

Workshop On Arduino



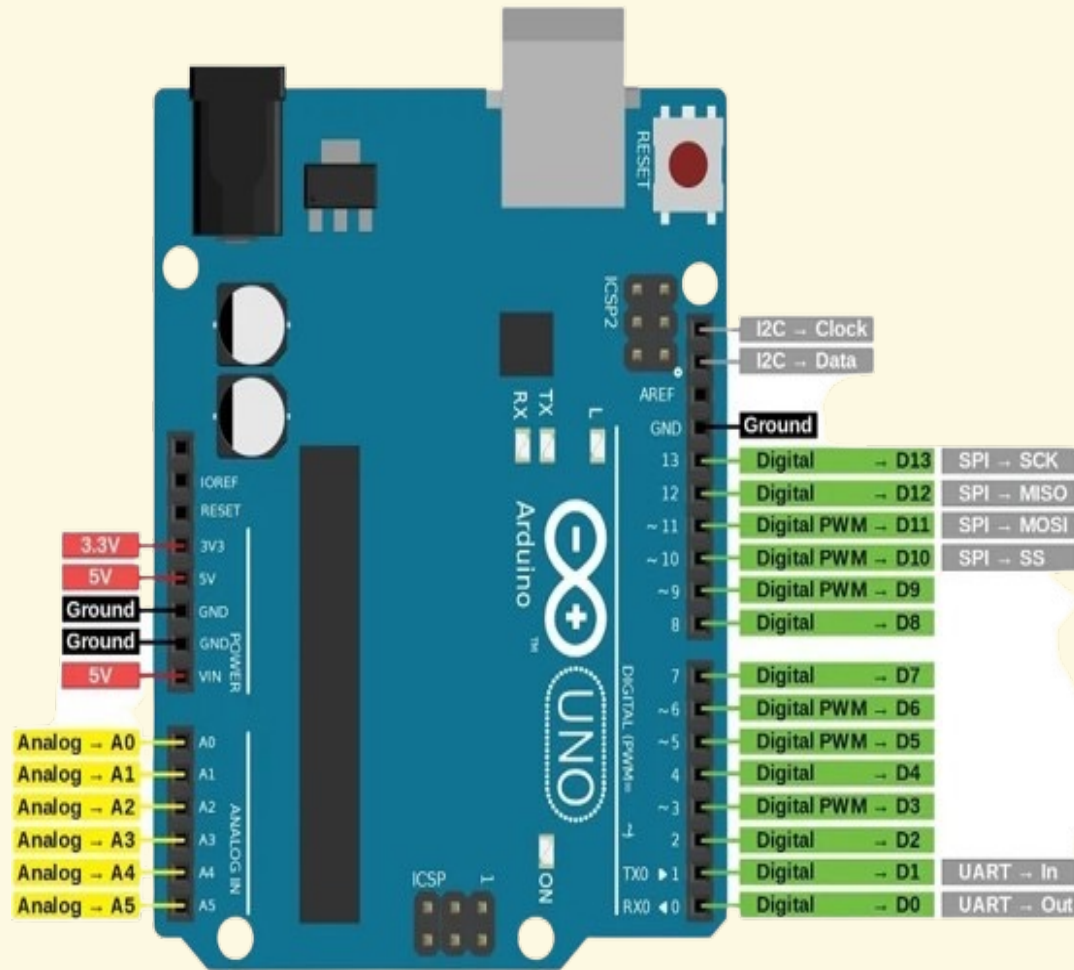
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What is Arduino?

