# Cozmo Clench

TASK:

- Teams have to build a manually controlled bot which can do simple tasks of gripping blocks and putting them in target zones so that it can complete the route by overcoming the Hurdles in its path.
- The bot can be wired or wireless. In case the participants use wireless mechanism, they must use dual frequency remote.

ARENA:

- The outer dimensions of the arena are 3000mm X 2500 mm (lxb).
  It consists of the following:
  - Four thermocol blocks with each of dimensions 150mm X 150mm X 100mm (lxbxh).
  - 6 Semi-Circular Pipes of dimension 400mm length & 20mm Radius.
  - 4 rectangular hurdles of dimensions 200mm X 20mm (lxb).
  - **"Deposit Zone 1"**, **"Deposit Zone 4"** of dimensions 200mm X 200mm (lxb) shown in Blue colour.
  - **"Deposit Zone 2"** of dimensions 160mm X 300mm X 100mm (lxbxh) which is shown in Fig. 1.
  - **"Deposit Zone 3"** of dimensions 170mm X 170mm X 100mm (lxbxh) which is shown in Fig. 1.
  - Ramp assembly with an inclination of 20 degrees and a declination of 20 degrees.
  - Two Half Ramp assemblies with an inclination of 15 degrees each.
  - Sand Box of dimensions 350mm X 400mm X 20mm (lxbxh).
  - A Box of stones of dimensions 400mm X 400mm X 20mm (lxbxh).
  - The bridge (in Fig. 4) spans over a dimension of 550mm X 400mm X 90mm.
  - An individual wood piece (in bridge) is of dimension 400mm X 25mm with gaps of dimension 400mm X 10mm.
  - **"Checkpoints" A, B, C & D** of Dimensions 400mm X 30mm are shown in Light Green Colour.
  - **"START"** and **"END"** of dimensions 400mm x100mm are shown in Green Colour.

