TOPIC OUTLINE

I. How to change the map in Virtual Simulator?

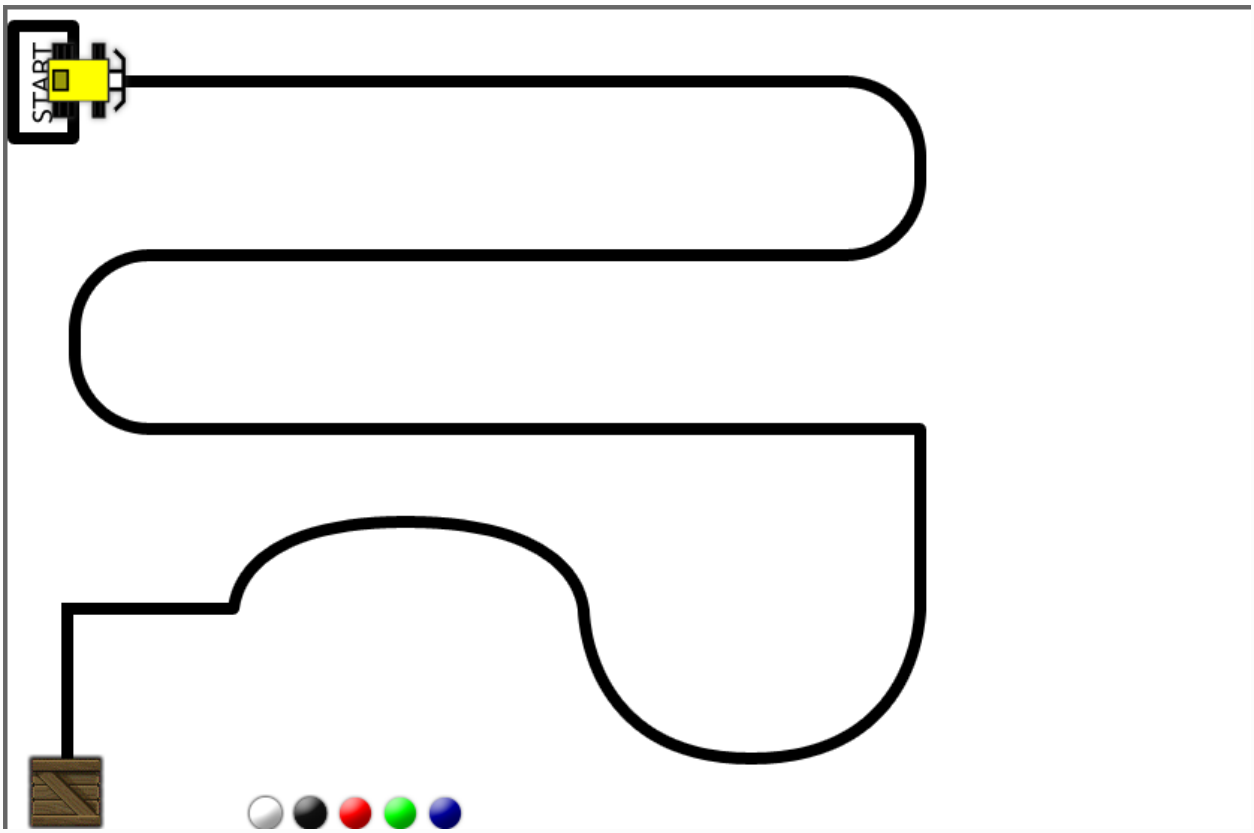
II. How to change the type of robot?

III. Virtual Robot Sensor Setting

IV. Sensor Calibration

V. Basic Line Tracing

How to change the map in Arduino Virtual Robot Simulator?



Changing the map or loading a customize map in Virtual Simulator is not a problem. We simply follow the procedures below,

Step 1: Click on the  , Map Selection tool.

Step 2: Choose your desired map, by highlighting the map and click the left mouse button.

Step 3: Now, try to change the map by repeating step 1 and 2.

How to change the type of Robot?

