data science technology corporation

Object Avoidance using the Virtual Robot Simulator

TOPIC OUTLINE

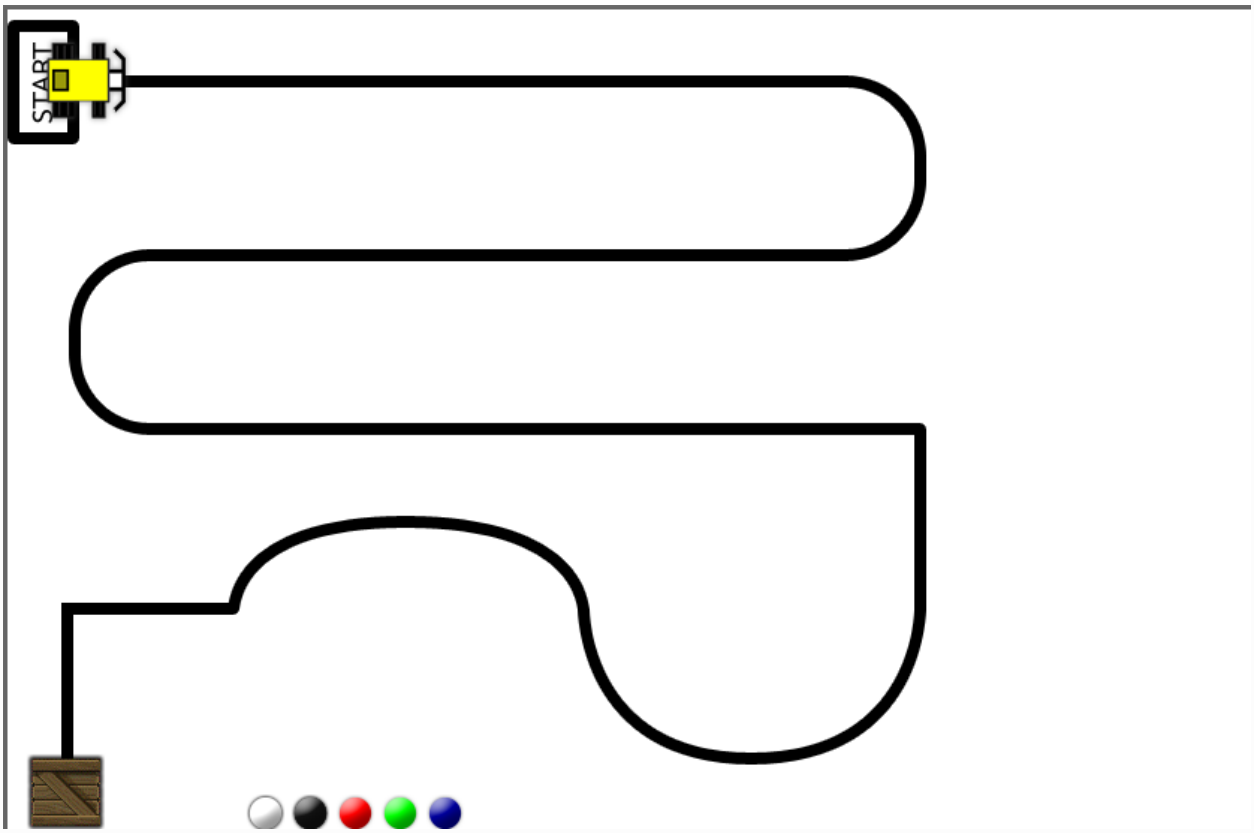
I. How to change the Map in Arduino Virtual Robot Simulator?

II. How to add the Virtual Distance Sensor?

III. How to calibrate the Virtual Distance Sensor?

IV. Sample Virtual Robot Object Avoidance

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.

