MAKE

Opensource Award 2019

by Sarawak Red Team

Introduction

We are Sarawak Red Team and we came from Sarawak, Malaysia.

Felix Thian Zhi Xiang

Leader

Declan Hadrian Anak Sem

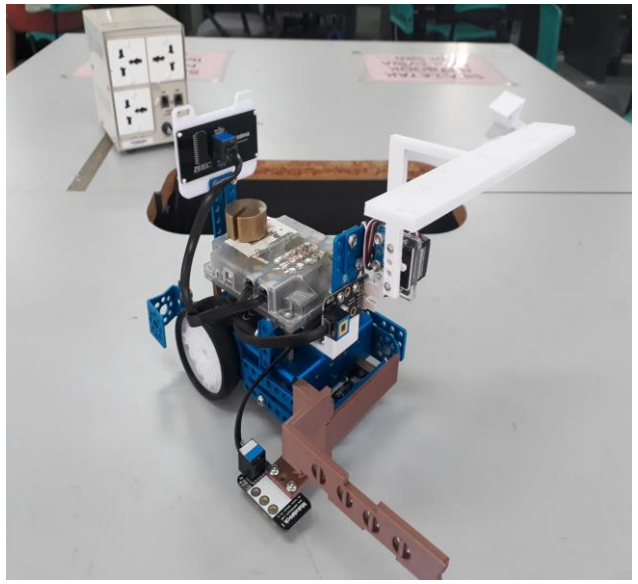