Step 1: Click on the 

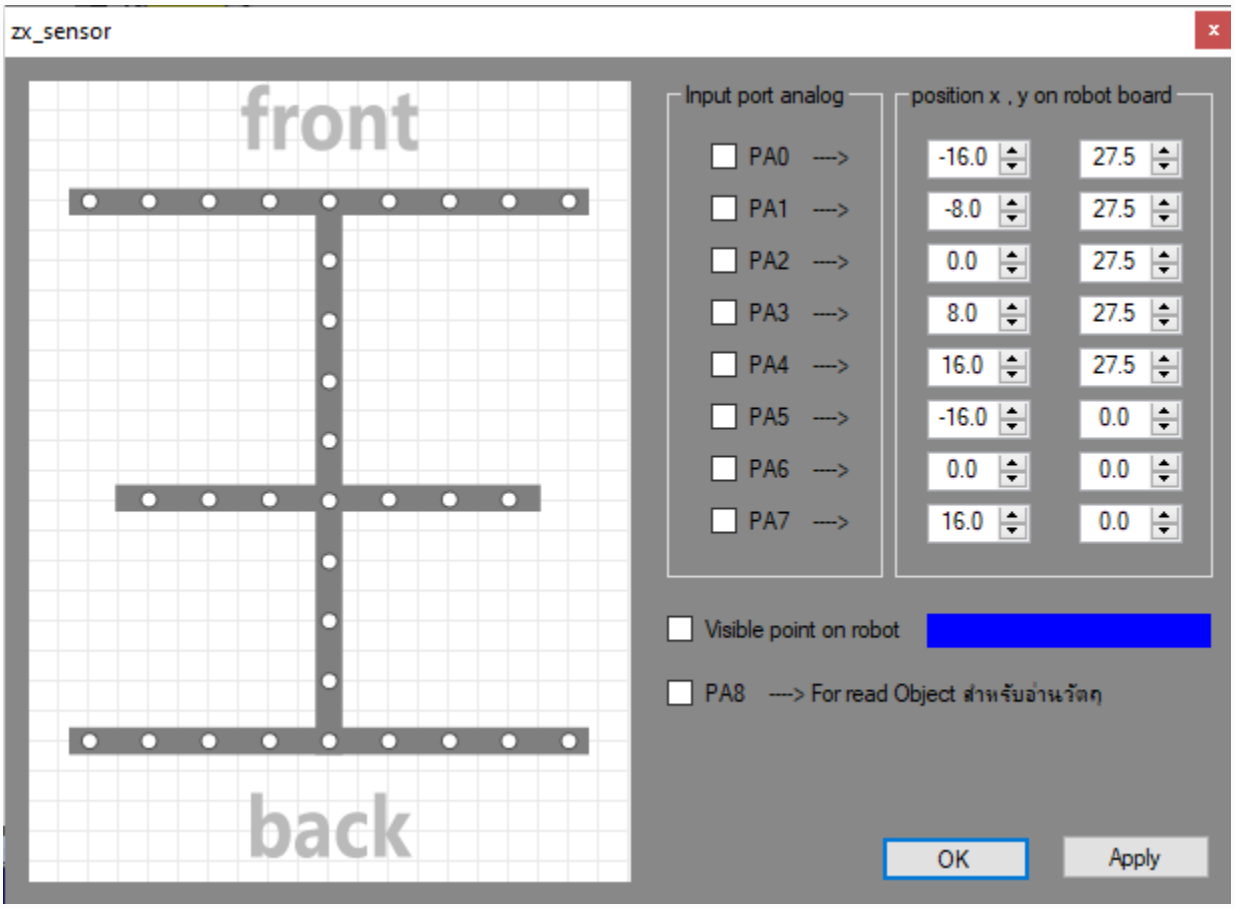
, robot selection tool and choose your desired robot.

Virtual Robot Sensor Setting

In setting up the ZX IR and ZX Distance Sensors, follow these steps.

Step 1: Click on the  , ZX-Setting tool and wait for the ZX-Setting Screen to display.

Step 2: Once this screen appears on your screen, notice the boxes beside the PA0 – PA7. Simply, click on those boxes to add ZX-Reflector Sensor (IR) to your robot.