Fig.1 Top View
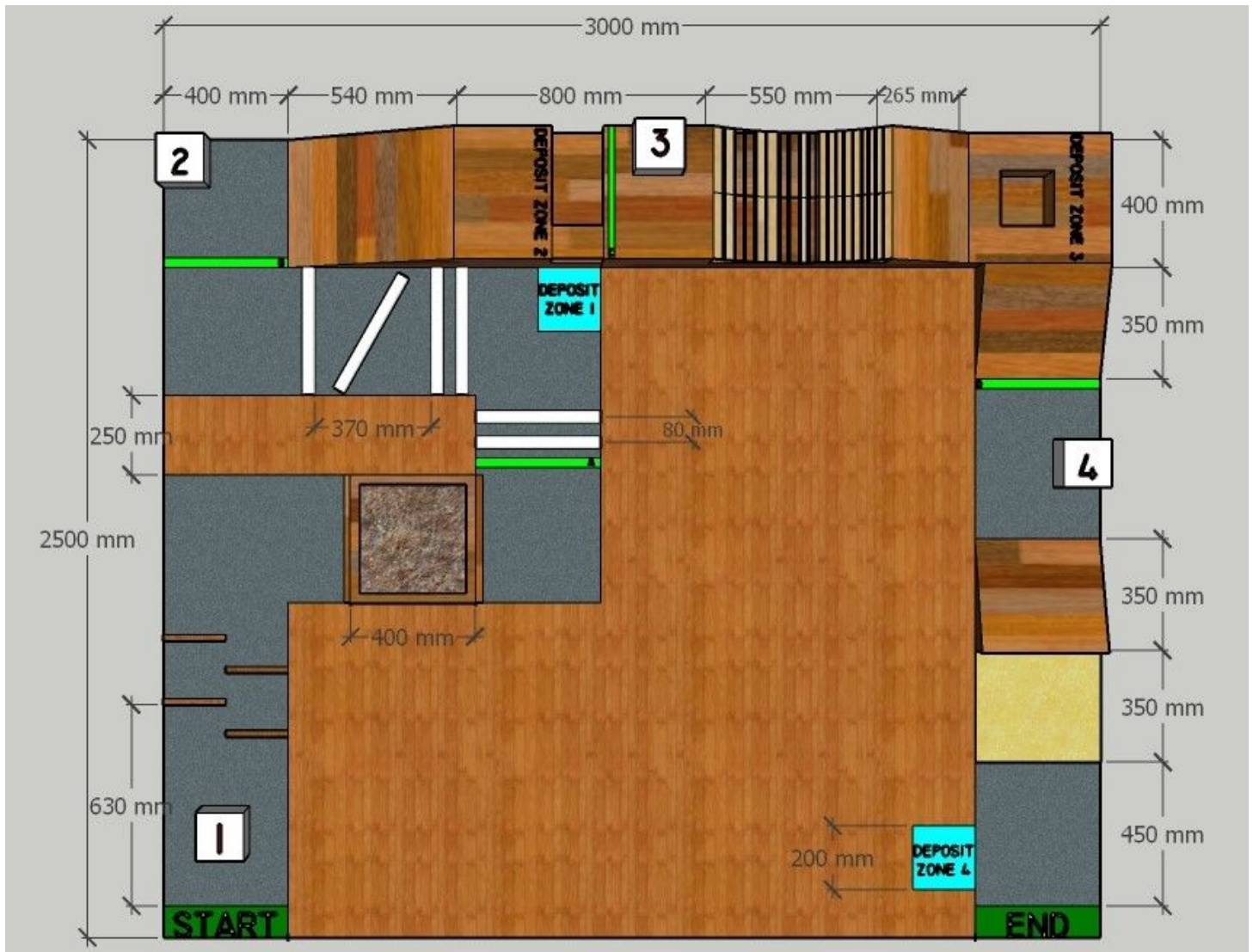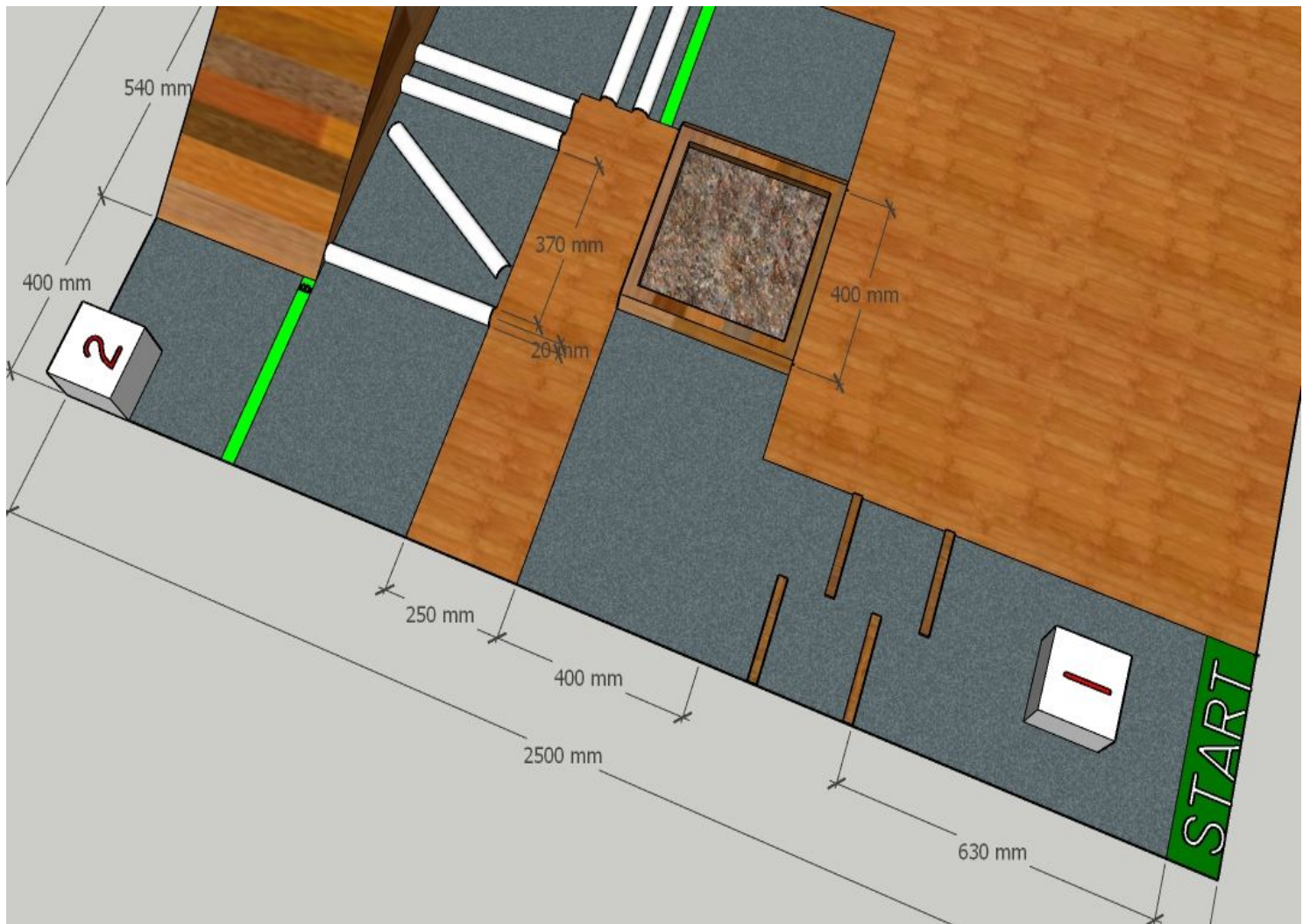