Member

The Mbot

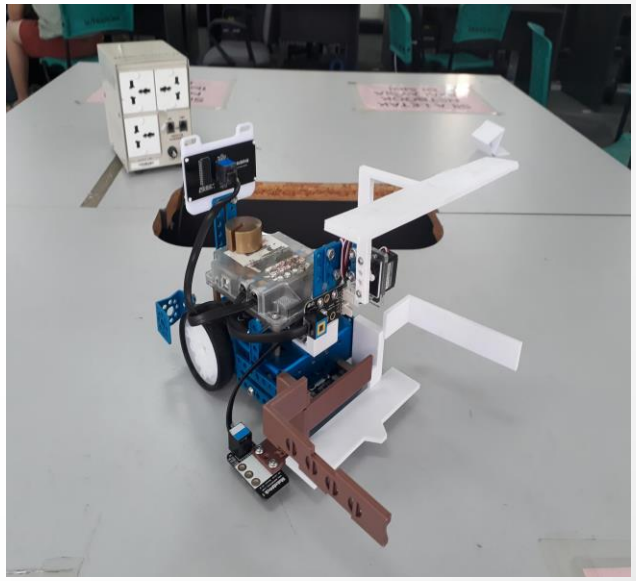
Before

After

Automatic Tasks



Manual Tasks

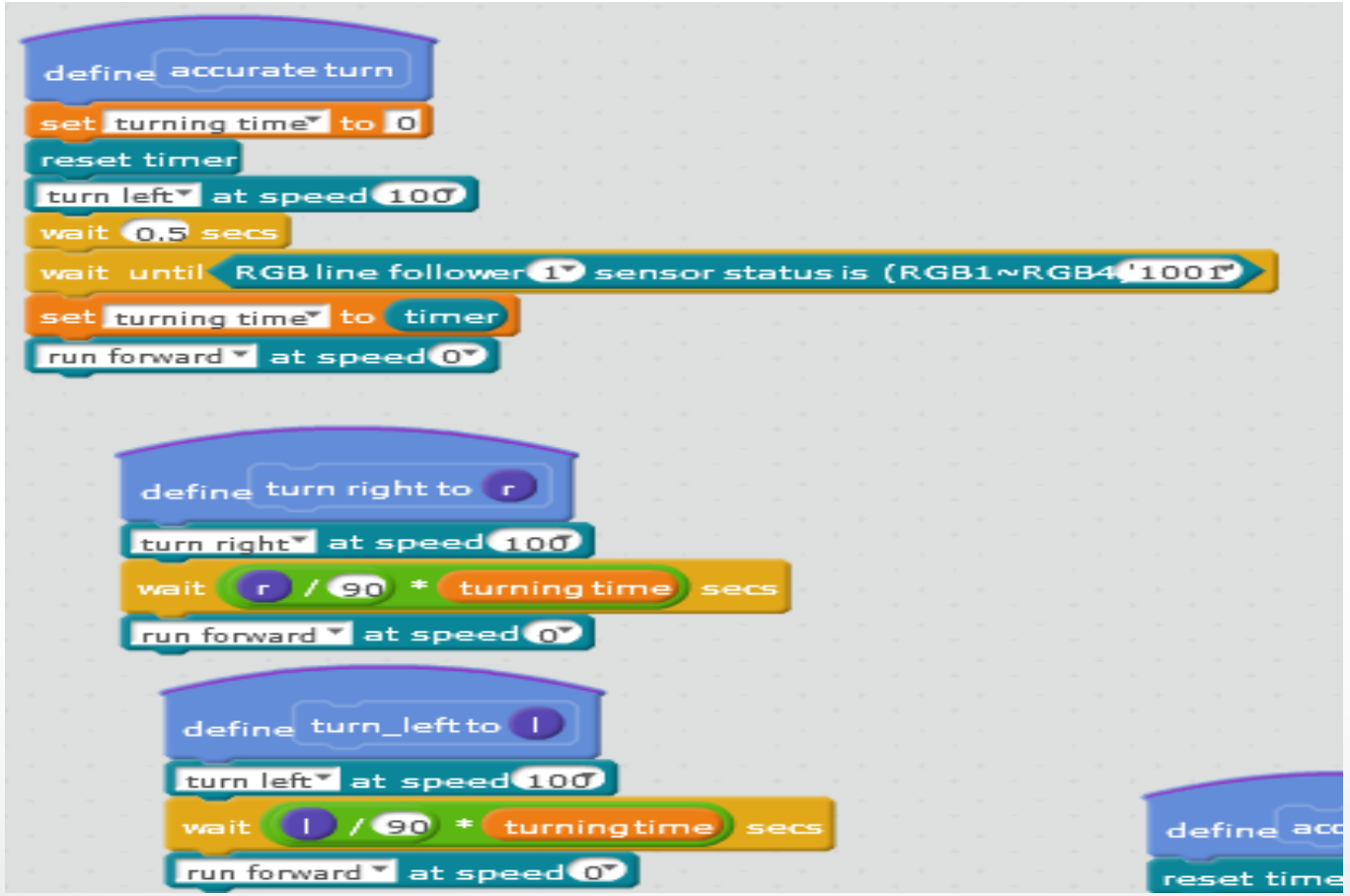


Automatic Tasks

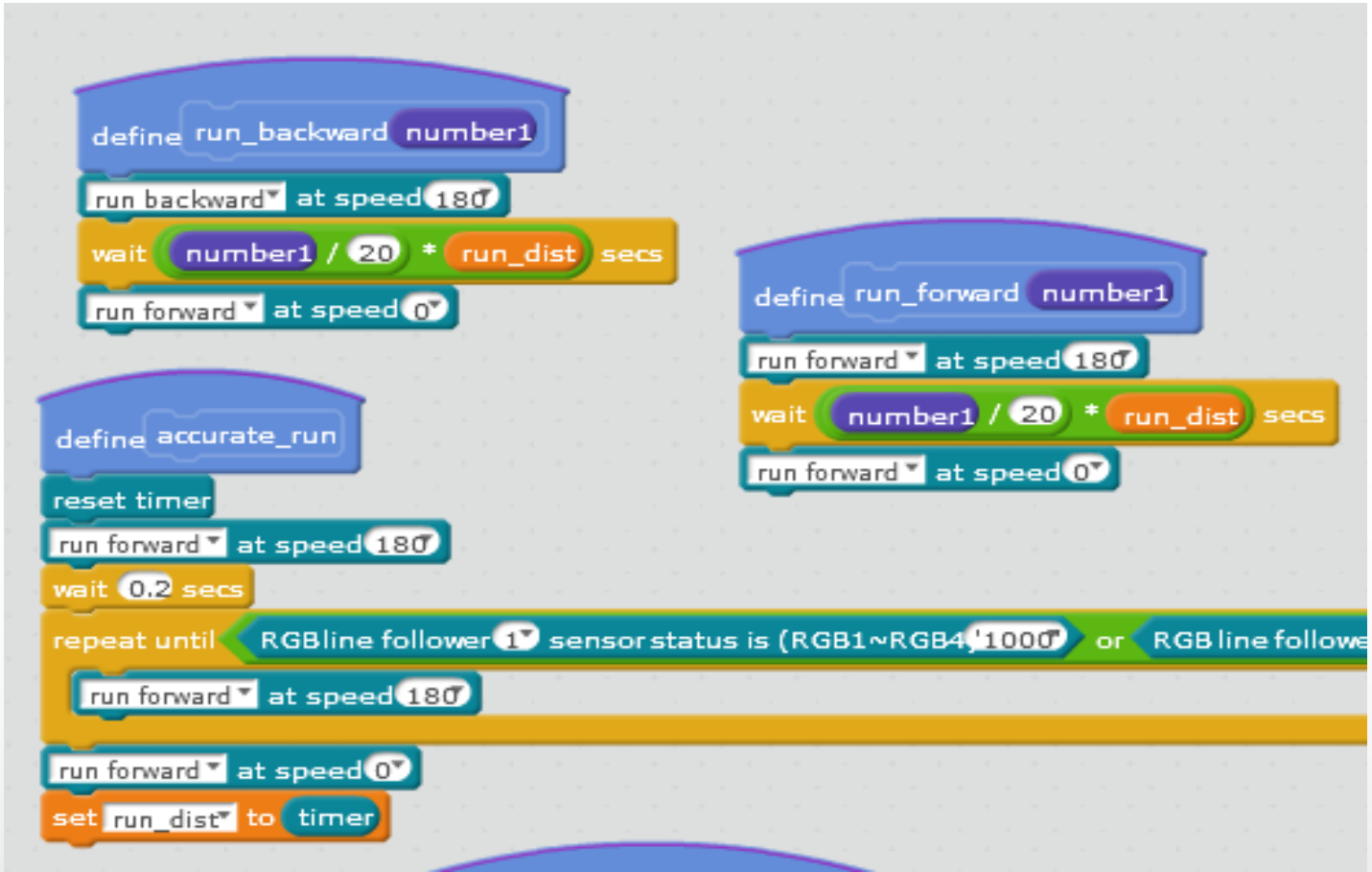
