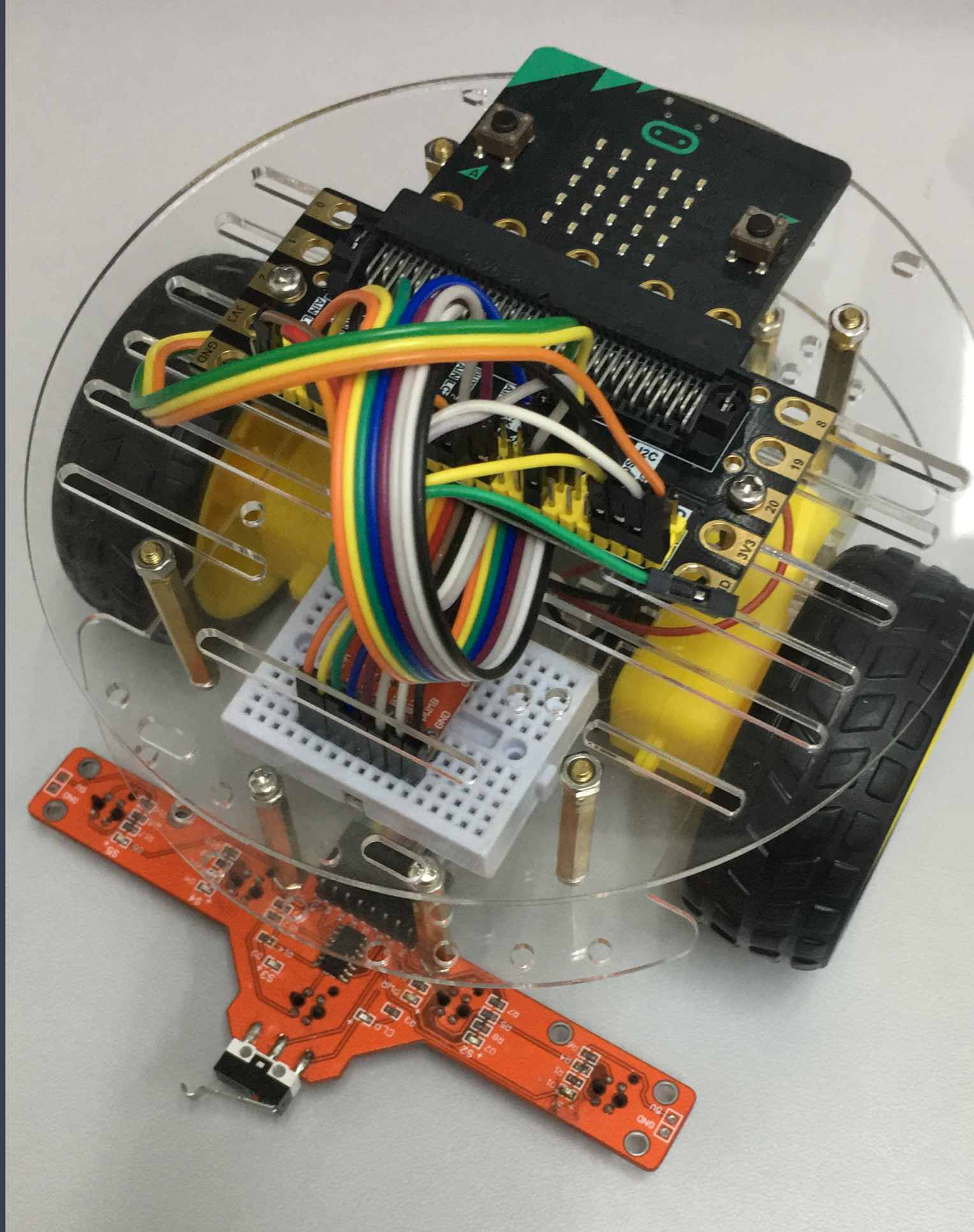
MAKERHOUSE : EMPOWERING MAKERS

MICRO:BIT

IR SENSOR

Introduction to Infra-Red (IR) Sensor and how to use it with 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
- Jumper wires

