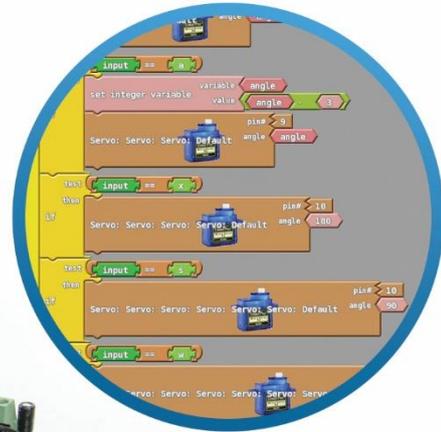
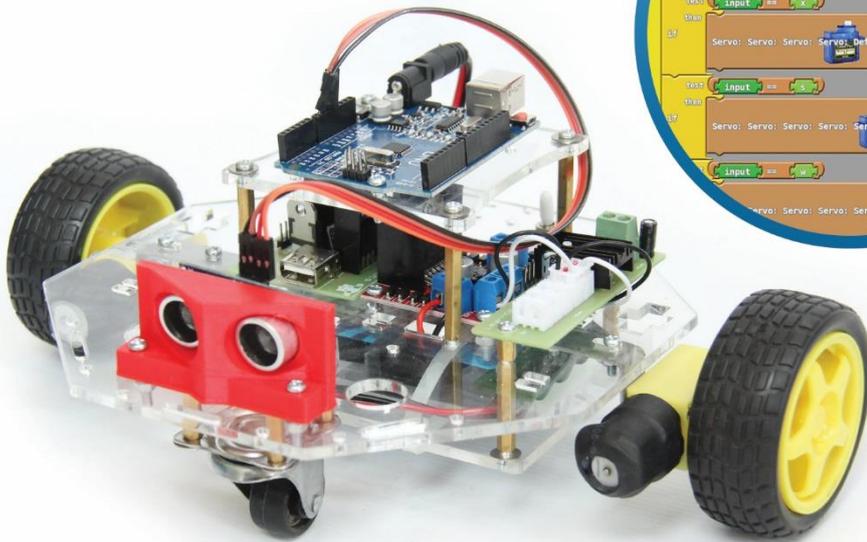


Obstacle Avoidance



THE PERFECT COMPANION TO LEARN
PROGRAMMING, ROBOTICS AND ELECTRONICS

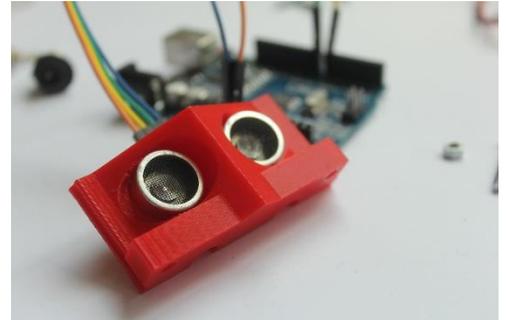
Obstacle Avoidance Manual for CODIBOT

Introduction

Now that you have tested the CODI's FEET we can move on to some more FUN! In this activity, we will program CODI in such a way that it can avoid obstacles in its way and move around them.

How it works?

A sonar sensor (CODI's EYES) sends out an ultra-sonic sound wave also called transmitting an echo. The sound bounces back and is received by a microphone. If there is an object in front of the robot then the sound bounces back of the object and the robot knows that there is an object in front of it. If there is no object then the sound does not bounce back and we know that there is no object in front of the robot.



STEP 1:

