NATIONAL CODE & ROBOTICS COMPETITION 2025

1. General information

National Code & Robotics Competition 2025

The National Code & Robotics Competition 2025, organized by The Lab, is a fun and exciting event designed to expose students to the world of coding and robotics. Open to the public for ages 5 to 14, this annual competition aims to ignite interest and innovation in Science, Technology, Engineering, and Mathematics (STEM).

Participants will tackle individual challenges, putting their knowledge and skills to the test in a dynamic and stimulating environment. This competition encourages students to think creatively, solve problems independently, and showcase their talent in coding and robotics.

1.2 Introduction to TLTC

Participants will face problem-based challenges that require solutions using coding and/or robotics. The competition consists of a qualifying round, semi-finals, and a finals round, culminating in the crowning of the top 3 winners in each age group. This competition is a platform for students to showcase their creativity, problem-solving abilities, and technical skills in a dynamic and stimulating environment.

Students will focus on developing the following areas:

- Coding skills
- Robotics skills
- Computational Thinking (e.g., tinkering, debugging, collaboration etc.)

1.3 Learning regardless of the result

The Lab strongly believes that the process of learning is more important than the result. The competition serves as a learning platform for students to experience competition and demonstrate their talent and interest in technology.

2. Age group and Coach definitions

2.2 Age Groups

The age groups are defined as of 31 December 2025

- Ages 5 - 6 years old: The Kinder category
- Ages 7 – 9 years old: The Junior category
- Ages 10 – 14 years old: The Coder category

2.3 Coach Definition

In the Kinder category (ages 5–6 years old), each participant is allowed to have one parent or guardian act as a coach during the competition day. Coaches are there to facilitate learning and provide guidance when participants have questions or encounter problems. While coaches are not permitted to code or complete tasks during the actual competition challenge, they can assist by offering verbal support to their child.

This arrangement is specifically for the Kinder category due to the participants' young age and the likelihood that this may be their first competition experience. For participants aged 7–14 years old, no parent or guardian assistance is allowed.

3. Fair Competition

Participants are expected to uphold high standards of ethics throughout the competition. Every participant must compete fairly and show respect towards fellow competitors, judges, and competition organizers.

All solutions must be the original work of the participant. Using solutions that are not the participant's own work is strictly prohibited and will be considered plagiarism.

If there is suspicion of any violations, an investigation will be conducted. Penalties, including potential disqualification, may apply. Judges reserve the right to prevent the participant from advancing to the next stage of the competition, even if the submitted solution would have otherwise won.

4. Competition Format and Procedure

The competition for all age groups consists of three stages:

- Qualifying Round
- Semi-Finals
- Final Round

The Qualifying Round is open to all contestants, and the top 6 participants will advance to the Semi-Finals. From there, the top 3 participants will proceed to the Final Round, where the winners will be determined.

All three stages of the competition will take place on the same day, 12 April 2025.

The location of the competition is at Kinex Mall, 11 Tanjong Katong Road (S)437157.

5. Competition Details

5.1 For Ages 5 - 6 years old: The Kinder category

The competition uses the Kubo robot.

Qualifying Round:

All Participants will face a total of three coding challenges in the qualifying, where they must program Kubo to move from one random location to another. The goal is to complete each 3 tasks in the fastest average time within their group of six in each session. The top 6 participants overall will advance to the Semi-Finals.

Semi-Finals and Final Round:

From the Semi-Finals, the top 3 participants will proceed to the Final Round, where the winners will be determined. All three stages of the competition will take place on the same day, 12 April 2025.

Sample video:
https://www.youtube.com/watch?v=HwTV6O3H_0Y&list=PLb6GbZRcg07N3zUziu_Gw2WdPqYnB-a6R&index=2

5.2 Ages 7 – 9 years old: The Junior category

The competition uses the LEGO Education SPIKE Prime Core Set (45678) robot.

Qualifying Round:

In this round, all participants will face building challenges where they must construct three different robots. Participants will be given a specific amount of time to memorize the design of a robot and then a set amount of time to build it. The goal is to complete all three building tasks with the fastest average time within their group of six in each session.

If time runs out and no participant successfully completes the robot, the participant whose build is the closest to the desired robot will be declared the winner for that task. The top 6 participants overall will advance to the Semi-Finals.

Semi-Finals and Final Round:

In the Semi-Finals, the top 6 participants will compete for a place in the Final Round, where the top 3 participants will be determined and crowned as winners.

All three stages of the competition will take place on the same day, 12 April 2025.

5.3 Ages 10 – 14 years old: The Coder category

- Novice participants will be assessed on their skills in block-based programming.
- Expert participants will be tested on Python programming.

Qualifying Round

Participants in the Qualifying Round will be grouped and compete in a buzzer round format. In this round, participants will tackle challenges that may include:

- Guessing the output of a program,
- Filling in blanks in a provided code snippet.
- Spotting the error in the code.

One point will be awarded to the first participant to answer a question correctly. The goal is for participants to get as many points within their session. In the event of a tie within a group, tied participants will proceed to answer tie-breaker questions until a winner is determined.

Semi-Finals and Final Round

The Semi-Finals and Final will utilize The Lab Blockly program for Novice participants and Visual Studio Code for Expert.

In the Semi-Finals, the top 6 participants will compete for a place in the Final Round, where the top 3 participants will be determined and crowned as winners.

Both the Semi-Finals and Final Round will follow a quiz format, where participants will compete to answer coding challenges within a specific time frame. Challenges may involve coding programs to achieve specific results or solving problems requiring logical reasoning and computational thinking.

Participants will be scored based on a Test Case-Based system. For each question, participants will earn one point for every test case that their code satisfies. The goal is for participants to get as many points within the round. In the event of a tie within a round, tied participants will proceed to answer tie-breaker questions until a winner is determined.

All three stages of the competition—Qualifying Rounds, Semi-Finals, and Final Round—will take place on the same day: 12 April 2025.