Workshop On Arduino

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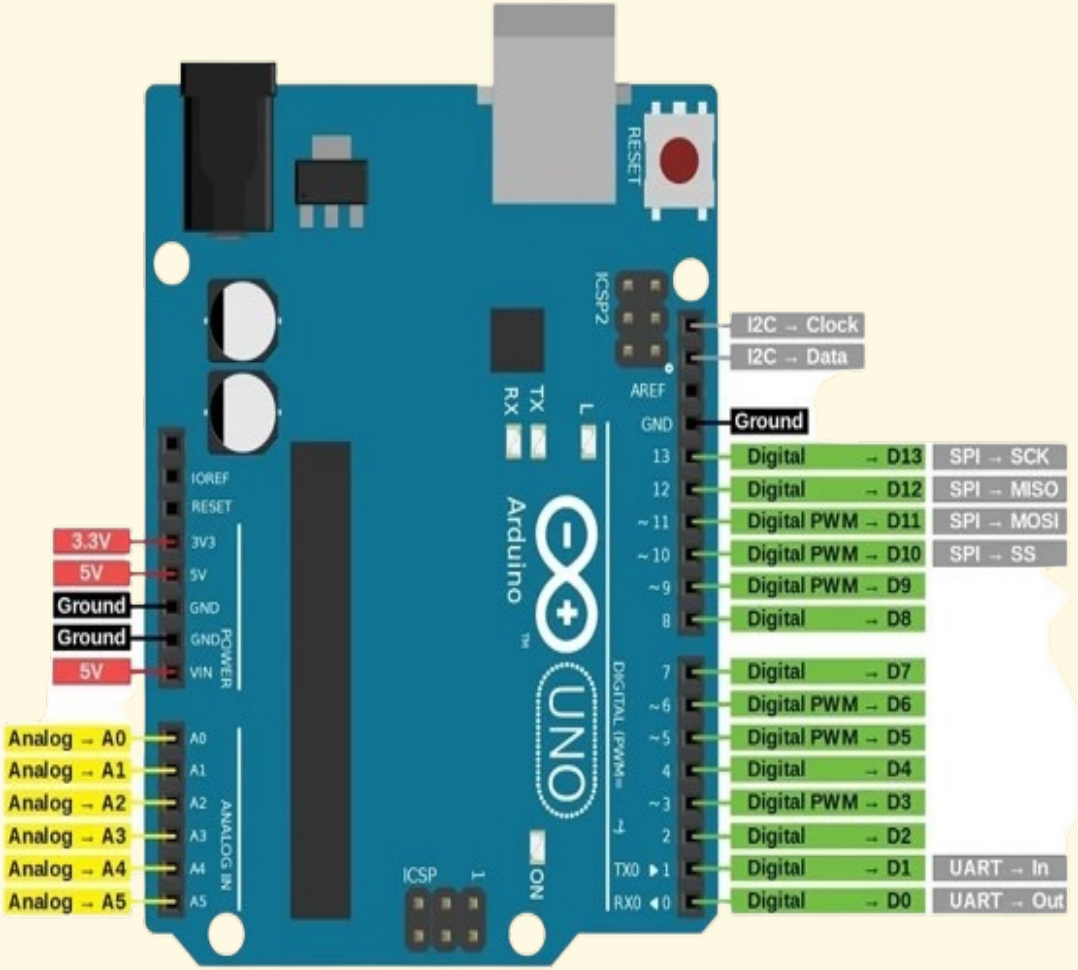
1 What is Arduino?

- 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.



