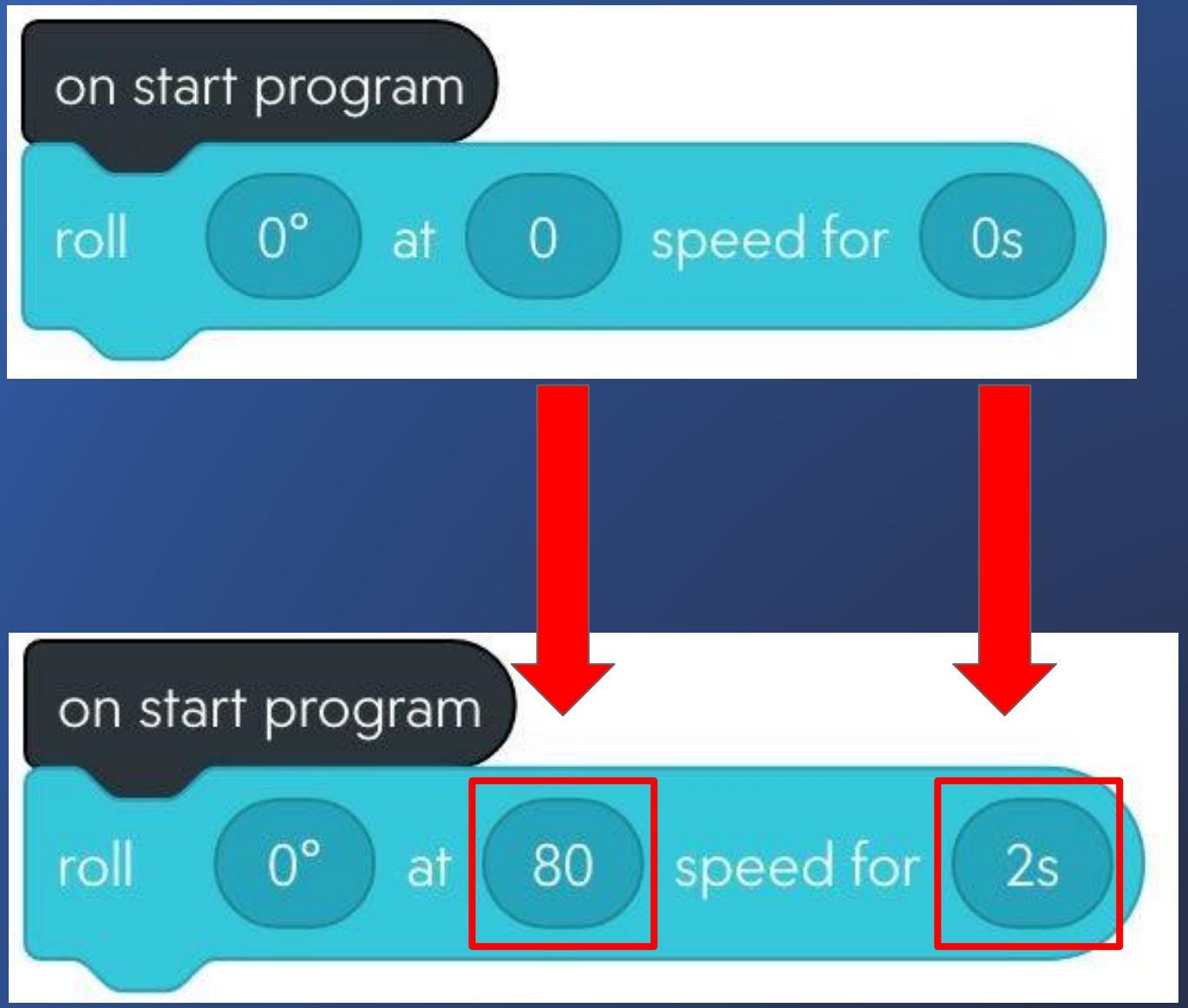


Welcome to the Canvas



Make Sphero move Forward

