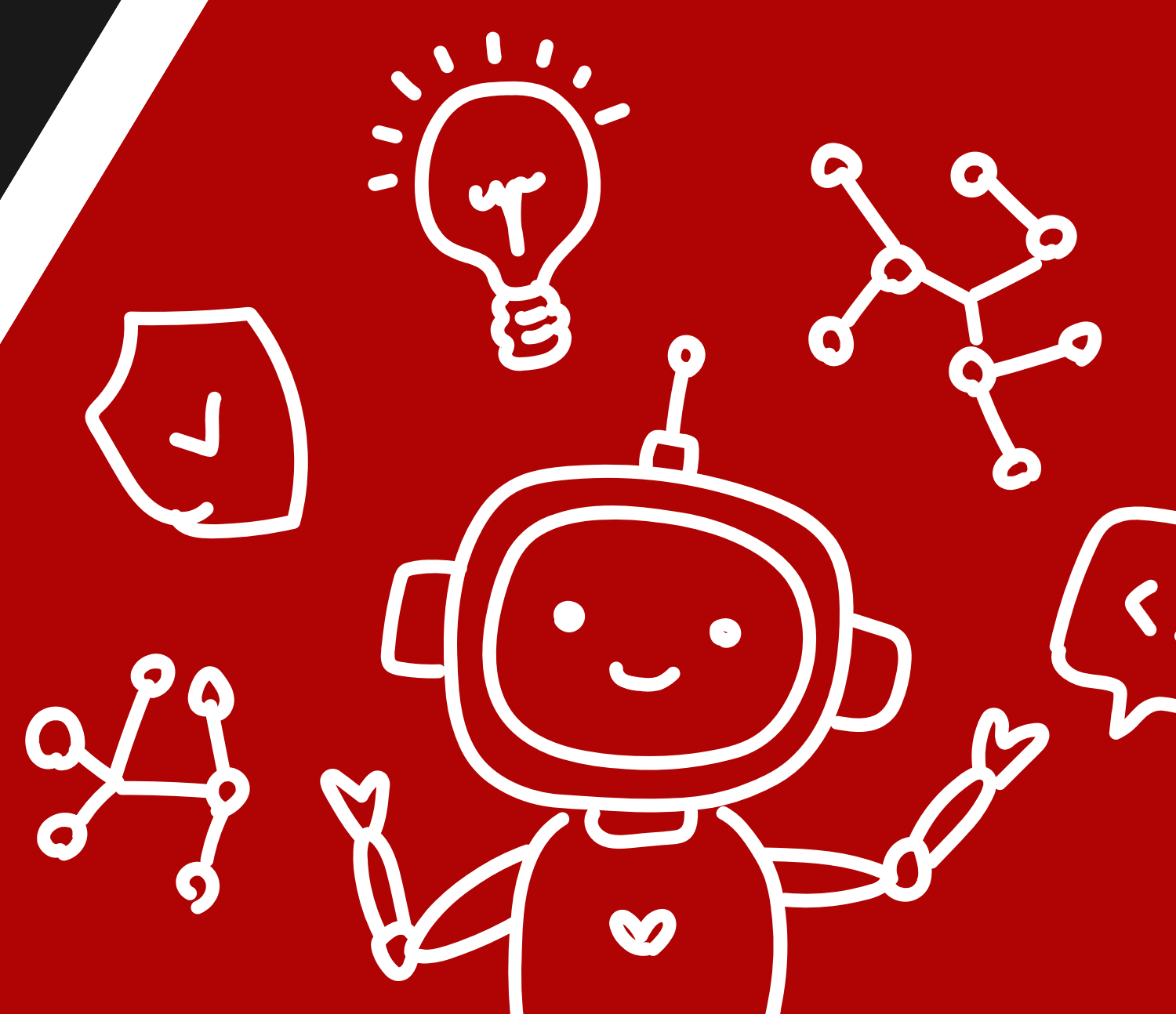




RuleBook

 IUC TECH
FEST 2025

LINE FOLLOWING ROBOT



EVENT

DATE

25

NOVEMBER

2025



10 AM – 1 PM

2 PM– 4 PM



Dept. of ETE

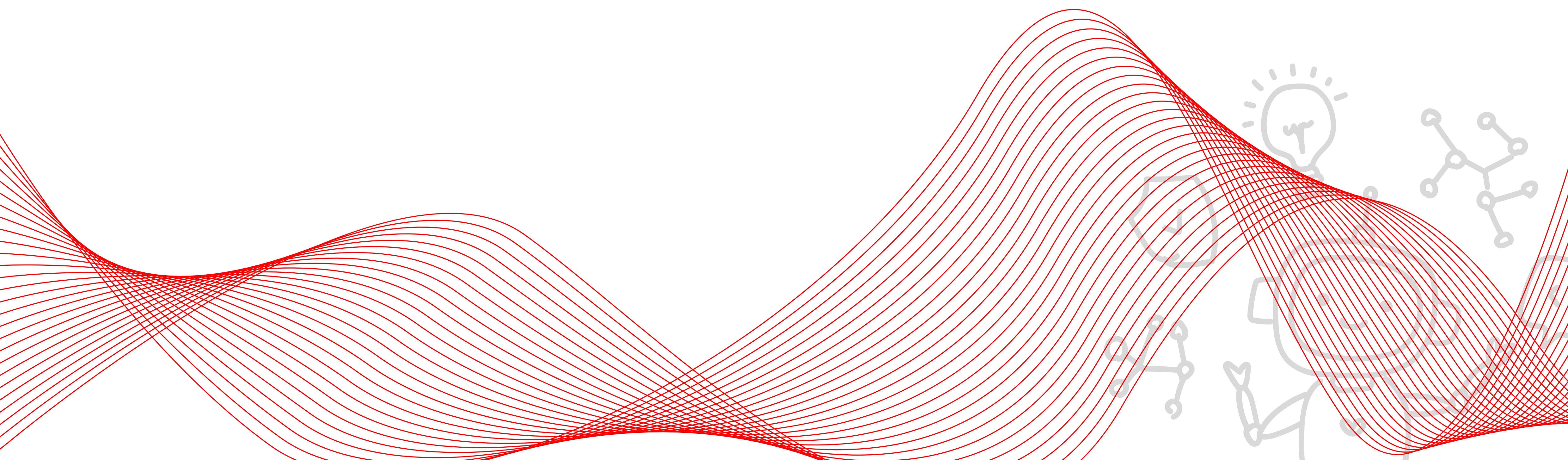


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INTRODUCTION

The Line Follower Robot (LFR) Challenge is the flagship robotics event under IIUC Tech Fest 2025. This competition emphasizes precision engineering, real-time decision-making, and algorithmic efficiency in robotics. Participants are required to design and program fully autonomous robots capable of following a track marked by a contrasting line. The challenge is designed to evaluate technical excellence in design, programming efficiency in navigating complex segments, and operational stability across calibration, runtime, and checkpoints.



ELIGIBILITY

- **Open to all undergraduate university students.**
- **Teams may consist of 1–3 members.**
- **Team formation should be **only Male** or **only Female**.**
- **Cross-institution teams are permitted.**
- **Each participant can join only one team.**
- **Every team must have a unique team name and appoint a team leader for communications.**

ROBOT SPECIFICATIONS

- **Dimensions:** $\leq 25 \text{ cm (L)} \times 25 \text{ cm (W)} \times 15 \text{ cm (H)}$.
- **Weight:** $\leq 1.5 \text{ kg}$.
- **Drive System:** Ground-based wheeled mechanism; fully autonomous.
- **Power Supply:** Onboard only; voltage $\leq 16.8 \text{ V}$ between any two terminals.
- **Switches:** One kill/power switch is mandatory. A maximum of 4 switches is permitted.

Restrictions

- No external wired or wireless communication during the run.
- No commercial readymade robots (e.g., mBot, Ichibot).
- No parts/mechanisms that may damage or stain the track.
- Maintain EMI hygiene (isolated leads, decoupling caps).

