

Mechatron: Wildcard

Task:

1. Teams must build a manually controlled machine which can do simple task of gripping blocks and putting them in deposit zones so that it can exit the arena by overcoming the discontinuity in the ramp.
2. 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 2276mm X 1750mm (lxb). It consists of the following:

1. Four thermocol blocks of dimensions 150 mm X 150 mm X 100 mm (lxbxh).
2. Two ramps, one with inclination of 20 degrees and another with 30 degrees.
3. Four semi cylindrical shaped hurdles each of diameter 30 mm on the 30 degree ramp.
4. A thermocol block of dimensions 170 mm X 150 mm X 100 mm (lxbxh) placed **fixed** and connecting the two ramps.
5. Hurdle with 6 wedges joined together. Dimensions of a wedge are 475mm X 54mm X 40mm (lxbxh) i.e. distance between 2 consecutive top edges is 54mm and the height of wedge is 40mm.
6. A seesaw with width 40mm, horizontal projection of length 660mm and height in balanced position as 150mm.

Note: The dimensions of the arena will be accurate to within 5% or 20mm, whichever is less.

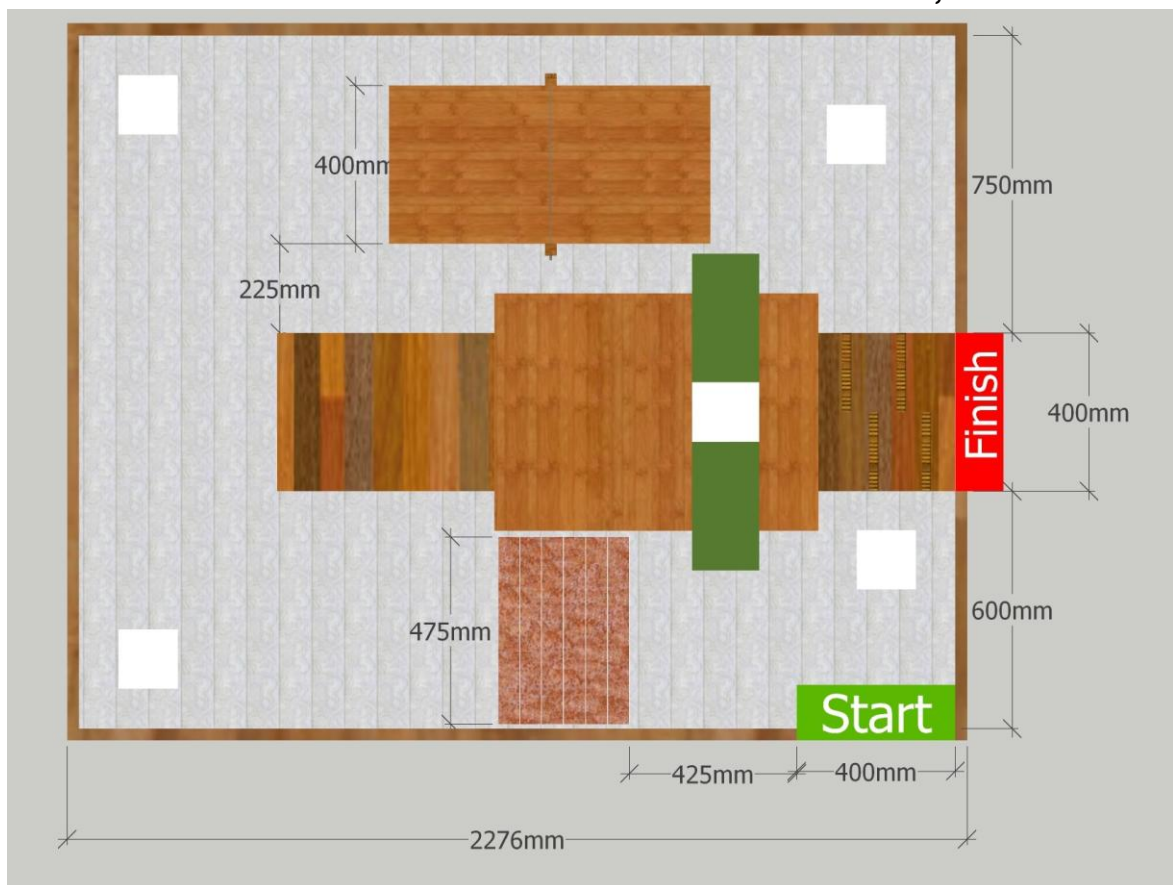


Figure 1: Top view of complete arena



Figure 2: Isometric view of complete arena

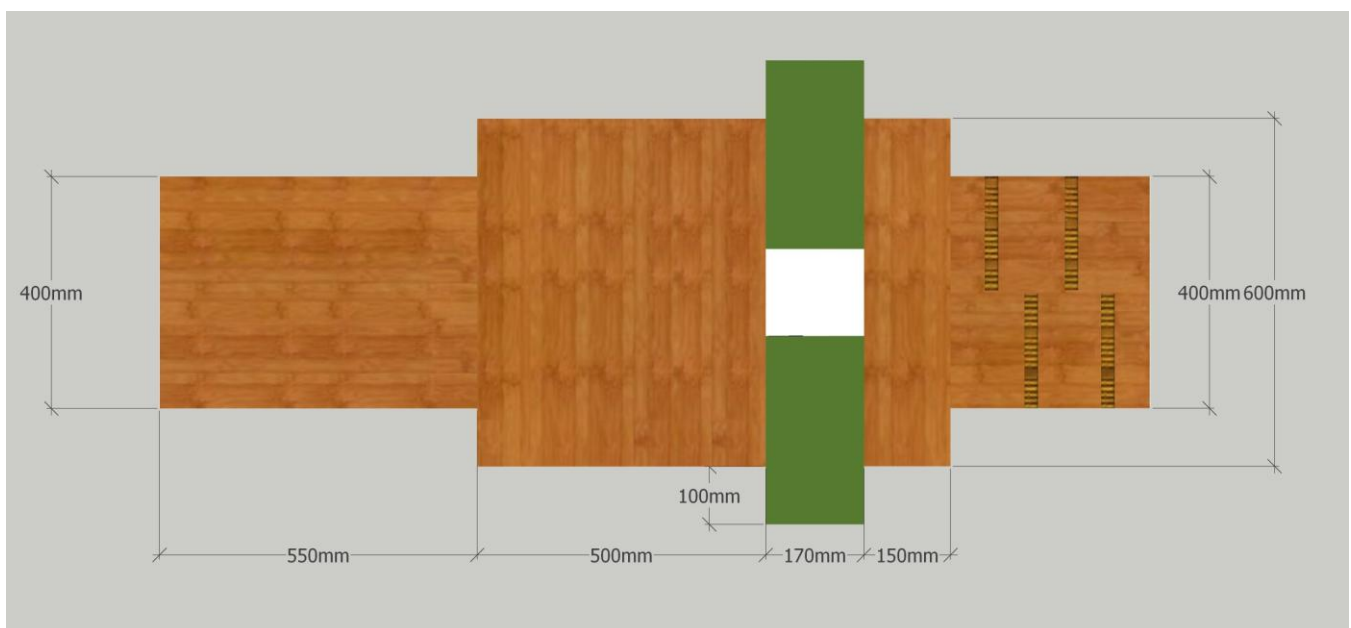


Figure 3: Top view of bridge

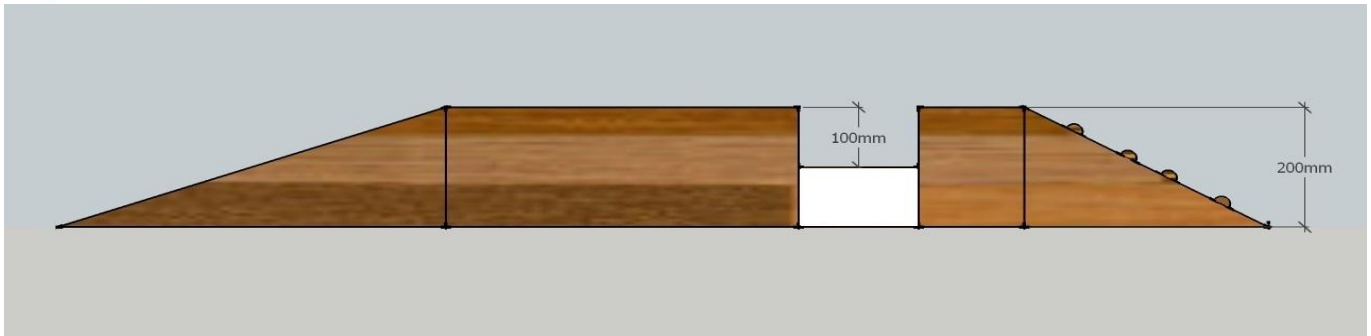