SOFTWARE

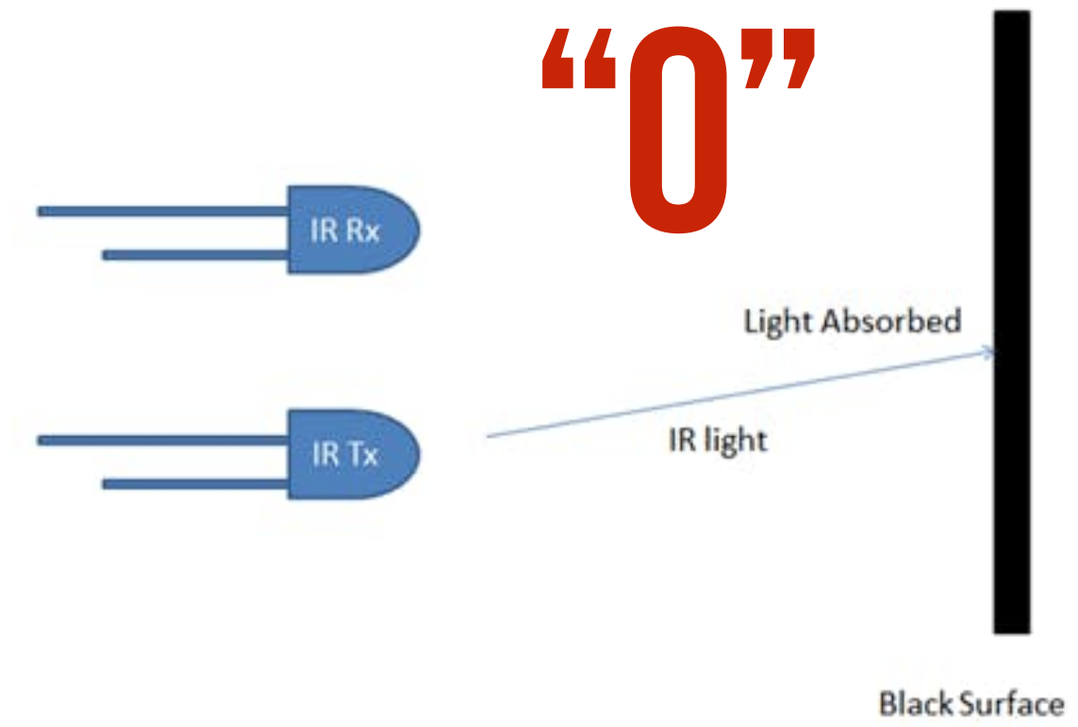
- Microsoft MakeCode

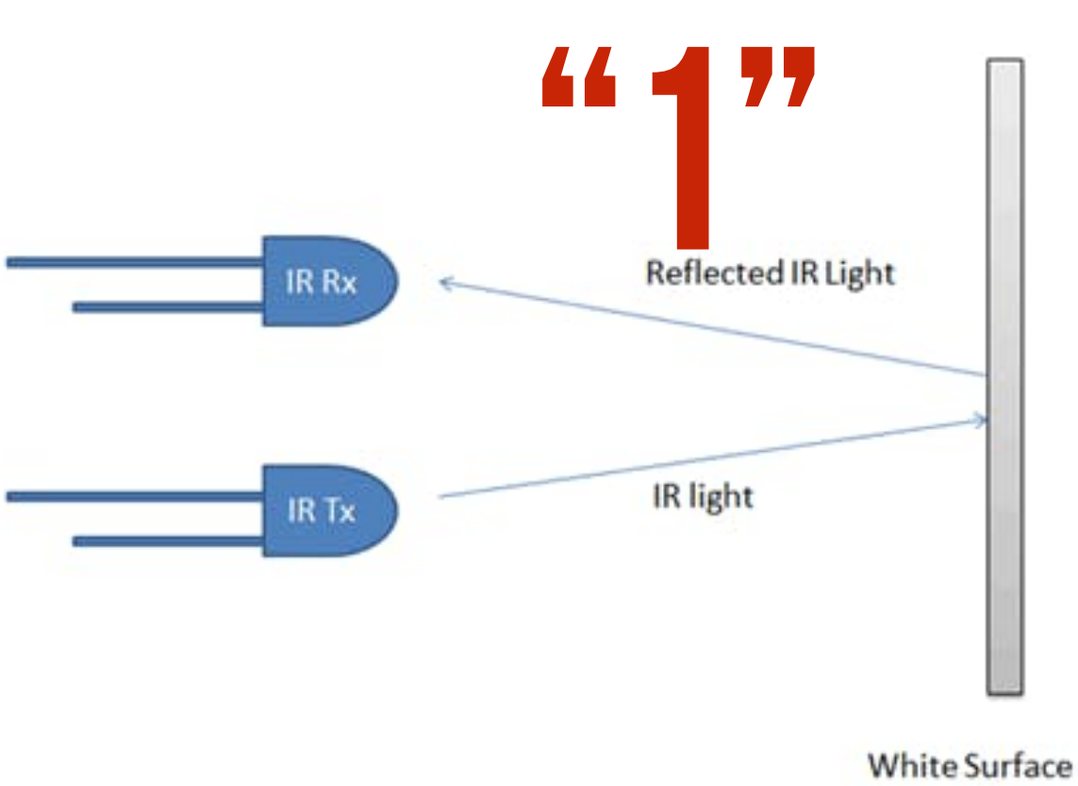
OBJECTIVES

A proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. A proximity sensor often emits an electromagnetic field or a beam of electromagnetic radiation (infrared, for instance), and looks for changes in the field or return signal.

