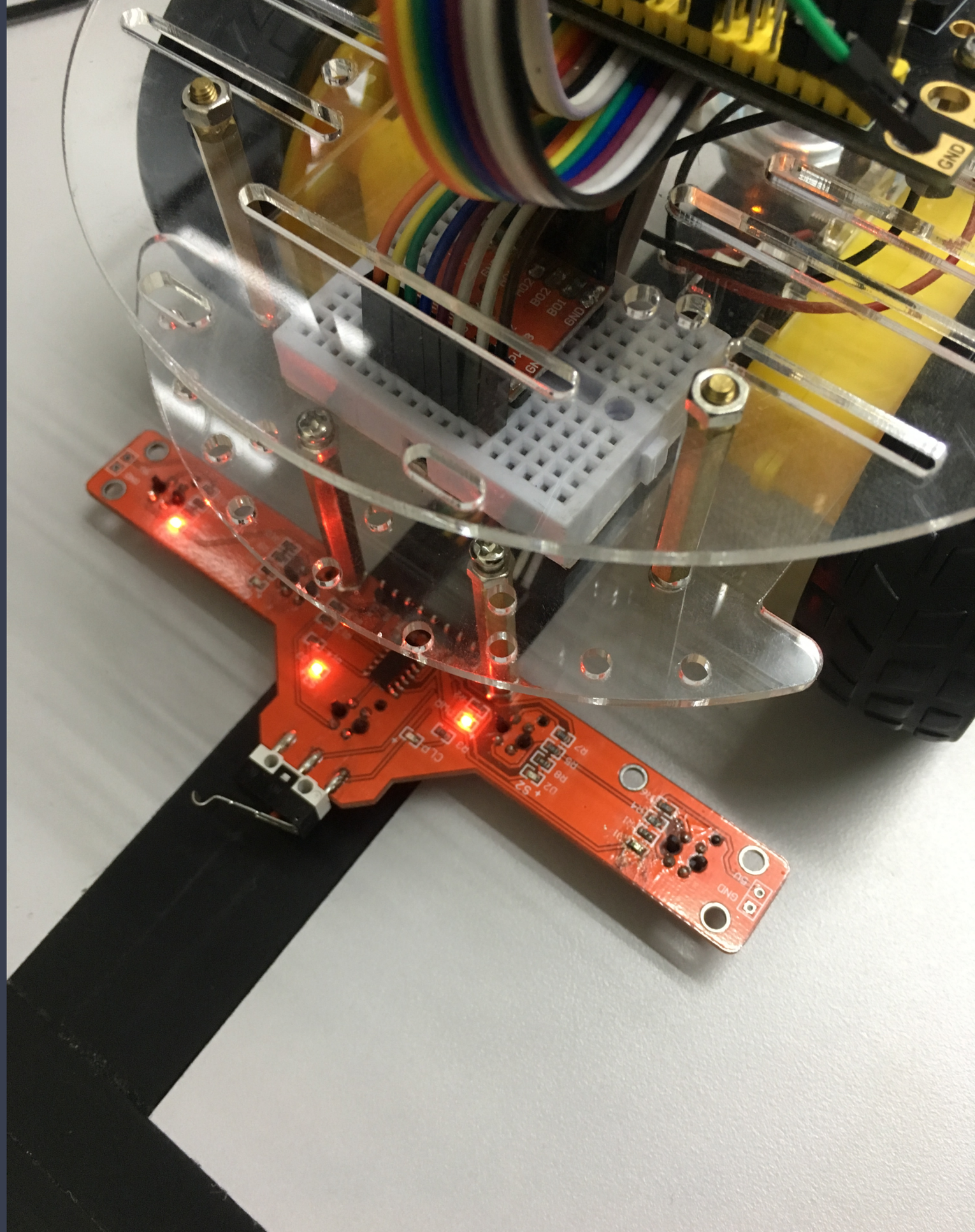
MakerHouse : Empowering Makers

MICRO:BIT

LINE FOLLOWING ROBOT

The building blocks of line following robots using micro:bit



Things used in this project:

HARDWARE

- micro:bit
- Edge breakout for micro:bit, I/O expansion
- 5 channels infrared sensor
- Smart robot car chassis kit with DC motor set
- Dual motor driver controller module – TB6612FNG
- Jumper wires