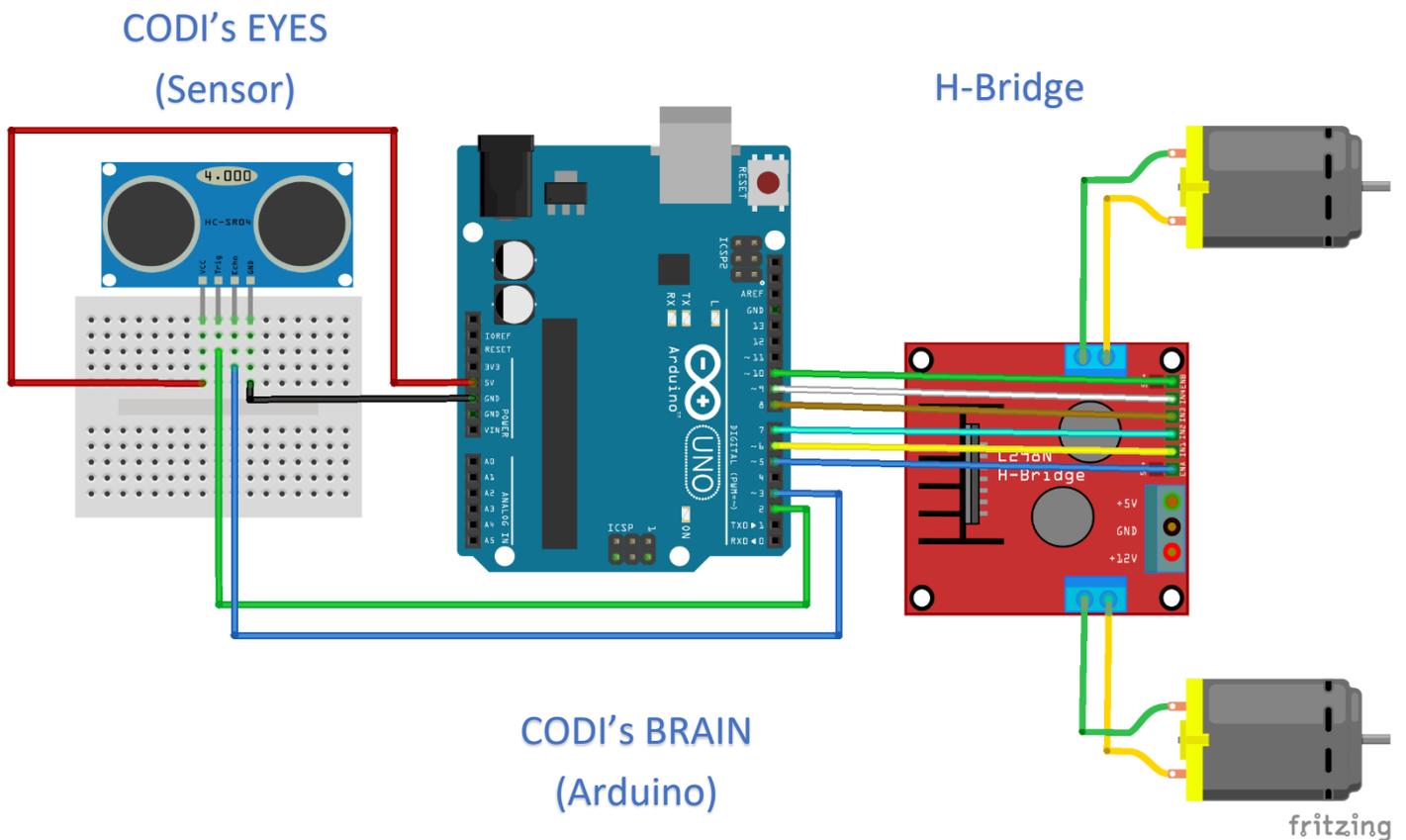
Take the CODI's EYES and the MAIN BODY.

STEP 2:

Attach the CODI's EYES on the body as shown in the picture

STEP 3:

Use the connecting wires to make connections between the CODI's EYES and the CODI's BRAIN as shown in the picture. Also connect the H-Bridge with the CODI's BRAIN (Refer Getting Started Manual).



There are 4 pins on the Sonar Sensor:

1. Vcc
2. Trig
3. Echo
4. GND.



Make Connections as follows:

ARDUINO	CODI's EYES
Digital Pin # 2	Trig
Digital Pin # 3	Echo
Power Pin 5V	Vcc
Power Pin Gnd	Gnd

STEP 4:

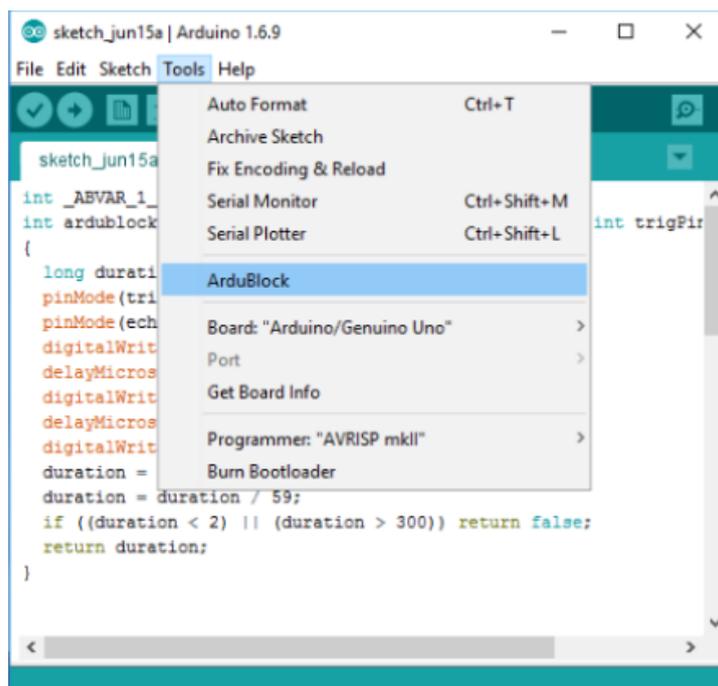
Make sure all the connections are correct otherwise the code won't work. Double check.

STEP 5:

Now connect the CODI's BRAIN with your computer using the blue USB cable provided in the box.