- ☐ **Arduino is an open-source platform that allows you to create interactive electronic projects.**
- ☐ **It consists of a physical board that you can program with a software on your computer.**
- ☐ **You can use Arduino to control sensors, lights, motors, and many other devices.**



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Arduino Pins



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List of components

- ✓ **Arduino UNO or NANO**
- ✓ **HC-05 Bluetooth**
- ✓ **L293D Motor Driver**
- ✓ **4 BO Motors (With Wheels)**
- ✓ **2 Li-ion Battery(With Connectors)**
- ✓ **Jumper Cables**
- ✓ **Car Chase**

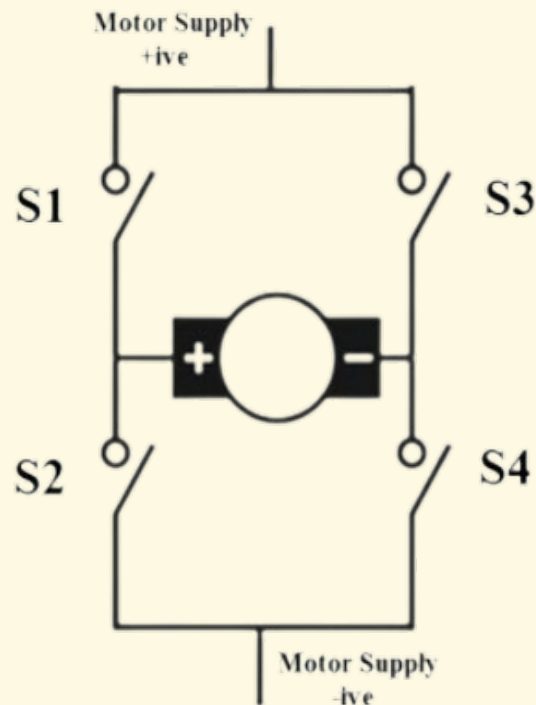
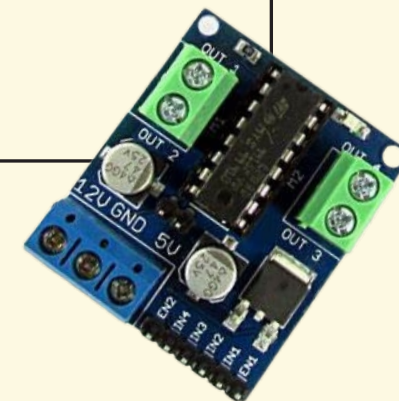


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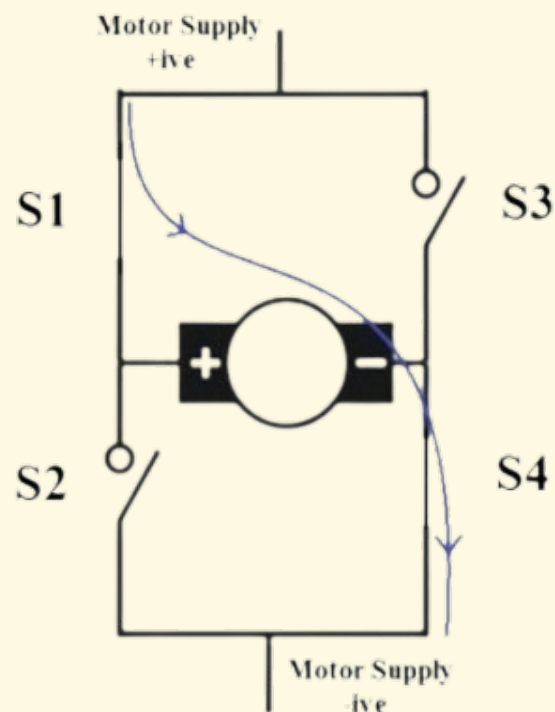


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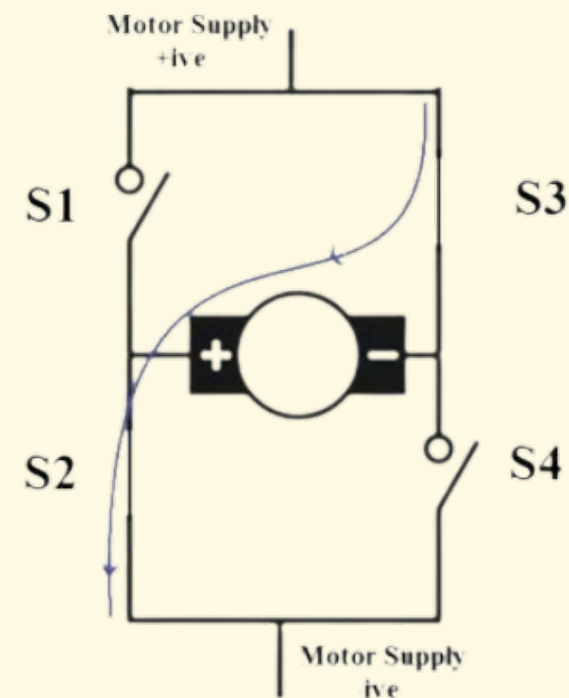
Working of L293D