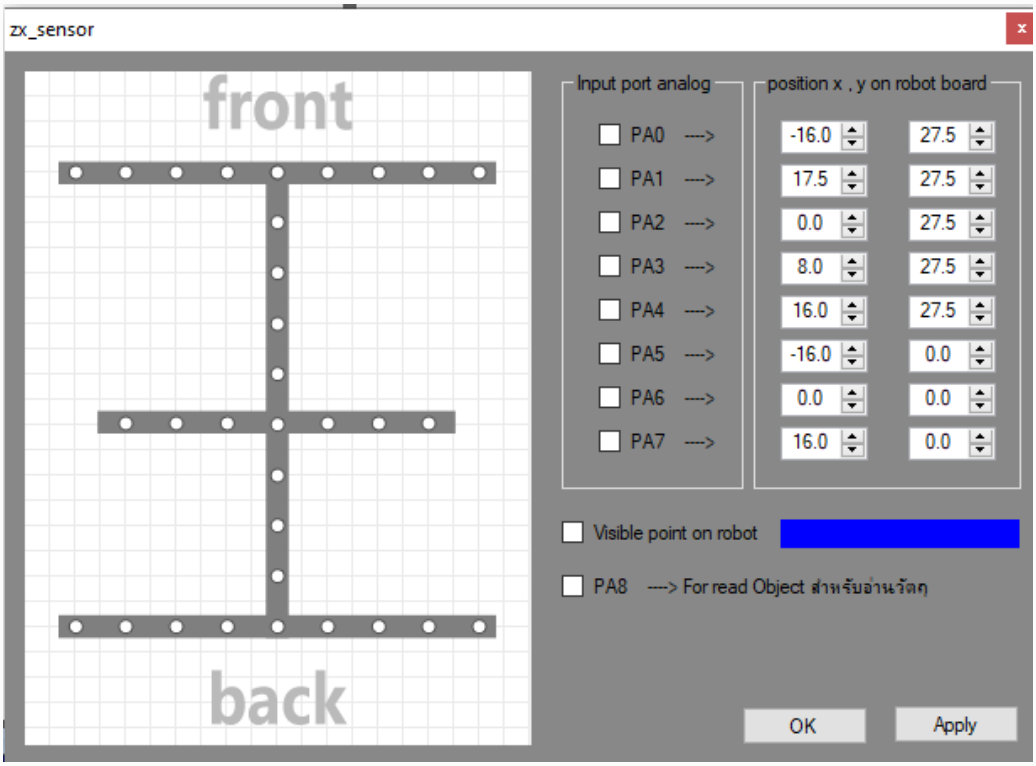
Step 2: Choose your desired map, by highlighting the map and click the left mouse button.

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

How to add or setup the virtual distance sensor?

Step 1: Click on the  , ZX-Settings Tool.

Step 2: You should be able to see this image on your screen.



Step 3: Since the PA8 (Distance Sensor) will not be displayed on your screen, you do not have to tick on the visible point on robot.

Step 4: Tick on PA8 (analog 8), this is the port # assigned to the virtual distance sensor.

Step 5: Click the OK button to proceed.

Reminder: The virtual object avoidance will only work in circle or round object on your virtual simulator.

How to Calibrate the Virtual Distance Sensor?

Step 1: Type all the commands used in this screen.