- For automatic tasks, We found some new useful methods to overcome the problem.

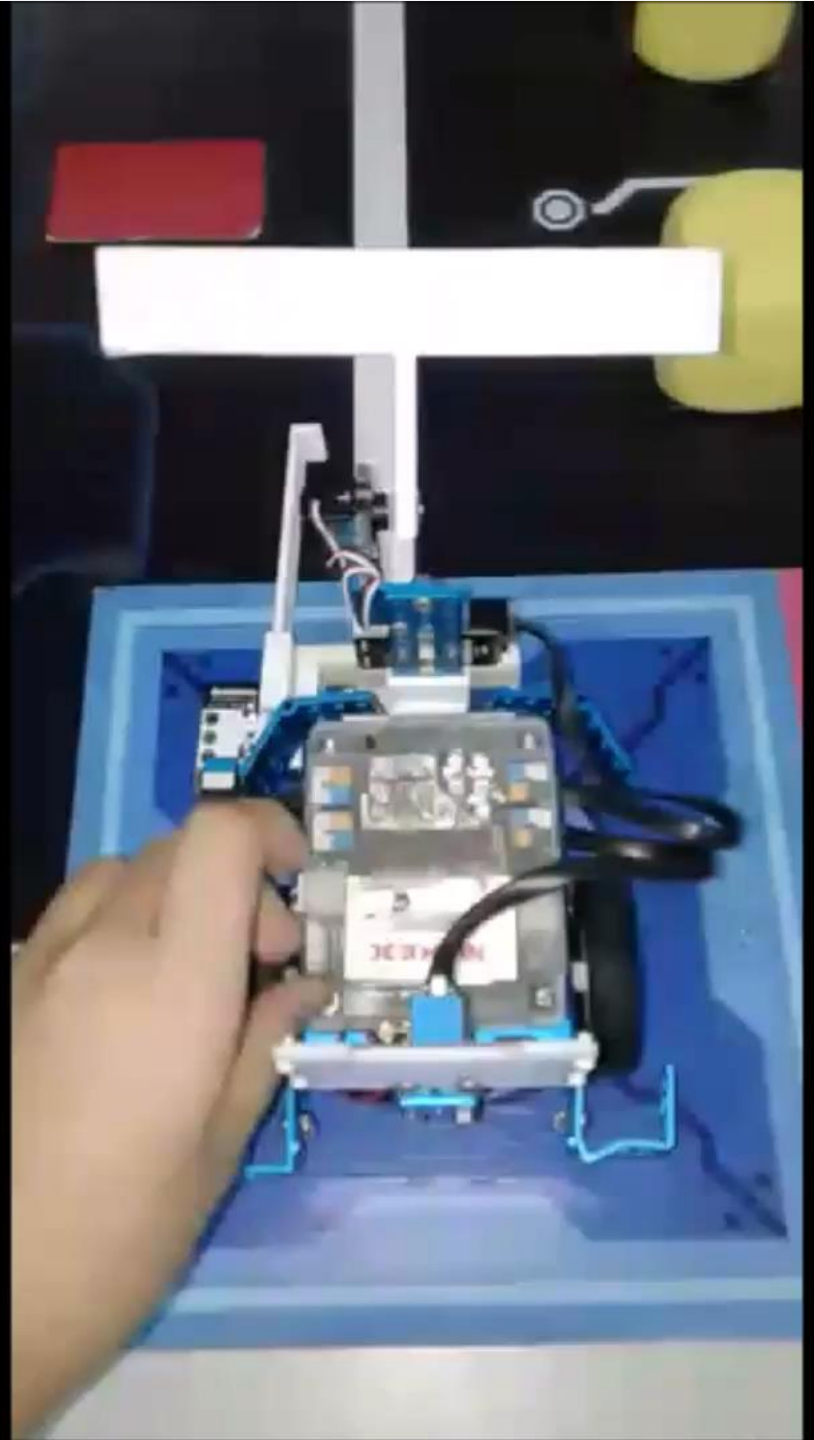
- Our new methods are:
  - accurate turning (精准90度)
  - accurate running (精准前进距离)
  - sine wave line following (正弦波精准轨道追踪法)