STEP 6:

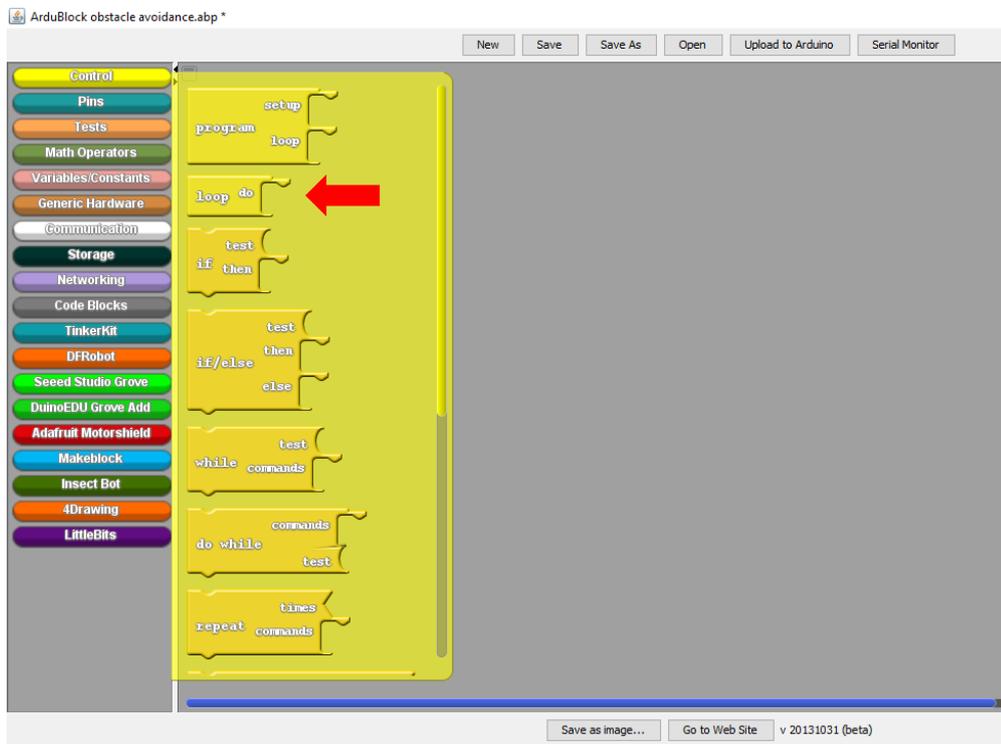
Start the Arduino Program, and click on the ArduBlock on the tools tab in the program. (For download and installation instructions kindly refer the Getting Started Manual).



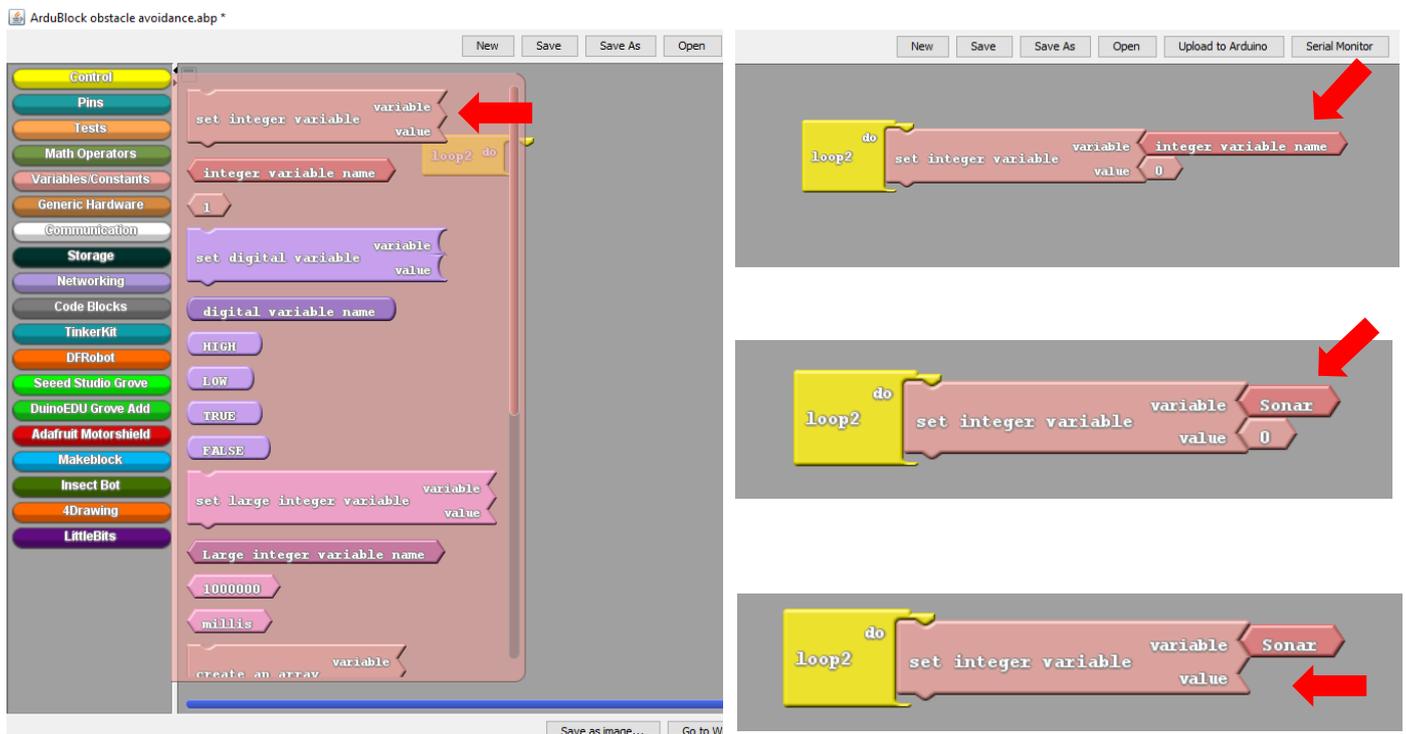
STEP 7:

Let's make changes to the Program as follows:

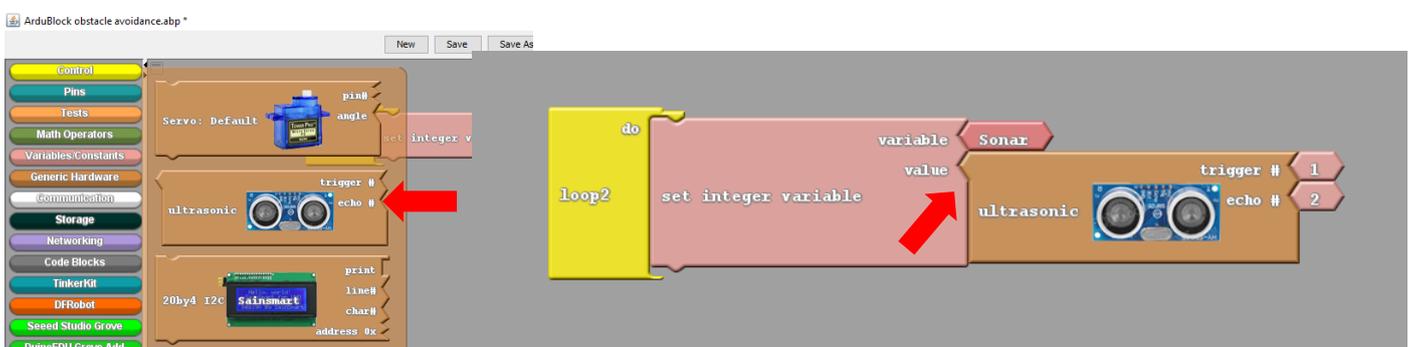
1. Drag and Drop the "Loop" panel from the Yellow "Control" Tab.



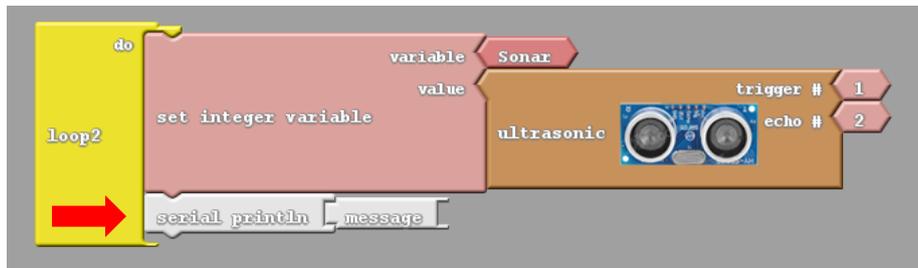
2. Drag and Drop the "Set Integer Variable" from the Pink "Variables/Constants" Tab. Change the name of the "Integer Variable name" to "Sonar". Snap out the small diamond shape panel in the value slot.



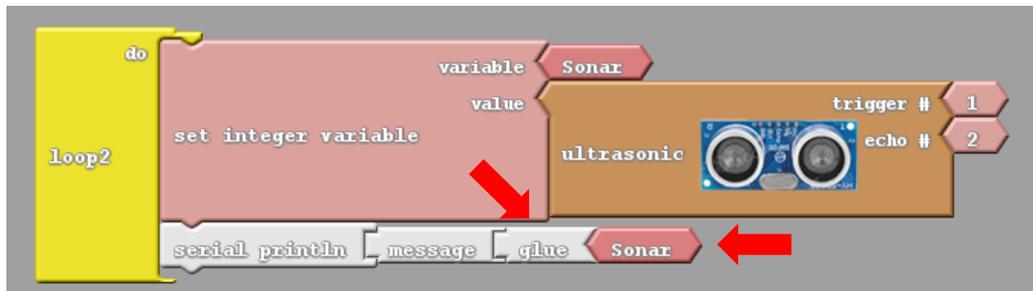
3. Select the "Ultrasonic" Sensor from the "Generic Hardware" Tab and snap it to the "value" slot. Ultrasonic Sensor has two slots, Trigger and Echo, Insert "2" for trigger and "3" for echo.