Arduino Pins

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3 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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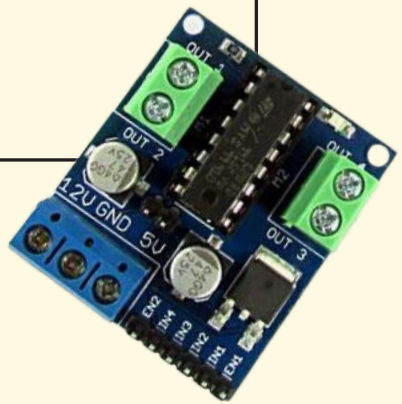
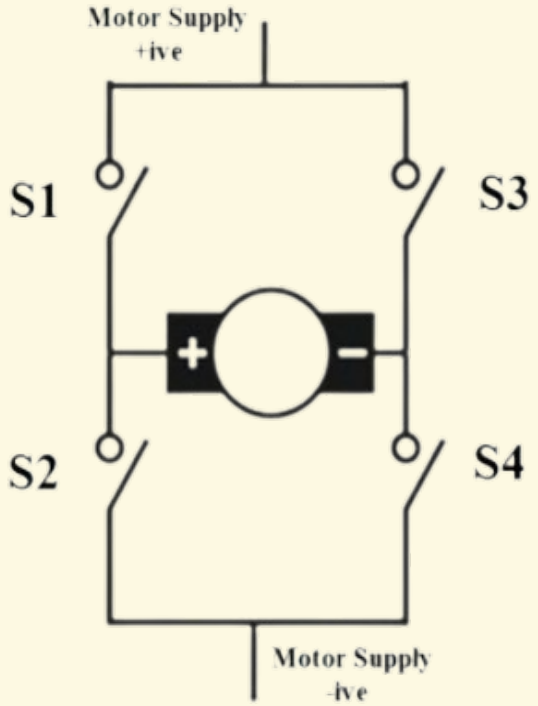
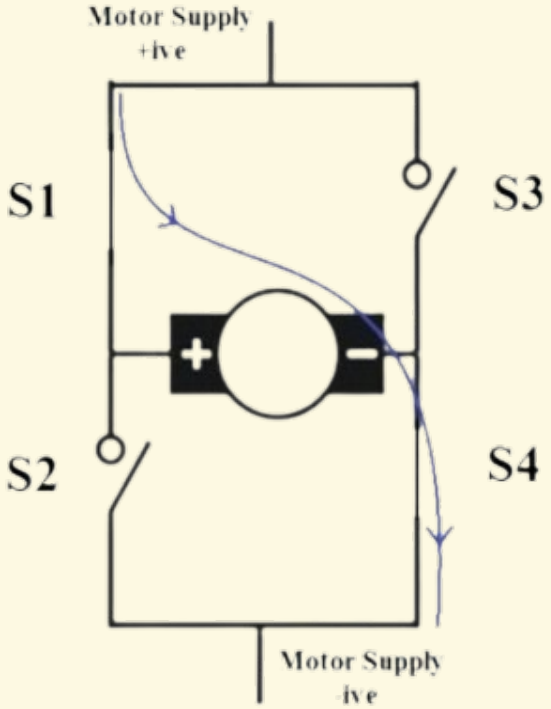
4 Working of L293D