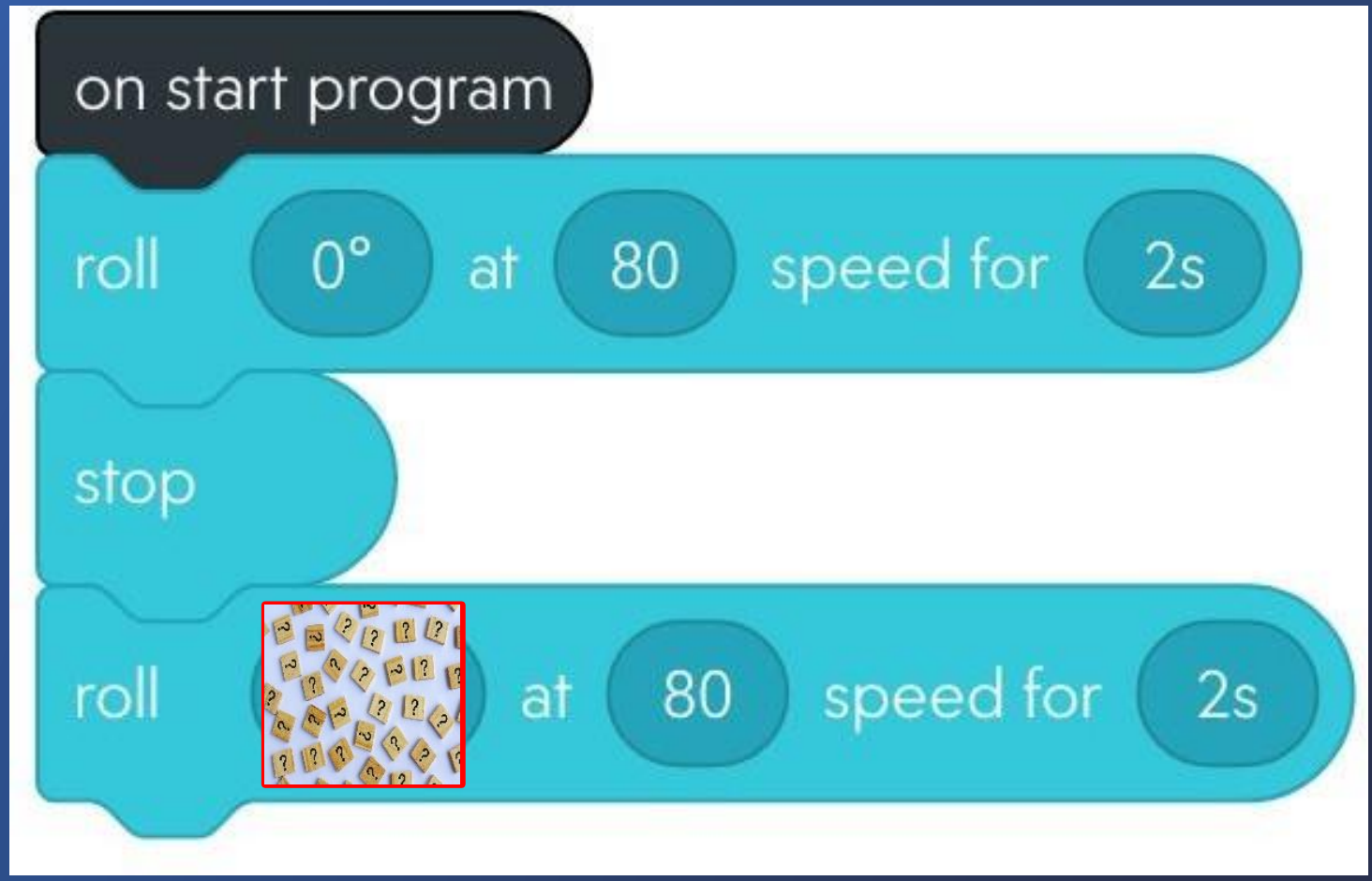
- ❑ Click on movements tab
- ❑ Drag Roll function onto canvas
- ❑ Adjust parameters



