# RoboQuest: Design the Ultimate Drag-and-Place Bot

# Calling all young engineers and robotics enthusiasts!

Get ready to unleash your creativity and problem-solving skills in Kreativity League 2024's RoboQuest challenge. Your mission: design and build, a wirelessly controlled robot that can navigate a complex arena, strategically drag objects, and precisely relocate them.



**The RoboQuest Controller is compulsory for this challenge and contains all the necessary components you will need.**

# The Challenge:

You must use a multiple-piece chassis from any kit to design a unique and innovative robot, showcasing your engineering ingenuity. As part of the challenge, participants will have to **drag and place all the 4 blocks at their respective place.**

# Your Robot Must:

* Be wirelessly controlled using the RoboQuest Controller.
* Use BO DC motors with a maximum speed of 150 RPM (Tested on a Tachometer).
* Navigate the arena manually, following pre-programmed instructions.
* Efficiently drag and reposition objects within the arena.
* Adhere to all size, weight, and electrical specifications (Detailed in the RoboQuest Rules and Regulations).
* Only mobile phones can be used for robot control (No RC Remotes).

# Prizes:

* **Grand Prize:** A life-changing trip to the Indian Space Research Organisation (ISRO)!
* **Additional Prizes:** Exciting rewards for top-performing teams and individual achievements.

# Additional Details:

* **Specifications, Rules & Regulations:** Look into this segment for the details.
* **Competition Rounds and Scoring:** Get ready for mind-boggling challenges and a scoring system that will test your robotic ingenuity!

# Let your creativity soar and your robots conquer!

**Specifications, Rules & Regulations:**

# Robot Specifications:

The main part of the robot's dimensions must not exceed **25 cm X 25 cm X 20 cm** (LxWxH) during the initial inspection, excluding the dragging part but including the wheels. However, the bot can extend its size once the run begins. A tolerance of ±5% is allowed.

* + Only **ONE** RoboQuest Controller is allowed for programming and control.

# Control Mechanism: The bot must be controlled using a RoboQuest Controller.

1. **Wireless Communication Integration**: Only a maximum of one Bluetooth is allowed for this purpose. And a mobile application for controlling the bot using Bluetooth connectivity is allowed.
2. **Ready-made Assemblies**: Participants are **not allowed** to use ready-made mechanical assemblies in their robots. Participants must use **multiple piece chassis** from **any kit** to design a unique and innovative robot.
3. **Power Supply**: AC power supply will not be provided or allowed during the competition.

# Wheel Specifications and Restrictions:

Maximum overall diameter: **8 cm** Maximum width: **2 cm**

Omni-directional wheels are not allowed

# Electrical Specifications:

* + The battery used for the Bot should not exceed **12V.**
  + Participants must provide an additional power source for the final built bot used in the competition.

1. **Motor Specifications**: Motors used should be BO DC motors with a maximum speed of **150 RPM.**
2. **Arena and Block Setup**: The Arena will have different levels of complexity, providing a dynamic challenge. Blocks will be placed strategically within the arena.
3. **Programming**: The robot must be pre-programmed before the start of each round. Teams are not allowed to reprogram the robot once the competition has started.
4. **Competition Rounds**: Each team will have a specified time to complete the task. Points will be awarded based on completion time and successful block placements.
5. **Participant Restrictions**: Teachers and mentors are not allowed in the competition arena.
6. **Disqualification Criteria**: Failure to meet any of the specified requirements will result in immediate disqualification

**Scoring and Penalties**

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| 🎲 **Step** | 🌟 **Challenge** | 🎯 **Points to Win** |
| 1 | ⏱ **Race against Time!** | 🏎 Finish in under 3 minutes: **100 points!**  🚗 Finish in under 4 minutes: **80 points!**  🐢 Finish in under 5 minutes: **60 points!**  🐌 Finish in under 6 minutes: **50 points!** |
| 2 | 🎯 **Place your blocks!**  *(Each block – Total 4 blocks)* | ⭐ Perfect placement: **20 points**  ✅ Almost perfect (touching the circle): **10 points**  ❌ Missed the mark (not touching the circle):  **0 points** |
| 3 | 🏁 **Build Your Path!** | 🟩 Finished 1 block: **10 points**  🟨 Finished 2 blocks: **20 points**  🟧 Finished 3 blocks: **30 points**  🟥 Completed all 4 blocks: **40 points!** |
| 4 | 🚧 **Watch Out for Mistakes!** | ❌ If a block leaves the game area:  **Oh no! Disqualified!** |
| 5 | 🎉 **Special Bonus Fun!** | 🚀 Use the Double-Road trick: **25 bonus points!**  🔧 Use the Hinge to win: **10 bonus points!** |