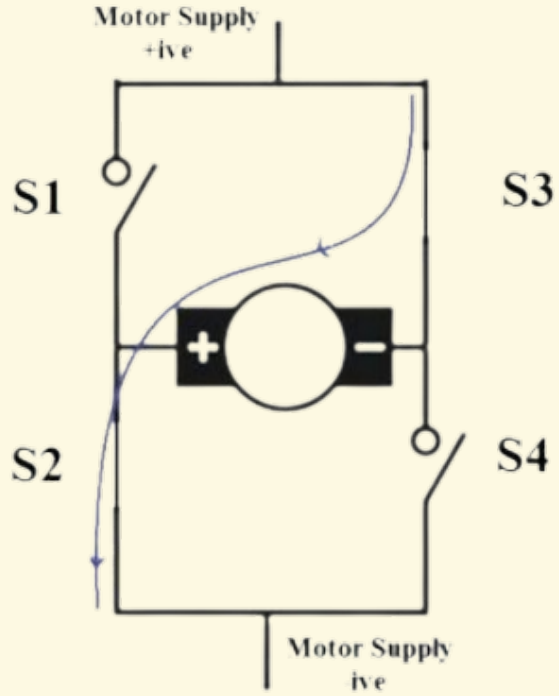




Basic H Bridge Circuit



Basic H Bridge Working



Basic H Bridge Working

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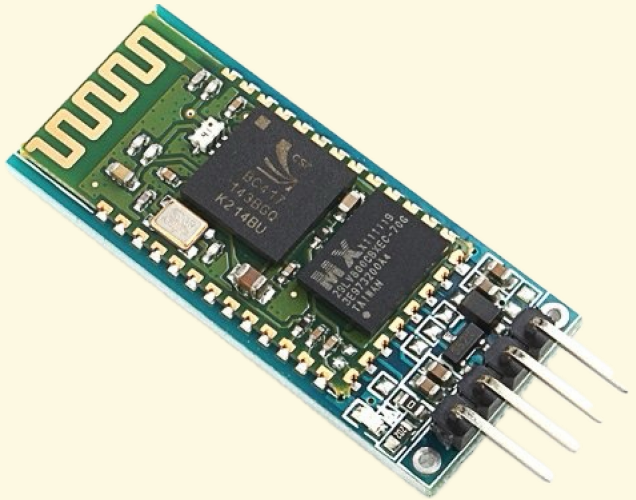
5 HC-05 Working

- 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



6 BO Motors & Wheels

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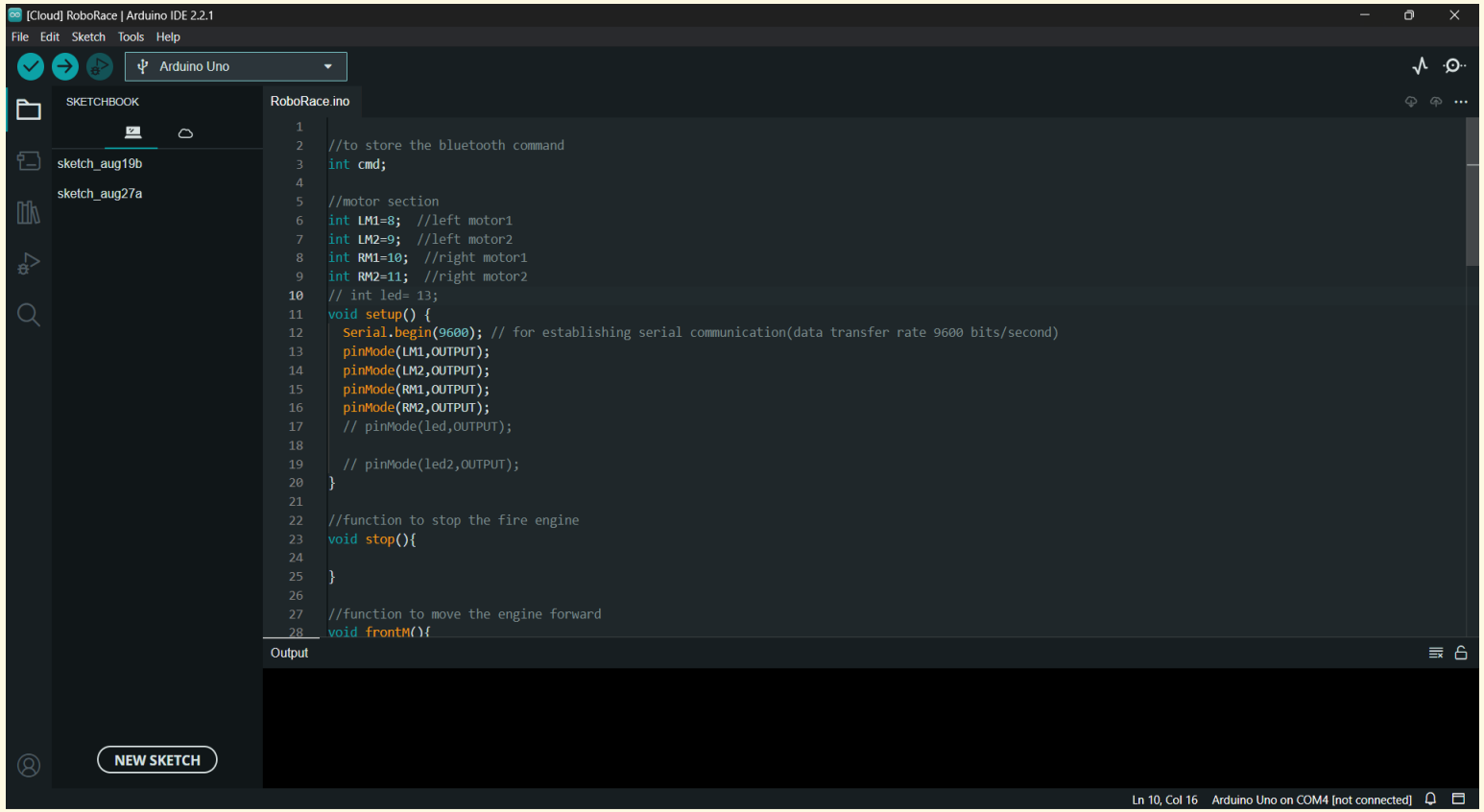
8 Arduino IDE



