# DROID BLITZ

**Problem Statement :**
To build wireless-remote controlled electric-powered robots that can be used to complete-broken pathways and transfer packages by running on land as well as water.

**Task :**

- Build a robot that can be used to perform tasks on land and water. Traverse across uneven terrains.
- Complete broken pathways by placing blocks kept on land in the given slots.
- Deliver packages kept on land across a channel and place it is specified locations.

**Robot specifications :**

- Participants have to bring an amphibious robot that can travel on both land and water.
- The robots must be electric powered and wireless (remote controlled).
- Participants can also use Bluetooth/internet/Arduino/raspberry pi techniques to control the bot

**Note**:

- A pair of receiver and transmitter (Rx and Tx) will be provided by organizers, on prior request of the participants.
- The Tx-Rx pair has 4 channels. It can be used to control a maximum of 3 servomotors. Participants who wish to use Rx and Tx provided by us, will have to make provision for this receiver on their robot.
- The participants can bring their own set of Rx and Tx if they want.
- The amphibious robot should be a battery based power supply.

**Event Rules** :

- The Robot should be capable of displacing objects by both pushing and lifting mechanisms.
- The Robot will not be allowed to move ahead without completing the path.
- During the one on one round obstructing the motion of other teams robot will be penalised by disqualification.
- Robot has to move in specified channels and bumping into the arena will be penalised with negative points.

**GENERAL RULES :**

1. Every team has to register online on the official Kshitij website for the competition.

2. A Team ID will be allocated to the team on registration which shall be used for future references.

3. LEGO kits or its spare parts or pre-made mechanical parts are not allowed.

4. A team can register at any point of time before and can submit final abstract(as mentioned in the structure).

5. The decision of the organizers or judges shall be treated as final and binding on all.

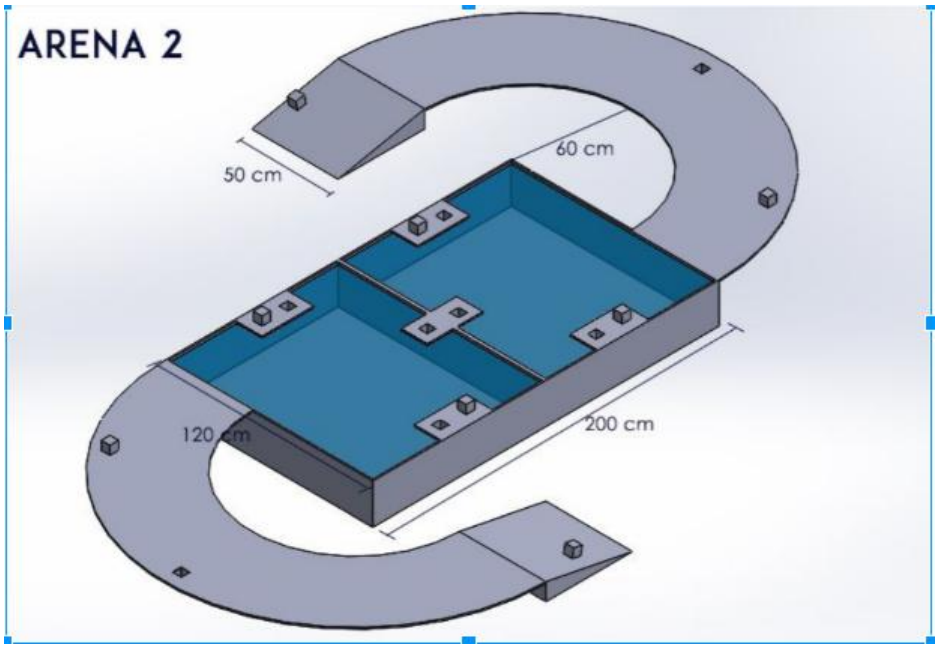
6. No responsibility will be held by Kshitij, IIT Kharagpur for any late, lost or misdirected entries.

7. Note that at any point of time the latest information will be that which is on the website. However, registered participants will be informed through mail about any changes.

8. Participants should report at the Arena in their respective slots. No further requests will be entertained.

## Round 1:-

**(Arena Image)**




Arena Description and Task :

- Arena with water zone is of 200 cm x 120 cm.
- Coordination round.
- Two teams one on one (knock out round).
- The arena has 2 zones a water and a land zone.
- The Bot had to get onto the curved path(land) of radius 60 cm by climbing a slant height of 50 cm at an angle of 12 degrees.
- The Bot had to complete the rest of the path(land and water) by picking up the blocks(cubes) kept on land the into the respective pits. Each cube has a dimension of 5 cm x 5 cm x 5 cm.

- The blocks will have a picking handle over it. Proper instructions shall be given during the event.
- The first team to complete all the tasks or the team with most points at the end of the specified time limit wins.
- The team that has a separate land and water can move only one robot at a time the other has to remain stationary.