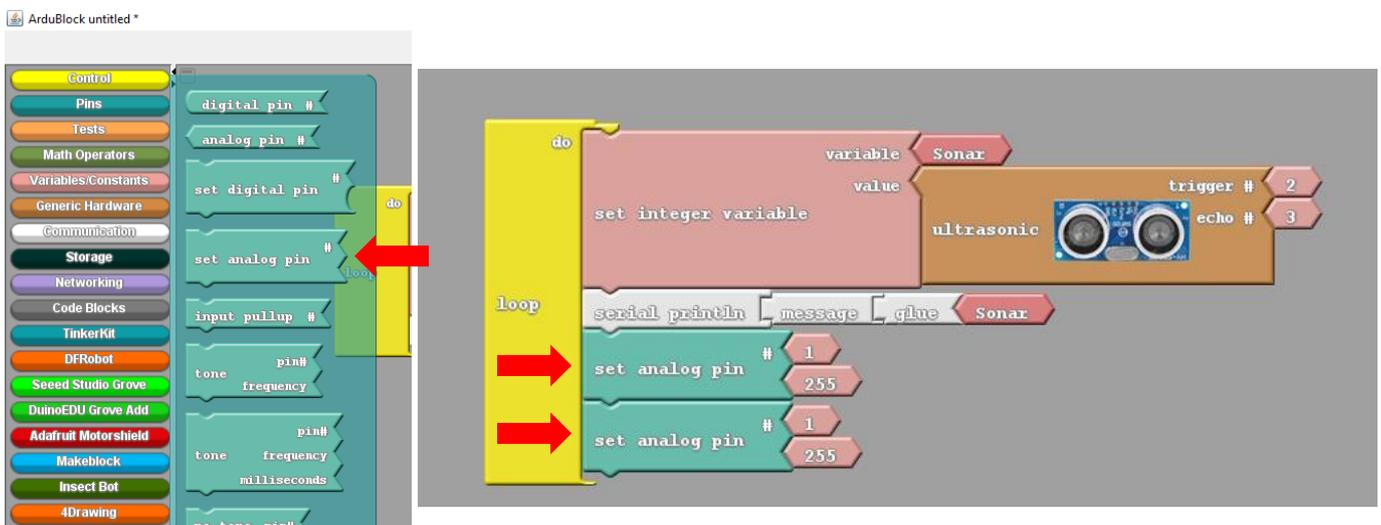
- From "Communication" Tab select "Serial Println" panel and snap it below the "set integer variable" panel.



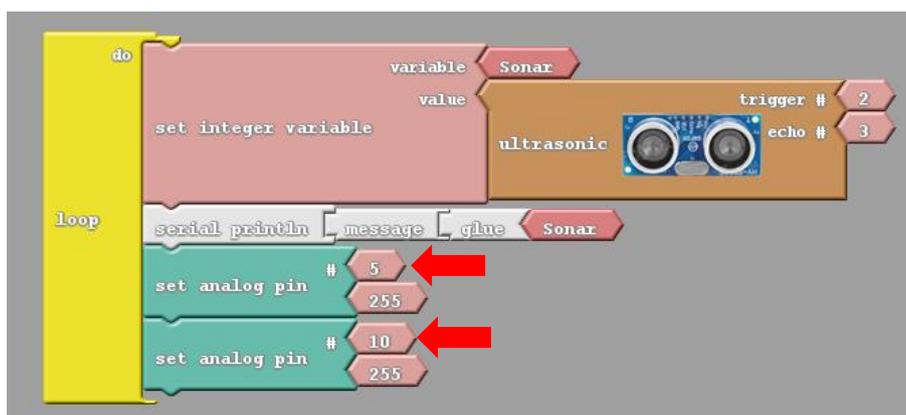
- Select the "glue" panel from "communication" tab and snap them, then select an "integer variable name" panel from the "Variables/Constants" tab and name it "Sonar" as shown.



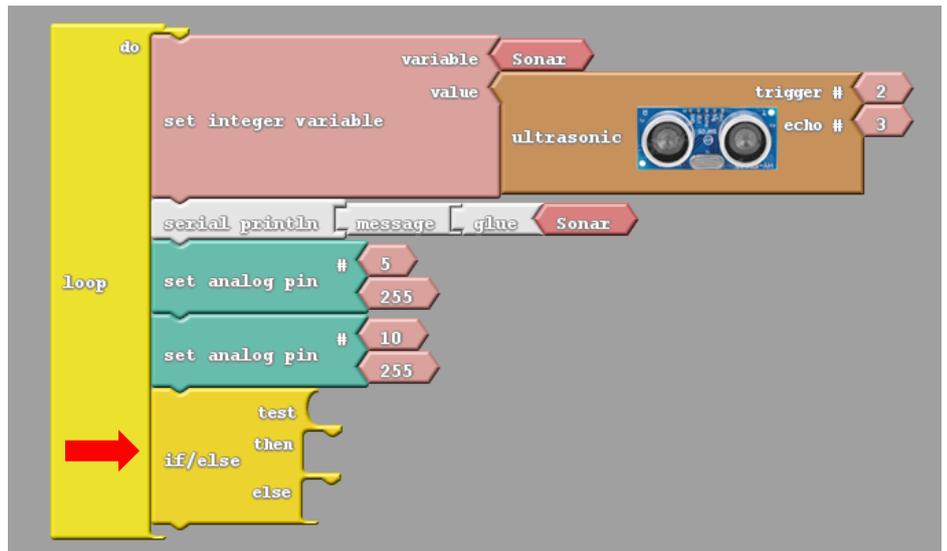
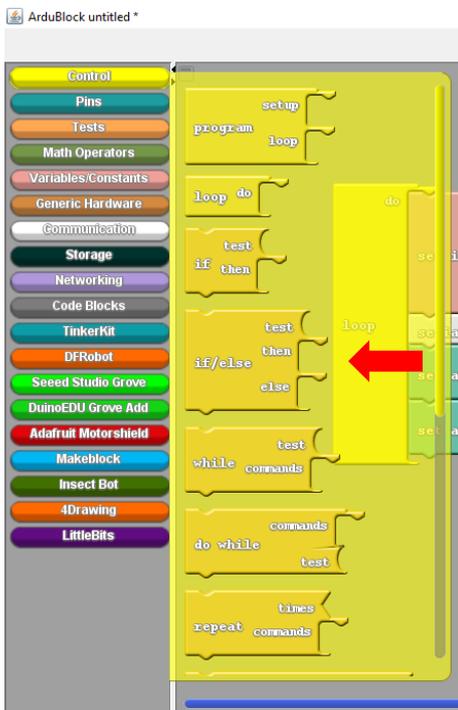
- From the "Pin" Tab select the "Set Analog pin" and snap it as shown, duplicate it and snap it again.