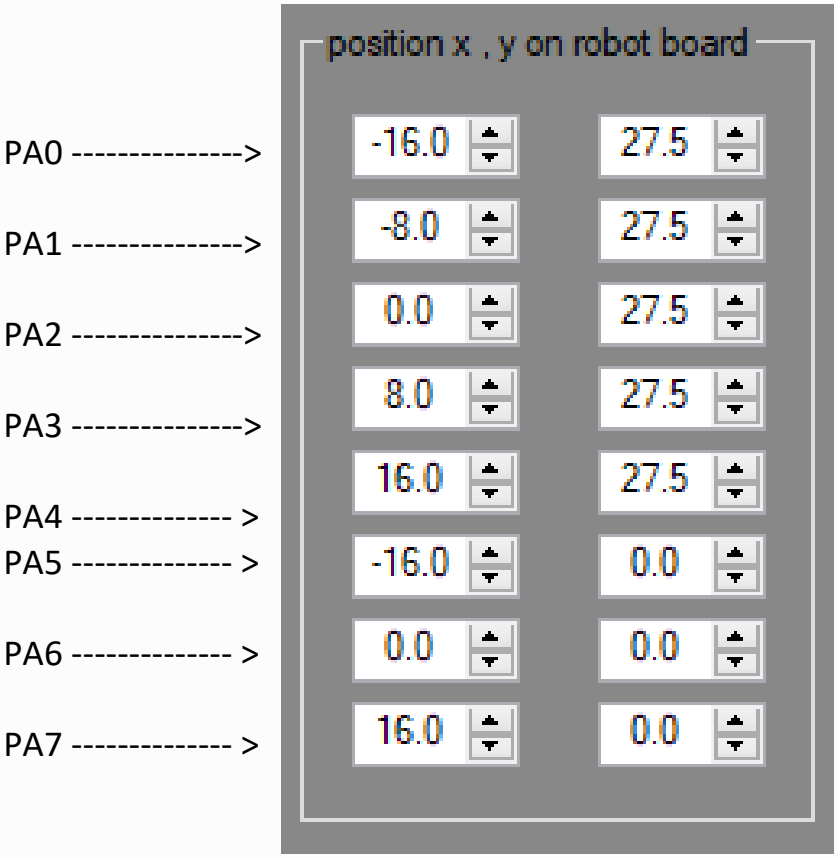


Check the table below for its corresponding port address.

PORT #	PORT ADDRESS
PA0	Analog 0
PA1	Analog 1
PA2	Analog 2
PA3	Analog 3
PA4	Analog 4
PA5	Analog 5
PA6	Analog 6
PA7	Analog 7
PA8	Analog 8 (This is used for Distance Sensor)