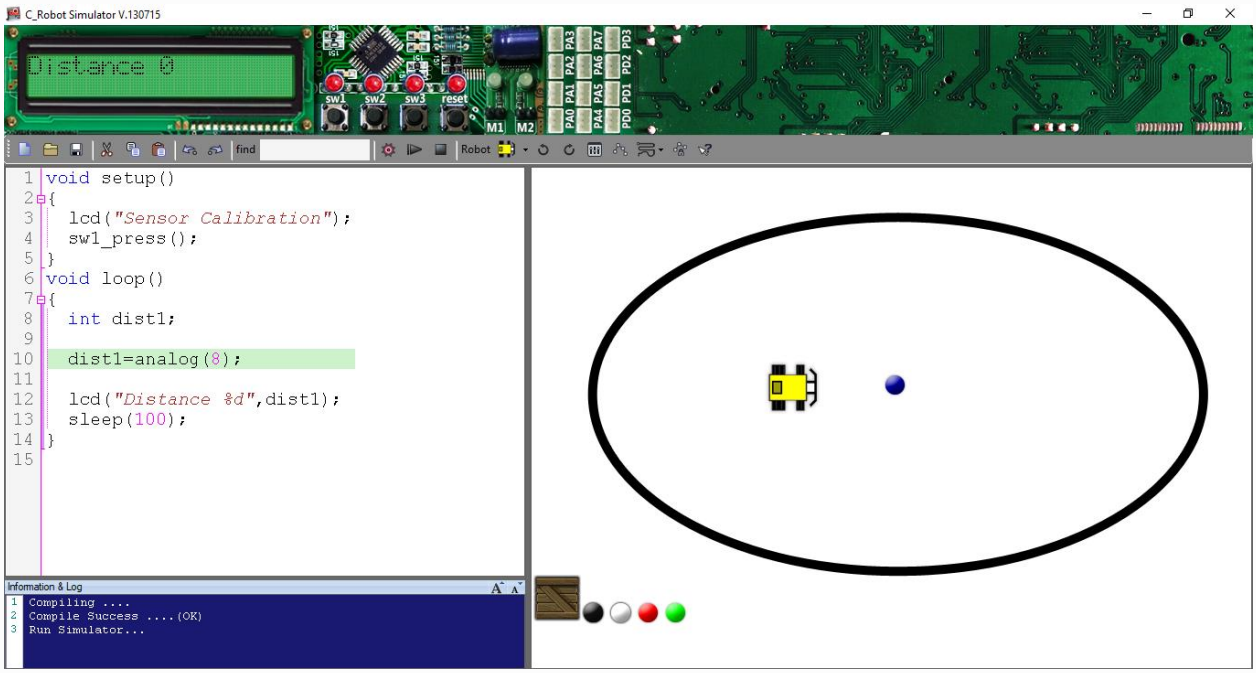


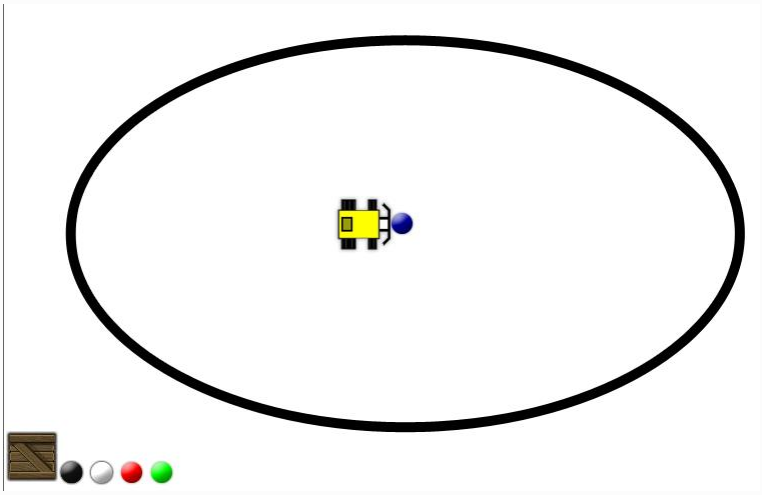
Figure 1.0

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

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

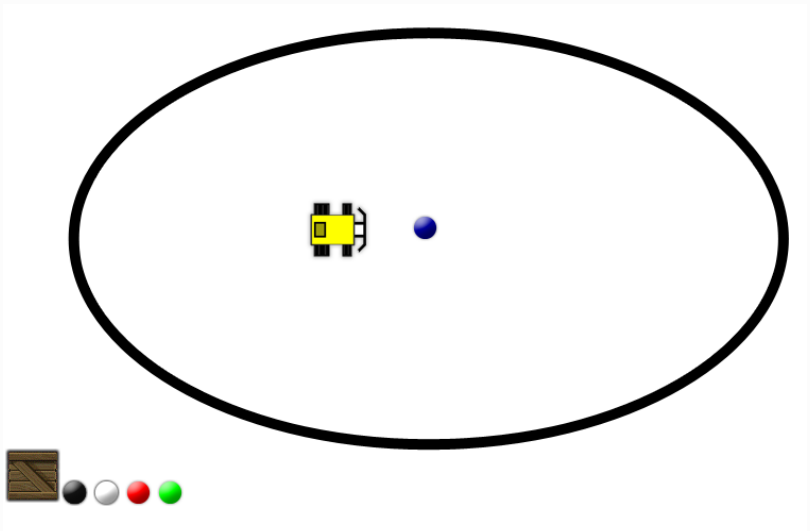
Step 4: Place any of the circle objects by dragging them into the center of your playfield as shown in figure 1.0

Step 5: Place the robot near the circle object as shown below.

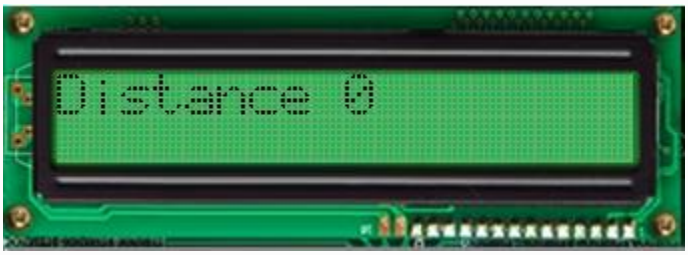


Step 6: There should be a high value displayed on your virtual lcd screen, like this.

Step 7: Now, drag and place the virtual robot away from the circle object, as shown in this picture.