- **Accurate Turning**
  - Turning 90º on the junction and record the time taken, and by calculating the ratio of the angle that need to turn to 90º. After that, the robot can turn very accurate in solving the task.

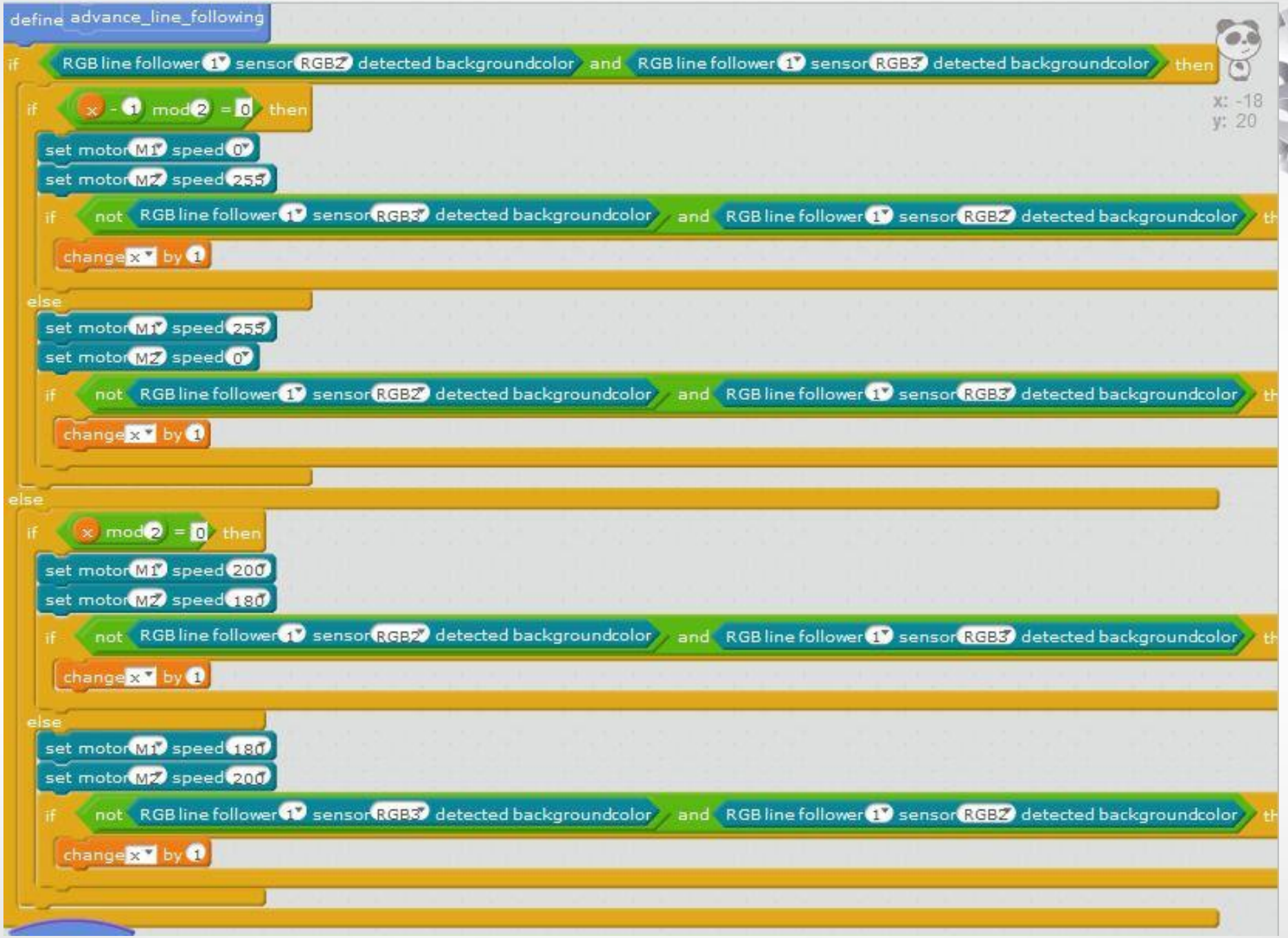


- **Accurate Running**
  - Running 20cm on the straight line and record the time taken and by calculating the ratio of the distance with 20cm. After that the robot can run very accurate for any distance needed.





- **Sine Wave Line Following**
  - Swing on the track and record the number that it swing. Once it is out of the track, the mbot will calculate the number that it swings and find the correct side to go back to the track.