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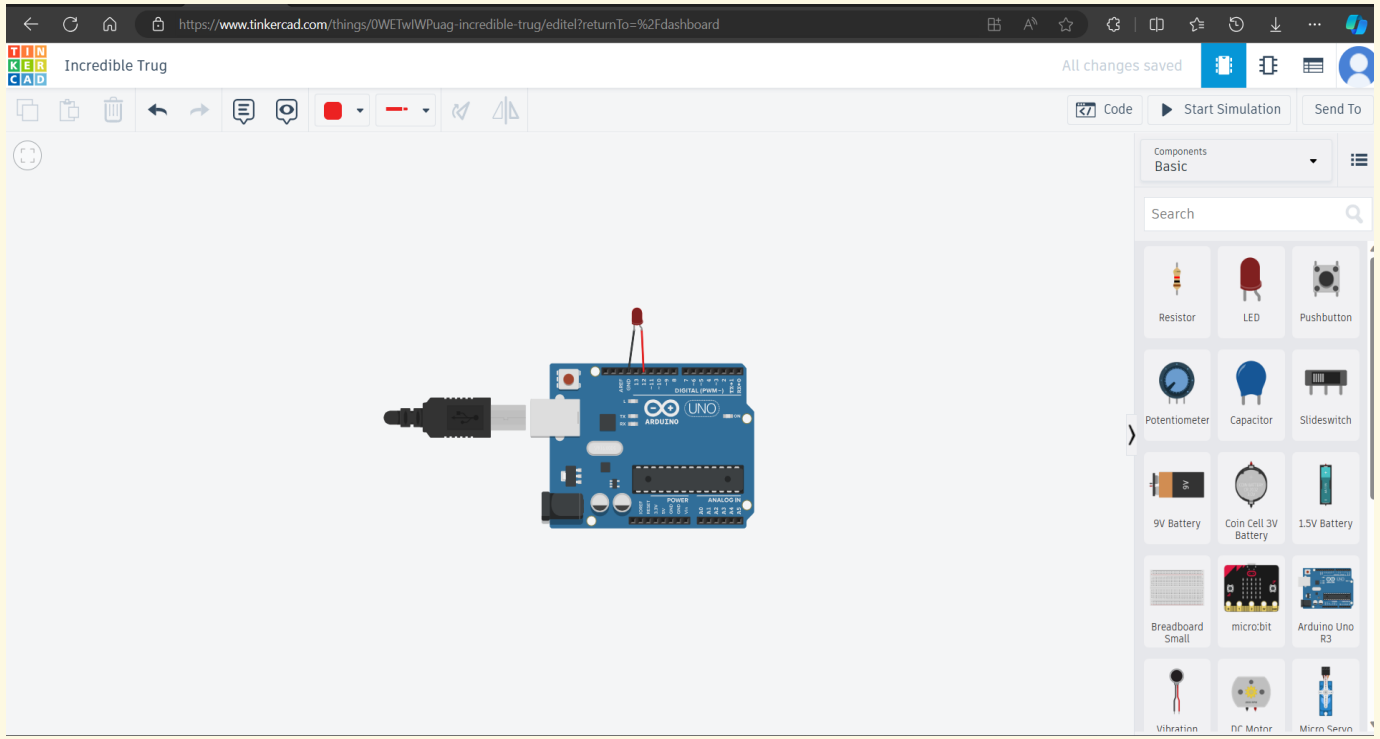
9 Tinkercad