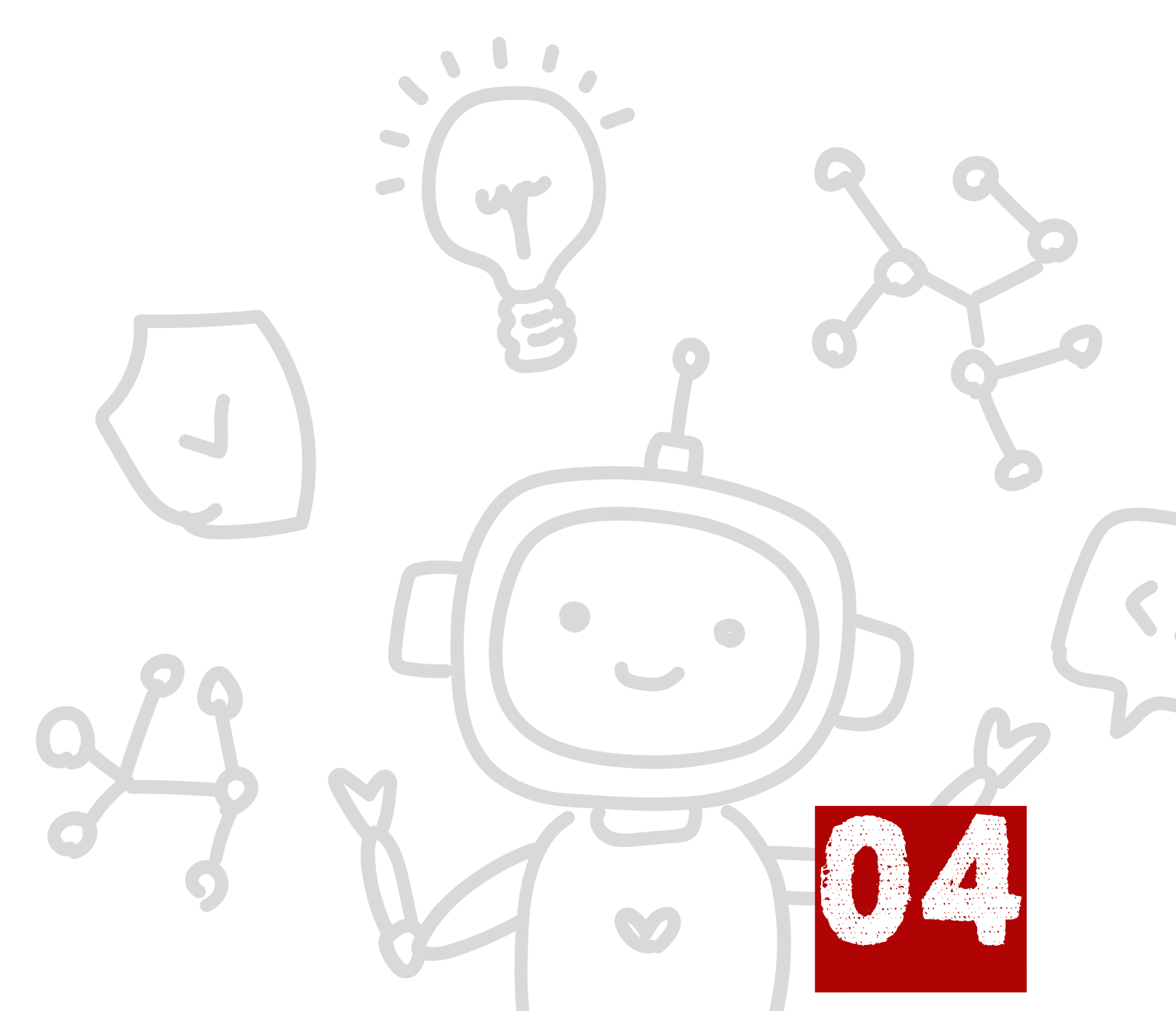


ARENA SPECIFICATIONS

The arena is designed to challenge both speed and accuracy. The track will be constructed with a black line on a white surface (line width 3 cm). Start and Finish zones are marked by solid black squares (30 cm × 30 cm). Robots must cross through all checkpoints to validate their run.

