Stay Inside the Line

Time required: 60 minutes

- Stay Inside the Line Demo Video

The line following sensor can be used for other tasks besides following a line. The sensor detects dark or light. This can be used to keep the mBot inside a circle or other shape that is outlined in black. You can use your line following track or some sort of black tape to outline a shape. Automotive cloth wiring harness tape works well. You could also use a piece of paper or the back of the mBot paper track on a dark floor.

Problem

We want our mBot to detect black lines and avoid them.

The following table shows the different readings from the line sensor. Our logic for staying on the line is to provide actions to get back to 0, both sensors on the line. In this project, we want both sensors to be off the line. If the sensor reading is 3, we can avoid any black lines.

Sensor Position	Value
Both sensors over the line	0
Right sensor off the line	1
Left sensor off the line	2
Both sensors off the line	3

Algorithm

An algorithm is a step-by-step set of instructions for solving a problem or performing a task. It's like a recipe that guides you through a series of actions to achieve a specific goal.

Pseudocode

A simple way to outline the steps of an algorithm for a computer program without using specific programming language syntax. It's like a rough draft of a program's logic. Start with writing clear and concise English-like statements to describe what your code should do.

Pseudocode solution to problem.

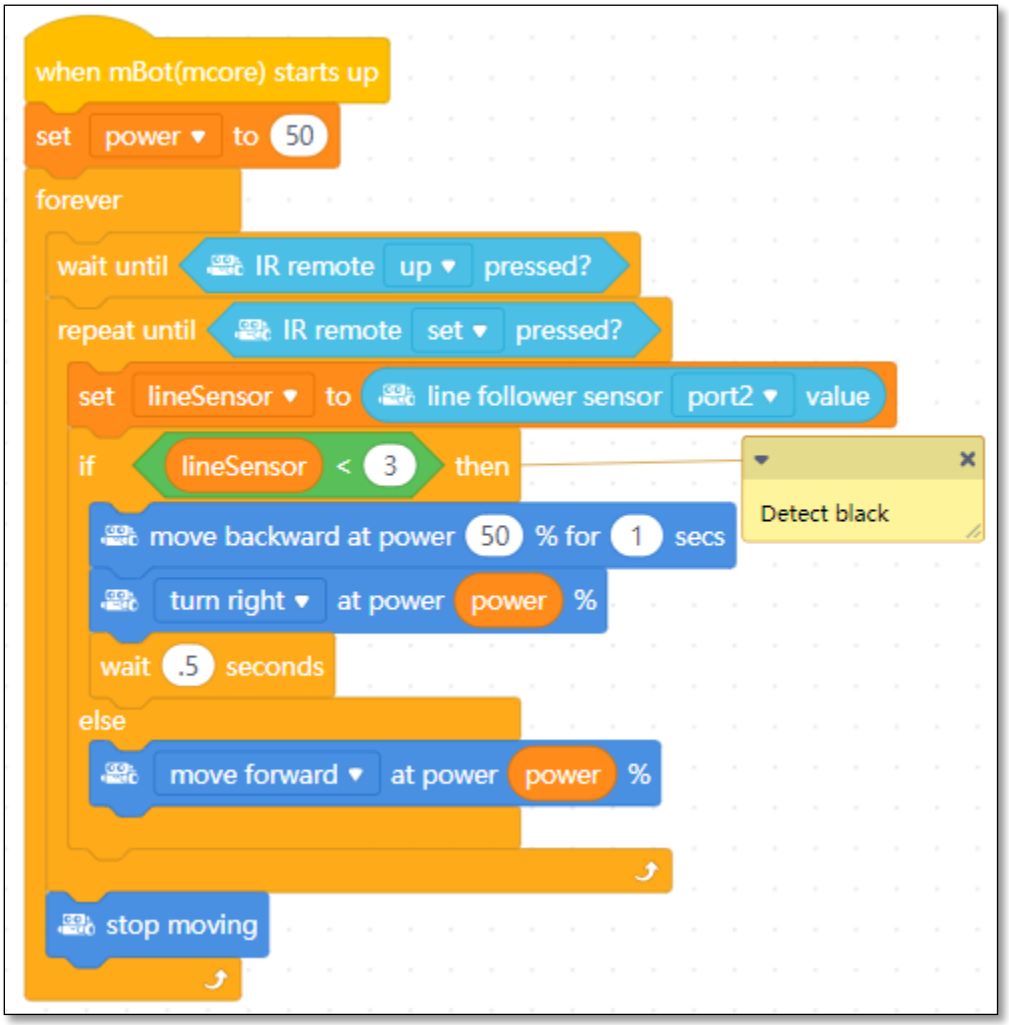
```
if linefollowing sensor reads 3
    robot is off the line
else if linefollowing sensor reads less than 3 (0, 1, 2)
    avoid obstacle
```

Requirements

- Stay inside the line.

Tutorial Assignment

1. Start mBlock. Save the program as **Stay Inside the Line**.
2. Complete and test the program as pictured with the requirements listed.



Assignment

Start with your tutorial project and add the following.

- Add a light and sound to indicate hitting the line.
- Randomly use a different maneuver to avoid the line.

Assignment Submission

- **All students** → Attach finished programs to the assignment in Blackboard.
- **In class assignment submission** → Demonstrate in person.
- **Online submission** → A link to a YouTube video recording showing the assignment placed in the submission area in BlackBoard.