Basic H Bridge Circuit



Basic H Bridge Working



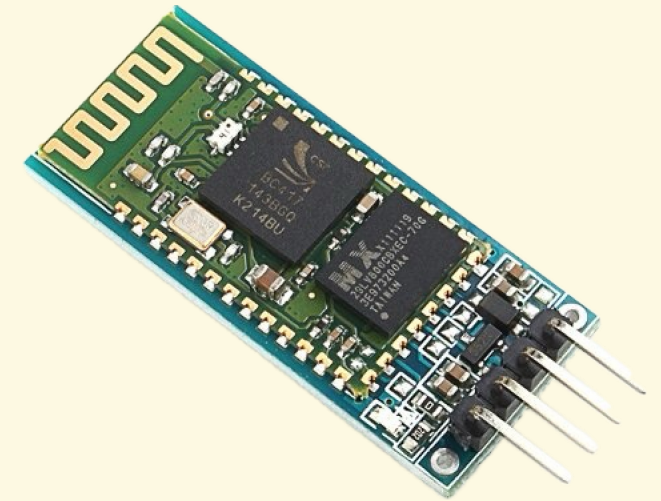
Basic H Bridge Working



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HC-05 Working

- **HC-05 uses serial communication to communicate with the electronics.**
- **It uses the 2.45GHz frequency band.**
- **transfer rate of the data can vary up to 1Mbps and is in range of 10**