Key Specifications

- **Each track (Preliminary and Final) will feature five mandatory checkpoints placed at critical turns and sections.**
- **Optional green checkpoints may provide bonus points.**
- **Straight and curved paths, invert obstacles, zigzags, sharp angles, line gaps, crossovers, invert obstacles**



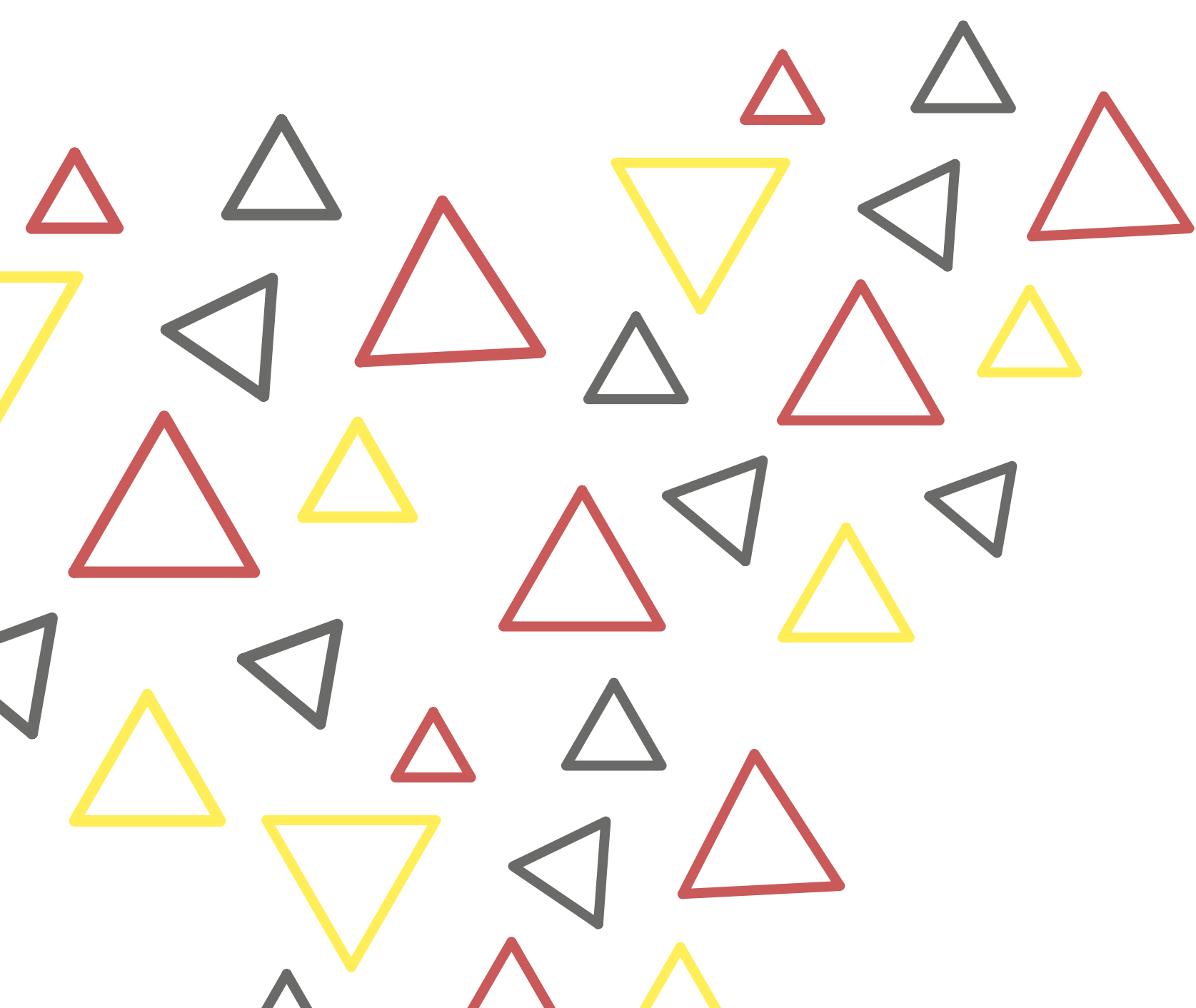
COMPETITION FORMAT

ROUND 1 (Preliminary)

- **Calibration Time: 1 minute**
- **Run Time: 5 minutes**
- **Track: Simple design with smooth curves and limited turns.**
- **Advancement: Top-scoring teams proceed to the final. Here, **timing is a crucial factor.****

