Robotricks

Team Event, Y14 only
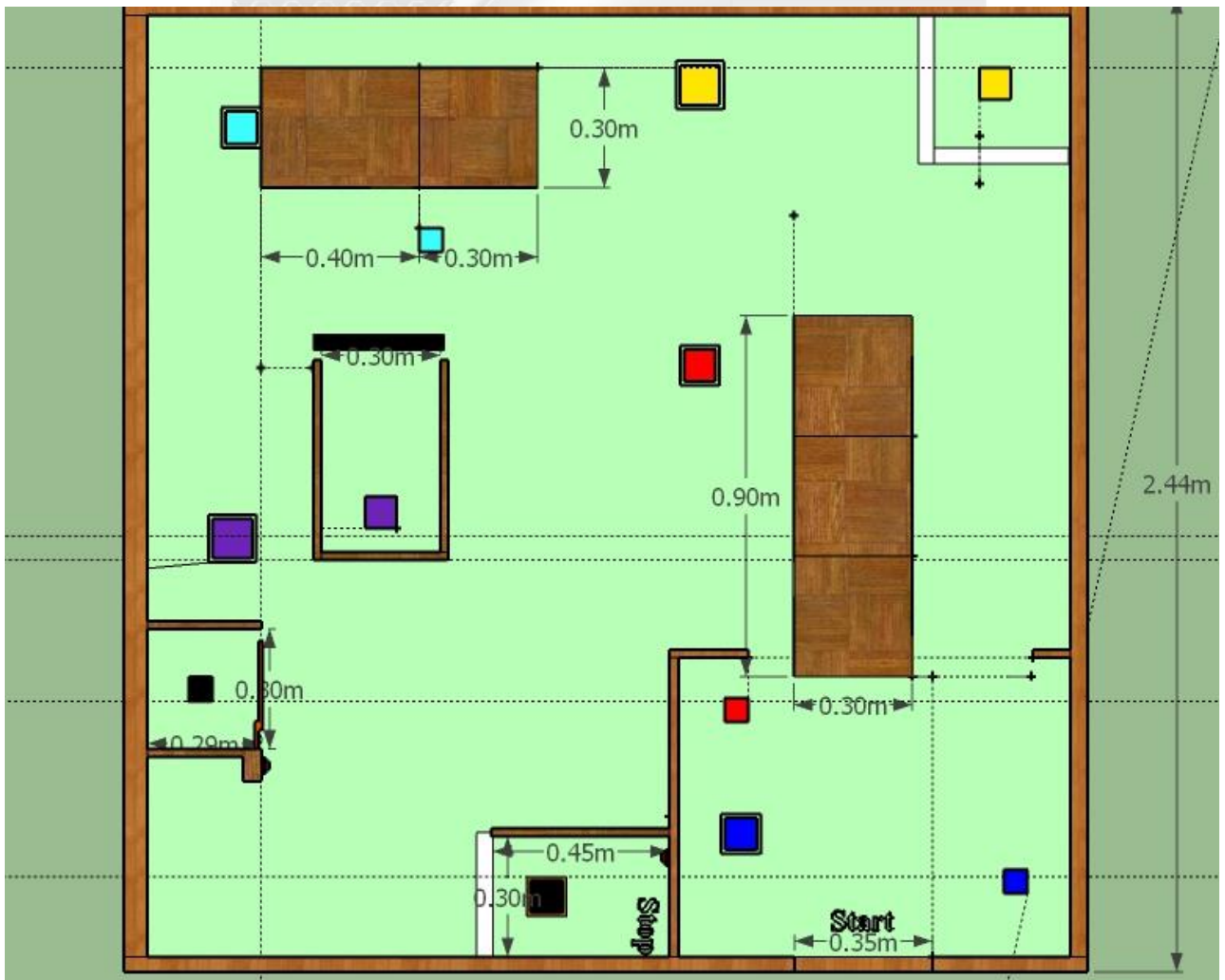*Robotics Club*

ARENA, View 1:

ARENA TOP VIEW:

ARENA VIEW 3:
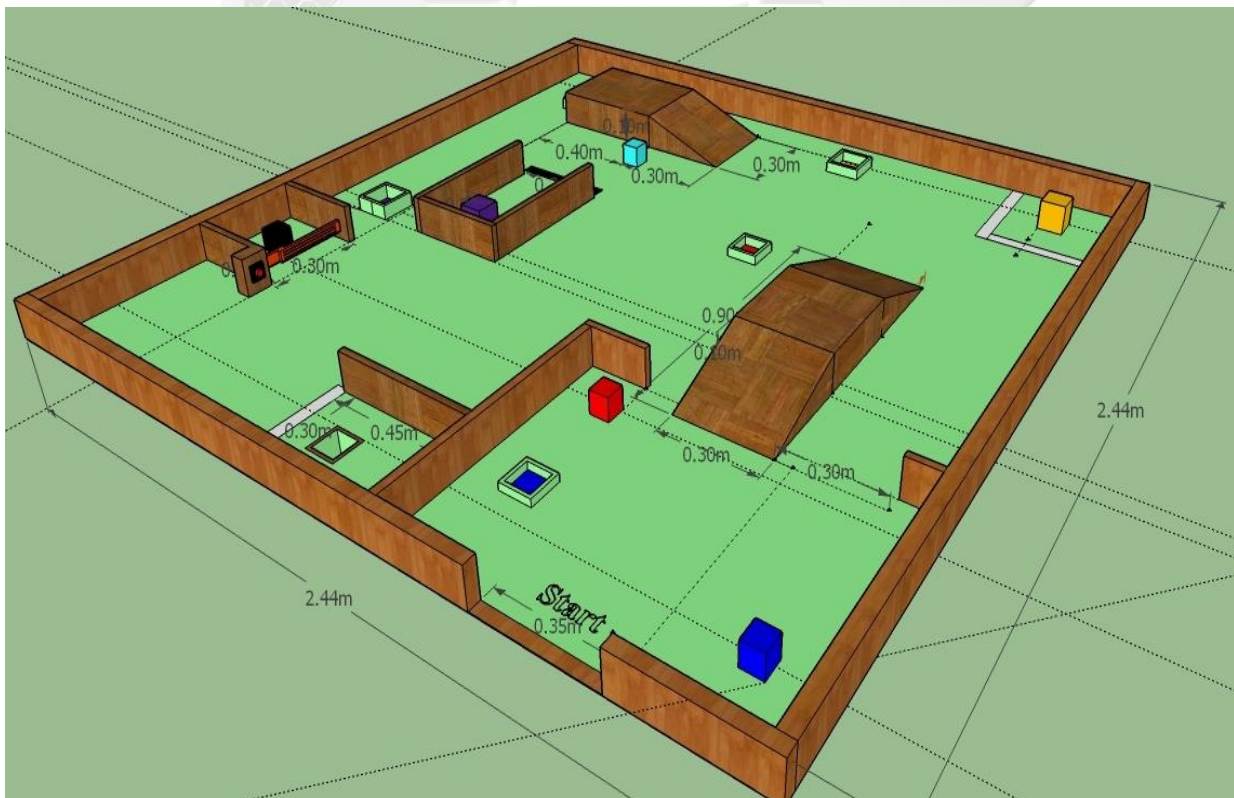
GAMEPLAY

Arena consists of a green coloured ground. 3 strips of black and white have been placed randomly in the arena.

The teams need to start from outside the arena.

NOTE:

A.) All the blocks have to be dropped in the basket of the corresponding colour (e.g. Blue block will be placed in blue basket)

B.) A team will be granted points only once for detecting each strip.

C.) A team can perform the below given tasks in any order.

1.) As soon as the bot enters, it will encounter a navy blue block which has to be picked up and dropped in the basket near it.

[10 points]

2.) In this task the bot will encounter a red block which has to be taken over the wedge and dropped in the basket on the other side. An alternative route has also been provided which does not involve going over the edge but causes a penalty.

[20 points, Penalty: -10 points]

3.) This task involves a yellow block, the path to which also contains a white strip. The bot has to detect the white strip and glow a red coloured LED, then pick up the block and place it in the corresponding basket.

[10 points (block) + 20 points (strip)]

4.) This task involves a light blue block which the bot will pick up, climb the half wedge, drop the block from a height into the basket directly below it and come down the wedge in reverse.

[25 points]

5.) This task involves a purple block which will be placed in a slightly narrow pathway into which the bot will enter while detecting a black strip and glowing a yellow coloured LED, pick the block up, come back and place it in the nearby basket.

[25 points]

6.) This task involves a black block which is inside a gate which can be opened by pressing switch 1. The bot then has to pick up the block and drop it in the black coloured hole, the path to which also involves a white strip which the bot will detect and glow a red coloured LED. This task will be considered complete only if the block has entered the hole completely (i.e. one side of the block is touching the base of the hole completely)

[All the points the team has scored up to that point will be doubled. This task has no points of its own. The points which the team scores after this will not be doubled.]

7.) The bot will then go over the just-filled hole and press a switch ahead which light up the LED.