Once completed the experiment (project), students will:

1. Understand about infrared sensors – concepts and applications
2. Implement infrared sensor with micro:bit and program it using Microsoft MakeCode



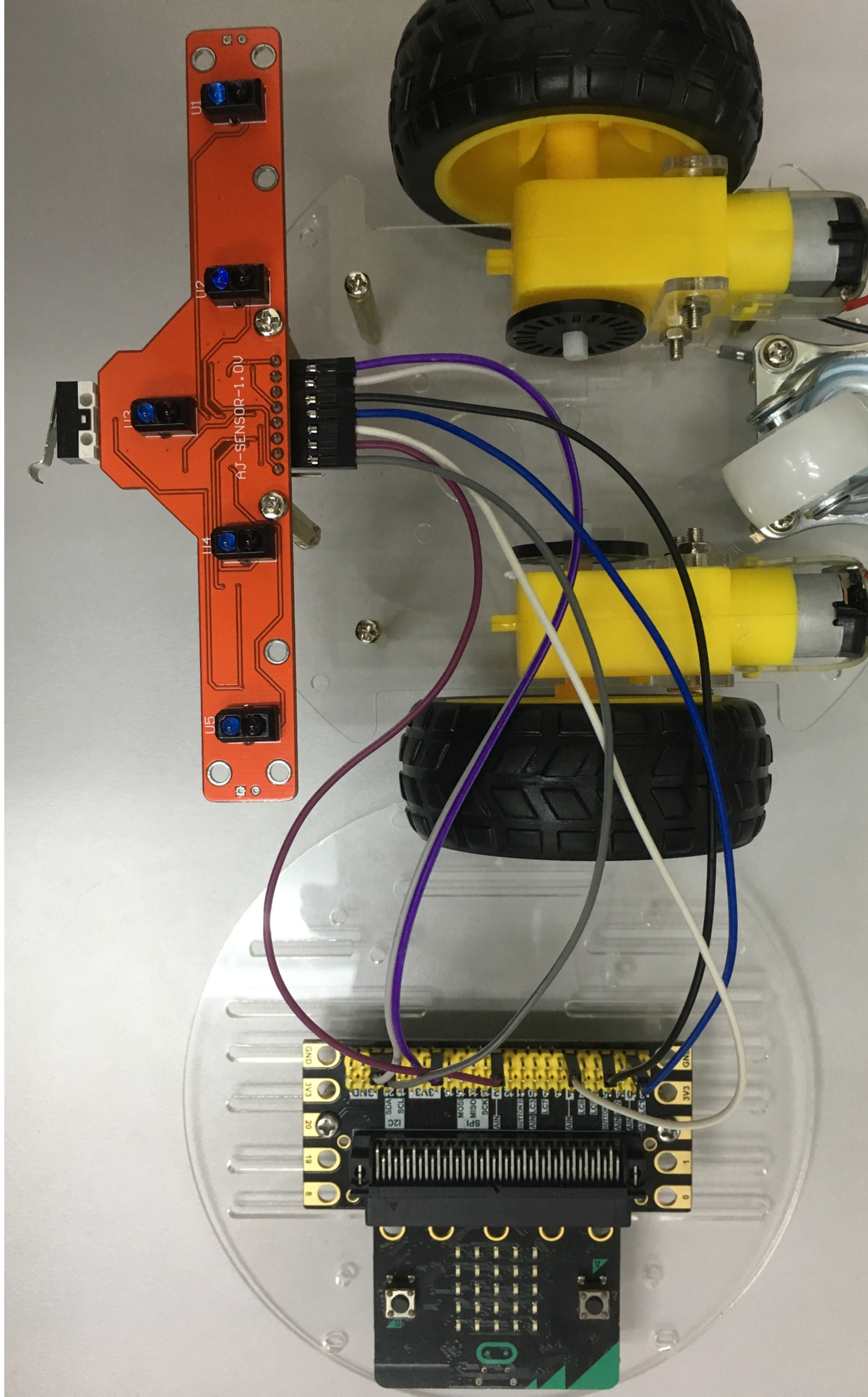


CONCEPTS OF IR SENSOR

We use here the behaviour of light at black and white surface. When light fall on a white surface it is almost full reflected and in case of black surface light is completely absorbed.