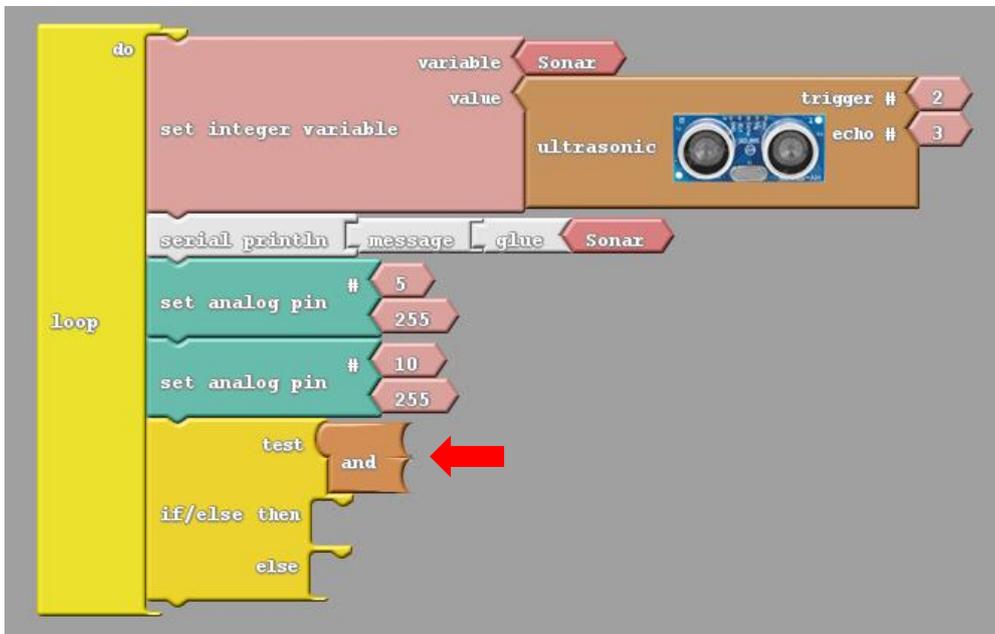
- Set the Values of the "Set analog pin" 5 and 10 as shown in the picture.



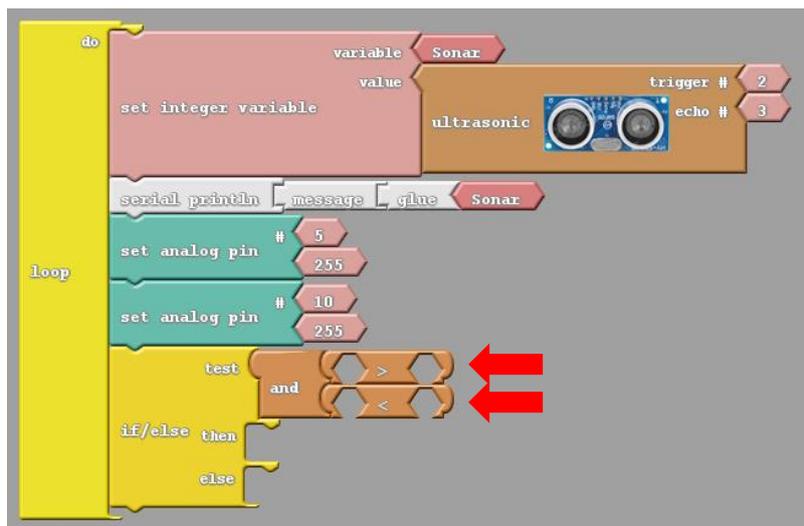
- Now Select an if/else panel from the Control Tab and snap it below the set analog pin panels as shown.