ROUND 2 (Final)

- **Calibration Time: 2 minutes**
- **Run Time: 5 minutes**
- **Track: Advanced design including zigzags, (30°–90°) turns, crossovers, and line gaps or inversed.**
- **Outcome: Champion, 1st Runner-Up, and 2nd Runner-Up determined**



RUNTIME RULES

- **Runs begin only at the judge's signal.**
- **No physical contact with the robot during runtime. Any contact results in a restart.**
- **If the robot stalls for more than 10 seconds, it must restart.**
- **Maximum of 5 restarts allowed: First 2 are free; remaining incur penalties.**
- **Restarts must begin from the last successfully crossed checkpoint.**
- **Skipping mandatory checkpoints invalidates the run.**
- **No skipping in 1st round.**
- **Optional checkpoints may be skipped, but bonus points are forfeited.**



SCORING SYSTEM

The scoring system is designed to balance speed, accuracy, and consistency. Points are awarded for crossing checkpoints and finishing within time, while penalties apply for restarts or missed checkpoints.

Time Bonus (T)	(Total Round Time – Elapsed Time) × 1
Checkpoint Crossed (C)	+100 per red checkpoint
Stopping at End (S)	30
Perfect Run (P)	+50 (no restart)
Restart Penalty (R)	–50 per restart after 2 free
Checkpoint Skip Penalty (CS)	–100 (Final Round only)
Out of line (o)	–10 × (Numbers of out of line)
Total Score	T + C + S + P – R – O – CS



SCORING SYSTEM

Example Scoring Explanation

Consider a robot that runs in 2 minutes 30 seconds on a track where the maximum allotted time is 3 minutes.

1. Time Bonus (T):

a. Since the robot finished 30 seconds earlier than the allotted time, it earns a time bonus of 30 points.

2. Checkpoints Crossed (C):

- a. The track has 5 mandatory checkpoints.**
- b. The robot successfully crossed all 5.**
- c. Therefore, it earns $5 \times 100 = 500$ points.**

3. Stopping at the End (S):

- a. The robot reached the finish zone and stopped within the designated box.**
- b. This adds 30 points.**

4. Perfect Run (P):

- a. The robot did not require any restarts during its run.**
- b. Hence, it is considered a perfect run, awarding 50 points.**

5. Restart Penalty (R):

- a. No restarts were required, so 0 penalty points are deducted.**

6. Out of line: (O):

- If the robot goes out of line at any point during the run, a penalty of -10 points will be applied.**

7. Checkpoint Skip Penalty (CS):

- The robot did not skip any mandatory checkpoints.**
- Thus, 0 penalty points are applied.**