WIRINGS (CONNECTIONS)

Sensor Pin	Micro:bit Pin
5V	3V3
GND	GND
S1	11
S2	0
S3	1
S4	2
S5	20



1.

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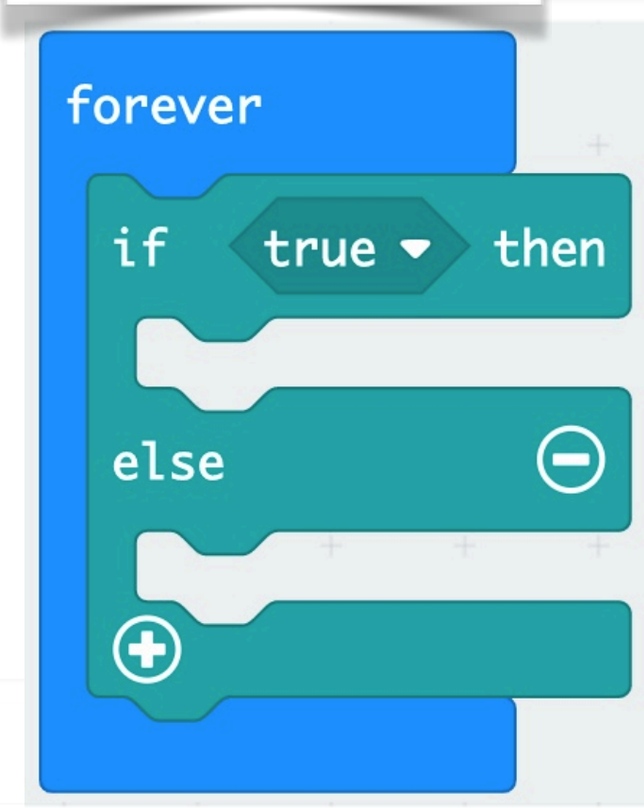

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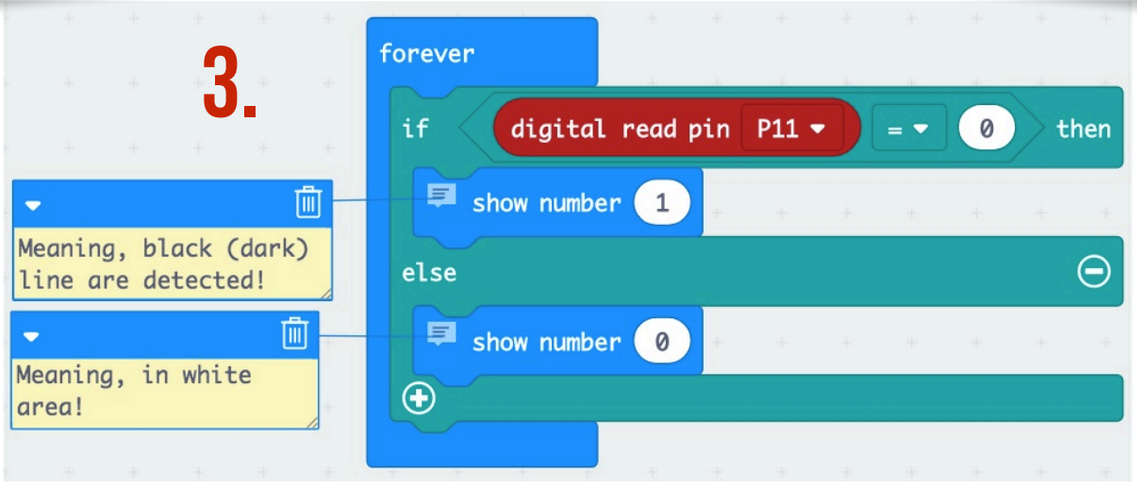

FLASHING PROGRAM

BASIC

Step 0: Connect the micro:bit to the pc, open the Microsoft **MakeCode** Software. Click **new program** and rename it – **Single IR Sensor**.

Step 1: Start with the **forever** block – allows the code repeated forever.

Step 2: Under **Logic** > **Conditionals**, select **if...else**.

Step 3: Again, under **Logic** > **Comparison**, select **0 = 0**. Replace the first **0** with **digital read pin (pinN)** which can be found under **Advanced** > **Pins**.

Step 4: Download!

Step 5: Test the IR Sensor on the white and black line. Observe the behaviour.

CHALLENGE

Repeat the previous step with new program which can read all 5 IR Sensors available on the IR module.

HINT!

READING SIMULTANEOUSLY 5 CHANNELS IR SENSOR MODULE USING MICROSOFT MAKECODE

COMPARING THE VALUE OF
(S1 AND S2 AND S3 AND S4 AND S5)