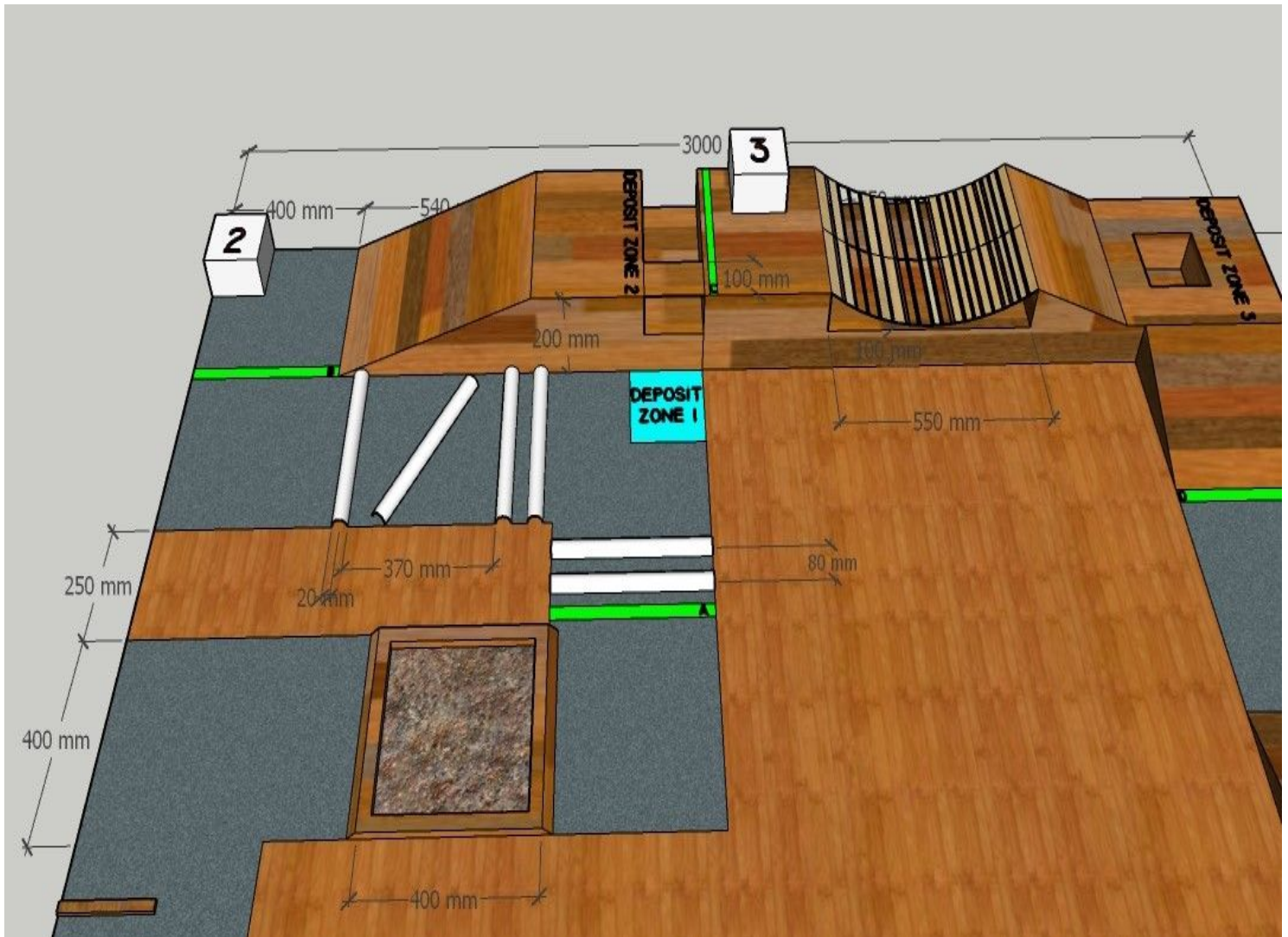
Fig.2 Side View