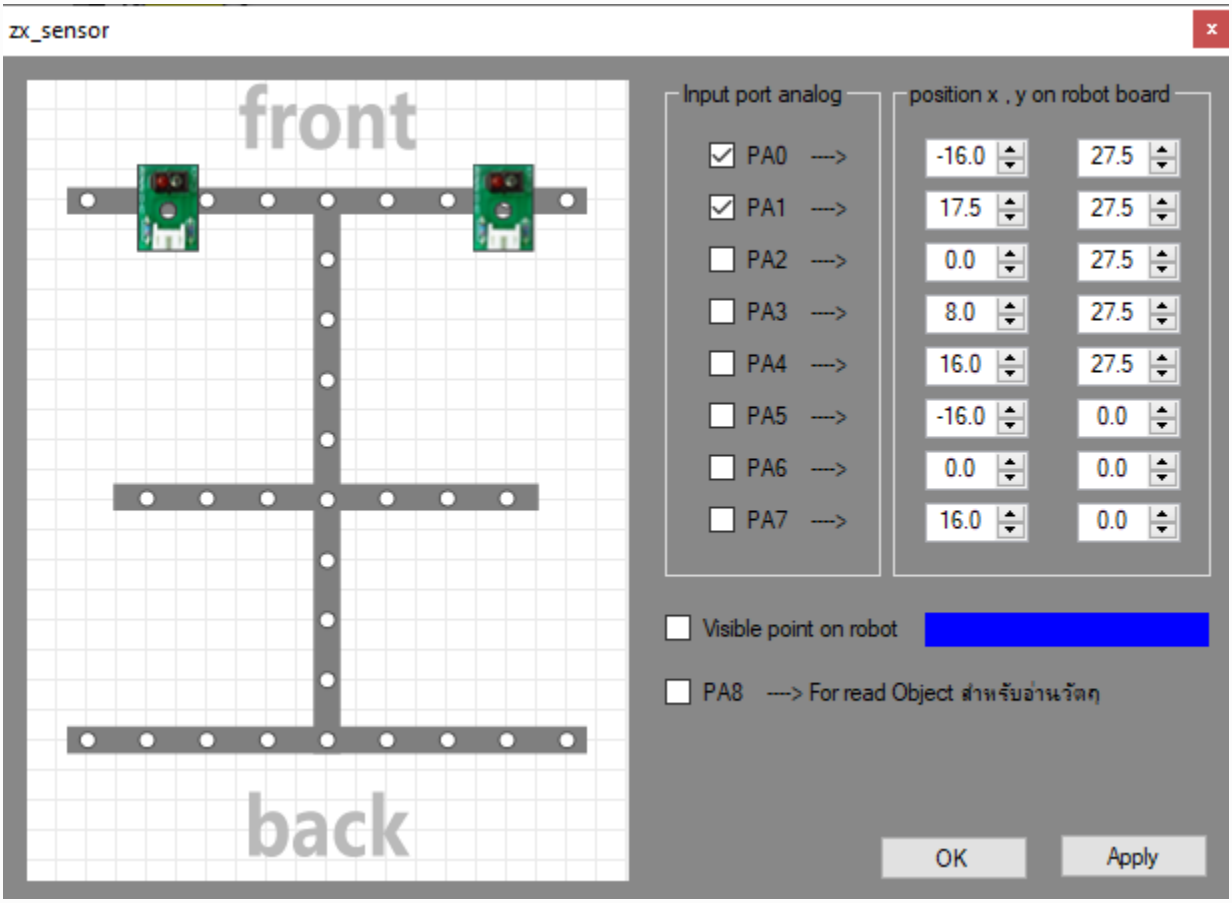
Tick on visible point on robot that will display the sensor image to your virtual robot. Take note that not all types of robot in the simulator can display the sensor.

You may click the arrow buttons of the screen below to adjust the sensor position. Once done, click the OK button to proceed.



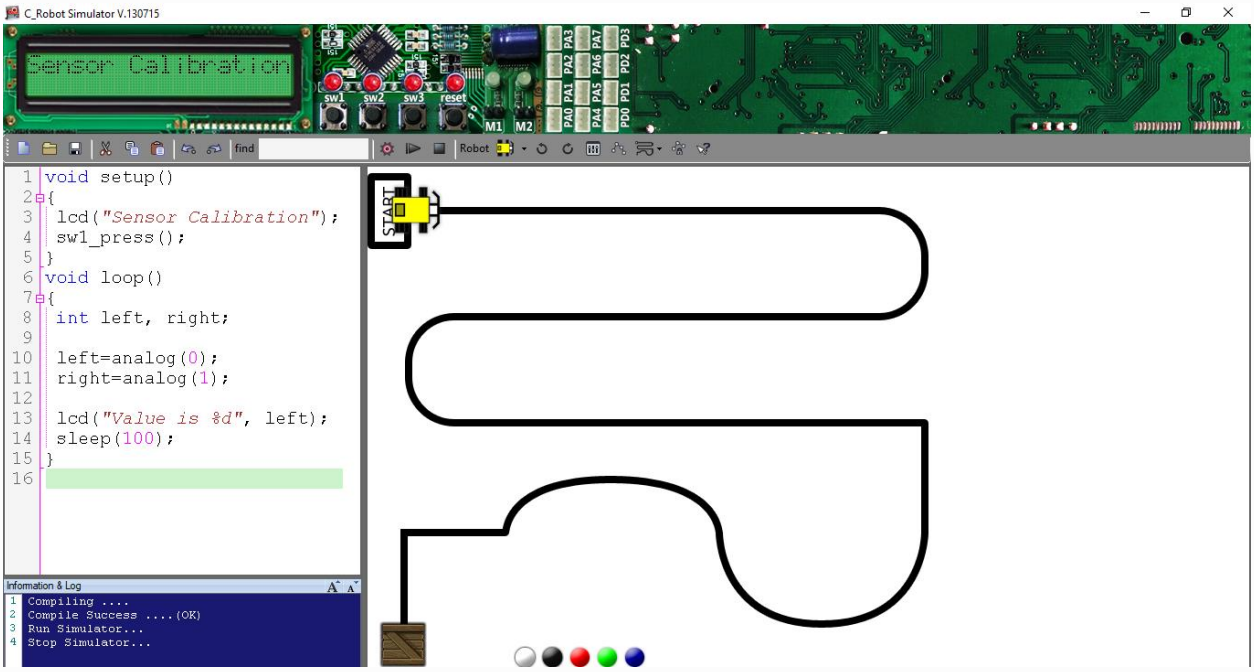
Now, you already know how to apply the sensor and adjust the position of each sensor. It is time to proceed to programming of the sensors.

