Technical Specifications

Eligibility

- Participants are advised to form a team of up to 5 undergraduates. Any number of teams from a university can enroll in the competition.
- All the team members should be undergraduates of the same university at the start time of their participation in the competition.
- Each team should provide valid identification document from the university on the competition day to prove their eligibility to participate in the competition.

Robot Specifications

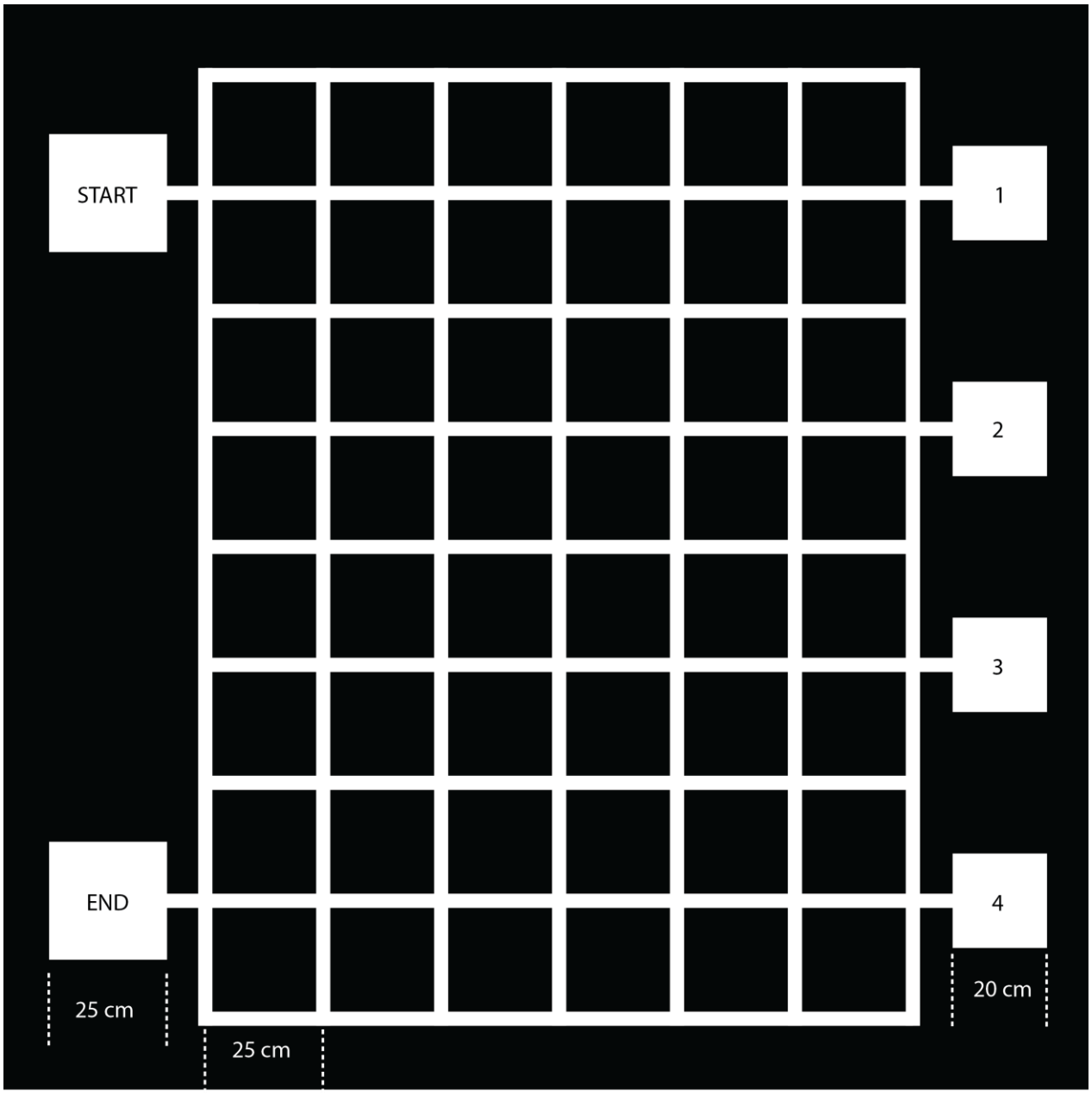
- Dimensions of the robot must not exceed 25 cm × 25 cm (length × width).
- Robot must be completely built by the team itself with their own design ideas.
- Robot should have a clearly indicated “ON/OFF” or “START” switch.
- Once the robot is switched on, it should be self-navigating. Wireless communication and remote controlled robots are not allowed in the competition.
- No off-the-shelf kits are allowed except processing boards (i.e. Arduino or equivalent, Raspberry Pi, etc.), sensor modules and drive gears. If you have any doubt, contact the organizing team.
- Except switching on and off, all interactions with the robot are illegal. Any illegal interaction with the robot will conclude the attempt.
- Robot must be wheeled and it should not cause any damage to the platform. Any robot with the potential threat of damaging the game platform will not be allowed to compete.
- Robots should work under any ambient light condition.