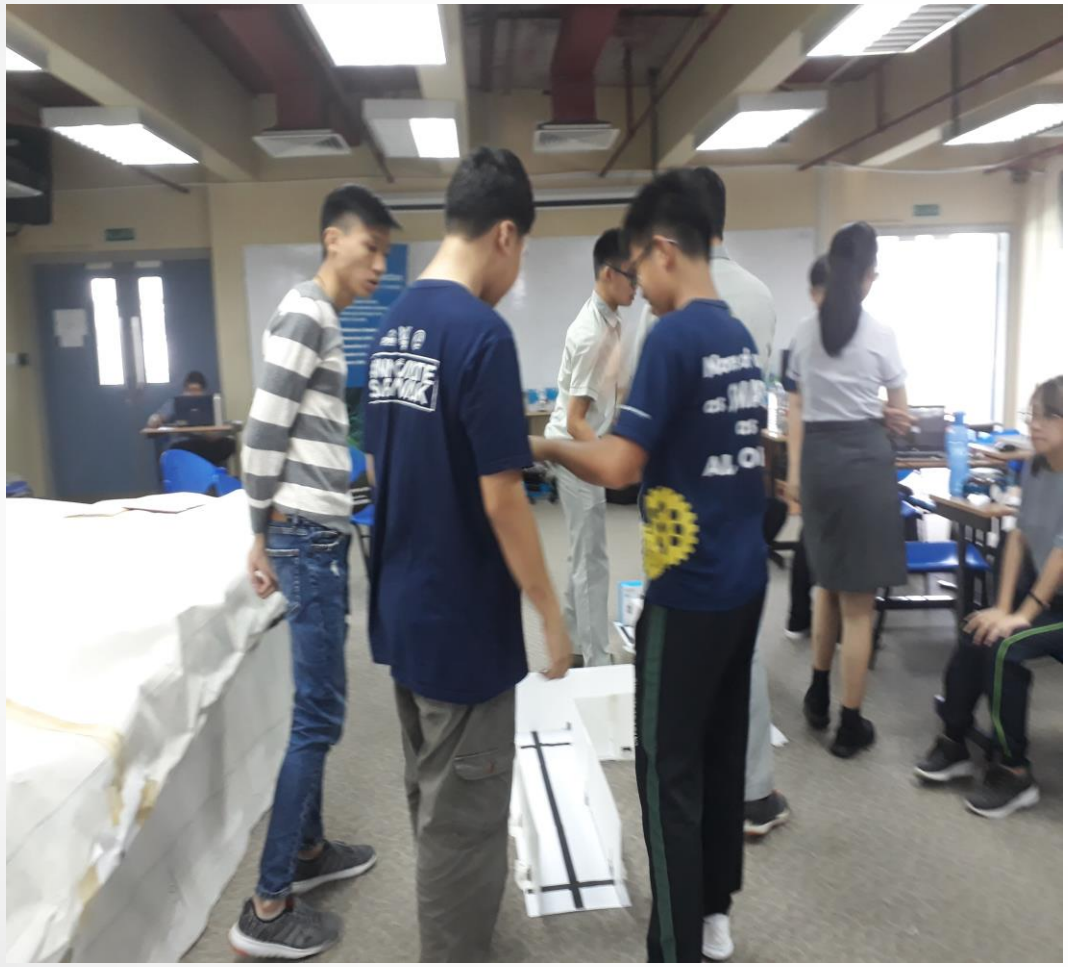

define advance_line_following
if RGB line follower 1 sensor RGB2 detected backgroundcolor and RGB line follower 1 sensor RGB3 detected backgroundcolor then
x: -18
y: 20
if x - 1 mod 2 = 0 then
set motor M1 speed 0
set motor M2 speed 255
if not RGB line follower 1 sensor RGB3 detected backgroundcolor and RGB line follower 1 sensor RGB2 detected backgroundcolor
change x by 1
else
set motor M1 speed 255
set motor M2 speed 0
if not RGB line follower 1 sensor RGB2 detected backgroundcolor and RGB line follower 1 sensor RGB3 detected backgroundcolor