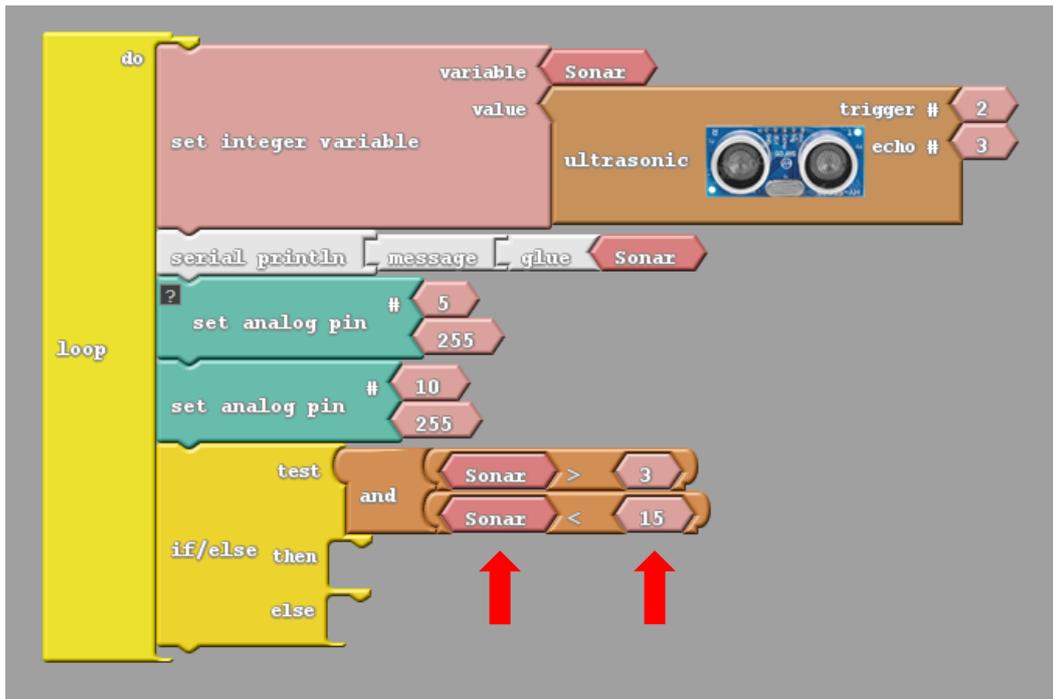
9. Take an “And” panel from “Test” Tab and snap it to the test slot as shown.



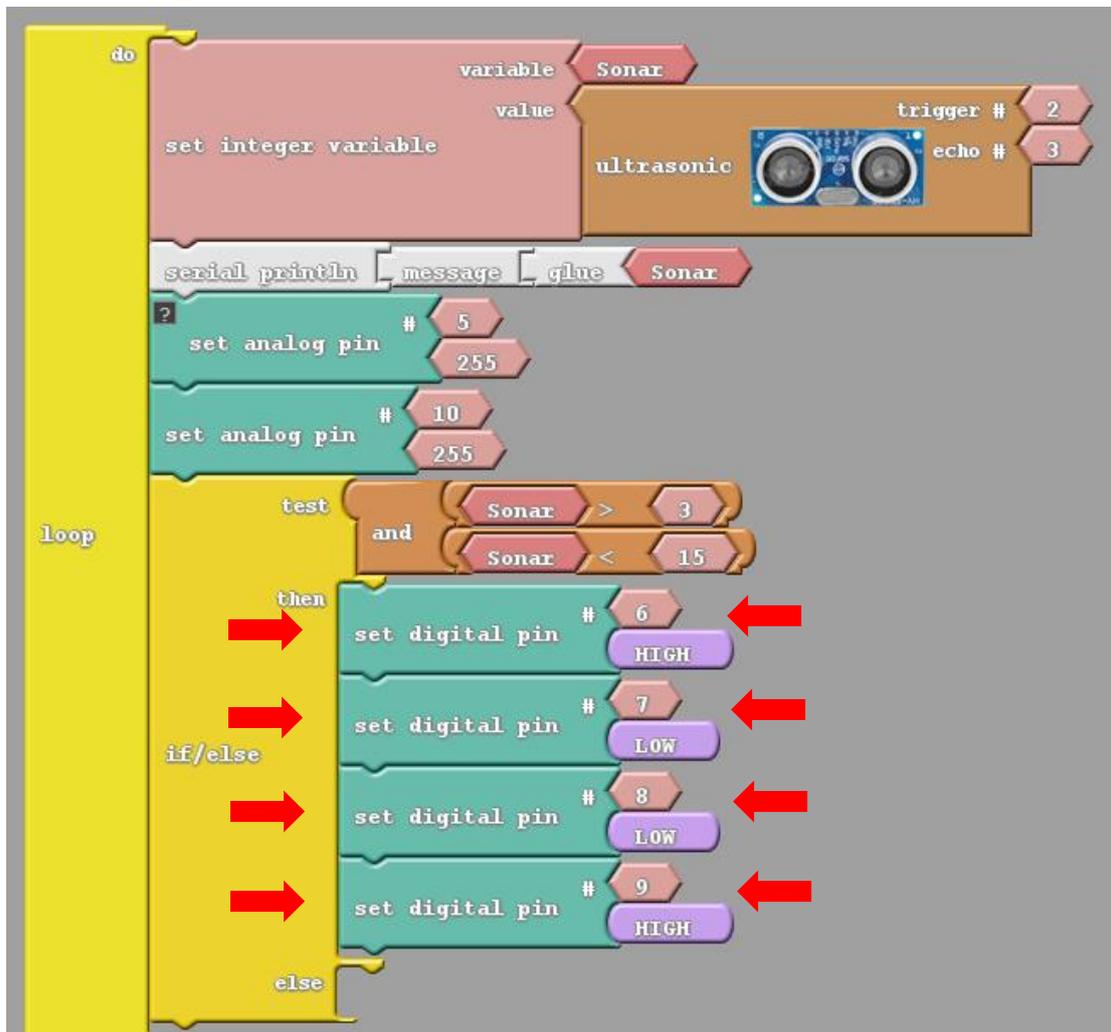
10. Select the “>” (more than) and “<” (less than) panels from the “Tests” Tab and insert it as shown.