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BO Motors & Wheels



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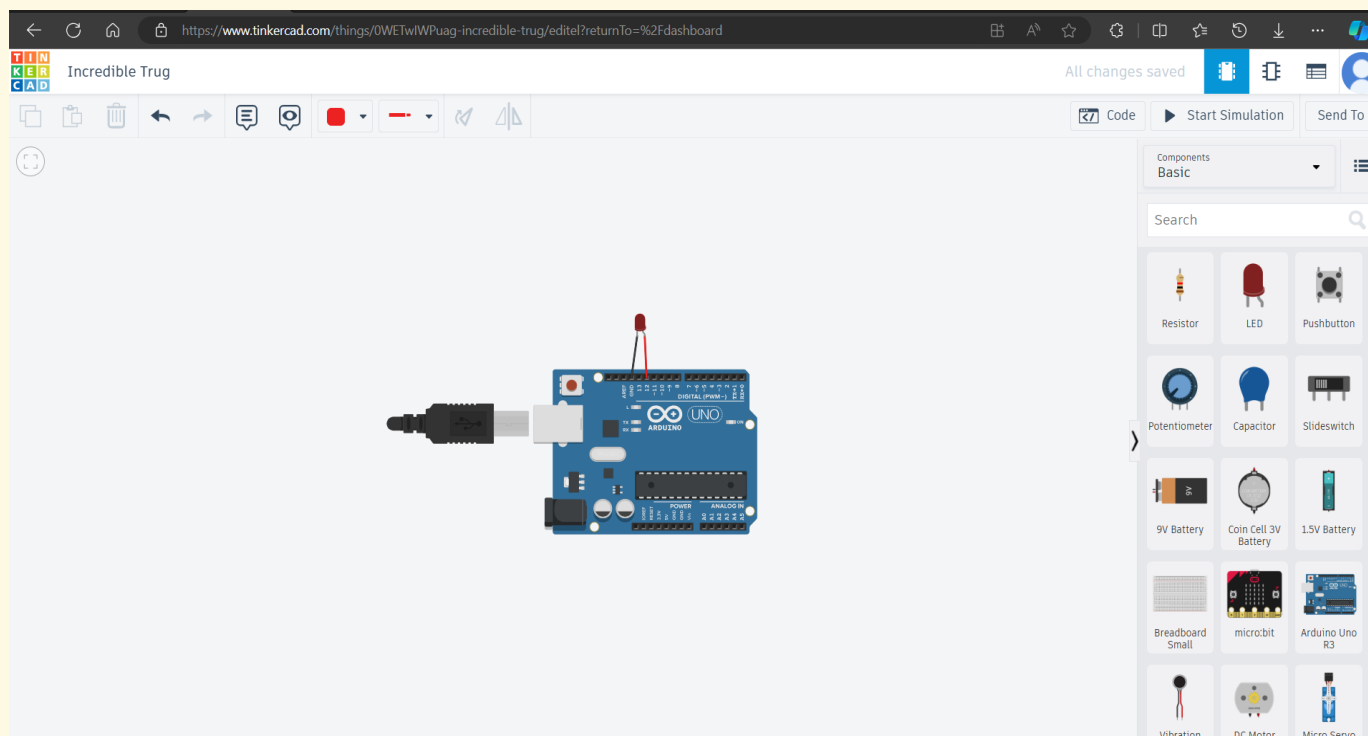
Arduino IDE

```
1 //to store the bluetooth command
2 int cmd;
3
4 //motor section
5 int LM1=8; //left motor1
6 int LM2=9; //left motor2
7 int RM1=10; //right motor1
8 int RM2=11; //right motor2
9 // int led= 13;
10 void setup() {
11   Serial.begin(9600); // for establishing serial communication(data transfer rate 9600 bits/second)
12   pinMode(LM1,OUTPUT);
13   pinMode(LM2,OUTPUT);
14   pinMode(RM1,OUTPUT);
15   pinMode(RM2,OUTPUT);
16   // pinMode(led,OUTPUT);
17   // pinMode(led2,OUTPUT);
18 }
19
20 //function to stop the fire engine
21 void stop(){
22
23 }
24
25 //function to move the engine forward
26 void frontM(){
```




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Tinkercad



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The background features abstract, thick, rounded lines in red and orange. On the left, a red line runs horizontally and turns right, while an orange line runs vertically. They intersect at a point marked by a small black dot. On the right, a red line runs vertically and turns right at the bottom, with a green circle positioned near its base. Another small black dot is located on the upper part of this red line.

**Thank
you**

An abstract graphic featuring thick red and orange lines that form a complex, winding path. A small black dot is located at a junction of the red lines on the left, and a larger green circle is positioned near the bottom right, partially overlapping a red line. The background is a solid light cream color.