SOFTWARE

- Microsoft MakeCode

OBJECTIVES

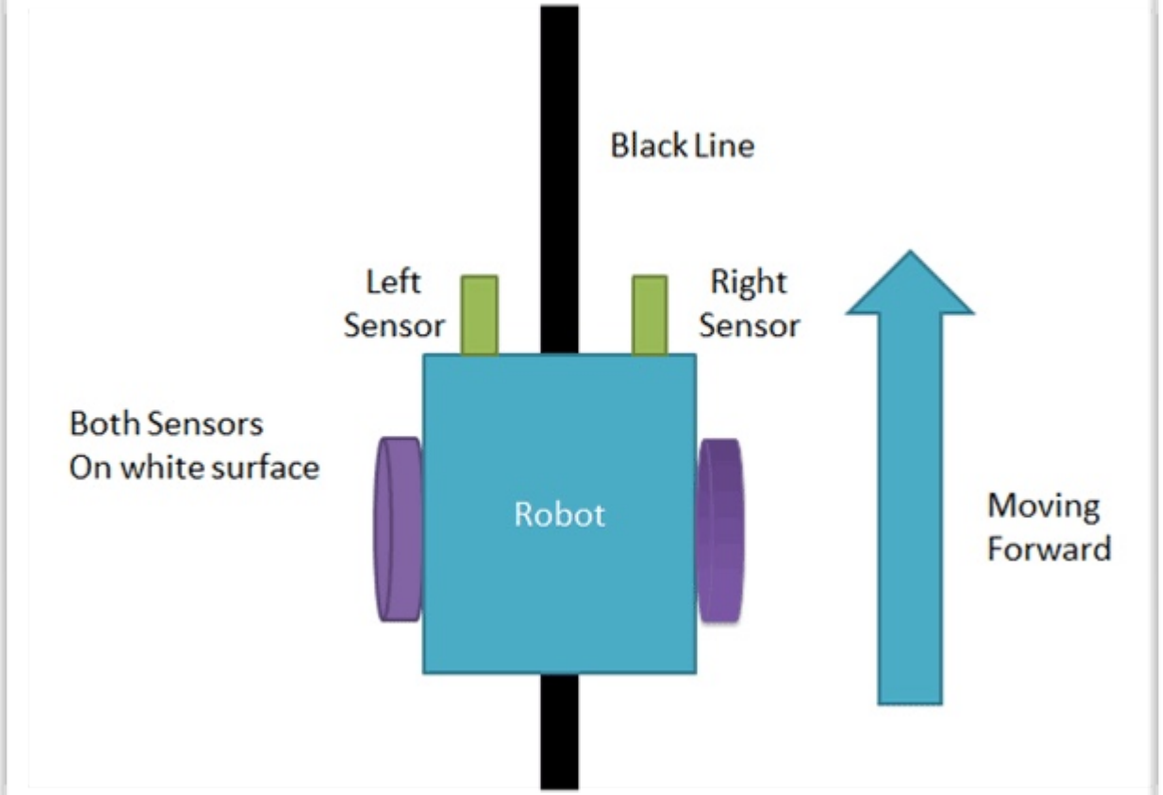
We will be building a micro:bit based line follower robot. We have learned about basic dc motor control (speed and direction) and how to use IR sensor with micro:bit by programmed it in Microsoft MakeCode.

