DETOUR

➢ Event Description:

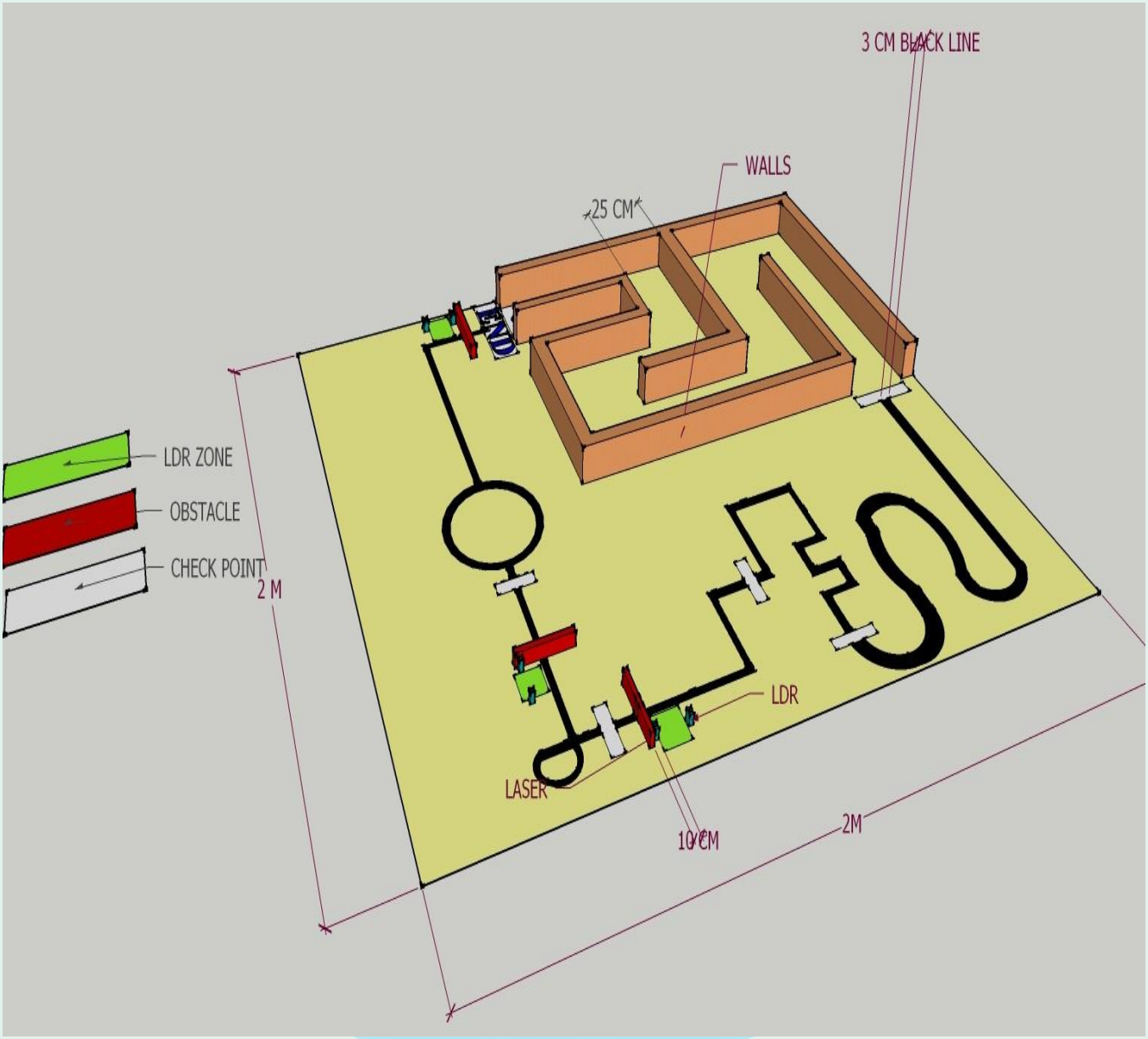
The objective of this challenge is to build an autonomous bot that is aware of its surroundings, and can make its way following a trail, or go through a path with walls on both sides without touching the walls. It must also be able to 'look' forward, to not bump into obstacles on its path. The first part of the course is through a path with **white** walls on both sides. The path has 90-degree turns. However, the bot must never touch these walls. The second part of the course requires the bot to follow a curved path (black line on white surface), while detecting obstacles on its path, and taking certain definite courses of action to remove these obstacles.