Figure 4: Side view of bridge

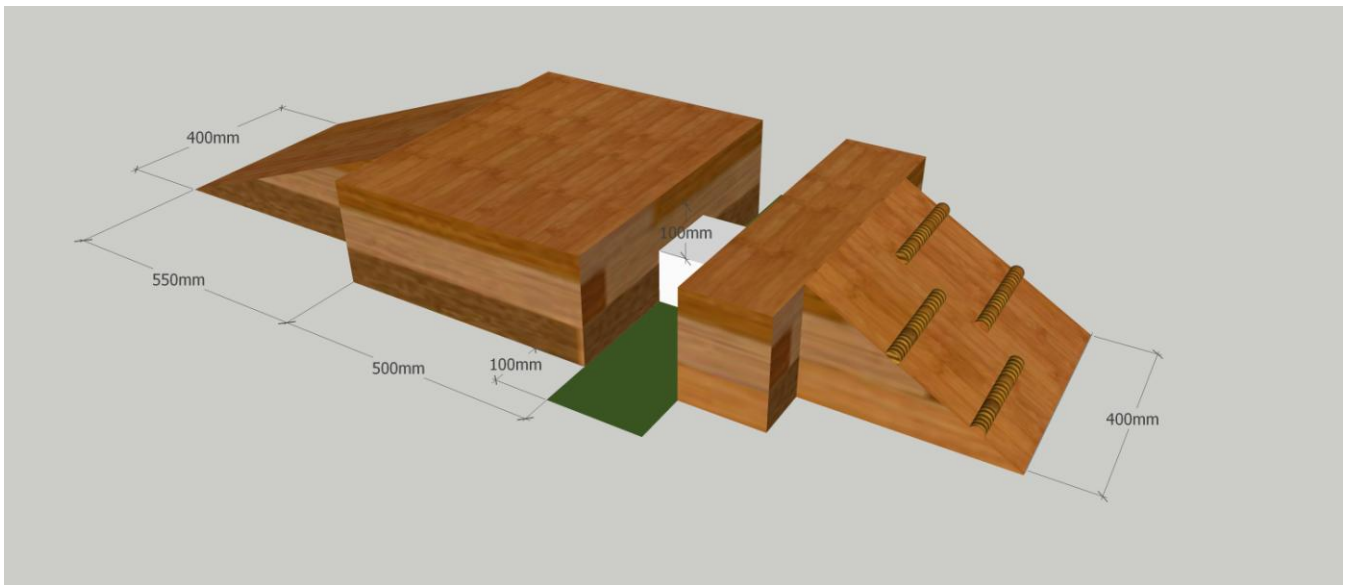


Figure 5: Isometric view of bridge

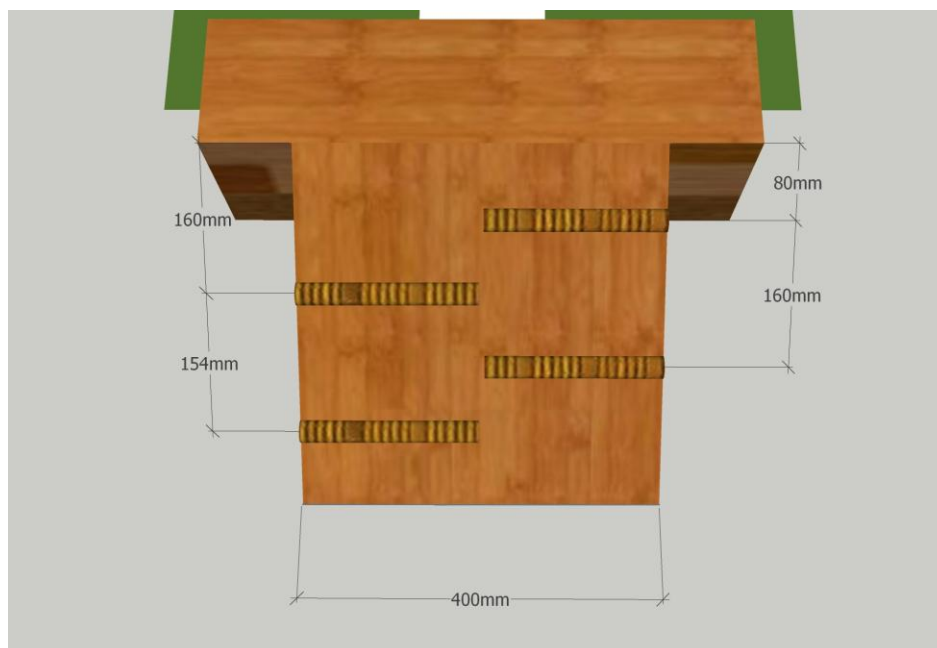


Figure 6: Bridge hurdles

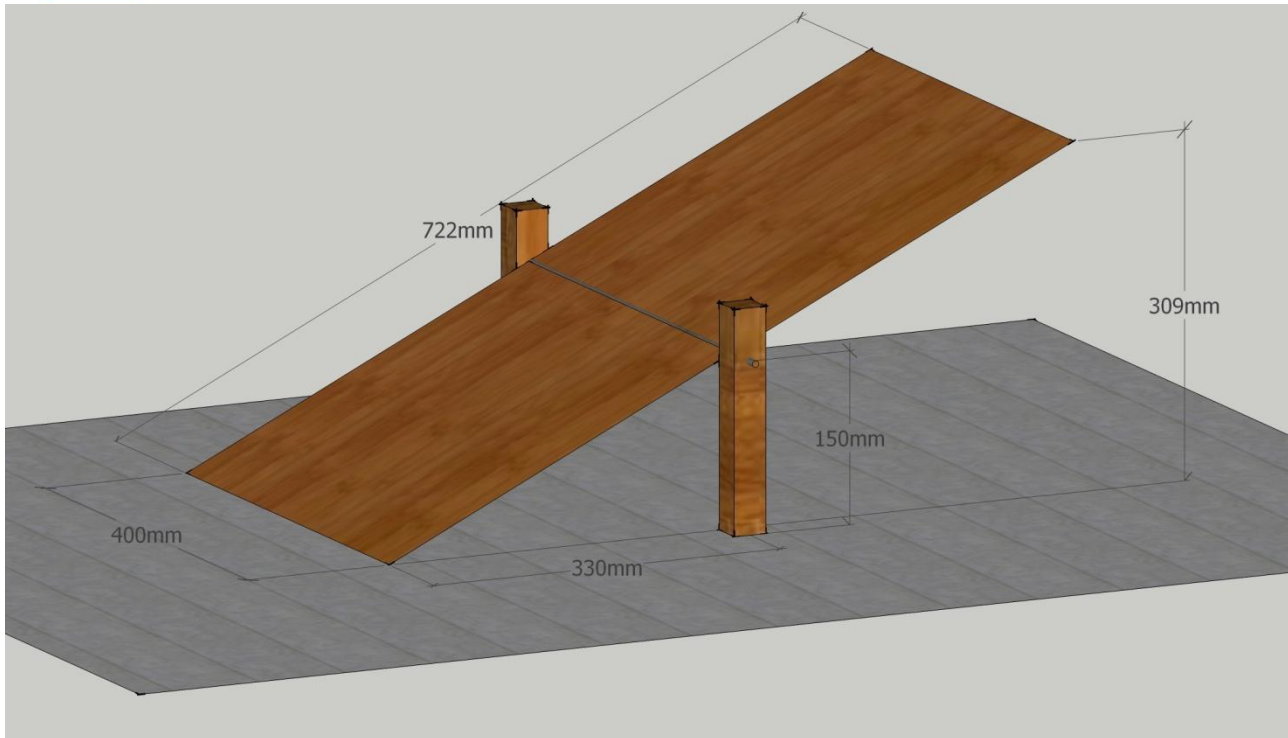


Figure 7: Seesaw

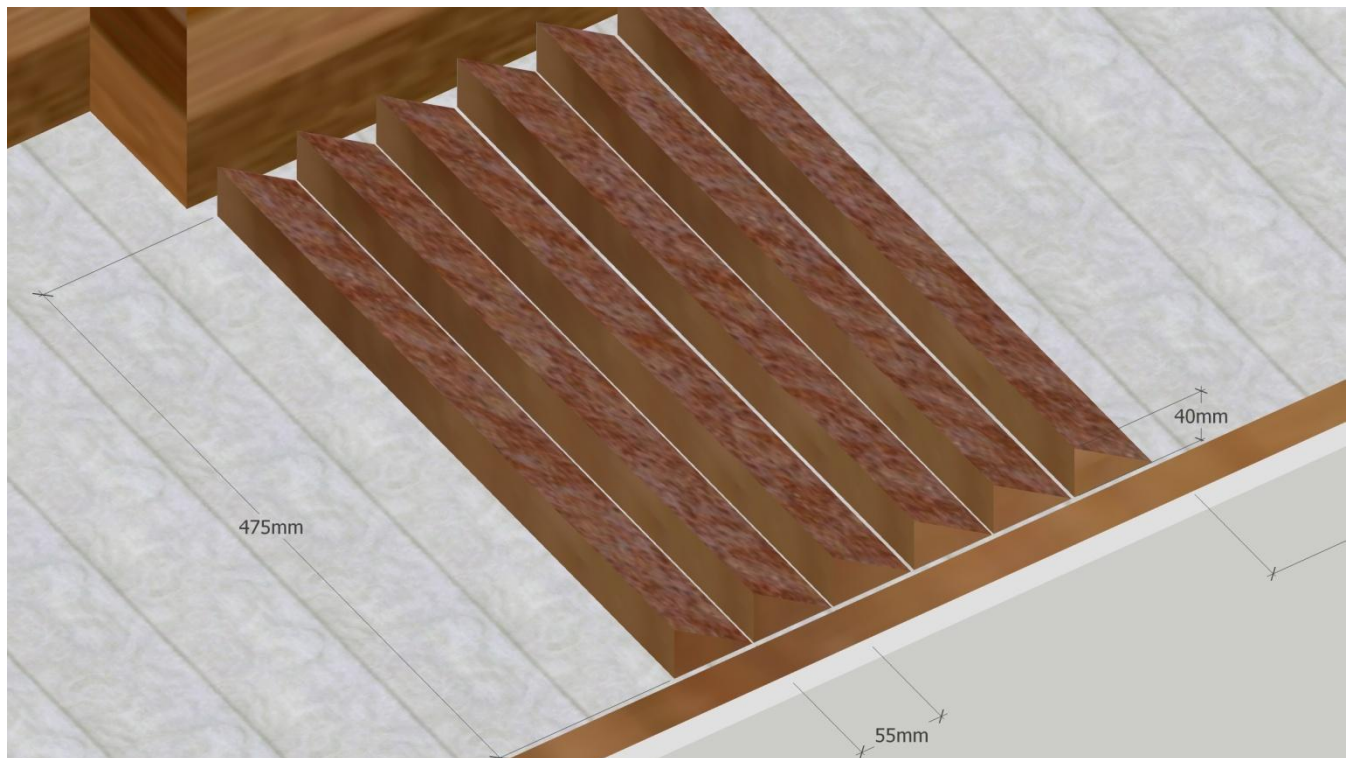


Figure 8: Wedges



Figure 9: Position of blocks



Figure 10: Position of blocks



Figure 11: Position of blocks

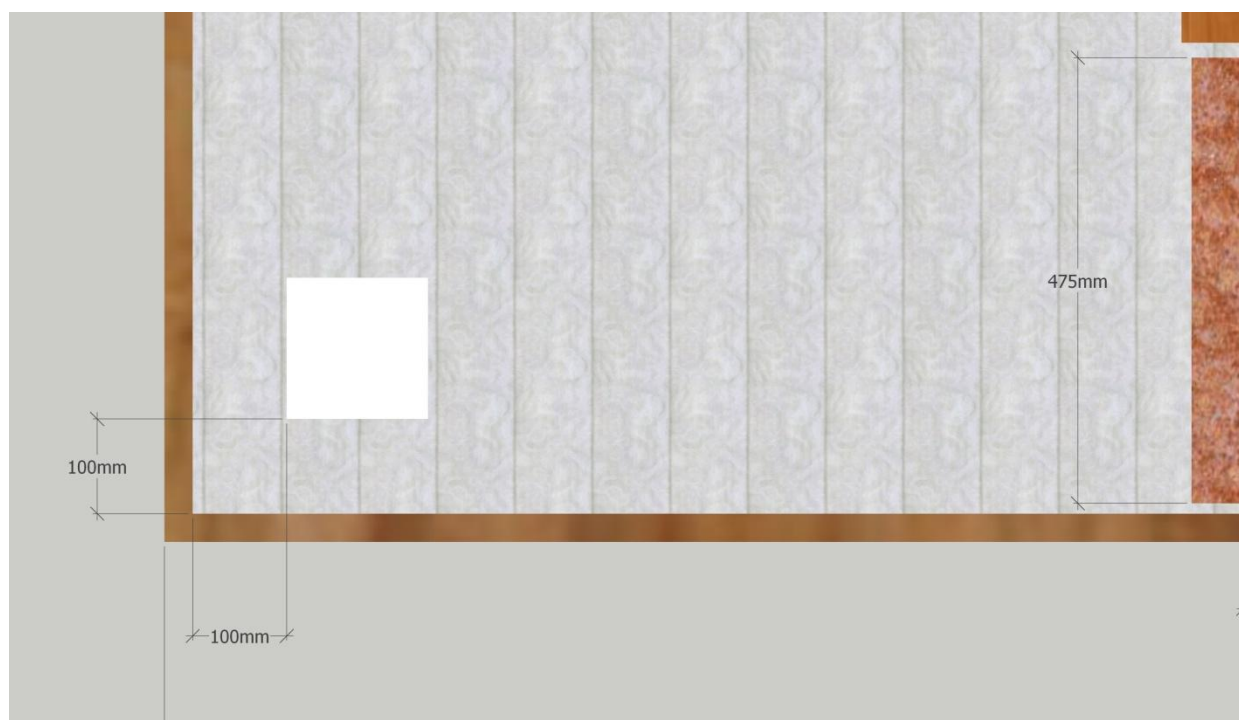


Figure 12: Position of blocks

Specifications:

Bot Specifications:

1. The dimensions of the bot should be less than or equal to 300 mm X 300 mm X 300 mm at the start of the game failing which the team will be disqualified from the competition. However the bot can extend its dimension once the run starts.
2. The bot should be controlled manually.
3. 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.
4. The dimensions of the remote are not included in the size constraint of the bot.
5. Bot must have an on-board power supply in any case.
6. Participants are not supposed to use any readymade lego components or readymade gripping mechanism. However the participants are allowed to use readymade gear assemblies. Violating this clause will lead to immediate disqualification of the team.
7. Irrespective of the mechanism used, only one person will be allowed to control the bot.