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Thank you

ROBO-RACE

Challenges of each round

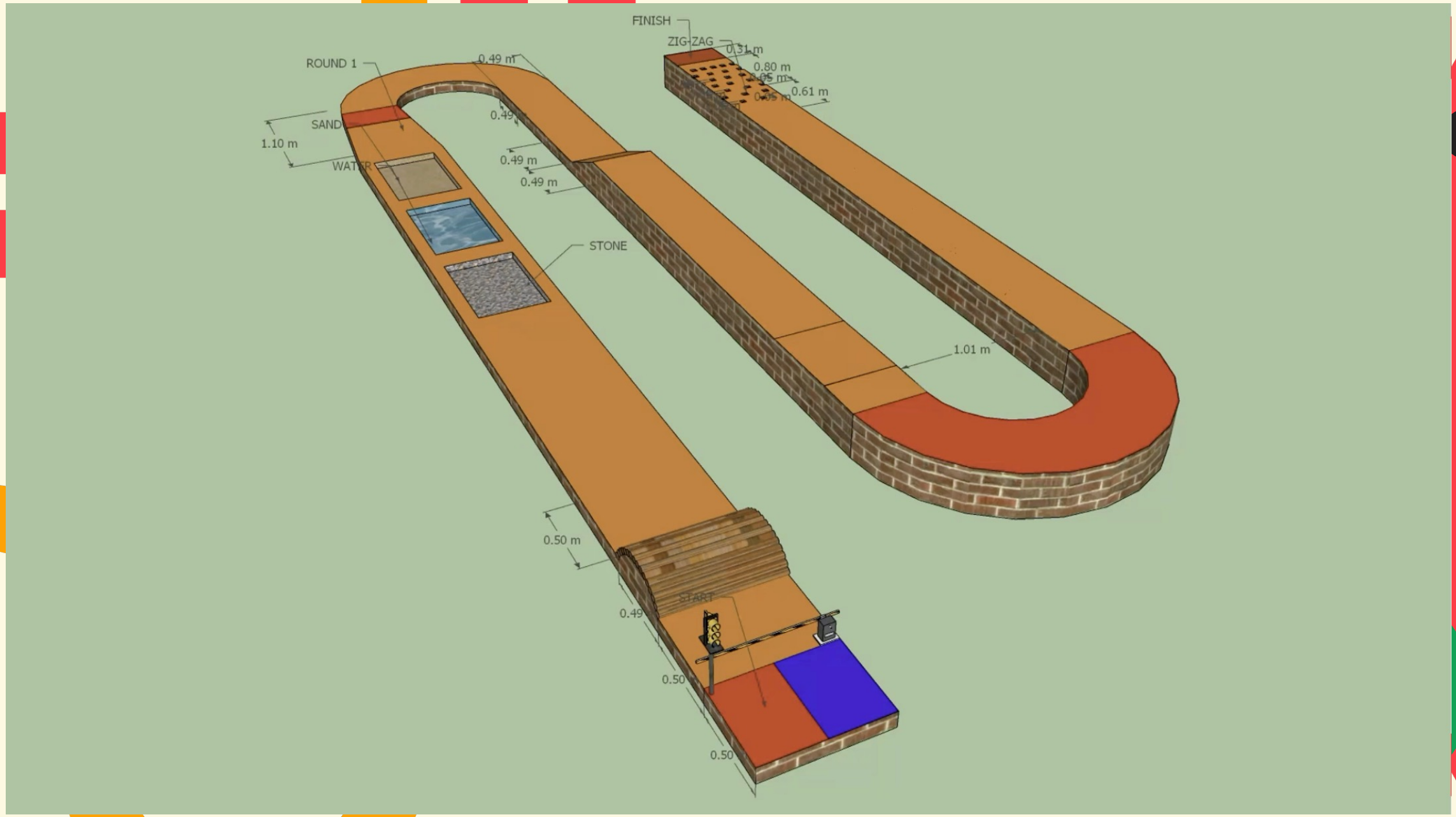
LEVEL - 1

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.