TAP osc
TECHNOLOGY AMBASSADOR PROGRAM

Now Backwards

- Adjust the first box to allow Sphero to change direction

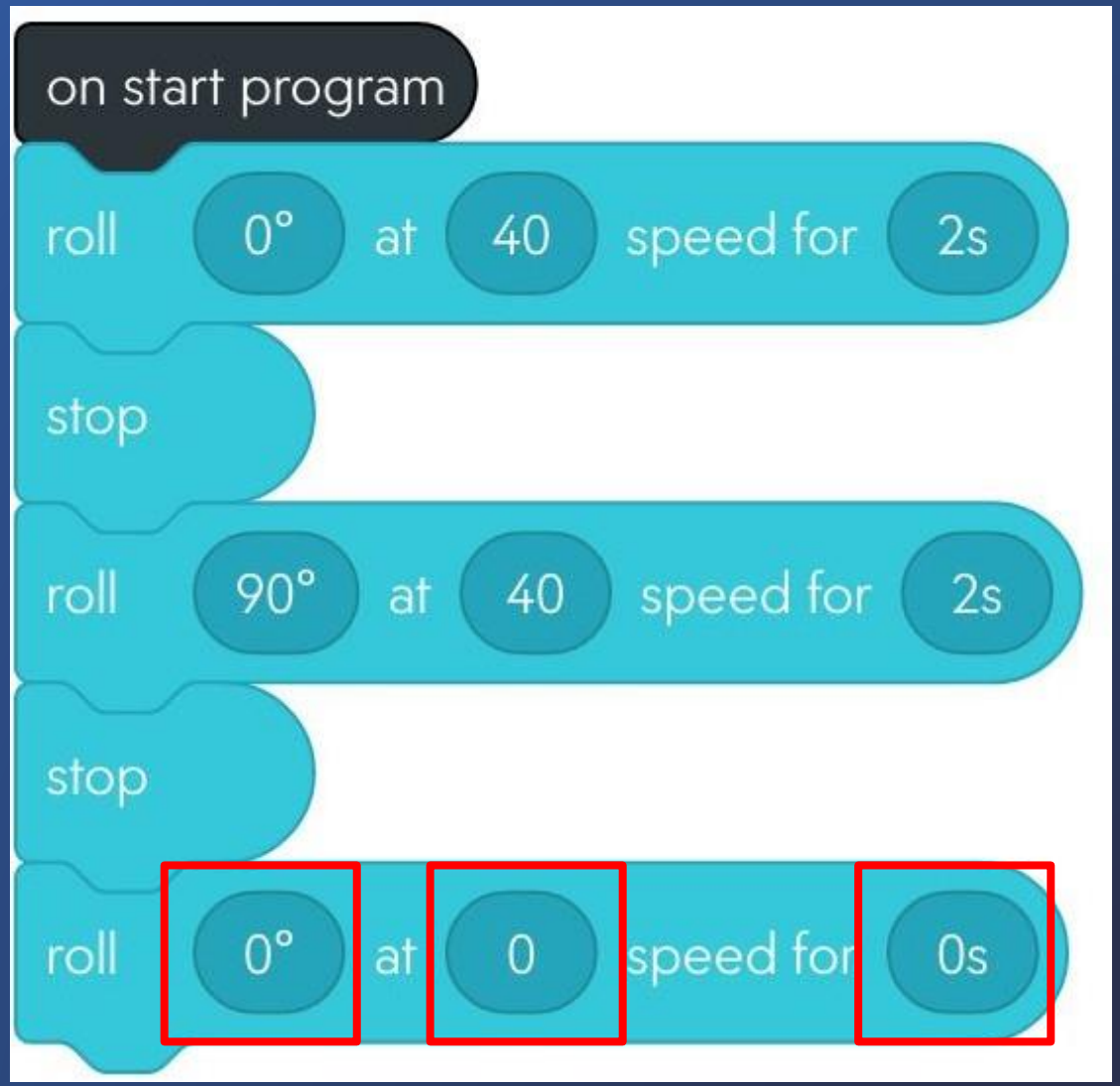


Now you try!