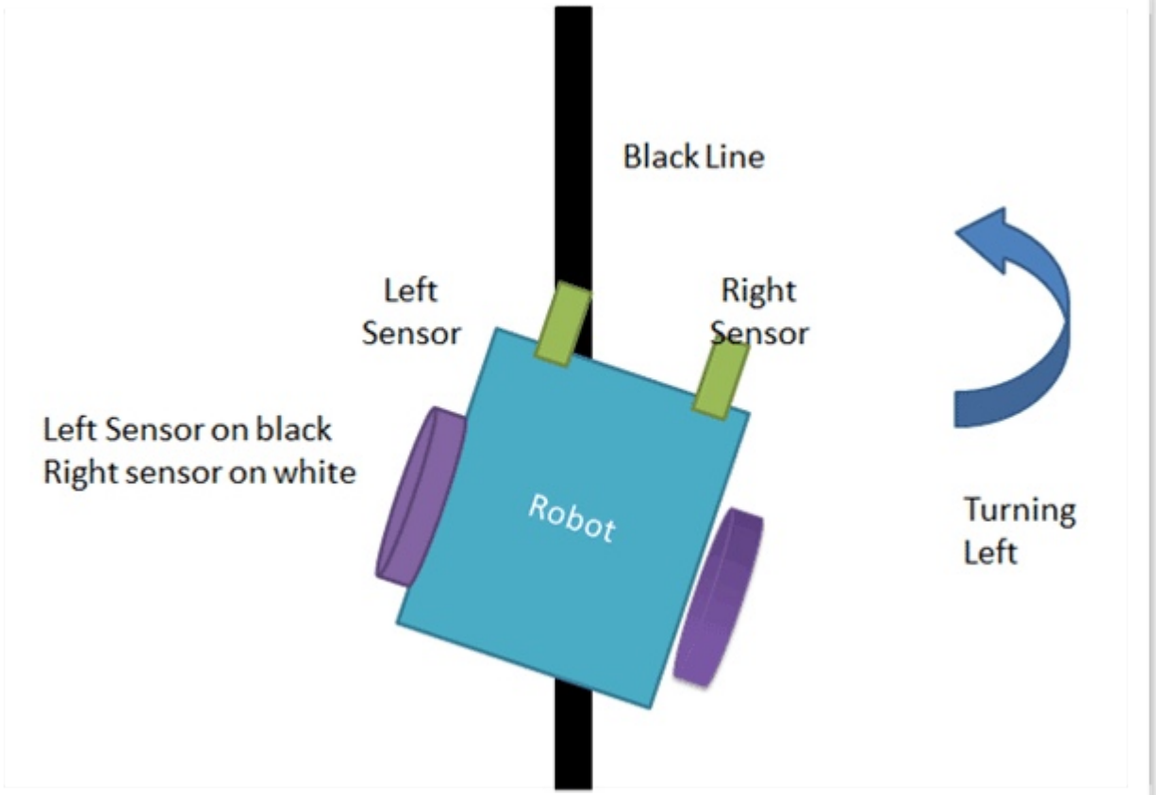
Here in this micro:bit line follower robot when IR sensor senses white surface then arduino gets 1 as input and when senses black line arduino gets 0 as input will be used to control the direction (and speed) of the dc motors accordingly.

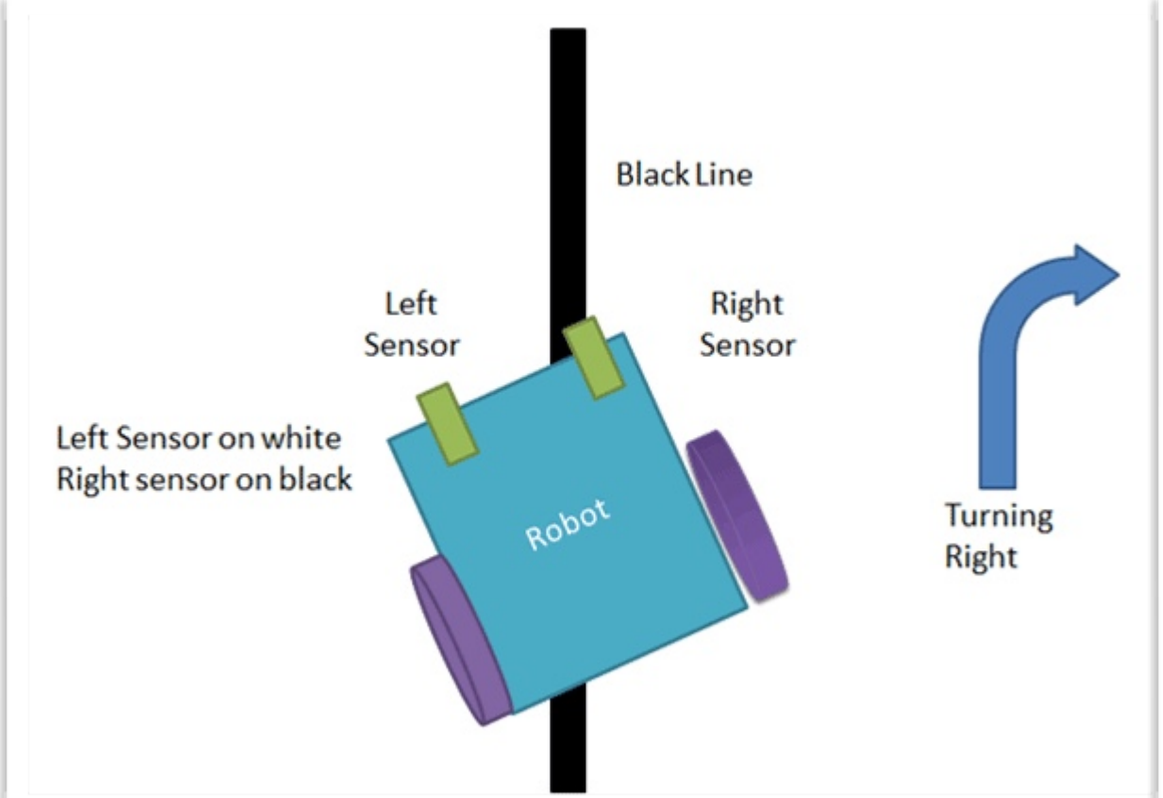
Once completed the experiment (project), students will:

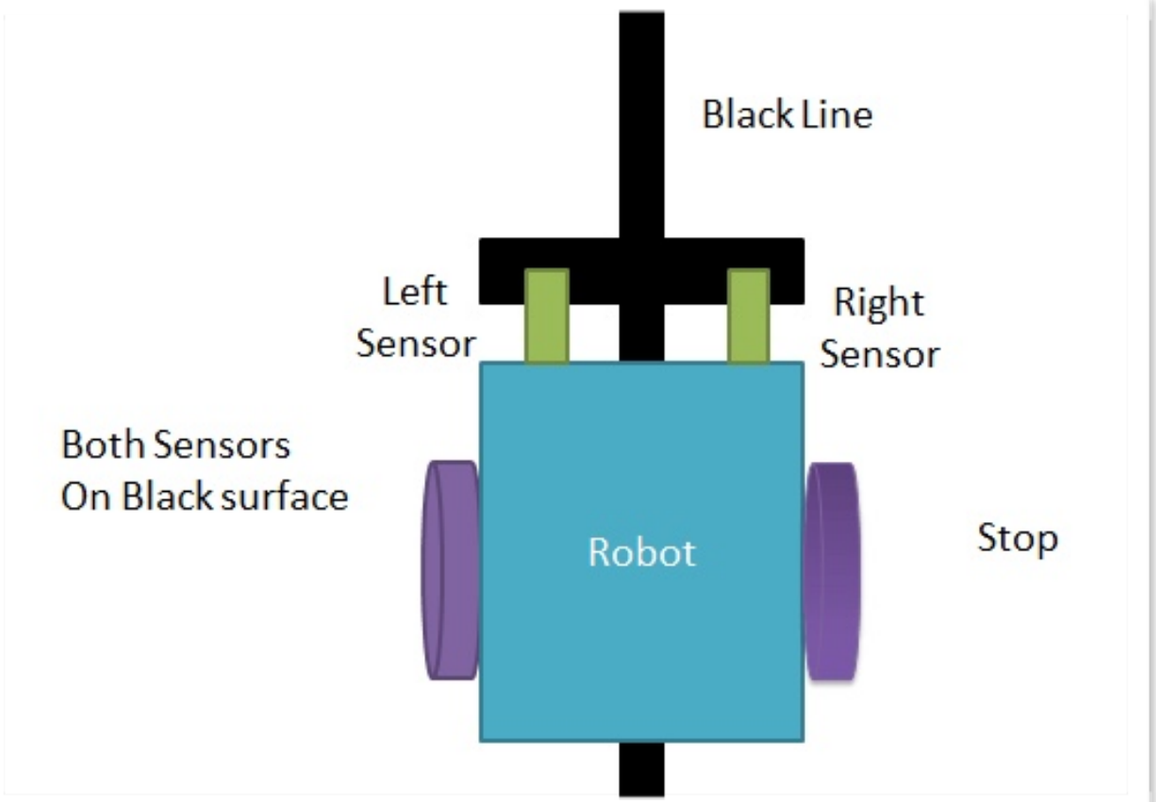
1. Using IR sensor to control the dc motor – line following
2. Understand the logic of decision – based on the input, what will the output.