Step 8: There should be zero (0) displayed on your lcd screen, as shown below.



Sample Robot Object Avoidance using the Virtual Simulator

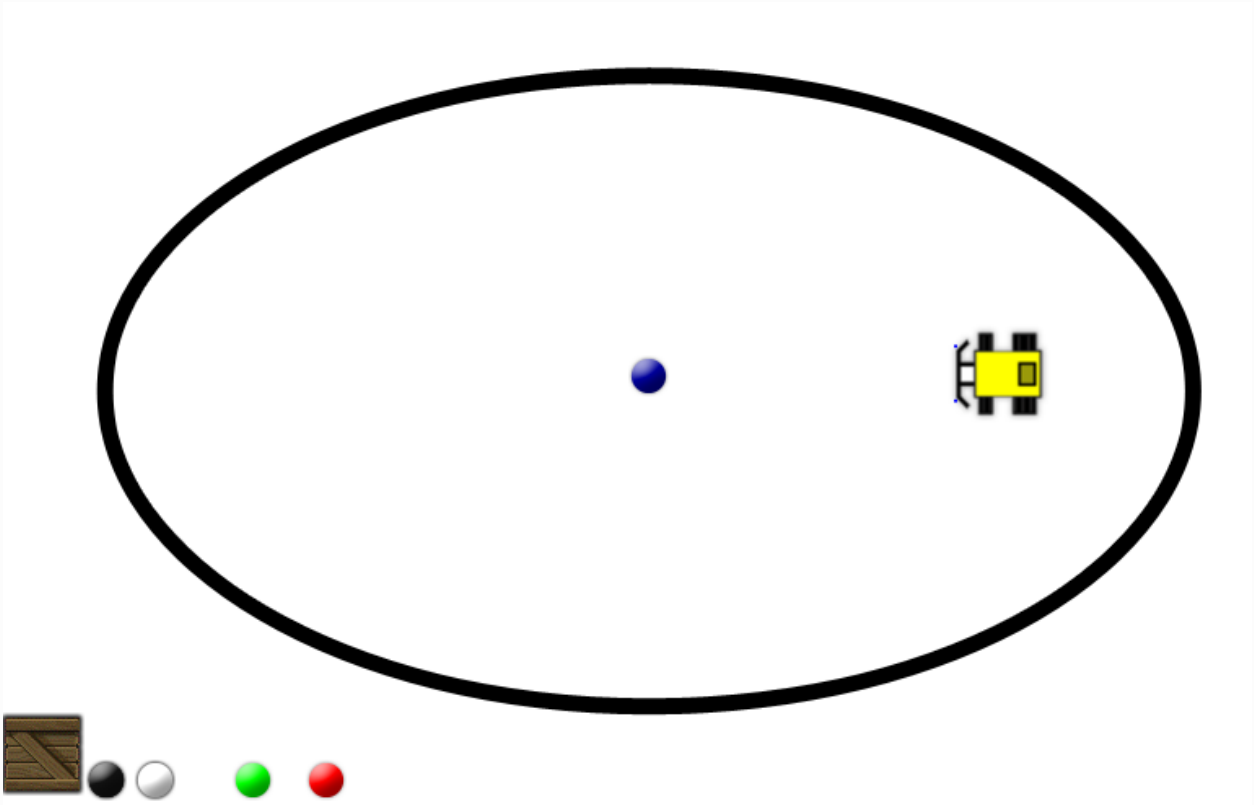
Instruction: Type all the commands as shown in this picture.

```
1  void setup()
2  {
3    lcd("Object Avoidance");
4    sw1_press();
5  }
6  void loop()
7  {
8    int left, right;
9    int dist1;
10
11   left=analog(0);
12   right=analog(1);
13   dist1=analog(8);
14
15   if(left >= 512 && right >= 512){
16       fd(80);
17   }
18
19   if(dist1 >= 15){
20       bk(100); sleep(1000);
21       tl(40); sleep(400);
22   }
23
24   else if(left <= 512){
25       bk(80); sleep(400);
26       sr(80); sleep(400);
27   }
28
29   else if(right <= 512){
30       bk(80); sleep(400);
31       sl(80); sleep(1200);
32   }
33
34 }
35
```

Information & Log

```
1 Compiling ....
2 Compile Success ....(OK)
3 Run Simulator...
4 Stop Simulator...
```

To test the program, simply click the  , play button to run the program. And then, place the robot as shown in this picture.



Lastly, click the sw1 button found on your simulator screen. Enjoy !