change x by 1
else
if x mod 2 = 0 then
set motor M1 speed 200
set motor M2 speed 180
if not RGB line follower 1 sensor RGB2 detected backgroundcolor and RGB line follower 1 sensor RGB3 detected backgroundcolor
change x by 1
else
set motor M1 speed 180
set motor M2 speed 200
if not RGB line follower 1 sensor RGB3 detected backgroundcolor and RGB line follower 1 sensor RGB2 detected backgroundcolor
change x by 1

BORNEO INTERNATIONAL
DROBOTEX
FINISH
START

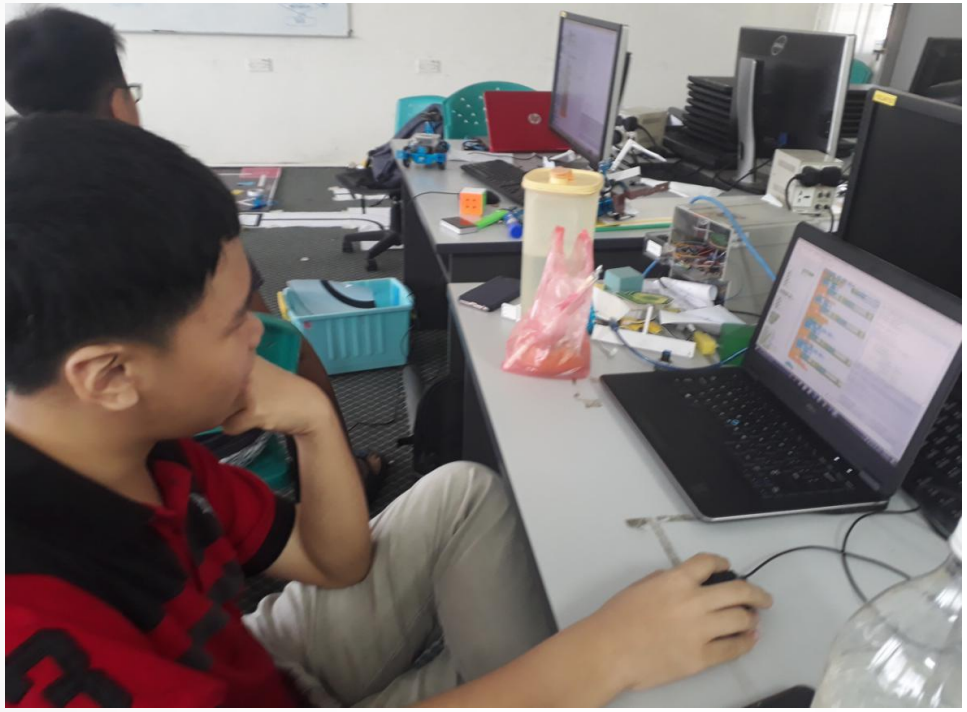
Sharing sessions:

