SORT BOT

Date: **16th March 2018** Time: **10.30 AM**

The Competition will be of two rounds: Prelims & Finals

A maximum of 3 members are allowed per team.

Objective:

The goal is to '*sort*' the boxes placed in the arena. Sorting a box refers to placing the colored boxes in its corresponding color zone i.e., the blue box must be placed in the blue zone, red box in the red zone and so on. This can be achieved either by manual control or automatically.

Arena description:

The arena consists of four boxes of different colors, four color zones and an intermediate zone and a track. The color zones and boxes will be of Blue, Green, Red and Yellow colors. A model of the arena is shown in the figure given below. The black line in the figure represents the track and it will remain the same during the competition (both prelims & finals). The positions of color zones and color boxes will be revealed only at the time of the competition. The intermediate zone is an empty white area that can hold a color box temporarily. For example, in the *figure*, the bot can place the blue box in the intermediate zone and then place the yellow box in the yellow zone. The color boxes will be a solid box made out of thermocol sheets.

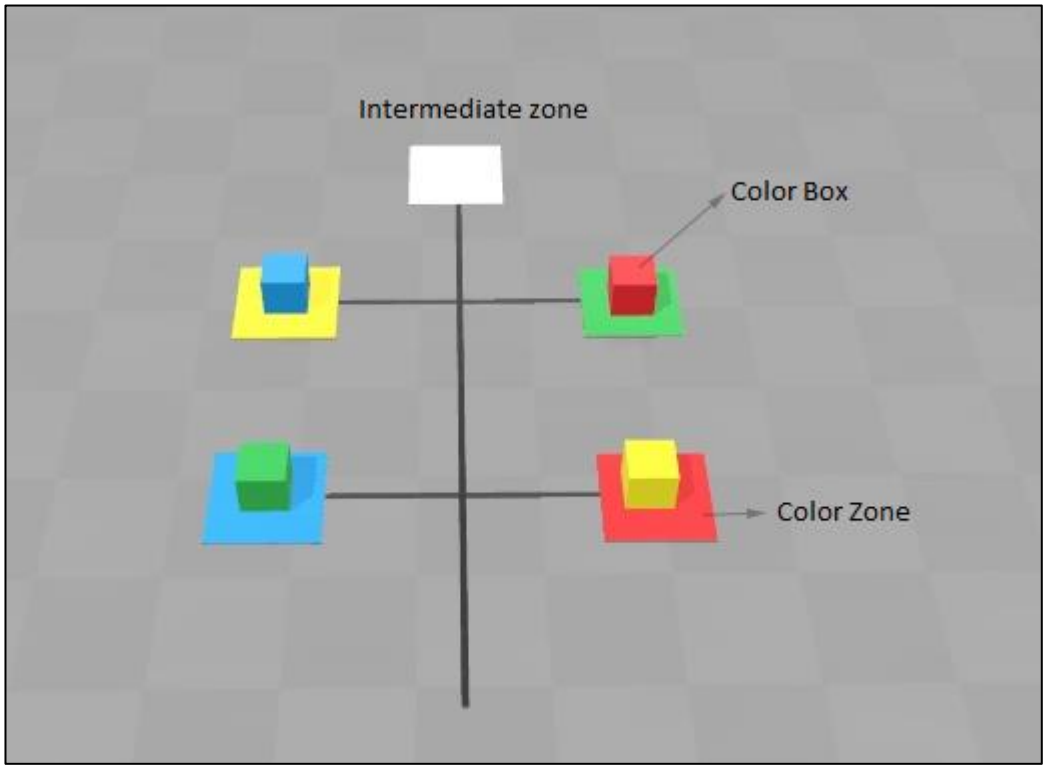
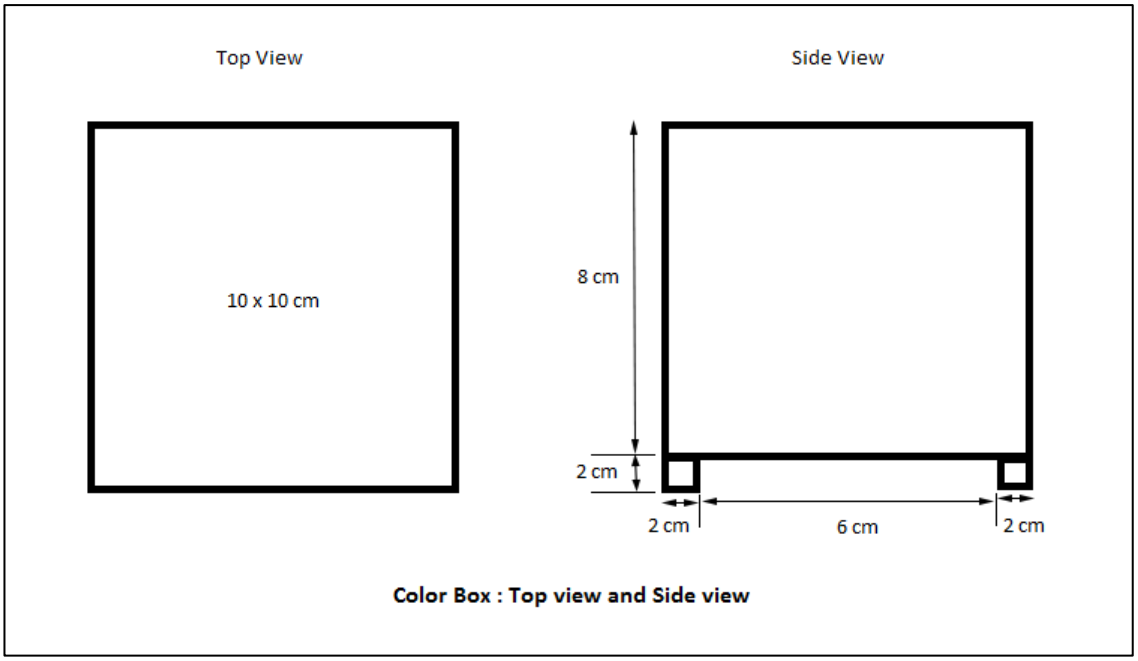