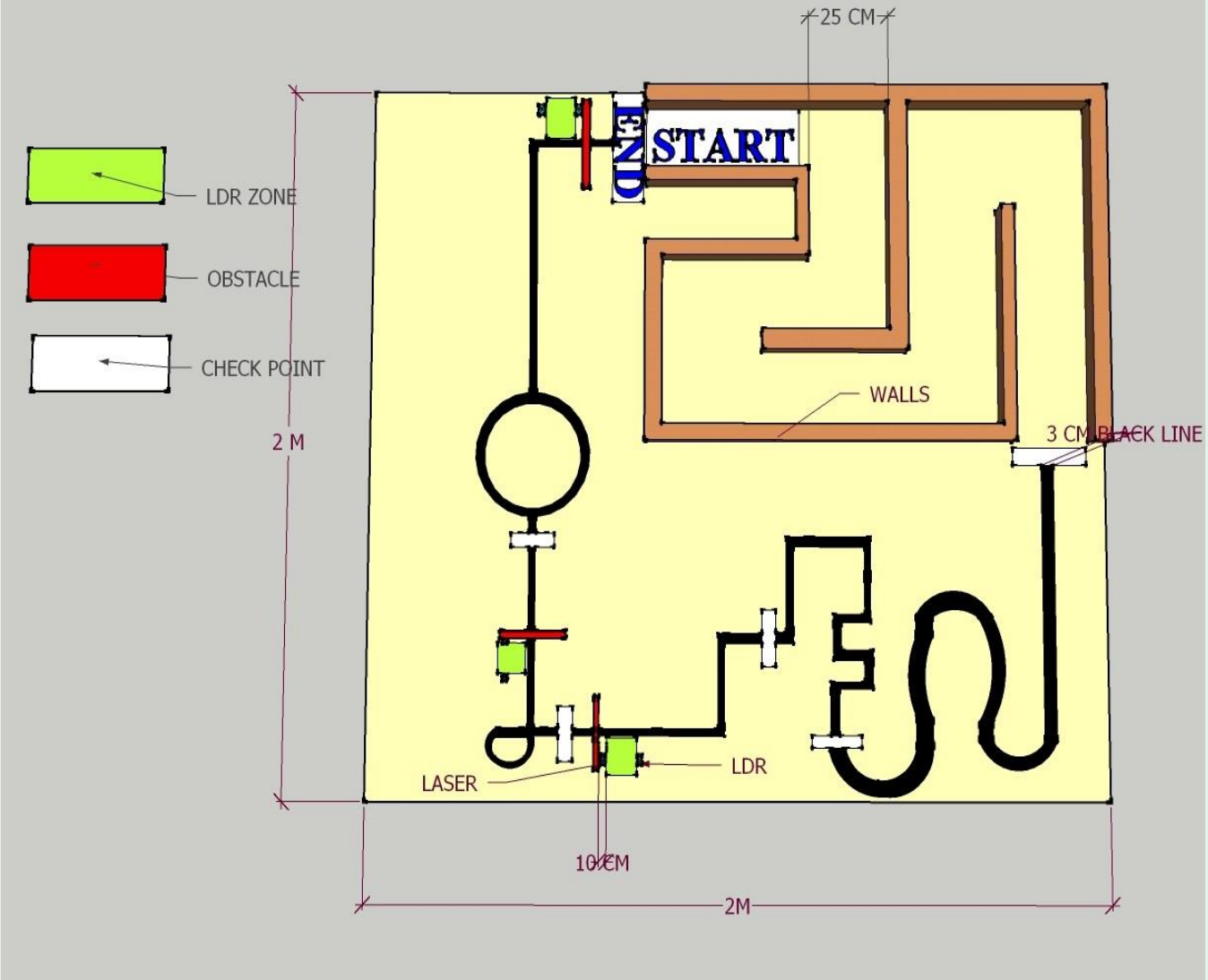
➢ GAME PLAY:

- There will be one round. Maximum 5 trials can be given to a team before the game begins.
- Maximum number of participants allowed in a team is **five**.
- The bot starts from the area demarcated as "START", and the timer is activated as soon as the bot leaves the starting area. **Maximum time limit to complete the task is "15 minutes".**

- At first the bot travels through a path with walls on either side. There are turns and bends in the path, and the bot must make its way through the path without touching the walls. Each time a bot touches the walls; there is a **penalty** of **10 seconds**.
- At the end of this section is Checkpoint 1. (henceforth abbreviated as CP)
- At every checkpoint, the bot must stop, flash a bright LED thrice, 0.5 second pulses each, with 0.5-second spaces in between. If the bot is unable to recognize a CP, it will be penalized with 10 seconds for each CP it misses.
- After CP 1, the path changes to line follower mode, and there are no walls anymore. The robot makes its way following the line through a curved path to reach CP 2.
- After CP 2, the path has sharp 90-degree turns. The robot manoeuvres through this section to reach CP 3.
- After CP 3, the bot keeps following the line until it reaches an obstacle directly in its path. Now it must reach a zone marked as 'Touchdown Zone 1'. There is a laser tripwire at a height of 10 centimetres in this zone. The bot blocks this light so that the obstacle is removed automatically from its path. Now the bot continues to follow the line to reach CP 4.
- The bot encounters another obstacle after CP 4 and similar to the situation before, has to reach 'Touchdown Zone 2' to unblock its path, to reach CP 5.
- After CP 5, the bot keeps following the line until it reaches the END.
- The timer will stop as soon as the bot reaches the END.
- If a bot loses its way on the course, or is stuck in a loop, it will be placed at the last checkpoint it reached with a time penalty of 10 seconds, for a maximum of two times. If the bot is unable to reach the next checkpoint for a third time in a row, it will be penalized with 20 seconds, and will start from the next checkpoint.
- Each participating team gets a maximum of **2** attempts on the arena.

➢ ARENA


3 CM BLACK LINE
WALLS
25 CM
END
LDR ZONE
OBSTACLE
CHECK POINT
2 M
LDR
LASER
10 CM
2M



FOR MORE DETAILS, VISIT:

https://goo.gl/CGlsNw

OR

SCAN THIS QR CODE: -

➢ ROBOT SPECIFICATIONS:

- The robot should be capable of detecting obstacles, such as walls, or blockages in its surroundings, and capable of following a path marked on the floor surface on which the bot moves, along with some additional features as specified.
- The Robot must be strictly autonomous.
- Dimensions of the Robot should be less than 20cm*20cm*15cm and weight should not exceed 3 kg.
- A power supply should be of maximum 12-15 V.

➢ SCORING CRITERIA:

- All teams will get **400** points initially.
- **50** points will be awarded for crossing a Checkpoint.
- **10 sec** penalties will be awarded if the bots touch any Obstacles/Wall.
- **100** points for reaching the end.
- **- 50** points will be awarded if the bot destroys the arena.
- Time taken will be converted to points and then added to the score earned so far to get the final score. The conversion formula is:

Bonus points = 900- Time in seconds

➢ WINNING CRITERIA:

- The bot with the maximum score will be announced as the Winner.

- In case of a tie, the Winner will be decided based on the number of penalties encountered.
- If none of the Robots finishes the course, then the one, which covered the longest distance in less time, will be considered the winner.
- If the machine remains immobile for respectable time, then on the spot decision will be taken by the organizers.

➢ CERTIFICATION POLICY AND PRIZES

- Certificate of Excellence and Cash Prizes will be awarded to winner and runner-up.
- Certificate of Appreciation will be Awarded to 2nd runner-up.
- Certificate of Participation to all the teams participating in Event.

➢ CONTACTS

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