Parkside Montessori LEGO

TACObot Line Follower

Name _____ Name _____ Robot # _____

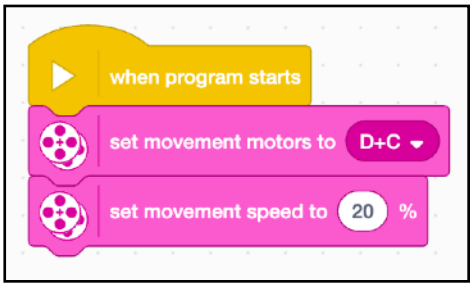
Last week you learned how to use the *wait until* block to perform an action until one of TACObot's sensors is triggered. This week you're going to learn about continuous decision making using the *forever* and *if-else* blocks to make TACObot follow a line.

PART 1: Download the TACObot Line Follower Project

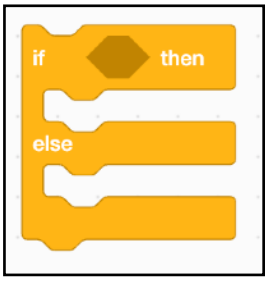
1. Go to parksidelego.org and download the *TACObot Line Follower Project*.
2. Go to spike.legoeducation.com, select "Spike Prime," click through to "Open Project" and open the file you just downloaded.
3. When prompted, click on "Save changes."

PART 2: Line Following Behavior

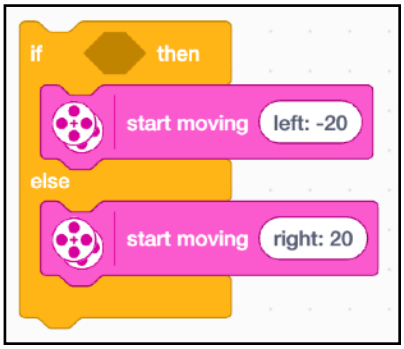
1. Start your program with the following blocks:



2. Add an *if-else* block below the *set movement speed* block. This block will run blocks inside the *if* when the hexagon-shaped condition is *true*, and run blocks inside the *else* when the hexagon-shaped condition is *false*.



3. Add the following motion commands inside the *if* and *else*.



4. Add a condition to check if the color detected by the color sensor is **black**.

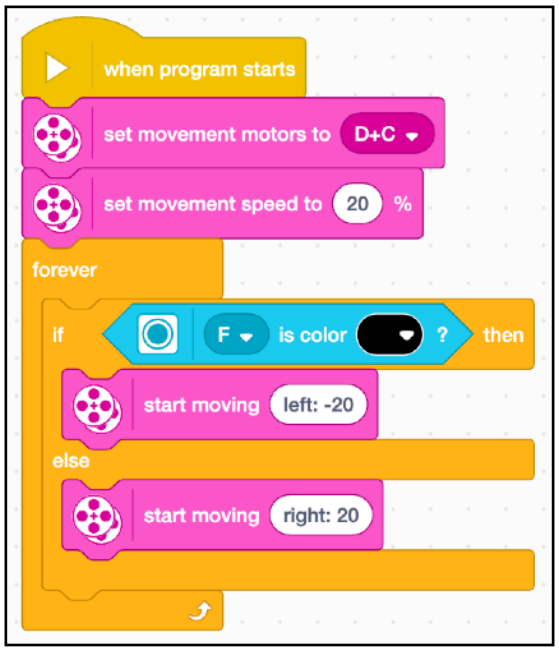
5. Try to imagine what TACObot will do when it encounters these blocks. What direction will TACObot move when the program is first run? Will it ever change direction?

6. We want TACObot to continuously run the *if-else* block. To do that, we wrap it inside a *forever* block. Add a *forever* block so that your program looks like the one on the right.

   Your program will now repeatedly decide which way to turn each time it encounters the *if-else* block.

   Does it matter whether your TACObot starts to the left or the right of the black line?

   What will happen if you start your program on the other side of the line?



7. Take your robot to the track and run your program. Does it behave the way you expected?

PART 3: Next Steps

1. Modify your program so that your robot stops when it encounters an obstacle. HINT: You'll want to replace the *forever* block with something else.

2. Make your robot move as fast as possible without losing the line. You can do this by changing the *movement speed* and the *turning angle*. Make sure your robot can follow both straight and curved lines.

   Why does TACObot lose the line if it moves too fast?
   Does the sharpness of the curve matter?