Figure: Arena Configuration

Arena Specifications:

1. Track Line Width – 3 cm
2. Color zone – 30 x 30 cm
3. Color box dimensions are mentioned in the figure below.



Color Box : Top view and Side view

Rules:

1. The bot can be controlled either manually or automatically. Automatic bots are awarded more points. Manual control can be done either through wired connection or wirelessly using radio transmission or Bluetooth.

2. The bot can use any technique to detect the colors. Some of the techniques would be to use a color sensor or a camera (image processing).

3. When the bot detects/senses the color of a color zone, an LED of that color must glow for at least one second.

4. The dimensions of the bot should NOT exceed 30 cm*20 cm*20cm (l*b*h).

5. Any controller/board can be used.

6. There must be only one box in a color zone at any time during a run of the bot.

7. A box, once moved, must be placed back in any of the color zones or the intermediate zone before touching the next box.

8. The bot must use only the black lines to traverse the arena.

9. The bot must be autonomous during the whole run and the code must be generic.

10. After sorting, all the LEDs must glow at once for at least one second. This marks the end of a bot's run.

11. Any damage done to the arena by the bot/participants will lead to disqualification.

Note: For easy detection, the colors of boxes and color zones will be fairly sharp. The teams will be given a sample of all the colors before the competition commences.

Scoring system:

1. 30 points will be awarded for every correct placement of the color box.10 points will be awarded when the correct led glows in its corresponding zone.
2. 20 points will be awarded when all the LEDs glow at the end after sorting all the boxes.
3. 10 points will be deducted for every intervention during a run of the bot. Participants can choose to quit at any time of the run, and the team will be awarded 0 points.
4. In case of a tie, the team that takes lesser time will make the cut.

5. 50% extra points will be given if the bot is fully automated. For example if the bot scored 70 points, the total score of the automated bot is (70+70/2=105) points. If the bot scored 100 points the total score will be 150 points.

In time and score calculation, Judges' decision is final and will NOT be changed in any event.

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Good Luck!