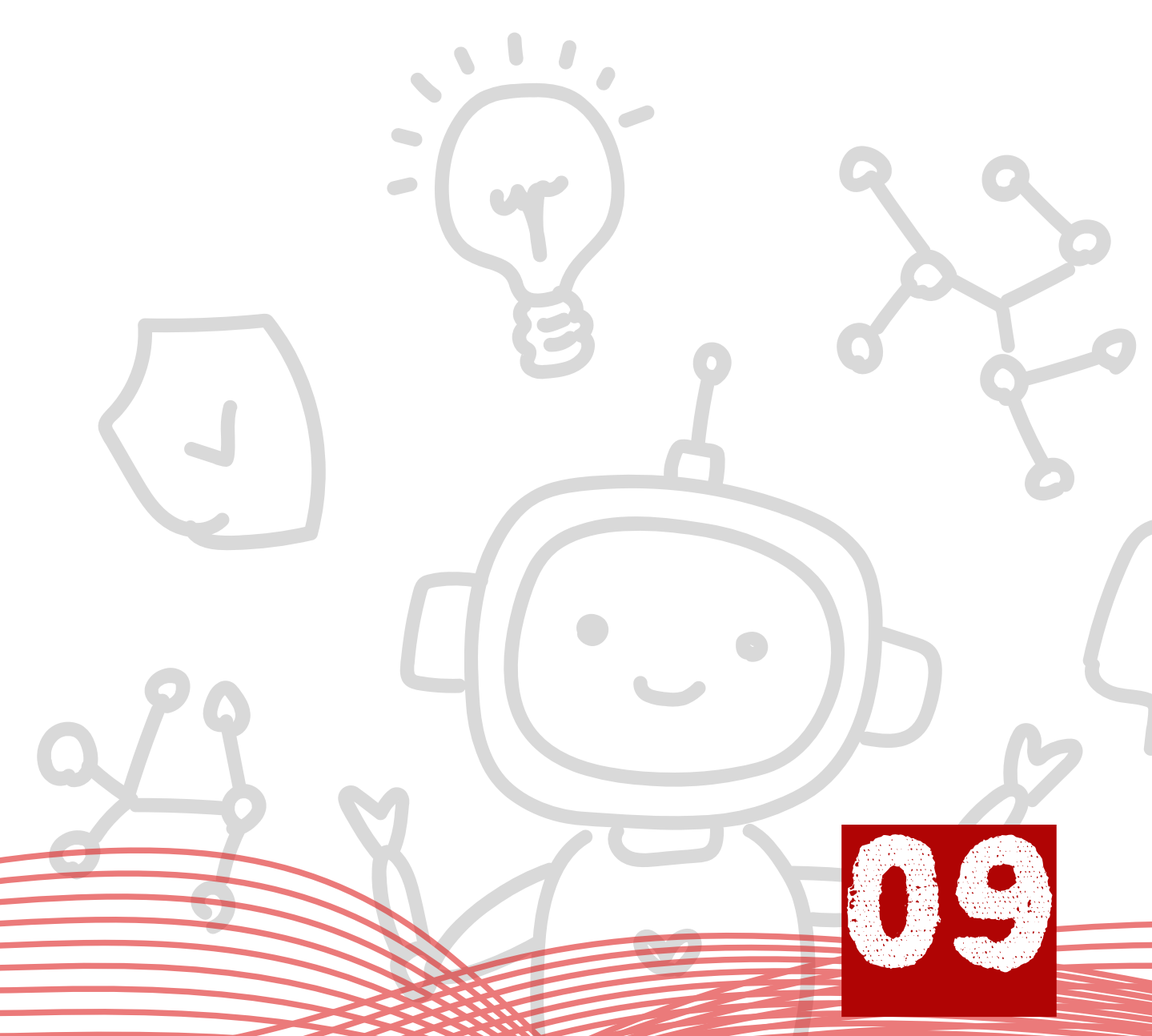


SCORING SYSTEM

Final Calculation

- **Time Bonus (T): + 30**
- **Checkpoints (C): + 500**
- **Stopping at End (S): + 30**
- **Perfect Run (P): + 50**
- **Restart Penalty (R): – 0**
- **Out of line (O): – 0**
- **Checkpoint Skip Penalty (CS): – 0**

Total Score = 30 + 500 + 30 + 50 = 710 points



WINNER SELECTION

TIE BREAKERS

The Champion of the competition will be the team that secures the highest score in the Final Round of the event.

In the event of a tie between two or more teams, the following tie-breaking criteria will be applied sequentially:

Perfect Runs: The team that has achieved the greater number of perfect runs (i.e., runs without any restarts) across both the preliminary and final rounds will be given priority.

Fewer Restarts: If the teams are still tied, the team with the fewest total restarts across all rounds will be ranked higher.

Tie-Breaker Run: Should the tie persist even after applying the above conditions, a special tie-breaker run will be conducted. The team securing the higher score in this additional run will be declared the winner.

This method ensures that consistency, precision, and stability are valued equally alongside speed, making the competition fair and rewarding for all.



PRIZE MONEY

**A GRAND
PRIZE MONEY OF**

45,000
BDT



CODE OF CONDUCT

To uphold the spirit of fair play and professionalism, all participating teams must adhere to a strict code of conduct throughout the competition.