FINISH
ZIG-ZAG
0.31 m
0.80 m
0.61 m
ROUND 1
0.49 m
SAND
1.10 m
WATER
0.49 m
0.49 m
STONE
1.01 m
0.50 m
START
0.49
0.50
0.50

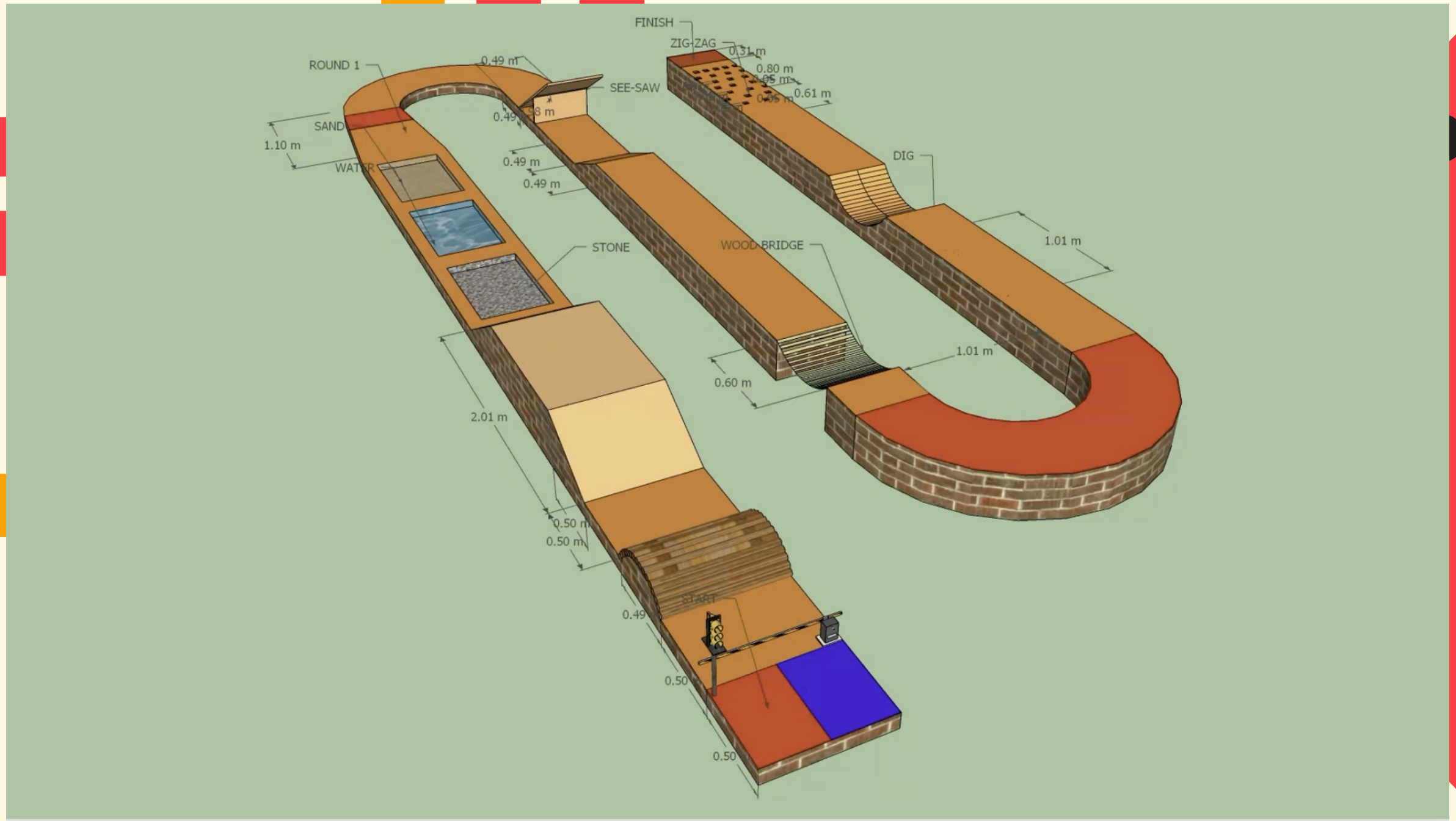
LEVEL - 2

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.