OBJECTIVES


Black Line
Left Sensor
Right Sensor
Both Sensors
On white surface
Robot
Moving Forward


Black Line
Left Sensor
Right Sensor
Left Sensor on black
Right sensor on white
Robot
Turning Left


Black Line
Left Sensor
Right Sensor
Left Sensor on white
Right sensor on black
Robot
Turning Right


Black Line
Left Sensor
Right Sensor
Both Sensors
On Black surface
Robot
Stop

CONDITIONS

BASICS

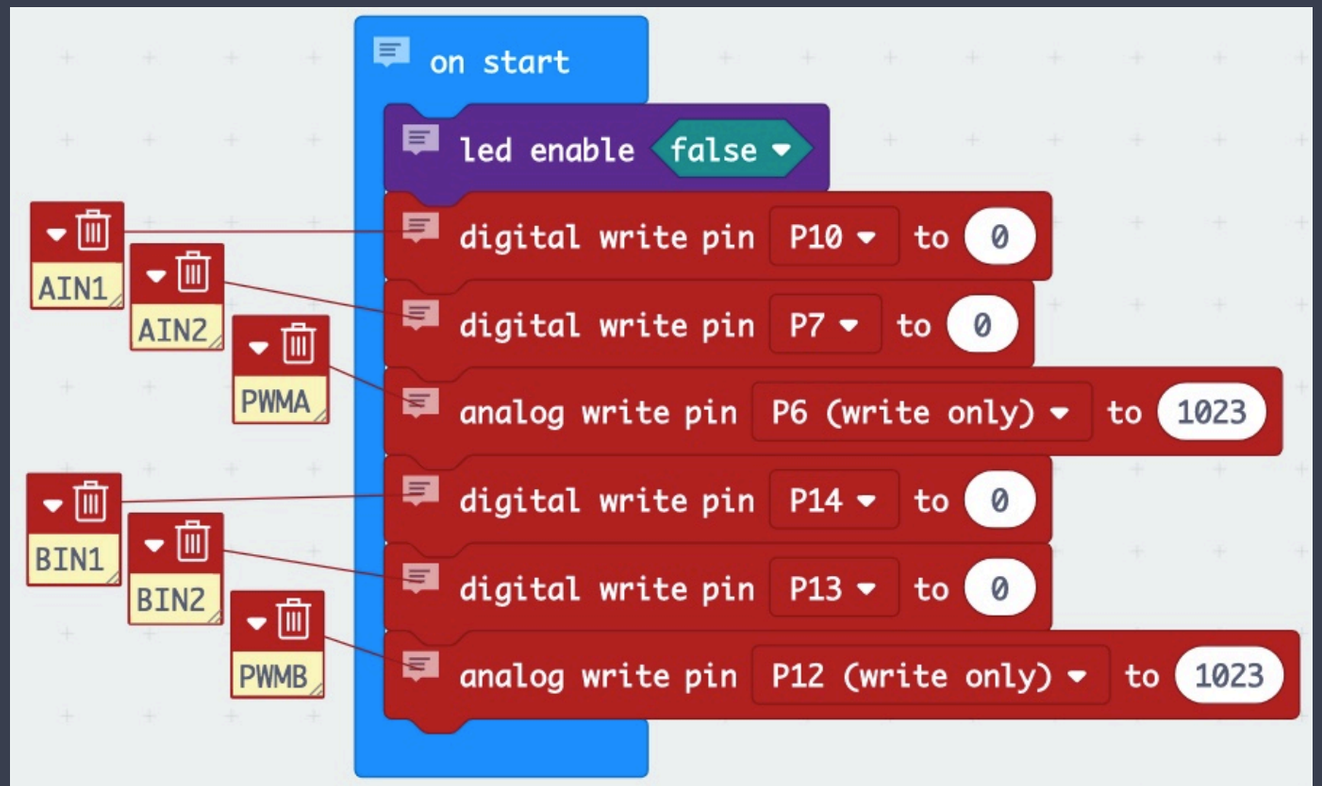
Movement	S1	S2	S3	S4	S5
Forward	1	1	0	1	1
Right	1	0	1	1	1
	1	0	0	1	1
Left	1	1	1	0	1
	1	1	0	0	1
Stop	0	0	0	0	0