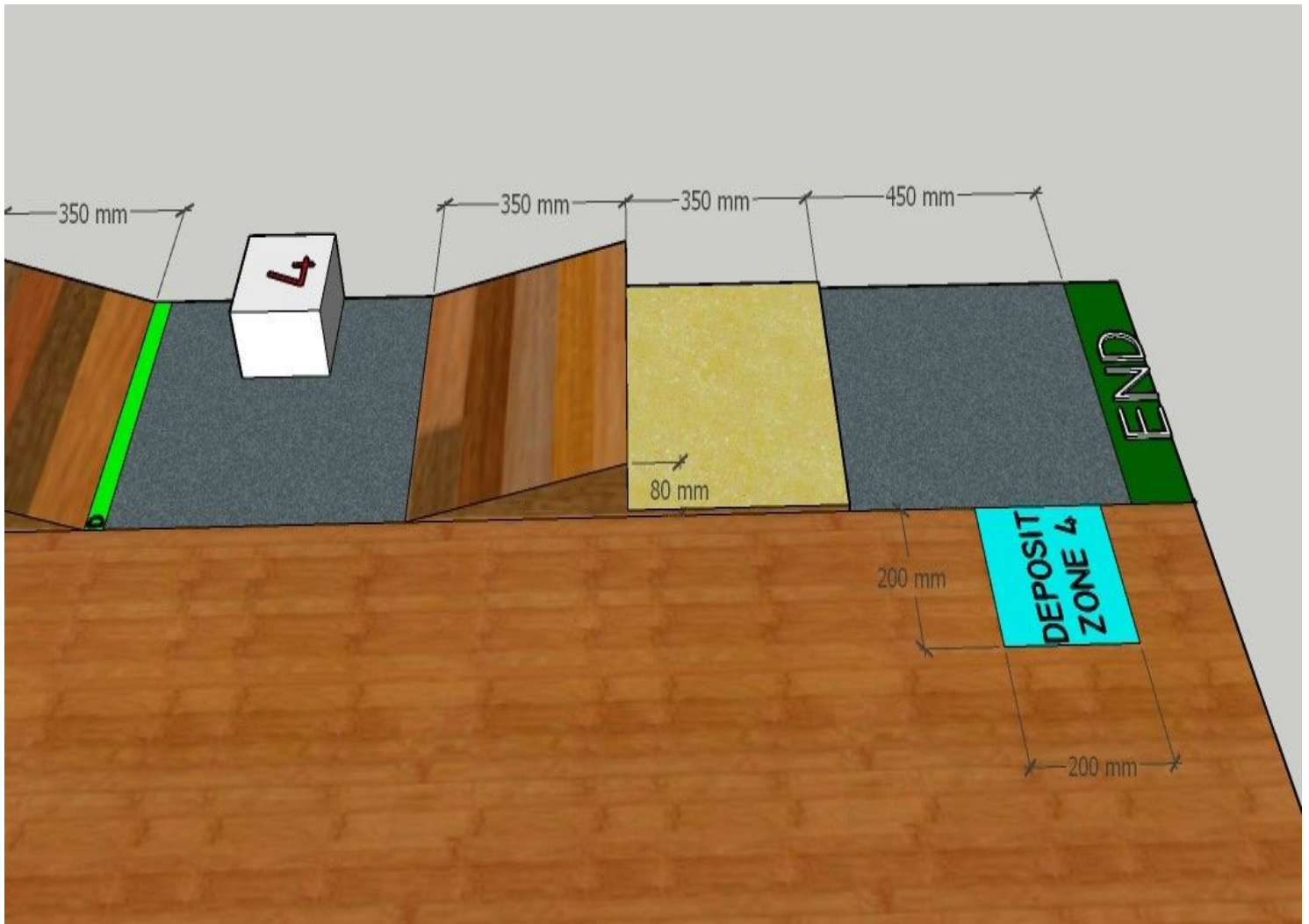**Fig.3 Start**

Fig.4 Checkpoint A, B, C

Fig.5 Checkpoint D

Fig.6 End

GAMEPLAY:

- The bot must start from the **'START'** mark (Fig.3).
- The bot has to arrive at **'Checkpoint A'** by avoiding the obstacles in between while carrying **'Block 1'**.
- The bot has to put **'Block 1'** in the **'Deposit Zone 1'**.
- The bot has to arrive at the **'Checkpoint B'** after crossing the obstacles and **'Deposit Zone 1'**.
- After that, it has to pick up the **'Block 2'** and arrive at the **'Checkpoint C'** along with the block. If the block gets dropped on the ramp, it will have to go again to **'Checkpoint B'**.
- The **'Block 2'** has to be placed in the **'Deposit Zone 2'**.

