Rules for Organizing and Conducting the International Competition "INFOMATRIX-ASIA"

1. General Information

1.1 These Rules for conducting the international competition "INFOMATRIX-ASIA" (hereinafter referred to as the Competition) are developed in accordance with the Law of the Republic of Kazakhstan "On Education," the Law "On Informatization," and the State Program for the Development of Education in Kazakhstan for 2011–2025. They define the objectives and tasks of the Competition, organizational and methodological support, procedures for conducting and financing, participation, and determining winners.

1.2 The main goal of the Competition is to create the necessary conditions to support gifted children and talented youth, including fostering their intellectual development and career orientation.

1.3 The main objectives of the Competition are:

- Identifying, supporting, and developing students who show interest and research abilities in the IT industry and science;
- Advancing information technology and creating new projects based on students' research activities as an effective means of enhancing the development of the IT industry in Kazakhstan;
- Implementing the idea of continuous education by preparing gifted students to continue their studies at leading domestic and international universities;
- Promoting international cooperation and creative exchange of experience in school education in IT and science.

1.4 These Rules are developed in accordance with the Law "On Education," the order of the Minister of Education and Science of the Republic of Kazakhstan (MES) "On Approval of the Rules for Forming Participants of International Olympiads and Scientific Project Competitions (Scientific Contests) on General Education Subjects" dated January 19, 2016, No. 45, and the requirements for scientific project competitions.

1.5 Scientific projects involving the following are not allowed in the competition:

- The use of equipment access to which is prohibited for minors, experiments involving cruelty to animals, or the use of substances harmful to human and animal health (toxic, radioactive, unstudied biologically active compounds with carcinogenic and mutagenic effects; pathogenic or conditionally pathogenic substances for humans and animals; microorganisms, viruses, alcohol, tobacco);
- Projects that have already been reviewed and presented at national competitions in the same unchanged version.

1.6 The international competition "INFOMATRIX-ASIA" is conducted in English; therefore, all necessary documentation and project presentations must be prepared in English.

1.7 Each project may include a team of 1 to 3 participants.

1.8 Only one mentor is allowed per project, and a certificate is issued exclusively to that mentor.

2. Order of organization and holding of Competitions

2.1 The competition is an annual event held with the support of the Republican Scientific and Practical Center "Daryn" (hereinafter referred to as "Daryn") under the Ministry of Education and Science of the Republic of Kazakhstan, as well as the International Educational Foundation "BILIM-INNOVATION." "Daryn" is responsible for developing the strategic plan, coordinating organizational tasks, and ensuring collaboration with participants and partners within Kazakhstan. The International Educational Foundation "BILIM-INNOVATION" facilitates international participation and knowledge exchange by attracting foreign specialists and maintaining international competition standards.

2.2 The overall preparation and organization of the Competition are overseen by the Competition Organizing Committee (hereinafter referred to as the Organizing Committee). This committee comprises leading Kazakhstani and international scientists, educators from international educational centers, experts in education, and specialists in information technology (IT) and artificial intelligence (AI). Scientists and educators provide scientific and methodological support, education experts establish requirements and standards for participants, and IT and AI professionals assist in evaluating projects related to new technologies and their practical applications.

2.3 The Organizing Committee, in coordination with the Ministry of Education and Science, develops the competition rules, formulates the regulations, appoints the jury, organizes the evaluation process, and facilitates the awarding of winners.

2.4 Participant data registration is conducted on the website www.infomatrix.asia. The registration form must include the following information:

- For participants from Kazakhstan: full name (in Latin and Cyrillic), Individual Identification Number (IIN), competition section, project title, grade, school, region/district/city, language of instruction, and the name and email of the team mentor.
- For international participants: full name, a scanned copy of their passport, competition section, project title, grade, school, region/district/city, language of instruction, and the name and email of the team mentor.

2.5 The competition and selection process consist of two stages:

1. **Registration and online selection** (see Section 2.4; specific requirements may apply depending on the section). At this stage, participants complete the registration forms and undergo an online evaluation of their projects to ensure compliance with the competition criteria.
2. **Final stage**, which will take place at Spectrum School in Astana in March 2025. At this stage, participants present their projects in person to the jury and other participants. They also take part in concluding events such as workshops, conferences, and the awards ceremony.

3. Requirements for the Content and Formatting of Work

3.1 Team Leader Rights:
The team leader (teacher or other school representative) may register multiple projects and represent several teams simultaneously.

3.2 Eligibility for Participation:
Participation is open to:

- Teams of school students from Kazakhstan in grades 9–11 (12).
- Teams of international school students aged 10 to 18.