TAP@93C
TECHNOLOGY AMBASSADOR PROGRAM

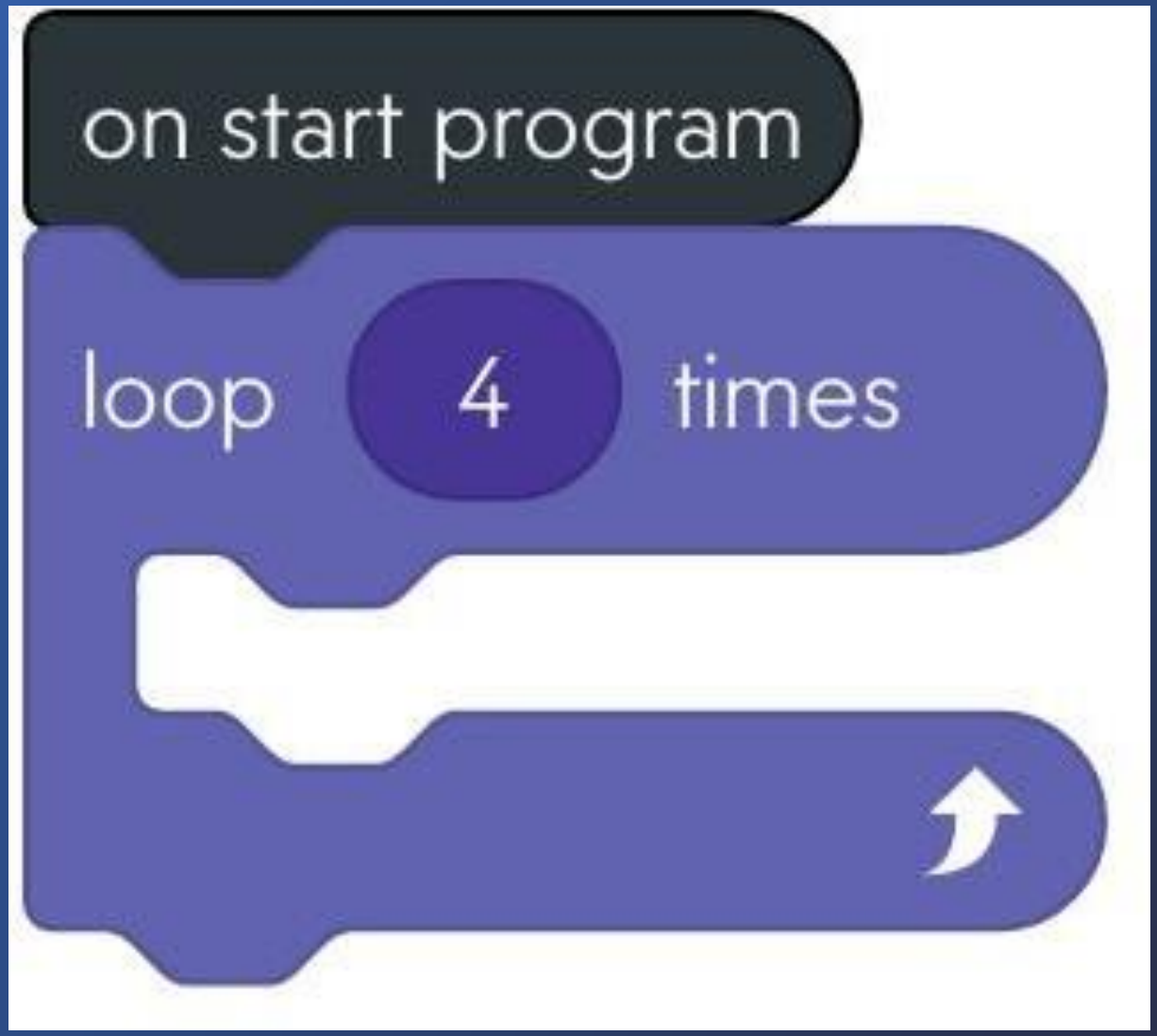
Let's make a Square

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



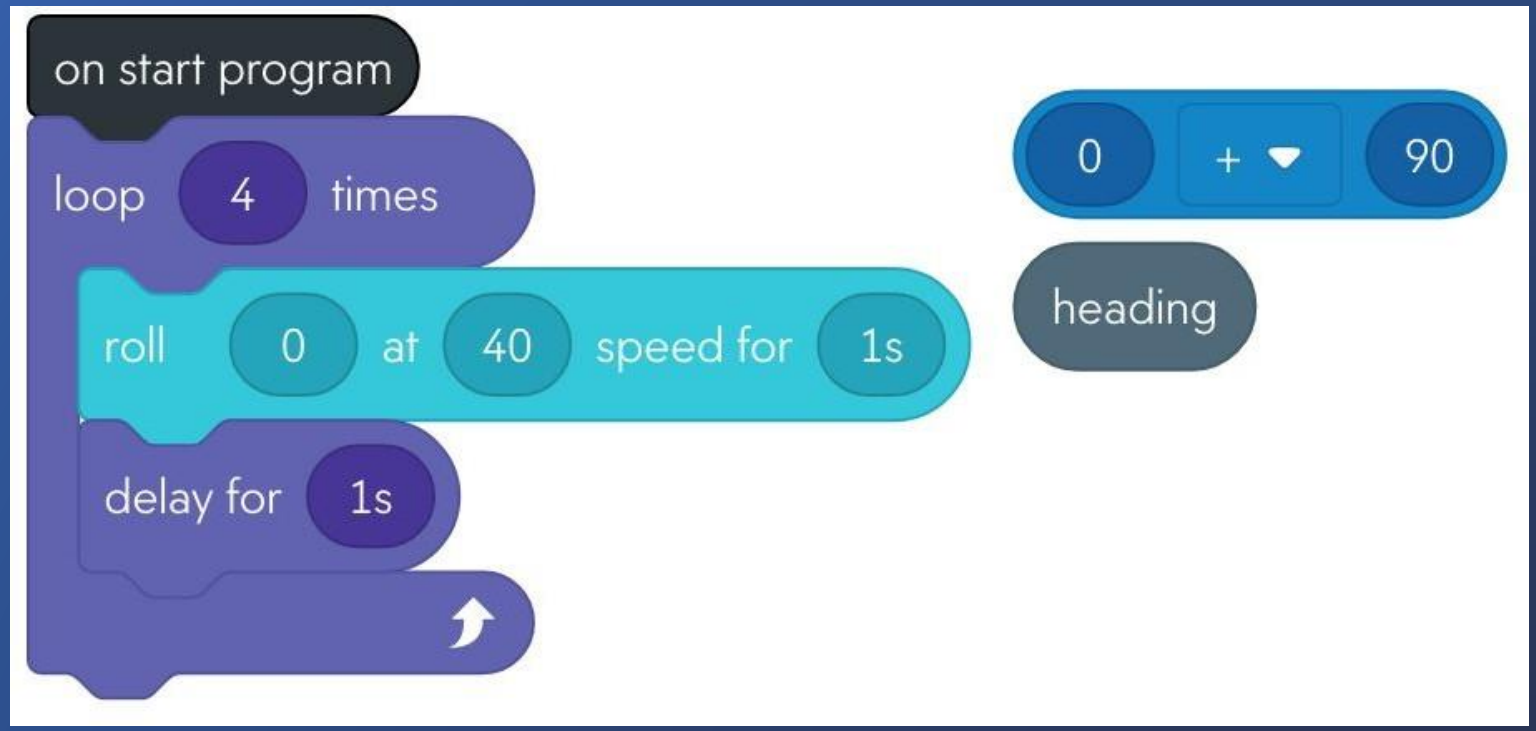