Platform

- Dimensions of the platform will be 7.5ft x 7.5ft. Please refer the view of platform.
- Surface of the platform will be black. The grid, starting point, ending point and the unloading bays will be white. Width of the grid lines will be 3 cm.
- There will be a clearance of at least 14 cm between any white line and the edges of the platform.
- Starting position and ending position will be indicated by a white square.
- Side length of unloading bays will be 20 cm.

Note: The platform will not be perfectly flat, so be ready to face imperfections.

View of the platform



Features of the platform

Starting point

Starting point is marked as a white square. Participants should place their robot on that square.

End point

After completing the task, robot should stop at the ending point.

Location of payloads

Payloads will be placed at any intersection point of the grid.

Unloading bays

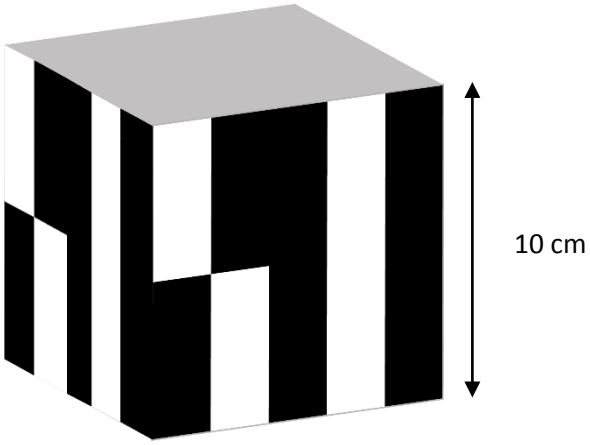
Payloads should be delivered to the unloading bays which are marked in white.

Payload

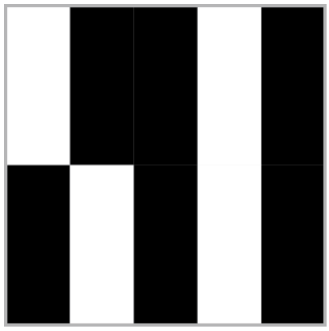
Payloads will be polystyrene cubes which have a side length of 10 cm. There will be a number tag on all vertical faces of each payload.

A robot can carry any number of payloads.