All eligible students may submit their projects for **online registration** through the official competition platform.

3.3 Competition Sections:
The competition consists of nine sections:

1. AI Programming
2. AI Hackathon
3. Hardware Control
4. Applied Science Projects
5. Computer Art
6. Short Movie
7. Arduino Hackathon
8. LEGO Relay Race
9. Startup

3.4 Documentation Requirements:
The project must be typed on a computer in MS Word format (.doc/.docx) using **Times New Roman** font, **size 12** (14 is acceptable), on **A4** sheets, and include:

- Title page;
- Table of contents;
- Abstract;
- Introduction;
- Research section;
- Conclusion;
- References.

The **title page** must include:

- Full name of the organization where the work was performed (city, school);
- Full name(s) of the author(s) and grade;
- Title of the work;
- Field and section of the work;
- Full name of the mentor;
- City (where the competition is held) and year.

The **abstract** (no more than 250 words) must include:

- The research objective;
- Hypothesis;
- Research stages and procedures;
- Methodology of the experiment;
- Novelty of the research and degree of independence;
- Results and conclusions;
- Practical applications of the results.

The **introduction** (no more than 2 pages) should reflect:

- Relevance of the topic;
- Objective(s) of the work;
- Brief methods for solving the tasks.

The **research section** (no more than 20 pages) must include:

- Analytical review of known results;
- Description of the methods for solving tasks;
- Results and discussion;
- Illustrations (graphs, photographs, drawings, diagrams).

References should be cited in square brackets, numbered sequentially as they appear in the text.

The **conclusion** (no more than 1 page) should include:

- Key results of the work;
- Conclusions and recommendations for using the results.

The **references** list should be formatted at the end of the work as follows:

- Author's last name and initials;
- Title of the article or book;
- Place of publication;
- Publisher (for books);
- Year of publication, issue number, and pages.

A **mentor's review** must assess the relevance of the topic, the author's personal contribution, the work's shortcomings, and provide recommendations.

Demonstration materials for the stand should not exceed 165×125 cm and must include text, graphics, photographs, diagrams, and conclusions.

IMPORTANT:
Each competition section may have its own unique documentation requirements. These specific rules override the standard requirements and are described in the appendices for each section. Participants must familiarize themselves with the specific requirements of their section before preparing their work.

3.5 Stand Requirements:
The top of the stand must include:

- Abstract, participant's full name, age, school, city, and region
- Stand materials should reflect the content of the work and be aesthetically designed.

3.6 Video Requirements:

- Videos must be uploaded to YouTube, with the link included in the documentation and on the stand.
- Videos should also be provided on USB or HDD.

3.7 Mentor Responsibilities:
The mentor must ensure that:

- The results are accurate.
- The work does not contain plagiarized material from dissertations, reports, or articles.
- The student has gained new knowledge and skills during the project.

3.8 Section-Specific Activities:

- **AI Programming**: Project presentation.
- **AI Hackathon**: On-site task execution.
- **Hardware Control**: Project defense.
- **Applied Science Projects**: Project presentation.
- **Computer Art**: Presentation and stand report.
- **Short Movie**: Submission for preliminary review.
- **Arduino Hackathon**: On-site task execution.
- **LEGO Relay Race**: Competition.
- **Startup**: Idea presentation and defense.

Projects that fail to meet these requirements may be rejected.

Prizes and Awards

4.1 Participants of the Competition are awarded participation certificates.

4.2 Winners are awarded diplomas of I, II, and III degrees.
The number of diplomas for each degree is determined based on the following proportion:

- 20% of the winners receive III-degree diplomas,
- 15% receive II-degree diplomas,
- 10% receive I-degree diplomas.

4.3 The ratio of diplomas I, II, and III degrees may be adjusted based on the quality of the submitted projects at the discretion of the jury and the Organizing Committee. If necessary, the proportion of awards may be increased or decreased.

Sections

5.1. AI Programming

You are expected to create an application that is beneficial to society, user-friendly, and reliable. The purpose of this category is to assess participants in the field of computer programming. You will need to be able to implement various algorithms and data structures and solve complex problems. You may use any programming or scripting language, such as C++, Java, Pascal, Python, or PHP.

This year, the competition particularly welcomes projects with a focus on artificial intelligence (AI), recognizing the rapid advancements in this field and its substantial impact on society. Such projects are highly relevant, and the committee is inclined to favor solutions that incorporate AI. However, traditional projects that meet the competition criteria and demonstrate social value will also be considered.