11. Snap the “integer variable name” and “Value” panels from the “Variable/Constants” tab into the >, < panels as shown. Rename the integer variable name to Sonar.



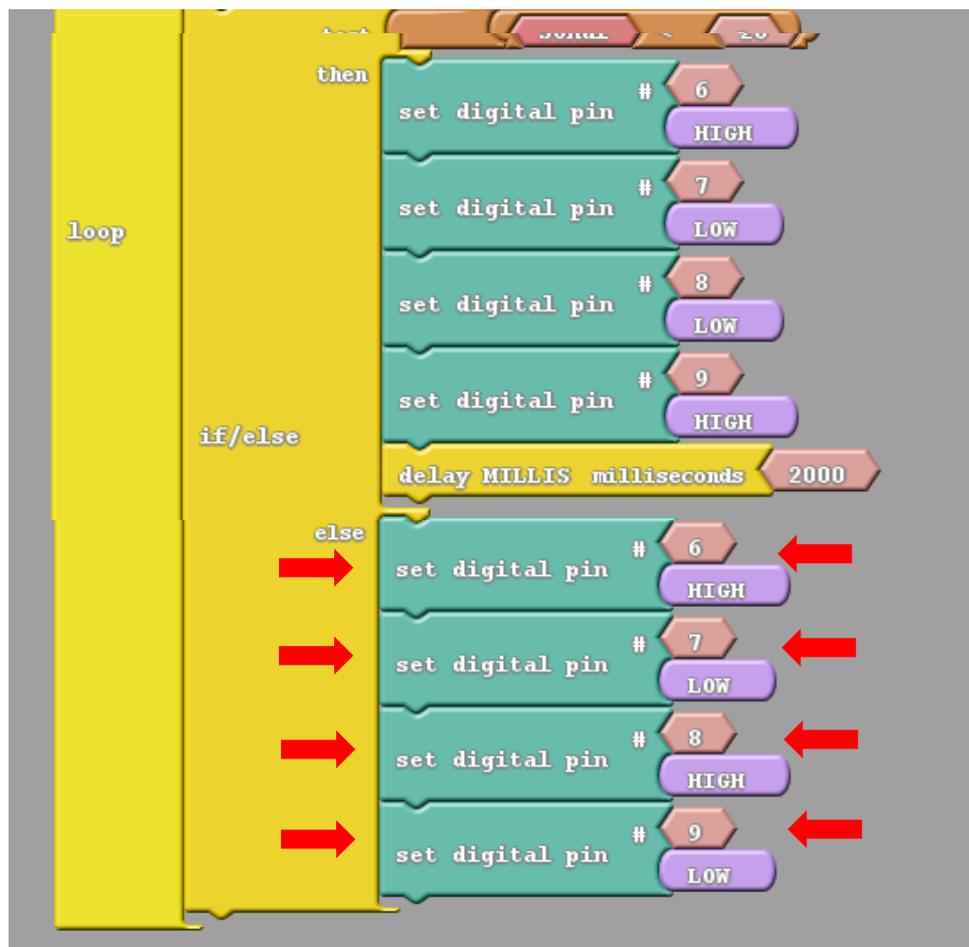
12. Snap four “Set Digital Pin” panels into the “then” slot on top of each other and set their values as shown.



13. Add a Delay MILLIS milliseconds as shown and change its value to "2000".



14. Snap another four "Set Digital Pin" panels into the "else" slot and set their values as shown.



15. Our code is complete, now just click on the Upload to Arduino button, make sure your CODI is connected to your computer via the Blue USB Cable and its switched off. The green bar at the bottom of the Arduino Window will tell the progress of upload.

16. Once the code is uploaded into CODI's BRAIN, disconnect CODI from the computer and turn it ON. Viola! ITS ALIVEEEEE!!!

17. Now CODI will avoid anything in its way.