- After that, the bot has to pick up the **'Block 3'** and place it in the **'Deposit Zone 3'**. If the block gets dropped while moving on the bridge, it has to go again to the **'Checkpoint C'**.
- Then the bot has to arrive at the **'Checkpoint D'**.
- The Bot then has to pick up the **'Block 4'** and jump from the ramp (inclination 15 degrees) and land safely in the 'Sand box'. If the Block gets dropped while landing, then again it has to go back to the **'Checkpoint D'**.
- The bot has to place the **'Block 4'** in the **'Deposit Zone 4'**.
- Then it has to cross the gate to arrive at the final **'END'** mark.

BOT SPECIFICATIONS:

- The dimensions of the bot should be less than or equal to **300 mm X 200mm X 300mm (lxbxh)** failing which the team will be **disqualified** from the competition. The bot can, however, extend its dimension once the run starts. An error of **(+5%/-5%)** is Permitted.
- The bot must be controlled manually.
- Teams can use both wired as well as wireless control mechanisms. In case of wired bots, the length of wire should be minimum 2 meters so that the wire remains slack at any instant of time. If the participants use wireless mechanism then it is mandatory to use a **dual frequency remote**.
- The dimensions of the remote are not included in the size constraint of the bot.
- **The Bot must have an onboard power supply in any case**.
- Participants **are not supposed to use any readymade** Lego components or readymade gripping mechanism. However, the participants are allowed to use readymade gear assemblies.
- Irrespective of the mechanism used, only one person will be allowed to control the bot.
- Failing to meet any of the above specifications will lead to immediate disqualification.

POWER SUPPLY:

- The participants should use an on-board electric or non-electric power supply i.e. the power source should be on the bot itself. The power source must be non-polluting and must satisfy the safety constraints determined by the organizers. In case of the non-electric power supply, the participants must get it approved from the organizers beforehand via email. Organizers are not responsible for the inconvenience if the approval is not sought.
- In case of an electric power supply, the voltage between any two points should be less than or equal to **24V DC** at all times during the run.
- AC power supply will not be provided and cannot be used in the competition.

GAME RULES:

- The bot would be checked for safety before starting and will be disqualified if found unsafe for other participants.
- Only one team member is allowed to handle the bot. No other team member is allowed to enter the arena.

- The bot will be liable for disqualification if it causes any kind of damage to the arena.
- The bot is **not allowed to slide the blocks** against the ground except for fine adjustments in the Deposit Zone.
- Any damage done to the blocks will lead to immediate disqualification.
- **Maximum of 6 minutes will be given for each team**.
- The arena has 4 checkpoints, In case the bot gets stuck at any place, then the block it is carrying (if any) will be repositioned at its initial position and the bot will be kept in the checkpoints corresponding to that zone. There will be no penalty for this.
- The blocks which are correctly deposited in deposit zones/pushed from ramp won't be disturbed.
- The timer won't be stopped during this process.
- **In case of any disputes/discrepancies, the organizer's decision will be final and binding**.
- **The organizer's reserves the right to change any or all of the above rules as they deem fit**. Change in rules, if any will be highlighted on the website and notified to the registered teams.

JUDGING:
- 30 points will be awarded for successfully crossing hurdles between the START mark and the Checkpoint A.
- 20 points will be awarded for placing the Block 1 in the Deposit Zone 1.
- 20 points will be awarded for placing the Block 2 in the Deposit Zone 2 and crossing the wedge, points will be awarded only once for crossing the wedge. Points will not be awarded if the bot crosses the wedge multiple times.
- 20 points will be awarded for placing the Block 3 in the Deposit Zone 3.
- 10 points will be awarded for crossing the Checkpoint D.
- 30 points will be awarded to Land safely in the Sand Box while holding the Block 4.
- 20 points will be awarded to keep the Block 4 in the Deposit Zone 4.
- In case bot falls/crosses the referred path then 10 points will be deducted and the bot will be placed at the previous Checkpoint corresponding to that zone as shown in Fig. 1.

SCORING:
- A = Points scored
- P = Penalties
- T = (360 -Time taken in seconds)
- Total points scored = A + T - P
- The team with maximum points will be declared as the winner.

TEAM SPECIFICATIONS:
- A team may consist of a maximum of 4 members.
- Students from different educational institutes can form a team.

ELIGIBILITY:

● All students with a valid identity card of their respective educational institutes are eligible to participate.

CERTIFICATE POLICY:

● Top ten teams from Each Zonal Qualifiers will qualify for the Grand Finale at Techfest 2019-20 which will be held during **3rd - 5th January, 2020**.
● Top three teams in the grand finale will be awarded Certificates of Excellence.
● E-Certificates of participation will be given to the teams scoring more than the critical marks which will be decided later.