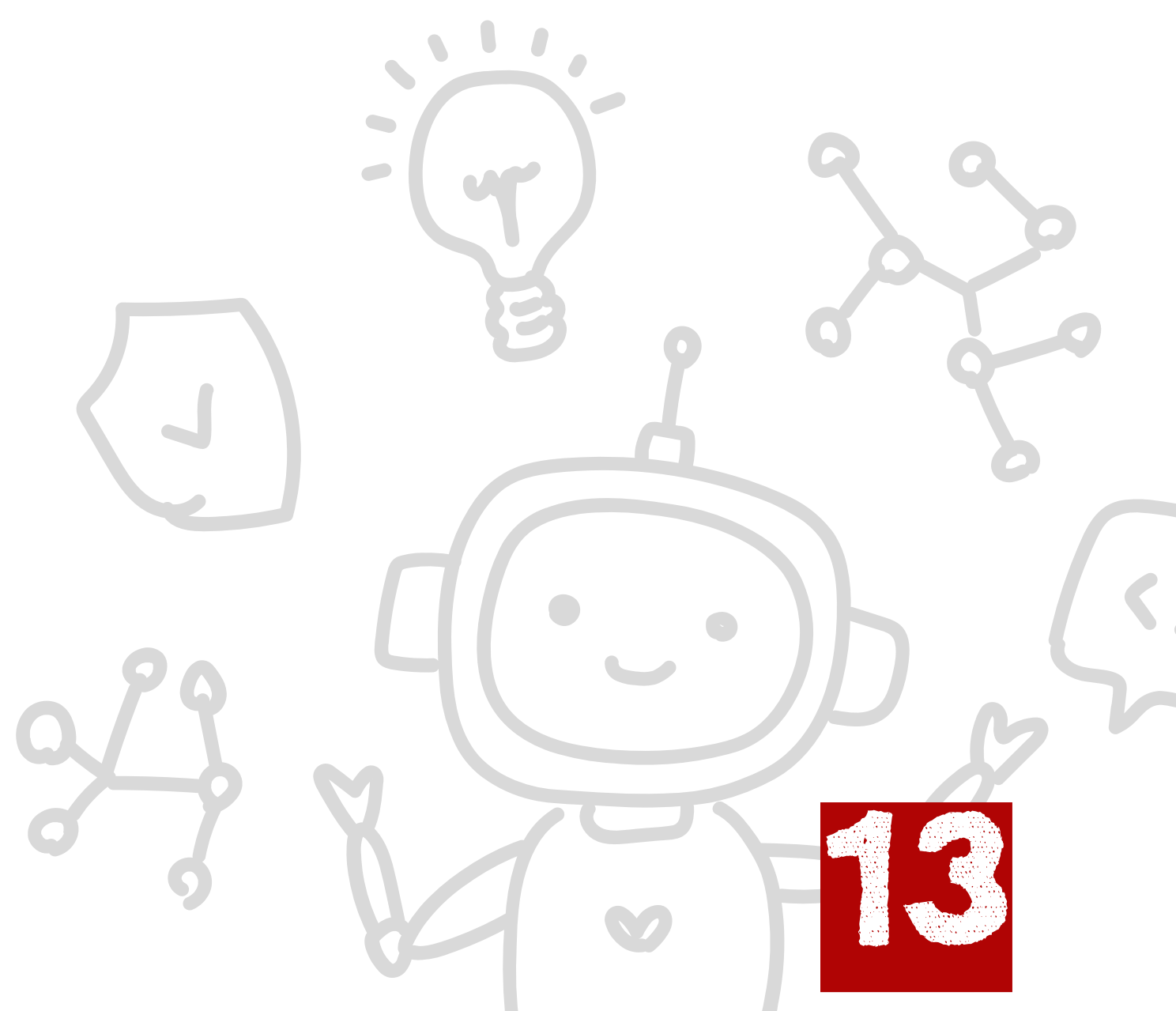
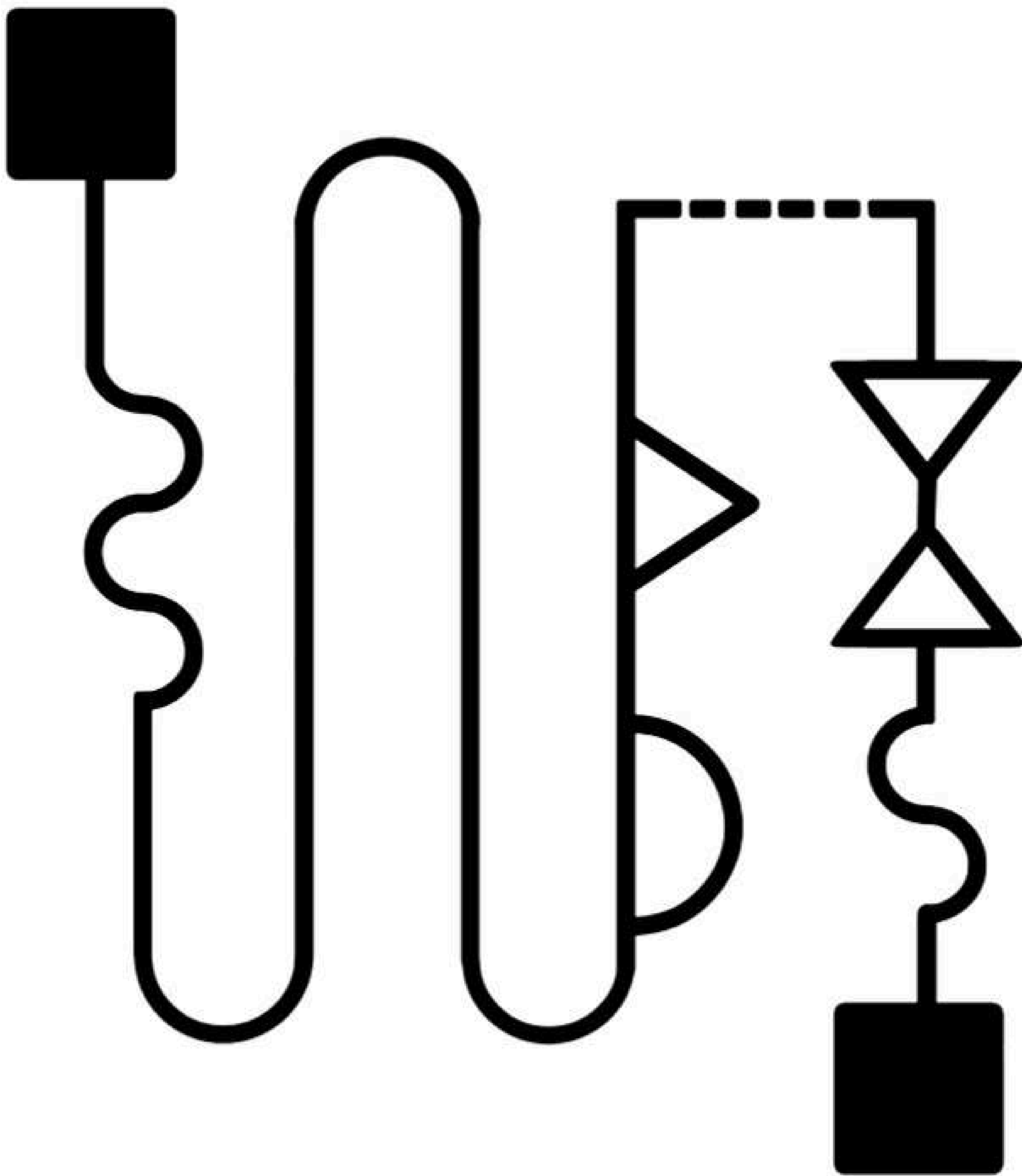
- **Respect and Behavior:** Any form of disrespect, misconduct, or unsportsmanlike behavior directed towards judges, officials, organizers, or fellow participants will result in immediate disqualification of the team involved.

- **Integrity and Fairness:** Teams must present their robots honestly and transparently. Any attempt to mislead judges, conceal prohibited modules, or use banned communication devices (such as Wi-Fi, Bluetooth, or RF links during the run) will be considered a violation and lead to disqualification.

- **Final Authority:** All decisions made by the judging panel are final and binding. Teams must accept the outcome with professionalism, and any dispute or challenge beyond the official verdict will not be entertained.



DEMO TRACK



REGISTRATION FEE

1500
BDT

Minimum 1, Maximum 3 on a Team

BKash: 01866989292

Give team name in Reference.

Registration Link here!



CONTACT US

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