View of payload



Perspective View

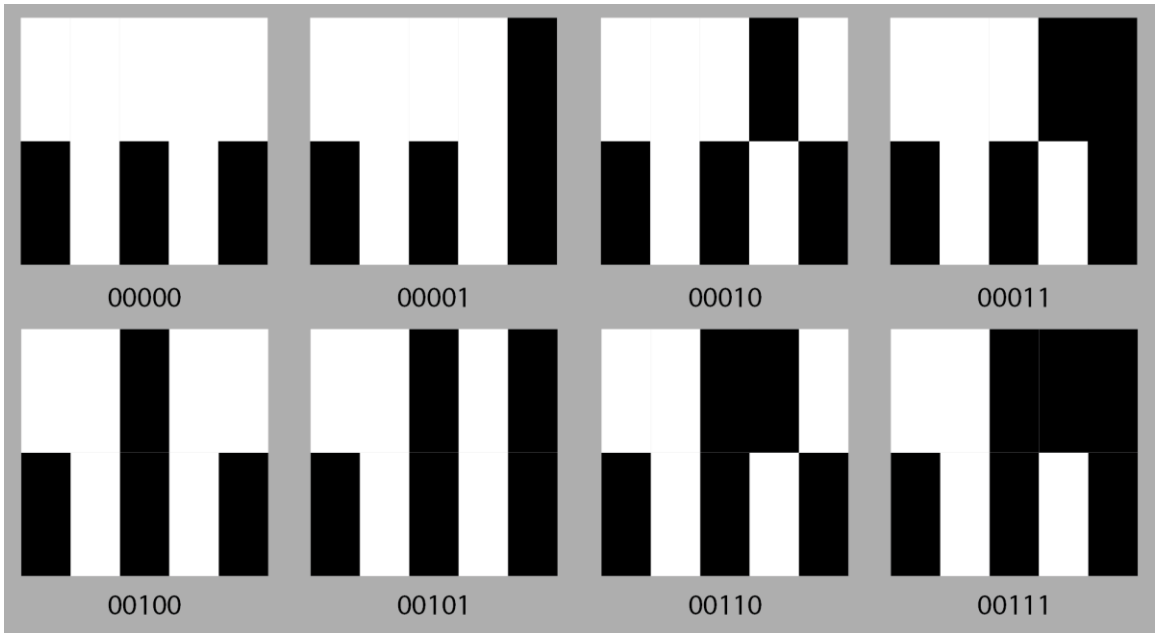


Front View

Tag Details

The tag of the payload is a binary number. The number will be given as a barcode as follows.

- **All vertical faces** of the payload has the tag.
- Code is separated in to two parts.
- Lower part of the code is for synchronizing.
- Upper section of the code contains the binary number.
- White is counted as zero and black is one.
- The tag of each payload will be any number between 00000 and 11111



Challenge

The challenge for the university category is to simulate a warehouse scenario using an automated robot. The background colour of platform is black. The platform is consisted of a white grid to aid the robot to navigate the platform.

There are 5 payloads placed on the platform. There may be payloads that are placed on top of another payload. Positions of payloads are fixed during a round.

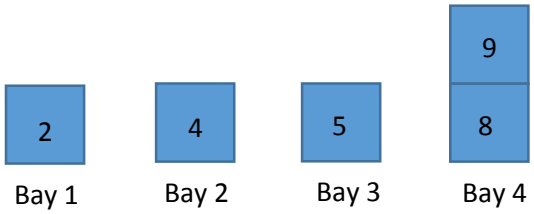
The robot should navigate the grid and find the payloads. Then robot should deliver payloads to unloading bays according to the tag number.

Unloading rules:

- Payloads should be placed at unloading bays according to a sorted manner.
- The 1st unloading bay should contain the payload which has the lowest tag number.
- The payload which has the highest tag number should be placed on top of the payload at 4th bay.

- As there are only 4 unloading bays, one payload should be placed on top of the other **only at 4th unloading bay**.

E.g.: Suppose payload tag contains binary numbers equivalent to 2, 4, 5, 8, and 9. They should be placed as follows.



After delivering all the payloads, robot should stop at the ending point. There will be a penalty if the payloads were not positioned within the unloading bay area.

Competition Procedure

- All the teams should submit their robots to the organizers of IESL RoboGames at the beginning of a round. Teams are not allowed to modify their robots after submitting.
- No trial runs will be given after starting the competition.
- At the beginning of an attempt, the team should place their robot at the "START" point. At this point, dimensions of the robot should not exceed 25×25 cm.
- The team should switch on the robot on the judges signal. Once the robot is switched on, it should not be given any kind of aid such as pushing or pulling the robot.
- Each team has 3 attempts to complete the task. Fastest attempt will be counted for scoring. All 3 attempts should be made within 20 minutes.
- The team can decide to stop the robot during an attempt and the team will be given marks for percentage of completion.
- The decisions of the panel of judges regarding the scores, rules and the conduct of the event will be final.

Please contact our organizing committee for further inquiries.

- Regarding registration and event details:
  Mr. Madawa Soysa
  madawa.11@cse.mrt.ac.lk
  075 812 0726

- Regarding game specifications:
  Mr. Kasun Fernando
  kasun.11@cse.mrt.ac.lk
  071 216 9268

Email: robo2014@cse.mrt.ac.lk
Web site: robo.cse.mrt.ac.lk

*Please use the subject as "RoboGames-2014" for emails.

Keep in touch with Facebook page for updates.