Welcome to the Kreativity/MechanzO League Finale

The Kreativity League/MechanzO League Finale features the intense "**PICK and Place Bot Race.**" Witness as robots go head-to-head, navigating obstacles, sharp turns, and speed breaker zones.

The challenge: precision in picking blocks from a square section and strategically placing them in a circular drop zone. This isn't just a race; it's a showcase of innovation, speed, and the seamless integration of hardware. Get ready for a thrilling display of robotic prowess at its finest. Welcome to the future—welcome to the **PICK and Place Bot Race**!

Note: Lego kits are not allowed in the competition.

Problem statement for Junior Category

Teams are challenged to create a **non-programmable robot for the PICK and Place Bot Race.** The objective is to control the robot wirelessly or with a wired remote, enabling it to pick up and place blocks accurately during the race. The emphasis is on crafting a straightforward yet efficient robot design that excels in both speed and precision on the racecourse.

Junior Category: Students of grades 5-8 are allowed to form the team

All the Best to all participants, and may the most creative and skilled pick and place bot win!

Note: The problem statement may be modified by the organisers, for latest PS please refer the website.

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Robot Specifications

1. Robot Dimensions:

- The main dimensions of the robot, excluding the picking mechanism but including wheels, should be less than or equal to 30 cm x 30 cm x 30 cm (L x B x H) at the start of the race. The robot can extend its size once the run begins, with an error tolerance of ±5%.

2. Control Mechanism:

- The robot must be controlled using a wired or wireless remote, and the dimensions of the remote are not included in the size constraint of the bot.

3. Control Options:

- Teams have the flexibility to use either wired or wireless control mechanisms for operating the robot during the race.

4. Wireless Remote Mechanism:

- Remote control (RC) remotes are prohibited, and only radio frequency (RF) remotes operating up to 433MHz are permitted for the competition.

5. Weight and Dimensions:

- The robot's weight should not exceed 3kg.
- Main Part Robot dimensions must conform to: **Height = 30 cm**, **Width = 30 cm**, **Length = 30 cm** excluding the picking mechanism.
- The wheel boasts a maximum overall **diameter of 8 cm** and an impressive **width reaching 2 cm**.

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6. Wheel Specifications and Restrictions:

- Maximum overall diameter: 8 cm
- Maximum width: 2 cm
- Omni-directional wheels are not allowed.

7. Electrical Specifications:

- The potential difference between any two points on the Drag-and-Place Bot should not exceed 12V.
- The use of pneumatics and hydraulics is strictly prohibited.
- Participants must provide an additional power source for the final built bot used in the competition.

8. Motor Specifications:

- Motors used should be DC motors with a maximum speed of 150 RPM.
- Only DC motor is allowed any other type of motor is not allowed.

9. Assembly and Tools:

- Electric tools are not allowed for robot assembly.
- The Pick-and-Place Bot must incorporate various mechanical components.

10. Remote Control Limitations:

- Remote control (RC) remotes are strictly prohibited.
- Only radio frequency (RF) remotes operating up to **433MHz** are allowed.

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11. Ready-Made Assemblies:

- Participants are allowed to use ready-made assemblies, providing them with the flexibility to incorporate off-the-shelf components into their robot design.

12. Disqualification Criteria:

- Failing to meet any of the specified robot specifications, including size constraints and control mechanisms, will result in immediate disqualification from the competition.

13. Power Supply:

- AC power supply will not be provided during the competition, and robots cannot use AC power sources.
- Participants must design their robots to operate on alternative power sources such as batteries.
- Maximum battery voltage should be 12v.

14. Mechanical Assembly Kit:

- Participants may use the MechanzO Kit or a similar kit for the mechanical assembly of their robots. This provides a standardized foundation for mechanical components while allowing teams to showcase their innovation in navigation, obstacle avoidance, and strategic decision-making.