General Criteria:
- Documentation
- Originality/creativity
- Usefulness for society
- Stand design
- Oral presentation
- Demonstration of programming skills
- Design (UI/UX)

To participate, your project must be accepted by the registration committee.

Registration Criteria:
- Quality of documentation (5 to 10 pages; documentation must be in English)
- Video presentation of the project (upload the video to YouTube and send the link)
- Full information about all participants
- Link to the project repository on GitHub (must be publicly accessible)

The **final evaluation**, which takes place in Astana, consists of two stages.

The first stage is dedicated to project presentations. Each team member must be present; otherwise, the work will not be accepted. Delays in arriving for the defense are not allowed. The team will be allocated between 5 to 10 minutes to present the project (exact time will be announced one day before the presentation). The team must be prepared to adapt their presentation to any time limit, so it is recommended to prepare both a brief and a full version of the presentation. You must have all necessary materials for the presentation (such as computers, chargers, booklets, etc.). Please prepare the required presentation slides.

Additional Recommendations: Teams are encouraged to prepare a small brochure or handout with a brief description of the project, its unique features, and links to the documentation. This will help the jury recall the project after the presentation.

Important Note: In the final stage, your project must run on your local or remote server. If members of the jury or committee ask to see the code and explain its parts, you must be ready to do so.

The second stage involves the stand presentation. One of the jury members will secretly approach the stand throughout the day (be prepared; it could be anyone) and review the participants once again. Here, it is also important to be able to present your project and code. Additionally, the stand design plays an essential role and should be well thought-out and visually appealing.

Additional Rules:
- This year, projects with an artificial intelligence (AI) focus are encouraged, but traditional projects that meet other criteria are also accepted.
- Telegram bots and other integration applications are not accepted, except in cases where the project demonstrates a complex architecture and extensive functionality.
- The project must be complete by the time of the presentation, at least as a Minimum Viable Product (MVP), with no critical errors or missing functionality. This will help the jury focus on high-quality and complete solutions.

Important Notes:
- Rules are subject to change.
- Projects from previous years or past competitions will not be accepted in their previous form.

5.2. AI Hackathon

For the first time within the framework of INFOMATRIX-ASIA, we are launching a large-scale AI hackathon! This is a unique opportunity for students to showcase their skills in programming and development, as well as to integrate the latest artificial intelligence technologies into their projects. The hackathon will give participants the chance to work with leading mentors and AI professionals, helping them unlock their potential and enhance their projects.

In this hackathon, students are required to submit completed projects with CRUDL(read below) functionality (Create, Read, Update, Delete, List). In the first stage, participants will submit their projects online without any AI elements, as AI functions will be randomly assigned in the second stage.

If a project already includes AI features, they will be removed at the start of the offline event and replaced with those randomly assigned by the organizers. **Important:** AI features added prior to the offline stage will not be evaluated by the judges.

The second stage will be held offline in Astana. Here, participants will work under the guidance of experienced mentors, selected from top AI experts, who will be assigned to teams at random by the organizers. This approach creates equal conditions and provides each participant with a unique experience. Under their guidance, participants will integrate the specially assigned AI functions into their completed projects, significantly improving the quality and functionality.

Participation Criteria:

General Criteria:

- Quality of documentation
- Originality/creativity
- Societal impact
- Booth design
- Oral presentation
- Demonstration of programming skills
- Interface design (UI/UX)

Hackathon Stages:

Online Selection: Participants submit their completed projects with CRUDL(read below) functionality. Projects should be well-documented and include a short video presentation demonstrating the main features of the project.

Final Evaluation (Astana): The final stage consists of three parts.

1. **First Stage:** Collaborative work with mentors to add AI functions to the project. The available pool of AI functions will be announced in advance, and at the start of the hackathon, they will be randomly assigned to teams. Organizers will provide OpenAI API keys that teams can use in their development.
2. **Second Stage:** Project presentations. All team members must be present for the project defense; otherwise, the project will not be accepted. Teams will have between 5 and 10

minutes for the presentation (exact time will be announced a day before). Teams should be prepared to adapt their presentation to any duration, so preparing both a short and full version is recommended. All necessary presentation materials, such as computers, chargers, brochures, and slides, should be ready and available.

Additional Recommendations: Teams are encouraged to prepare a small brochure or handout with a brief description of the project, its unique features, and links to documentation. This will help judges remember the project after the presentation.

Important Note: At the final stage, your project should run on a local or remote server. In case the judges or committee members ask to show and explain specific parts of the code, the team should be prepared to do so.

3. **Third Stage:** Booth presentation. One of the judges will discreetly visit each booth throughout the day to check on participants. It's important to be able to effectively present both the project and its code. Booth design also plays a crucial role and should be well-thought-out and attractive.