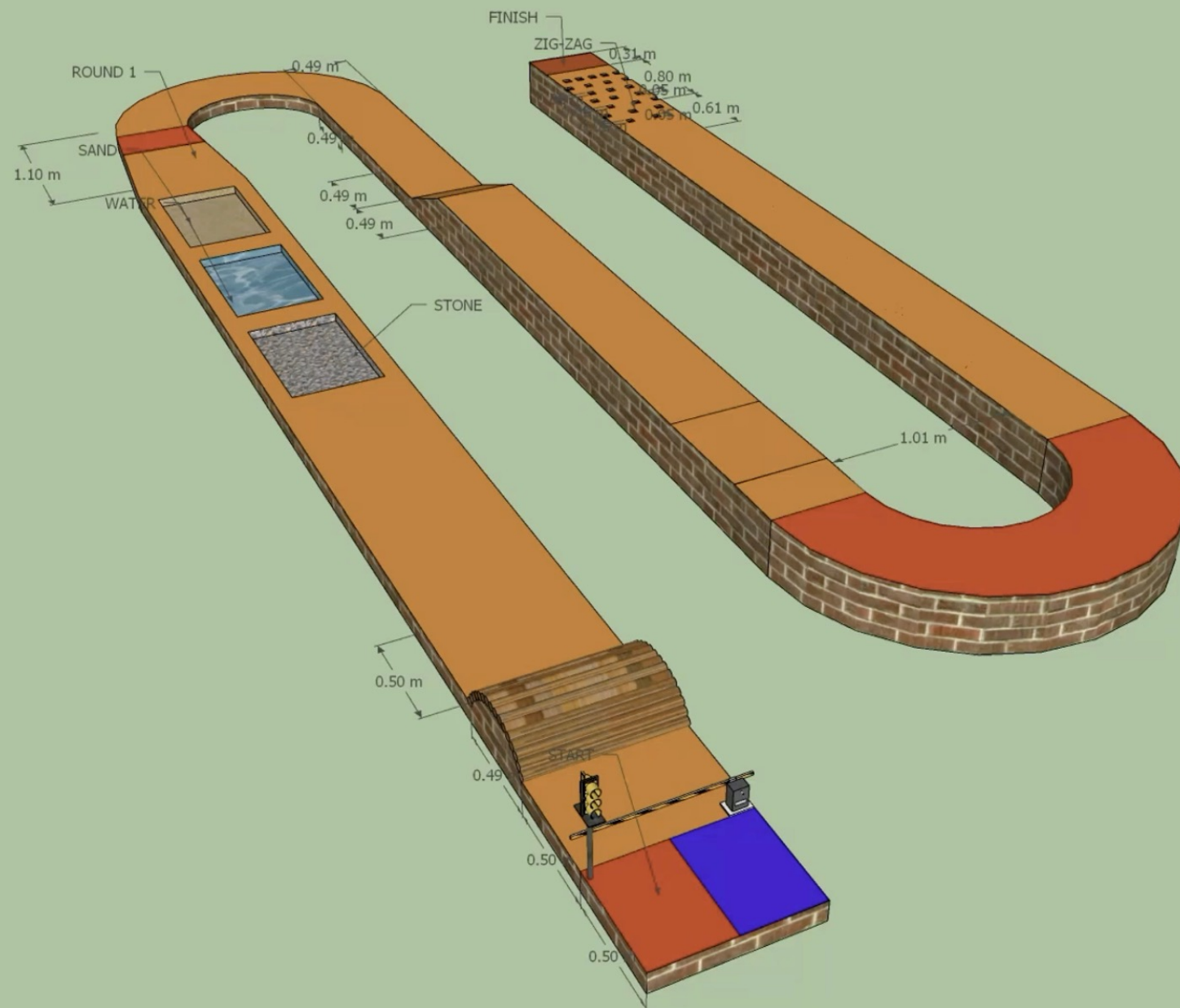
ROBO-RACE

Challenges of each round



LEVEL - 1

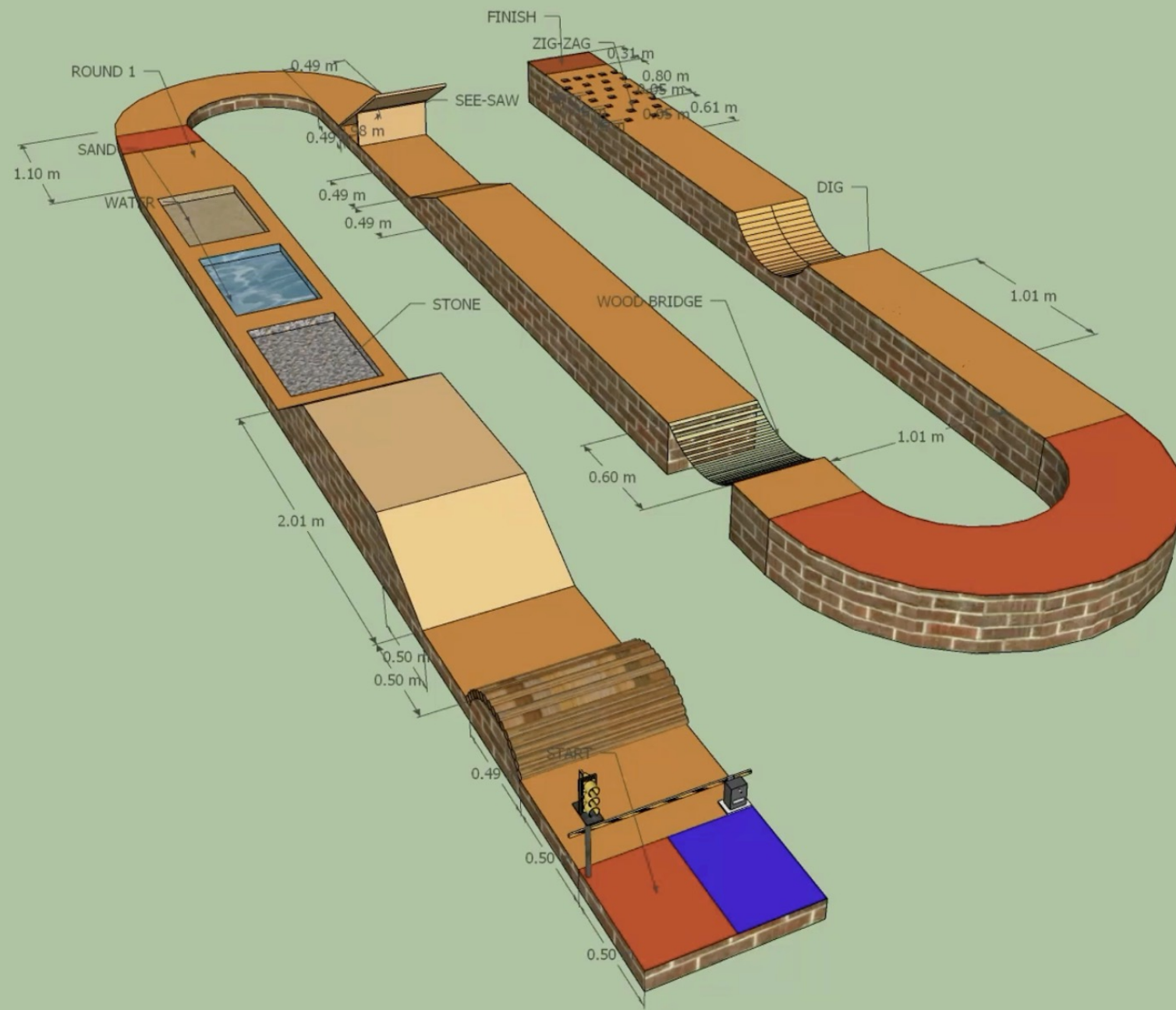
1. Curves: Robots need precise turning capabilities without deviating from the track.
2. Speed Bumps: Test stability and control as robots navigate these small obstacles.
3. Narrow Zig-Zag Path: Requires agile movement through tight spaces.
4. Varied Surfaces: Robots need adaptability to different terrains like holes, sand, gravel, and slippery surfaces.





LEVEL - 2

1. 30° Ramp: Robots must ascend and descend this steep slope with balance.
2. Hanging Bridge: Requires precise movement across a suspended pathway.
3. Height Differential: Overcoming a larger bump challenges climbing ability.
4. See-Saw: Balancing the robot's weight while traversing the tilting platform.



The background features abstract, thick, rounded lines in red and orange. A red line runs horizontally across the top left, with a black dot at its intersection with a vertical orange line. Another red line runs vertically on the right side, with a black dot at its top. A large green circle is positioned in the bottom right corner, partially overlapping the vertical red line. The text 'LEVEL - 3' is located in the upper right quadrant.

LEVEL - 3

1. Narrow Inclined Path: Precision maneuvering in a narrow path with internal inclination.
2. Suicide Point: Interaction with objects to proceed along the track.
3. Ramp with Obstructive Balls: Navigating a ramp while dealing with rolling balls.