SENSOR CALIBRATION



In this example, we use PA0 (analog 0) as left IR sensor while PA1 (analog 1) as right IR sensor.

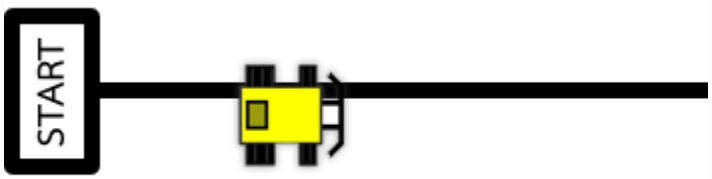
Step 1: Follow the commands as shown in this picture and type it in your virtual simulator.



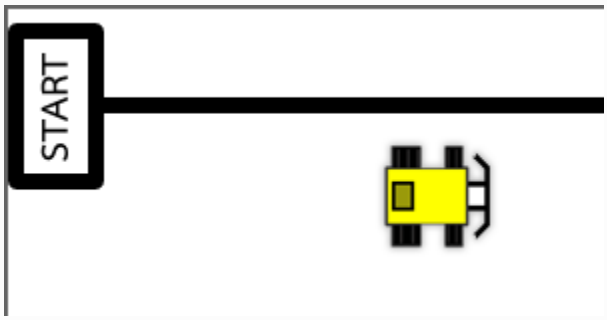
Step 2: Click on the  , play button to run the program.

Step 3: Click the sw1 button that will activate the program.

Step 4: Drag and place your robot in black line. There should be zero (0) displayed on your LCD screen.



Step 5: Drag and place the robot on white surface. There should be 1024 displayed on your LCD screen.



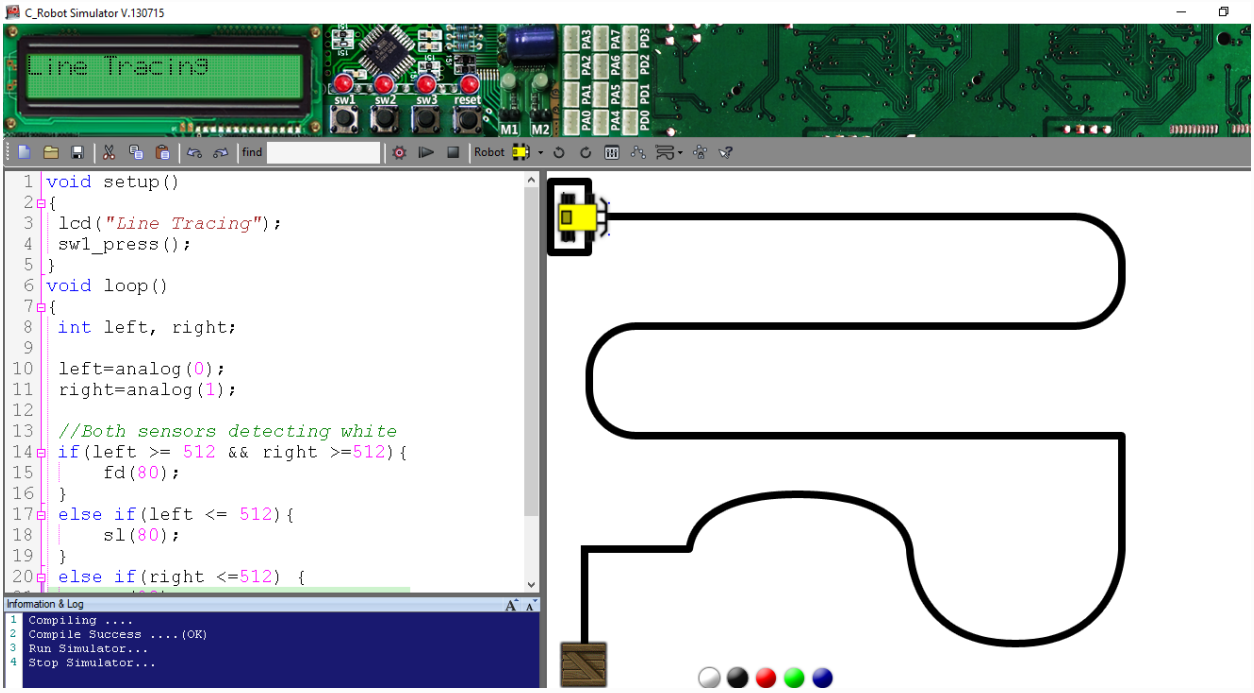
Step 6: Compute the following given numbers using this formula.