Competition: Rules and Regulations

1. Team Composition:

- Each team can consist of a maximum of 3 students
- Each team is required to appoint a team leader for communication with event organizers or judges.

2. Competition Tasks:

- Negative marking may be applied for errors in the picking and placing task.

3. Arena and Block Setup:

- The arena will have varying levels of complexity, providing a dynamic challenge.
- Blocks will be placed strategically within the arena.
- The competition arena dimensions will be 335.28cm X 182cm (LXB).

4. Participant Restrictions:

- Teachers and mentors are not allowed in the competition arena.

5. Finale Level Participation:

- To participate at the final level, participants must strictly adhere to all rules.

6. Scoring and Judging:

- In the event of any scoring discrepancies or issues during the competition, the final decision will be made by the judges.

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7. Technical Support:

- Teams are responsible for the maintenance and technical support of their robots.
- Technical issues during the competition will not result in additional time.

8. Code of Conduct:

- Fair play and sportsmanship are expected from all participants.
- Any form of intentional interference with other teams' robots will result in immediate disqualification.

9. Safety Precautions:

- Robots must not pose any safety hazards to participants, spectators, or event staff.
- Teams are responsible for ensuring their robots comply with safety regulations.

10. AC Power Supply is not allowed:

- AC power supply will not be provided or allowed during the competition.
- Teams must rely on battery power for their robots.

11. Allowed & Not allowed:

- The use of Lego kits is strictly prohibited.
- RC remote controls are not allowed.
- MechanzO Kit or a similar kit for mechanical assembly is allowed.

12. Rule Modification:

- The competition rules may be modified by the organizers, so participants are advised to regularly check the competition's official website for any updates.

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Tentative Scoring and Penalties Rules:

S.no	Criteria	Points
1	**Completion Time** - Under 6 minutes - Under 5 minutes - Under 4 minutes - Under 3 minutes - Under 2 minutes - Under 1 minute	 25 points 50 points 75 points 100 points 150 points 200 points
2	**Pick and Place Points for each block (Total 4 blocks)** - Perfect placement (Hides the number) - Near-perfect placement (Inside the circle but not hiding the number) - Slight deviation from target (Some parts touch the circle) - Significant deviation from the target (No part of the robot touches the target)	 25 points 15 points 5 points 0 points
3	**Incomplete race-scoring** - 50% - 75% completion - 25% - 50% completion - 0% - 25% completion	 15 points 10 points 5 points
4	**Time Points for Incomplete Race** - Deduct 5 points for every 30 seconds over the time limit	
5	**Dragging and Dropping** - Every Drop or dragging of blocks	 -2 points (per instance)
6	**Collision/Touches Wrong Area** - Robot touches the Black Line of the Area - Two Robots collide with each other - A Robot strikes the other robot by mistake or intentionally	-3 points -5 points -5 points for the team that strikes the other robot
7	**Disqualification Points** - Immediate disqualification	
8	**Miscellaneous**	

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Note:

- Any occurrences or actions during the race that are not explicitly covered in the provided scoring and penalties section will be subject to the discretion of the judge, who will determine the appropriate points to be awarded or deducted.
- In case of any dispute the final decision will be of the Judges of the competition.
- Judges have the right to disqualify any team for creating any misbehaviour or hinderance during the competition.

Arena Specifications

- The dimensions of the arena are 335.28 cm X 182 cm (LxB).
- The block dimensions are 7.62 cm x 7.62 cm x 7.62 cm (LxBxH).
- Drop section dimensions are 7.62 cm in diameter.
- Object weight is less than 100 grams.
- Picking sections are indicated by squares with numbers 1-4.
- Drop sections are indicated by circles with numbers 1-4.

Note: The above dimensions may vary during the competition.