[20 points]

ARENA DESCRIPTION

1. Arena Size :
   a) Length = 2.44m
   b) Breadth = 2.44m

2. Block Sizes :
   a) Total number of blocks = 6
   b) 4 blocks [Blue , Red , Black, Cyan] of size : 6cm x 6cm x 6cm
   c) 2 blocks [Purple , Yellow] of size : 8cm x 8cm x 8cm

3. Entrance is 35cm wide

4. Two wedges –
   a) Full wedge – Width = 30cm, Height = 10 cm, Length = 90 cm, Inclination = $\tan^{-1}(1/3)$
   b) Half wedge – Width= 30 cm, Height =10 cm, Length = 70 cm, Inclination = $\tan^{-1}(1/3)$

5. Baskets & holes :
   a) Total number of baskets = 5
   b) Height of baskets – 2 cm, 3 cm, 4 cm
   c) Total number of holes = 1

6. Two lanes –
   a) Width = 30 cm
   b) Length of lane with purple block = 50cm
   c) Length of lane with hole = 45 cm

7. A Gate controlled by pneumatics opened by a switch:
   a) Width = 30cm
   b) Length = 30cm

8. Three strips that have to be detected – 2 white and 1 black
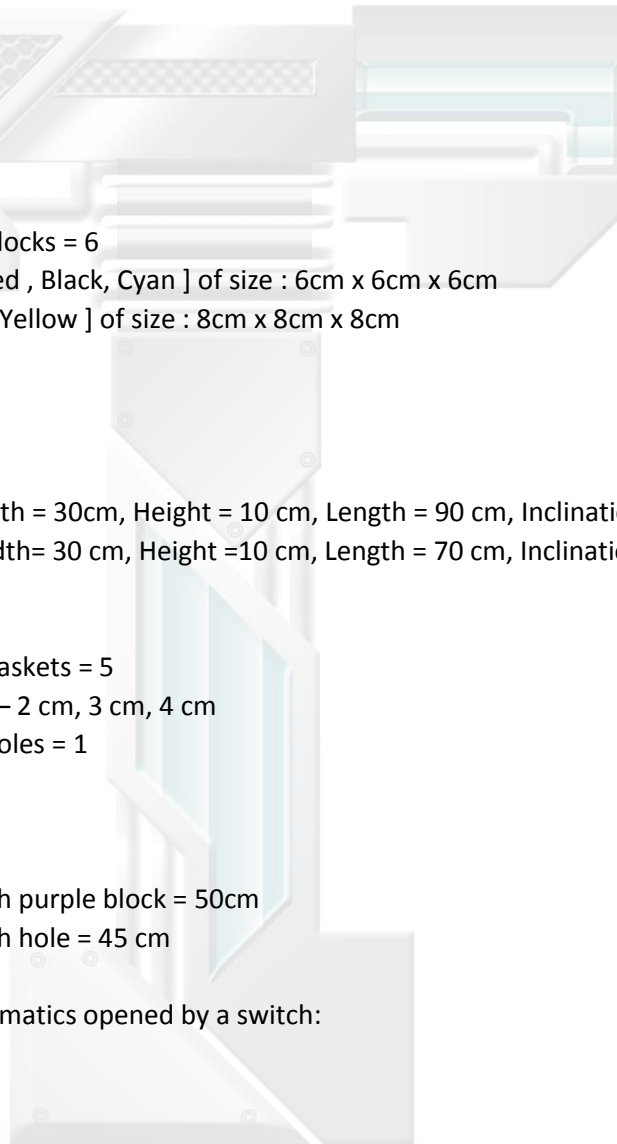
S. No	Parameter	Points
1.	Placing the **blue** block	10
2.	Placing the **red** block while going over the wedge	20
3.	Placing the **red** block without going over the wedge	10
4.	Placing the **yellow** block	10
5.	Placing the **light blue** block over the wedge	25
6.	Placing the **purple** block	25
7.	Placing the **black** block	Double the existing points*
8.	Lighting the **Final-LED**	40
9.	Detection of each strip	20
10.	Manual Interference	-20
11.	Going out of the arena	-20

In case of manual interruption, the corresponding team will have to start from the last basket in which the placed a box

* The points which the team has scored up to the point of placing the black block will be doubled. Any points the team scores after placing the black block will not be doubled.

*In case a team manages to finish all its tasks with time still remaining, the time remaining will be added to its points, with each second contributing 1 point to its tally.

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 has to be kept within the starting point initially.

4.) The bot has to move within the arena at all points.

5.) 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.

6.) Use of Lego-kits is prohibited.

7.) Tethered control is not allowed.

8.) All the teams will be given 2 trials of 5 minutes each in which they will have to try to score the maximum points.

9.) The time left, if any, after completion of all the tasks, will be added to the points of the team (1 second=1 point)

10.) In case of a tie, the winner will be decided by the following priority order:

- Glowing the FINAL LED
- Strip detection
- Black box (preference will be given to the team who didn't place it)
- Successfully completing the task related to the half wedge
- Climbing up and down the full wedge along with the block

DISCLAIMER

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

CONTACTS

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