CHALLENGES

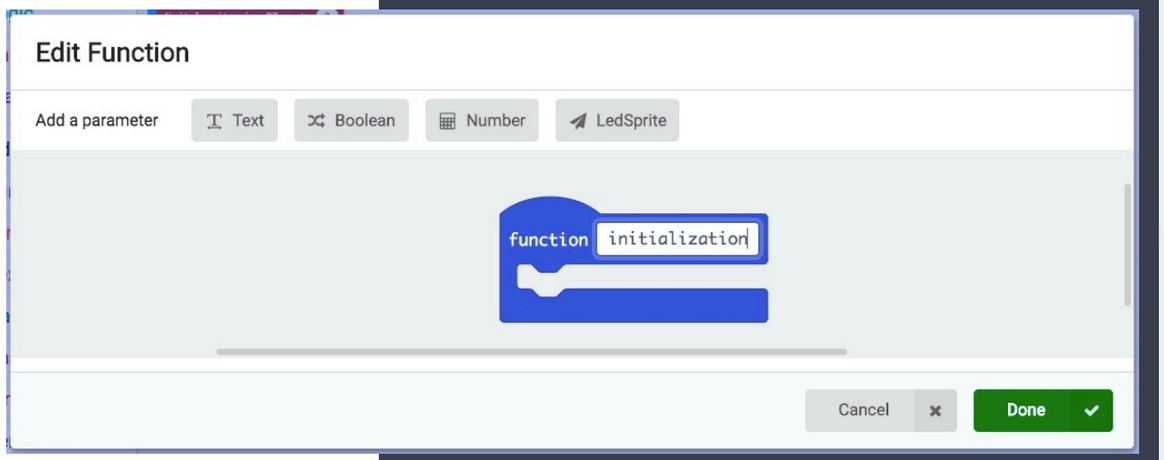
BASICS + JUNCTIONS

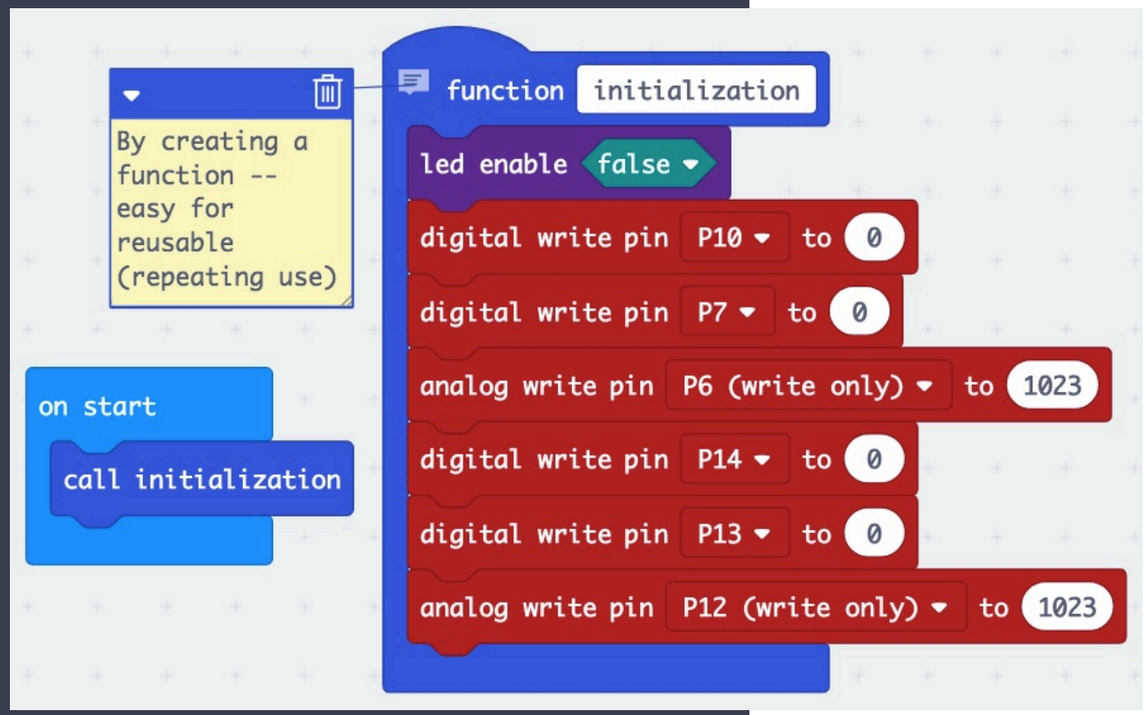
Instead of **STOP** once all IR sensors reading is equally to 0 (on a **BLACK** line), make it as creatives moves such as; consider it as **JUNCTION** – once junction count equal to **N**, **TURN** left/right or **STOP**.

