



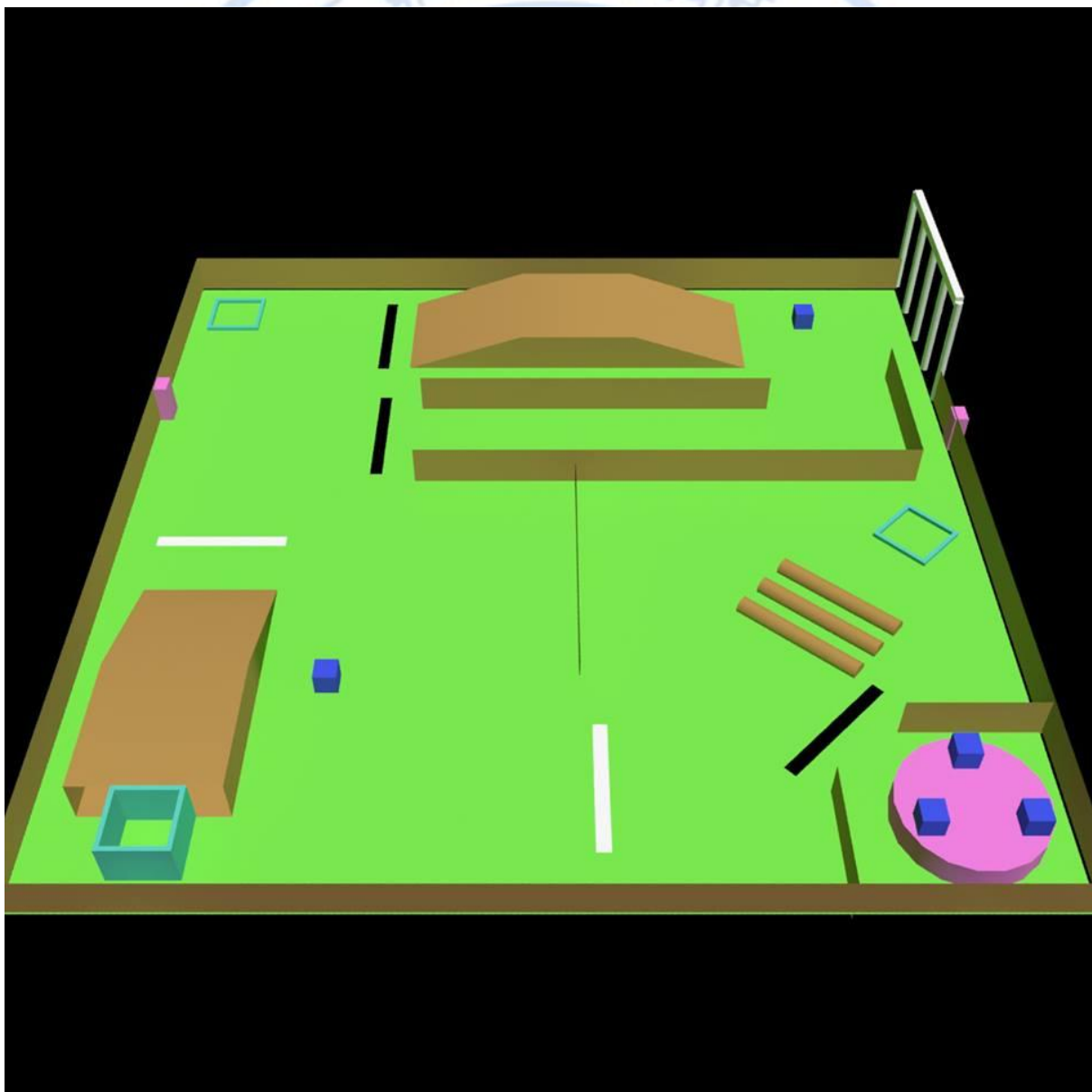
Y13 PROBLEM STATEMENT

Team Event, Freshers

Points: 30

ARENA

View 1:



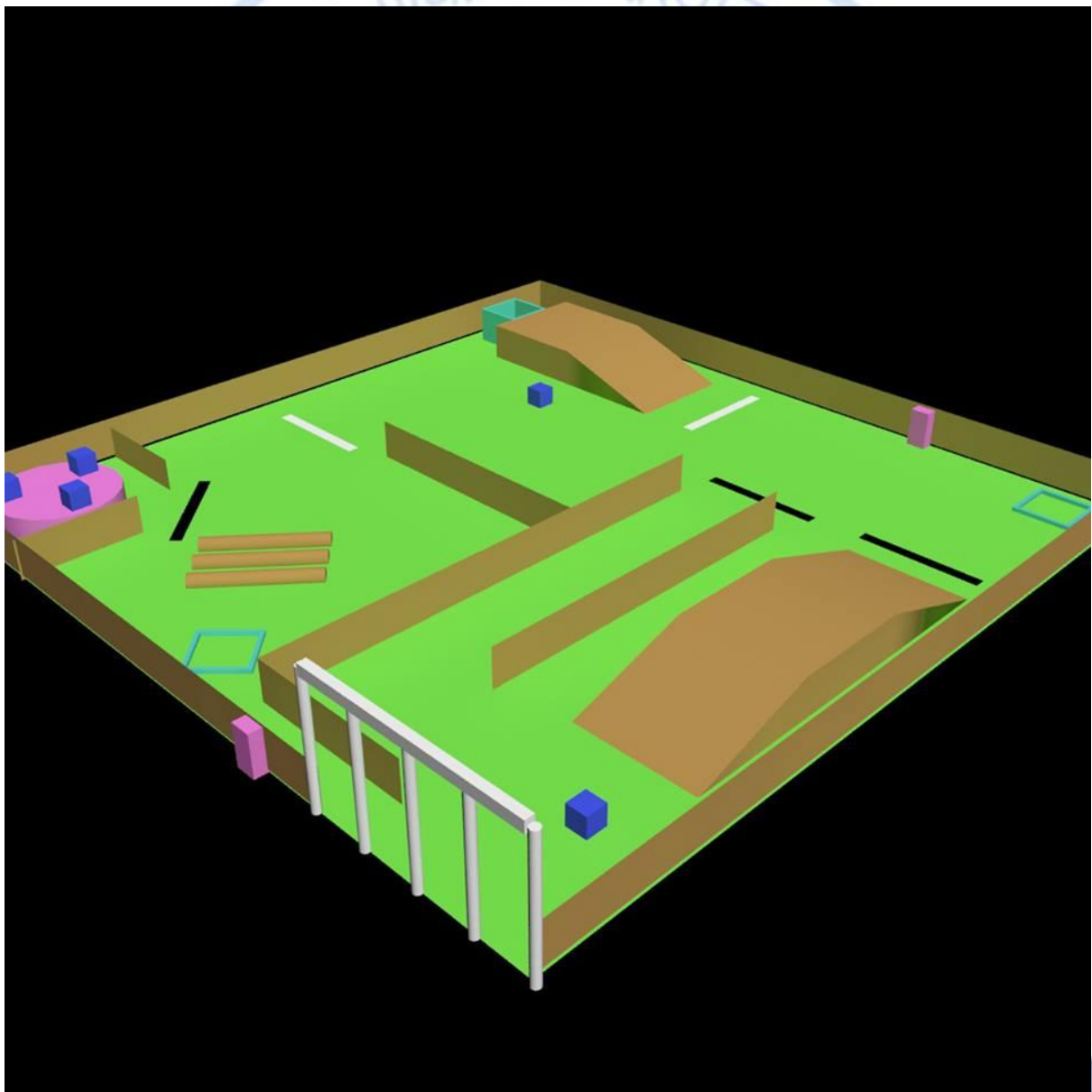


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View 2:



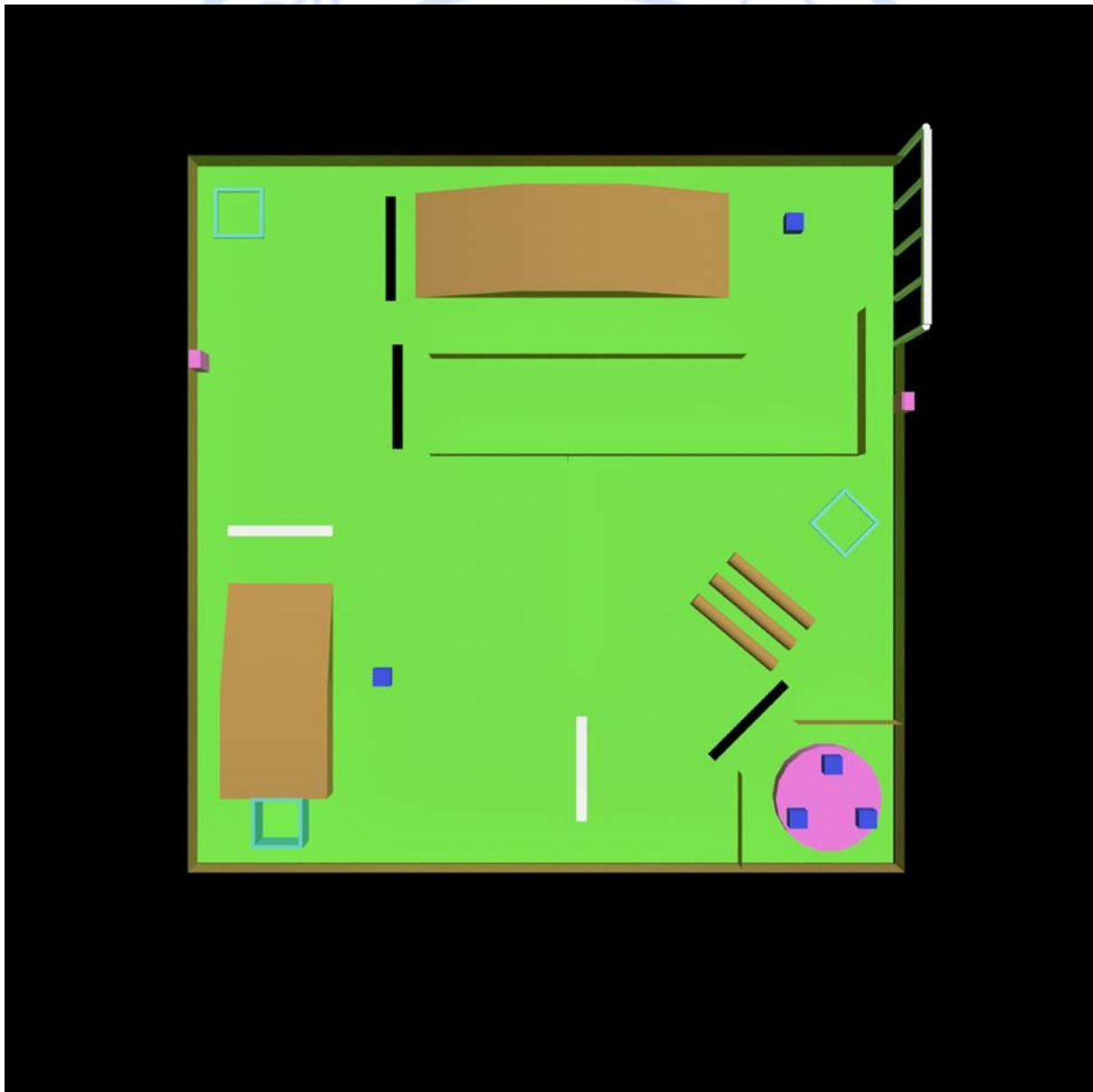


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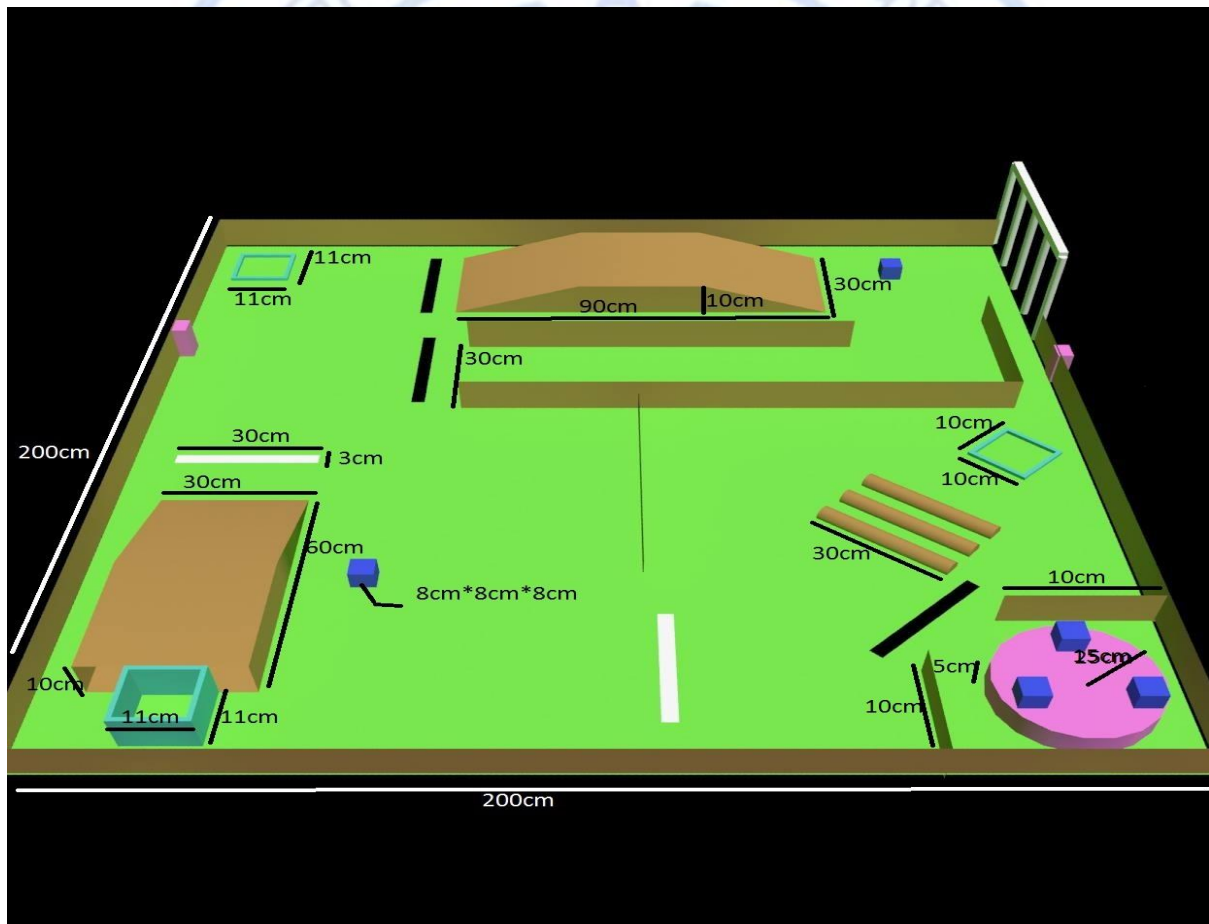
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Top View of Arena:





Arena Specifications:





GAME PLAY

- 1.) The arena consists of a green background. Strips of black and white colour are placed randomly in the arena.
- 2.) The teams will start the game from outside the arena. A push button is placed near the gate which needs to be pressed to open the gate to the arena.
- 3.) As soon as the bot enters the arena it encounters a block of dimension 8cm*8cm*8cm which has to be picked up and placed in the basket-1.
- 4.) In order to reach basket-1 teams will either have to cross a bridge of height 10cm, length 90cm and width 30cm or an alternate path is also provided.
- 5.) In the path to the basket there will be a black strip which needs to be detected with a glow of LED. Note that the points for correctly detecting the black strip will be allotted only once.
- 6.) After this the bot will have to pick up a block of dimension 8cm*8cm*8cm placed near the wedge of height 10cm, length 60cm and width 30cm, then climb the wedge detecting the white strip placed in the path with a different colour LED and then finally put the block in the raised basket. Note a team will be awarded points for correctly detecting the colour strip before the wedge only once.
- 7.) Then the bot will have to go towards the turn table detecting a white strip in the path. Points for correctly detecting the white strip will be given only once. In order to access the blocks of dimension 6cm*6cm*6cm kept on the turn table of height 5cm the teams will either have to detect the black strip near the turn table and then the turn table will rotate automatically or they will have to return back, take a longer path and press the push button kept in the arena near the basket-1 to rotate the turn table.
- 8.) The points for correctly detecting the black strip will be given each time it comes to pick block 'i+1' after placing the block 'i' i.e. 3 times only and there would be only one block placed on the turn table at a time and hence they can carry one block at a time. Also, the block will be placed on the diametrically opposite side from where the robots can access the block (i.e. At the extreme corner) before the turn table starts rotating and any attempt to pick the blocks from the turn table if the turn table is not rotating will lead to immediate disqualification. This means if the black strip before the colour strip was not identified correctly, then the robot has to compulsorily go back and press the push button as shown in the arena to access the blocks on the turn table.
- 9.) Now to place these blocks in the basket-3 the teams will again have an option either to take a path with speed breakers to score extra points or a simple alternate path. The teams will be given points for crossing the speed breaker while carrying the block only and if the block falls during the traverse over the speed breaker then no points will be given. Also, the teams will be allotted points only once for each block so they can gain the bonus points for traversing over speed breaker 3 times only.
- 10.) The teams have to put the 3 blocks kept on the turn table one by one into the basket-3 and the timer stops when they place the third block in the basket.
- 11.) The weight of the blocks is around 50 grams and the basket-1 and basket-2 are of dimensions 11cm*11cm while basket-3 is of size 10cm*10cm.



Rules:

- 1.) The bot size shouldn't increase 25*25*25 cubic cm initially, and weight should be less than 2kg.
- 2.) You have to use LED's to distinguish between the colours of strips and arena i.e. white, black and green.
- 3.) The bot can expand during its run.
- 4.) The bot has to be kept within the starting point initially.
- 5.) The bot has to move within the arena at all points.
- 6.) The voltage difference between any two points in the bot shouldn't exceed 20 V and there would be provision of power supply at the arena.
- 7.) Use of Lego-kits is prohibited.
- 8.) Tethered control is not allowed.
- 9.) All the teams will be given 2 trials of 5 minutes each in which they will have to try to score the maximum points.
- 10.) In case of tie, the following criteria will be considered in the given preference order:
 - a) no. of blocks placed
 - b) no. of strips detected
 - c) Team placing the last block earliest will be given preference

POINTS STRUCTURE

S.No	PARAMETER	POINTS
1	Strip detection	30 each
2	Picking block 1 and block 2	10 each
3	Picking block 3-5	20 each
3	Placing Block in basket-1	10
4	Placing Block in basket-2	20
5	Placing Blocks in basket-3	20 each
6	Manual interference	-20
7	Wrong strip detection	-10
8	Going Out of the Arena	-20



BONUS POINTS

- 1.) crossing the bridge → 20 points
- 2.) crossing the speed breakers → 10 points each time

MAX POINTS POSSIBLE

1.) LED detection	-	30 * 6 = 180
2.) Picking blocks 1 and 2	-	10 * 2 = 20
3.) Picking blocks 3, 4, 5	-	20 * 3 = 60
4.) Placing Block 1 in basket 1	-	10 * 1 = 10
5.) Placing Block 1 in basket 1	-	20 * 1 = 20
6.) Placing Block 1 in basket 1	-	20 * 3 = 60
7.) Crossing the bridge	-	20 * 1 = 20
8.) Crossing the speed breakers successfully	-	10 * 3 = 30
Total	-	400 points

DISCLAIMER

In case of discrepancies, the decision lies in hands of the co-ordinators.

CONTACTS

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