Power Supply:

1. The participants should use an onboard 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 organisers. In case of non-electric power supply, the participants must get it approved from the organisers beforehand via email. Organisers are not responsible for the inconvenience if the approval is not sought.
2. In case of an electric power supply, the voltage between any two points should be less than or equal to 24 V DC at all times during the run.
3. AC power supply will not be provided at the time of the competition.

Gameplay:

1. The bot must start from the START line.
2. The bot has to keep any two blocks in the deposit zones marked in green colour in the arena. Only one block is to be kept per deposit zone. Bot is not allowed to slide any block outside the deposit zone.
3. The bot is allowed to pick only one block at a time. Order of the blocks to be picked is left completely at the discretion of the participants.
4. The block must be placed completely in the deposit zone.
5. The bot has to place the remaining two blocks (one at a time) over the platform created by the two blocks in the deposit zones and a block connecting the two ramps. These two blocks should be placed by climbing the bridge and in such a way that they fill the gap and allow the bot to cross over.
6. The bot should cross the ramp and reach the FINISH line overcoming the speed-breakers.

Game Rules:

1. The machine would be checked for its safety before the run and will be disqualified if found unsafe for other participants.
2. Only one team member is allowed to handle the bot. Other team members are not allowed to enter the arena.
3. The bot will be liable for disqualification if it causes any kind of damage to the arena.
4. The bot is not allowed to slide the blocks against the ground except for fine adjustment in the deposit zone.
5. In case the bot gets stuck at any place and at any point of time, then the block it is carrying(if any) will be placed to its initial position and the bot will be placed back to the start position. The blocks which are correctly deposited in deposit zone won't be disturbed. The timer won't be stopped during this process.
6. Any damage done to the blocks will lead to immediate disqualification.
7. Maximum of 6 minutes will be given for each team.

General Rules:

1. The teams must adhere to the spirit of healthy competition.
2. Organisers reserve the right to disqualify any team indulging in misbehaviour or violating any rules.
3. Any team that is not ready at the specified time will be disqualified from the competition automatically.
4. The time measured by the organisers will be final and will be used for scoring the teams.
5. Time measured by any contestant by any means will not be accepted for scoring.
6. In case of any disputes/discrepancies, the organisers' decision will be final and binding.
7. The organisers reserve the rights 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.
8. Note that at any point of time, the latest information will be that which is on the website. The information provided in the pdf downloaded earlier may not be the latest. However, registered participants will be informed through mail about any such changes.

Judging:

1. 20 points will be awarded for placing a block in deposit zone.
2. 30 points will be awarded for placing a block over the blocks kept in the deposit zone after climbing the bridge.
3. 30 points will be awarded for crossing the wedges (points will be awarded only once for crossing the wedges. Points will not be awarded if the bot crosses the wedges multiple times).
4. 30 points will be awarded for crossing the seesaw (points will be awarded only once for crossing the seesaw. Points will not be awarded if the bot crosses the seesaw multiple times).
5. Total score = Total points + Number of seconds left from 360 seconds (Number of seconds will be accounted for only if all 4 blocks are placed in their respective positions and the bot has crossed the FINISH line).
6. The team with maximum points will be 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 in the event.

Certificate Policy:

1. Top three teams will qualify to the finale and will be awarded Certificate of Excellence for the wildcard round.
2. Certificate of participation will be given to the top 50% teams.