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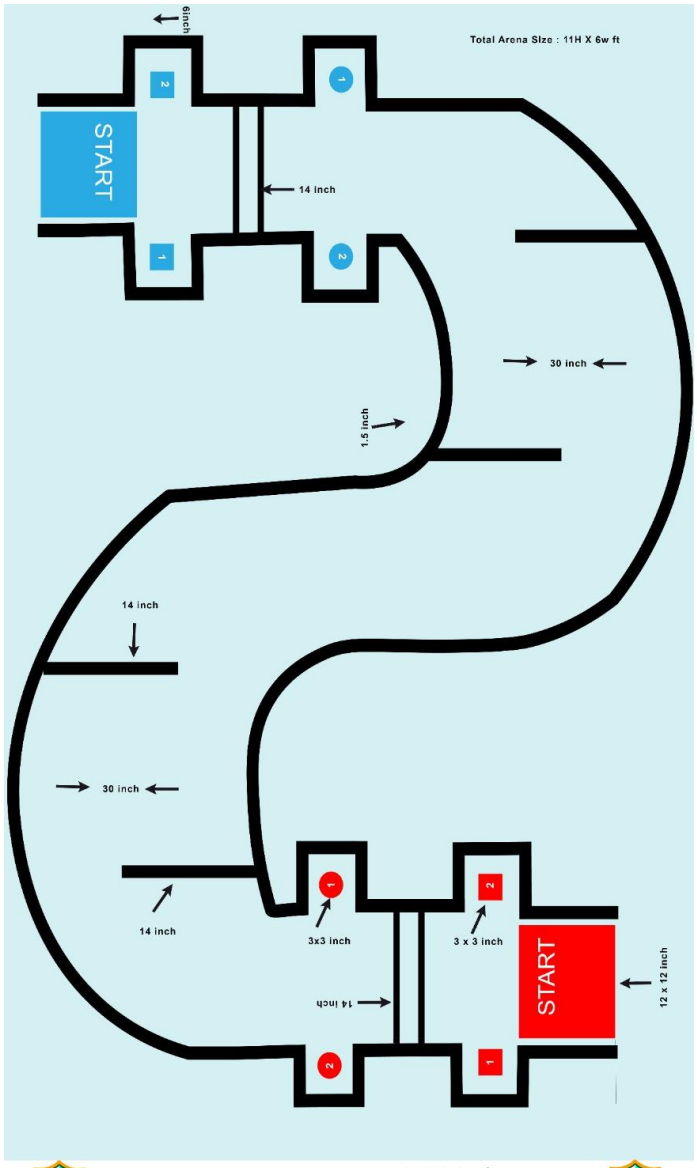
ARENA



Note: The above pictures are just for representation and it does notresemble the actual arena.

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Gameplay for the PICK and Place Bot Race:

1. **Starting Position:**
   Both teams will place their bots at their respective initial positions as directed by the judge.
2. **Bot Inspection:**
   Before the competition, the judge will conduct a thorough inspection to ensure that each bot complies with the specified competition conditions.
3. **Race Commencement:**
   The competition begins after the judge signals the start. Both teams will initiate their bots from their designated starting positions.
4. **Challenges Along the Course:**
   Teams navigate their bots through a dynamic racecourse, encountering obstacles, speed breakers, and various challenges strategically placed throughout the track.
5. **PICK and Place Task:**
   The primary objective is to pick up blocks from the designated square picking section and accurately place them in the circle drop section.
6. **Score and Penalties:**
   Teams will earn scores and face penalties based on their performance, following the criteria outlined in the problem statement.
7. **Victory Conditions:**
   To secure victory, teams must complete all challenges of the race, placing each of the two assigned color-coded blocks into their allocated circular drop locations in the least amount of time.
8. **Judge's Final Decision:**
   In situations not explicitly covered in the problem statement, the judge's decision will be final.

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9. Winner Determination:

The team with the highest total points, considering completion time, object placement accuracy, design and innovation, and miscellaneous achievements is declared the winner.

10. Post-Game Discussion:

Teams have the opportunity to discuss their strategies, share insights, and receive feedback from the judge.

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