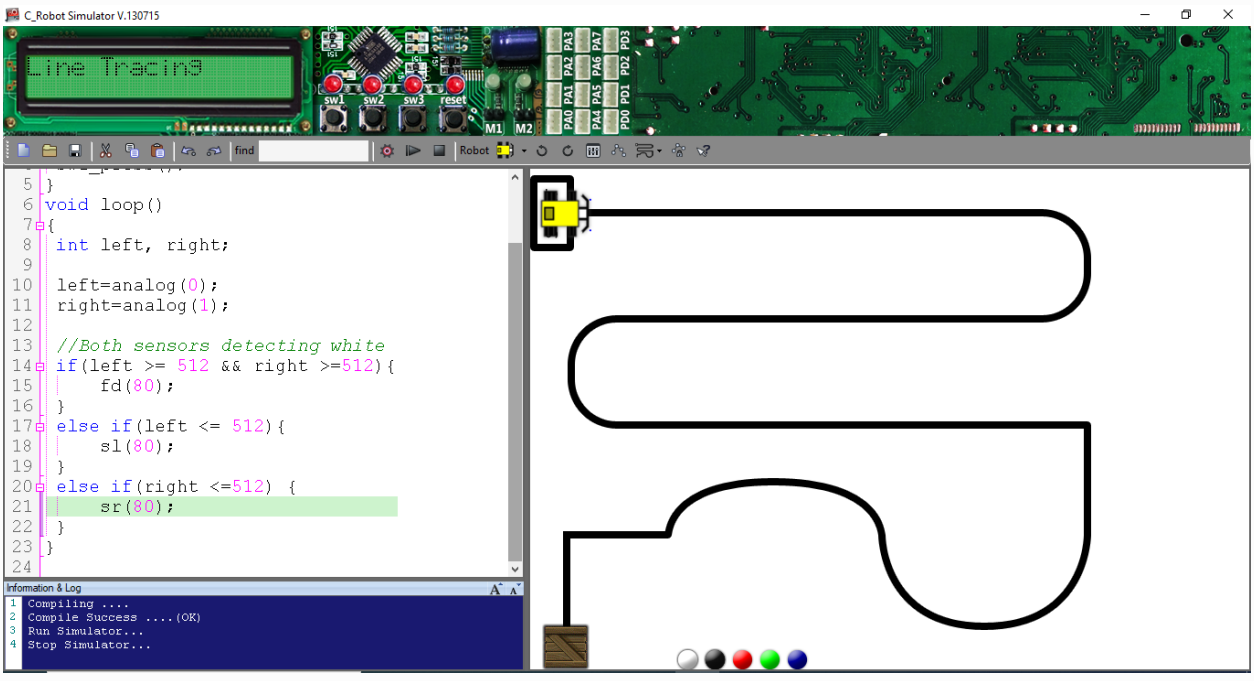
$$REF = \frac{BLACK + WHITE}{2}$$

Step 7: For this example, the ref is **512**.

SAMPLE PROGRAM: Basic Line Tracing

Instruction: Follow the command used as shown in the picture below for your line tracing program. You may change the speed of fd, bk, and turn movement command as you wish.





Press the play button to test the program.