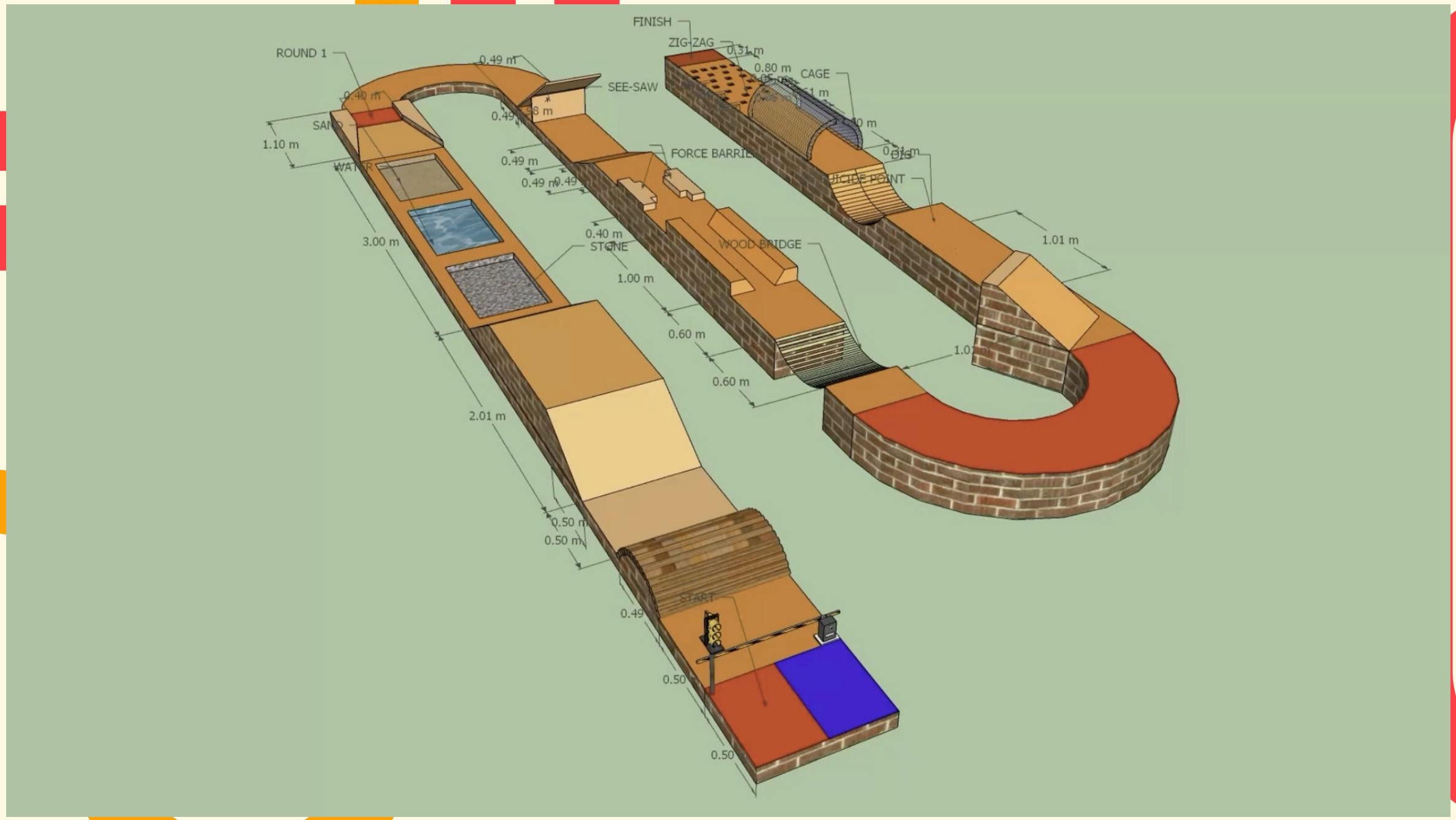

FINISH
ZIG-ZAG
0.31 m
0.80 m
0.61 m
ROUND 1
0.49 m
SEE-SAW
SAND
1.10 m
WATER
0.49 m
0.49 m
0.49 m
DIG
1.01 m
STONE
WOOD BRIDGE
1.01 m
0.60 m
2.01 m
0.50 m
0.50 m
START
0.49
0.50
0.50

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.


FINISH
ZIG-ZAG
0.31 m
0.80 m
CAGE
ROUND 1
0.49 m
SEE-SAW
0.40 m
1.10 m
SAND
WATER
0.49 m
FORCE BARRIER
0.49 m
0.40 m
WOOD BRIDGE
3.00 m
STONE
1.00 m
0.60 m
0.60 m
1.01 m
2.01 m
0.50 m
0.50 m
START
0.50
0.50