Additional Rules:

- **Telegram bots and other integration-based applications are not accepted** unless the project has a complex architecture and extensive functionality.
- **The project should be complete by the time of the presentation** in the form of a minimum viable product (MVP), with no critical errors or missing functionality. This helps judges focus on high-quality, finished solutions.

Important Notes:

- **Rules are subject to change**
- Projects from previous years or past competitions will not be accepted in their original form.

*What is CRUDL?

CRUDL is an acronym representing the fundamental operations commonly used in application development and database management. It stands for:

- **C - Create**: Adding new data.
- **R - Read**: Retrieving data.
- **U - Update**: Modifying existing data.
- **D - Delete**: Removing data.
- **L - List**: Displaying a list of data.

Examples of CRUDL implementation:

1. To-Do List Application:

- **Create**: A user adds a new task ("Buy groceries").
- **Read**: Tasks are displayed on the screen.
- **Update**: A user edits a task, such as adding a due date.
- **Delete**: A user removes a completed task.
- **List**: All tasks are displayed in a list.

2. Library Management Application:

- **Create**: Adding a new book to the catalog (e.g., "Harry Potter and the Philosopher's Stone").
- **Read**: Viewing details of a book (title, author, year of publication).
- **Update**: Modifying book information, such as adding a description.
- **Delete**: Removing a book from the database.
- **List**: Displaying a list of all books in the library.

3. E-commerce Application:

- **Create**: An admin adds a new product to the catalog.
- **Read**: A user views product details.
- **Update**: An admin updates product information, such as its price or description.
- **Delete**: Removing a product no longer available for sale.
- **List**: A user browses through the product catalog.

Why is CRUDL important?

These operations form the backbone of most applications that work with data. Implementing CRUDL ensures a functional **minimum viable product (MVP)**, providing a strong foundation to incorporate more advanced features, such as artificial intelligence.

Recommendations for Hackathon Participants:

1. **Simplicity and Functionality**: In the initial stage, focus on ensuring your project efficiently executes CRUDL operations without errors.
2. **Comprehensive Documentation**: Clearly explain how CRUDL functions are implemented in your project.
3. **Video Presentation**: Demonstrate how users perform create, read, update, delete, and list operations within your application.

These basic operations will serve as the core of your project and will enable seamless integration of AI features during the second stage of the hackathon, enhancing innovation and usefulness.

5.3. Hardware Control

In this section, you are expected to create software that controls or interacts with an electronic or mechanical device. You have the freedom to choose almost any type of device! Ideally, you'll assemble an original device using any spare parts and tools available to you. However, it must include a software component that interacts with the hardware.

Your creativity is just as important as your mechanical and programming skills. It's highly recommended that your project benefits people in some way, providing a service or functionality that makes life easier. The only limit is your imagination!

Registration Requirements:

- **Project Documentation**: Detailed documentation explaining your project. The written report must be in English and submitted in MS Word format, (as .doc/.docx file), using "Times New Roman" font size 12 in A4 format.
- **Video Presentation**: Upload a video presentation to YouTube and share the link.
- **Program Code Link**: Upload your program code to GitHub with clear documentation

Final Evaluation:

The **Final evaluation** consists of two stages.

The First stage is dedicated to project presentations. Each team member must be present; otherwise, the work will not be accepted. You must have all necessary materials for the presentation (such as computers, chargers, booklets, etc.). Please prepare the required presentation slides. Additional recommendation - teams are encouraged to prepare a small brochure or handout with a brief description of the project, its unique features. This will help the jury recall the project.

The Second stage involves the stand presentation. One of the jury members will secretly approach the stand throughout the day (be prepared; it could be anyone) and review the participants once again. Here, it is also important to be able to present your project. Additionally, the stand design plays an essential role and should be well thought-out and visually appealing.

General Criteria:

- Documentation (participants should bring one copy of the printed entire project and prepare a presentation.)
- Presentation
- Participants should be able to answer the judge's questions about their work (Arduino, sensors, etc.)
- Originality and Creativity
- Practical Benefits to Society
- Stand Design about their project
- Oral Presentation Skills (on the day of the competition, students will be invited to attend a 10 minute interview conducted by a panel of judges.)

After presenting, teams will receive points based on these criteria, which will influence their advancement in the competition.

Important Reminders:

- Ensure your presentation setup (stands, computers, chargers, booklets, etc.) is ready before the presentation day, as there will be no extra time provided.
- Participants must not plagiarize the work of others. If the contents of any books or other references are quoted in the report, the details of the sources, such as the names of the books or the URLs of websites, must be indicated.
- **Rules may change**.
- Projects from previous years will not be accepted.