Using loops to make a Square

- Grab the **loop** block under **Controls**



Loops

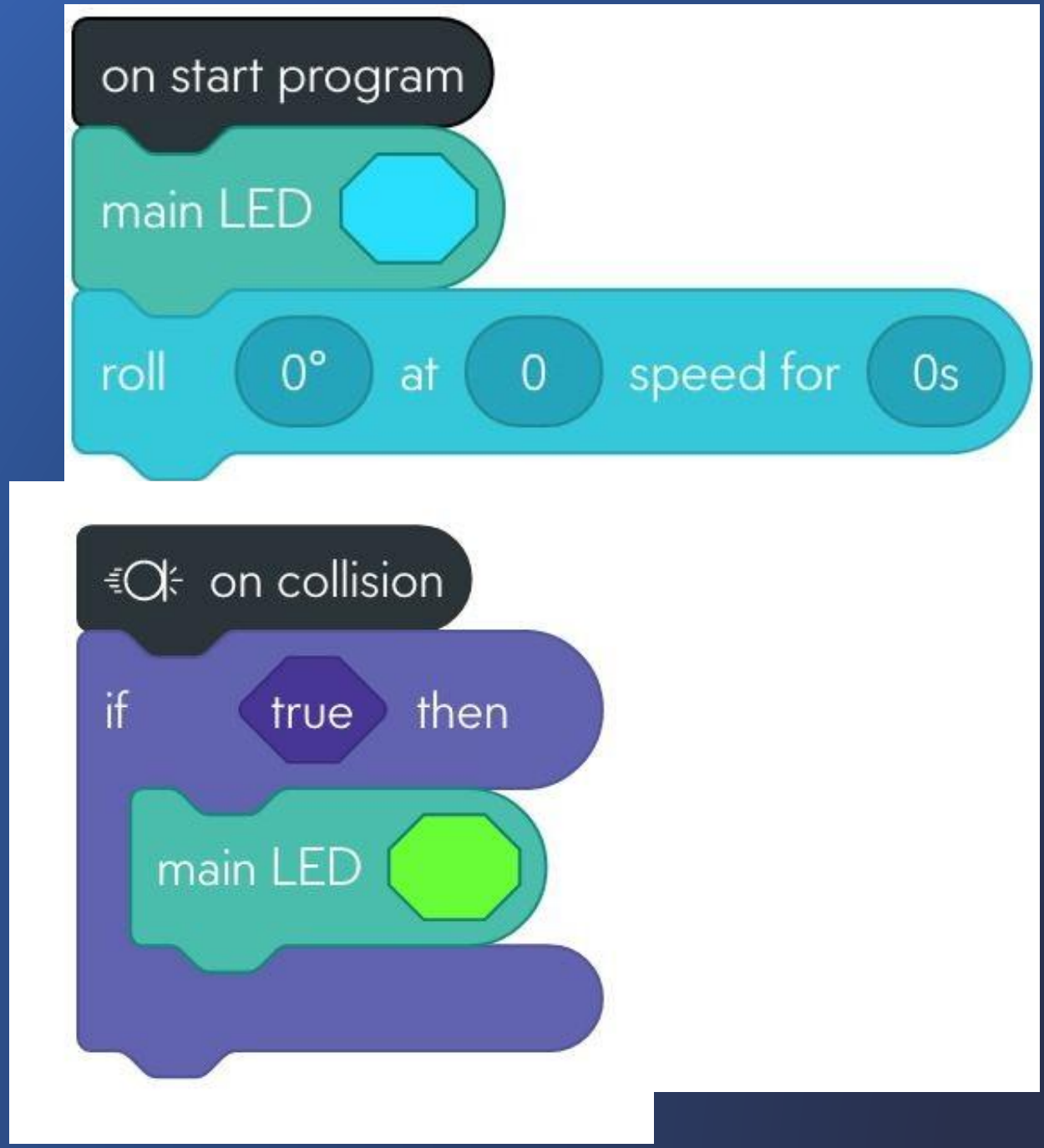
- Now grab the **roll** block and **insert** it into the loop
- Grab the **addition** block from under **operators**
- Grab **heading** block from under **sensors**



TAP osc
TECHNOLOGY AMBASSADOR PROGRAM

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!

TAP 0932
TECHNOLOGY AMBASSADOR PROGRAM