**Round Rules :**

- Maximum Time: 5 minutes
- Number of objects: 4
- Maximum number of restarts allowed: 1
- Maximum number of timeouts allowed: 2(1 min each)

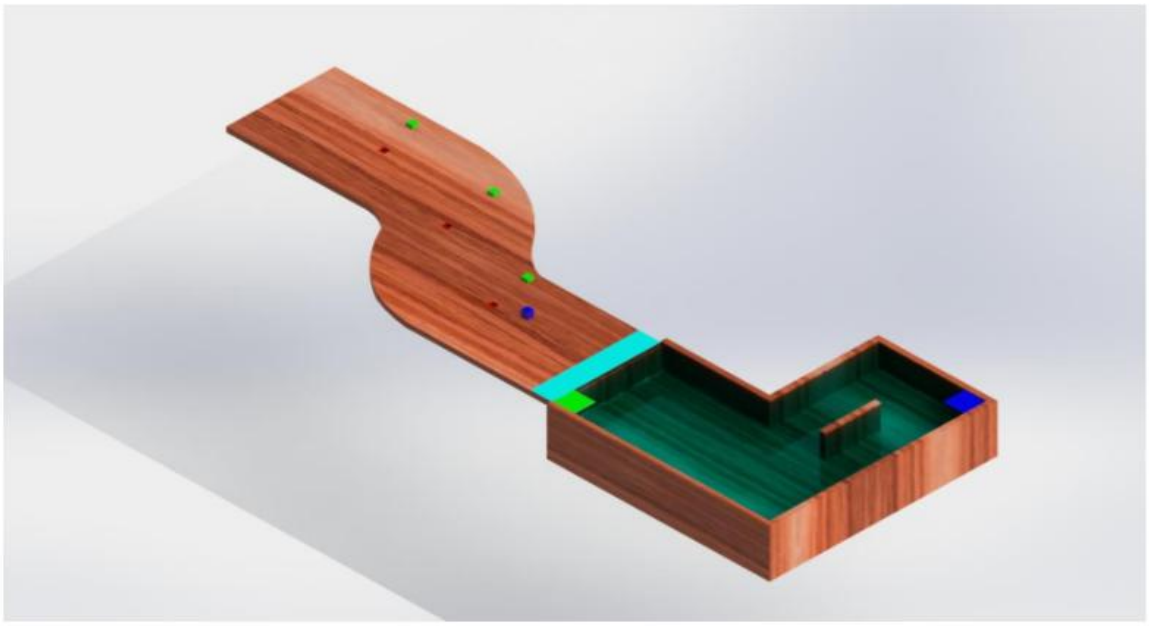
Note: Restart will only be allowed in case of a technical fault in the robot.

**Scoring Formula :_**

- Picking up an object on land: +25 points
- Placing an object in deposit zone on land: +50 points
- Picking up an object inside water zone: +50 points
- Placing a package in the deposit zone inside water: +75 points
- Reaching end point on water: +50 points
- Package falls on land: -25 points
- Package falls into water: -25 points
- Bumping into the arena: -25 points
- Restart: -100 points
- Timeout: -50 points

## Round 2 :

Arena Image



**Arena Description :_**

- The arena has 2 zones a water and a land zone.
- There are 2 blocks, 3 green coloured and 1 violet.
- There are 3 red coloured voids in the arena.
- The green blocks are to be placed in the red coloured voids.
- The violet block is to be carried across the channel and placed on the violet coloured zone in water.
- The green coloured zone in water is the end zone.

## Arena Dimensions :_

- Width of the land and water zone both are 100cm.
- Green coloured blocks are 4cm x 4cm x 3cm (lxbxh).
- The red voids are 6cm x 6cm x 3cm (lxbxh).
- The violet block is 6cm x 6cm x 6cm in dimension.

## Task

- Time and points based round.
- The robot running on land has to pick up green coloured objects (on land) and complete its path (bridge) by placing the objects in red coloured slots on the arena.
- On reaching the end of the land zone it has to pick up the violet package and place it on the robot in water.
- The robot in water has to follow the specified path and deliver the package at the violet deposit zone.
- The robot has to move around the blockade in the channel and then reach the green end zone to finish the round.
- If the participant brings a robot capable of traversing on both land and water he can complete the bridge and at the same time pick up the package and deliver it across the water while following the specified path to complete the round successfully.

## Round Rules :

- Maximum Time: 3 minutes
- Maximum number of timeouts allowed: 1(1 min)
- Maximum number of restarts allowed: 1

Note: Restart will only be allowed in case of technical fault in the robot.

**Scoring Formula :**

- Picking object on land: +25 points
- Placing object in the slot: +50 points
- Reaching end point on the land: +50 points
- Picking up the package: +25 points
- Placing package in the deposit zone: +75 points
- Reaching end point on water: +50 points
- Time Bonus: +(Time Left x 2)
- Package falls into water: -25 points
- Bumping into the arena: -25 points
- Restart: -100 points
- Timeout: -50 points

**Team Specifications:**

1) Participating team size should be limited to a maximum of 4 individuals.
2) The students must carry valid student ID cards of their college which they will be required to produce at the time of registration.
3) Students from different institutes can be a part of the same team.

**Prizes**

The Winner will have to mail the following information (immediately after the announcement of results in the Official website of Kshitij) to Kshitij team.

Subject: Kshitij, team id- your position (example- Kshitij, DB1234 – 1st position)

The body of mail :-
1. Account Holder's Name
2. Account Number
3. Bank name and Branch name.
4. IFSC Code