- Introducing and demonstrating MakeX in school.

- Discussion and explanation about our new methods



- Improve our mbot and programming to get accurate result.



Outcomes:

Competition	Achievement
MakeX Robotics Competition (Zone Sarawak)	MakeX Starter: City-Guardian 1st runner up
MakeX Robotics Competition (Malaysia)	MakeX Starter: City-Guardian 1st runner up Appearance Design Award

Outcomes:

Competition	Achievement
Borneo International Drobotex Competition 2019	Maze Solver(Open Category): Champion (Cash RM 3,000.00) Maze Solver(School Category): 4th place (Certificate) Auto line follower(School): 4th place (Group 1) (Certificate) Drone Delivery(School): Champion (Group 1 – Cash RM 2,000.00) + 2nd runner up (Group 2 – Cash RM 800.00) Drone obstacle(School): 1st runner up (Group 1 – Cash RM 1,200.00)

Outcomes:

Competition	Achievement
IEEE Robotics Challenge Competition (Mini)	Champion for Challenges 1, 2 & 3 and overall Champion (Gold Award)

Outcomes:

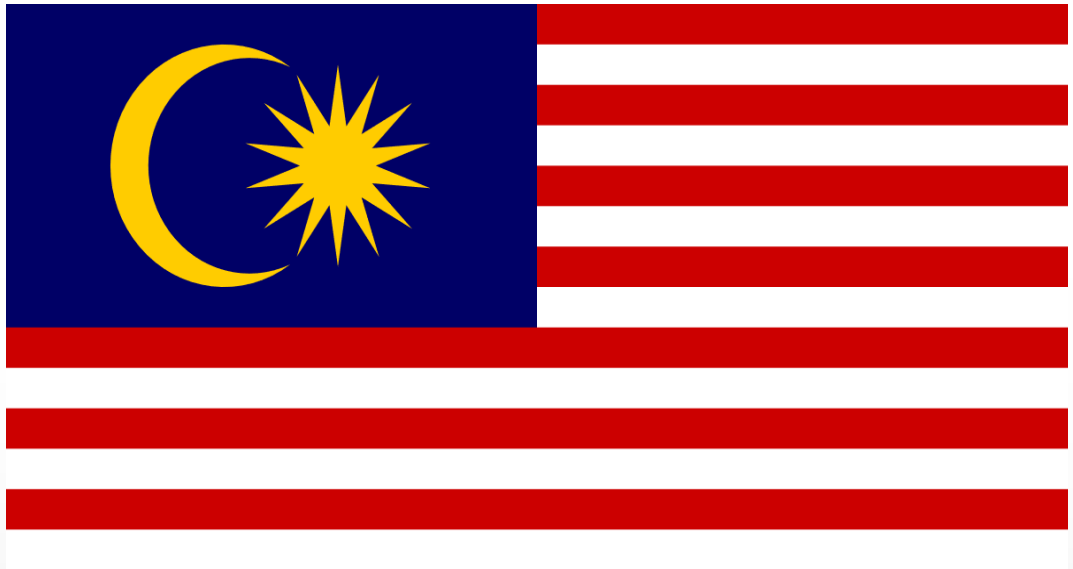
Competition	Achievement
IEEE Sarawak Robotics Competition 2019 – RoboRace Challenge (Junior Group)	Group 1: Champion Group 2: 1st runner up

Outcomes:

Competition	Achievement
IEEE Sarawak Robotics Competition 2019 – PathFinder Challenge (Senior Group) – as mentor	Group 1: 1st runner up Group 2: 2nd runner up

Suggestion to MakeBlock

- Add battery indicator in Makeblock 3 and 5
- Add higher rpm motor

THANK YOU

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