FUNCTIONS



----------CHANGES----------





FUNCTIONS

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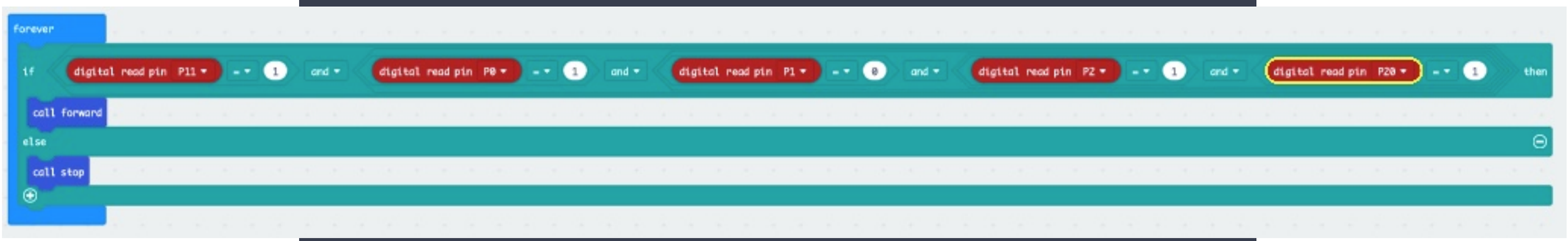
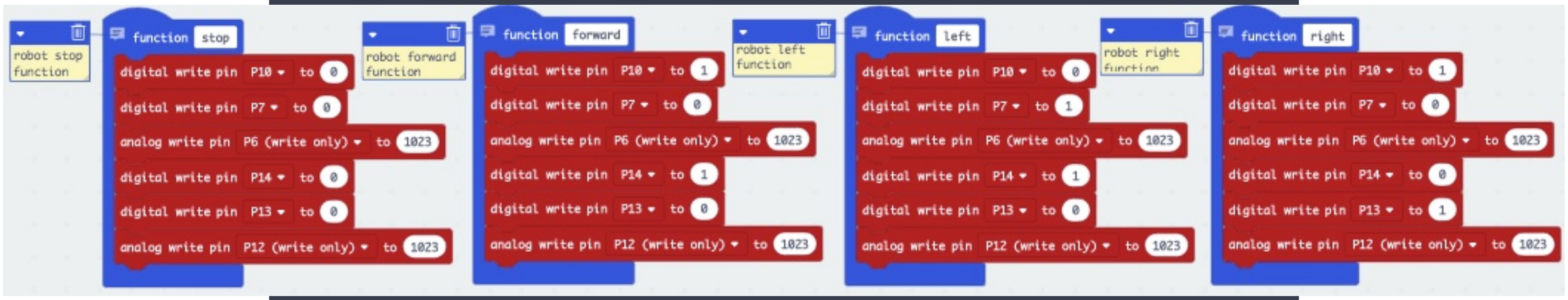


HINT!



CHALLENGE

Try to complete the block programme, so that a the robot manage to follow the black coloured line.