5.4. Applied Science Projects

The applied science project challenges participants to apply scientific concepts from any field whether biology, mathematics, chemistry, geography, or physics to solve real-world problems. Projects might include developing prototypes, creating technology to address environmental or social issues, or designing experiments to explore scientific principles. Successful projects will showcase scientific knowledge and technical skills while addressing societal challenges, offering a unique chance to make a positive impact.

Registration Requirements:

- **Project Documentation**: Detailed documentation explaining your project. The written report must be in English and submitted in MS Word format, (as .doc/.docx file), using "Times New Roman" font size 12 in A4 format.
- **Video Presentation**: Upload a video presentation to YouTube and share the link.

Final Evaluation:

The **Final evaluation** consists of two stages.

The First stage is dedicated to project presentations. Each team member must be present; otherwise, the work will not be accepted. You must have all necessary materials for the presentation (such as computers, chargers, booklets, etc.). Please prepare the required presentation slides. Additional recommendation - teams are encouraged to prepare a small brochure or handout with a brief description of the project, its unique features. This will help the jury recall the project.

The Second stage involves the stand presentation. One of the jury members will secretly approach the stand throughout the day (be prepared; it could be anyone) and review the participants once again. Here, it is also important to be able to present your project. Additionally, the stand design plays an essential role and should be well thought-out and visually appealing.

General Criteria:

- Documentation (participants should bring one copy of the printed entire project and prepare a presentation.)
- Presentation
- Participants should be able to answer the judge's questions about their work
- Originality and Creativity
- Practical Benefits to Society
- Stand Design about their project
- Oral Presentation Skills (on the day of the competition, students will be invited to attend a 10 minute interview conducted by a panel of judges.)

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- **Rules may change**.
- Projects from previous years will not be accepted.

5.5 Computer Art

Computer Art, also known as digital art, is artwork created or presented using digital technology. This category includes purely computer-generated art (e.g., fractals and algorithmic art) as well as pieces developed from other sources, like scanned photographs or images drawn using vector graphics software. Accepted formats include: **2D Artwork, 3D Artwork, 3D Animation, 3D Animation**

You may use any software, such as Illustrator, Photoshop, 3D Studio Max, AutoCAD, etc. For animations, the duration should not exceed 5 minutes. While there is no set theme, the artwork should communicate a message on its own.

Registration Requirements

To participate, submit the following:

- A video presentation of your project (upload to YouTube and share the link)
- Detailed information about your project
- Full participant information
- Time spent on the project and the programs used

Judging Criteria

Your work will be evaluated on these aspects:

1. **Visual Quality**
- Explanation: Your artwork should be sharp, detailed, and well-composed, with thoughtful use of color, layout, and perspective.
- Tip: Focus on creating a polished look with clear, refined details that enhance the overall design.
2. **Impact and Message**
- Explanation: Your work should make a strong first impression and convey a clear message or theme. It should captivate viewers and make them curious or feel something.
- Tip: Think about the story or idea you want to communicate, and use elements like color and contrast to support that message.
3. **Originality and Creativity**
- Explanation: Show us a unique and fresh approach! Surprising ideas, unusual themes, and creative techniques will help your work stand out.
- Tip: Avoid common ideas; explore new colors, subjects, or styles that represent your perspective.
4. **Oral Presentation**
- Explanation: You'll explain your work to the judges, describing your creative process, inspirations, and goals.
- Tip: Practice talking about your work confidently, focusing on why you made key artistic choices.
5. **Stand Design**
- Explanation: Your presentation space should enhance the viewing experience and connect with your audience. Your stand should support and reflect the theme of your work, helping viewers understand your concept.
- Tip: Arrange your display thoughtfully, considering how it can complement and highlight the main message of your artwork
6. **Technical Skills**

- Explanation: This criterion looks at how well you use digital tools, like layering, effects, or 3D techniques, to enhance your artwork.
- Tip: Show your technical knowledge by using digital tools effectively to improve your piece's quality

Presentation Requirements

Projects must be presented in two stages:

1. **Stands** – Set up a display of your artwork for review.

2. **Presentation for the Jury** – Each team member must be present for the jury presentation. The team will have 10 minutes for the presentation and 5 minutes for Q&A.

Please ensure all necessary materials (computers, chargers, booklets, etc.) are prepared in advance.

Important Notes

1. Rules are subject to change.

2. Projects from previous years or past competitions **will not be accepted**.

5.6. Short Movie

The Short Movie category involves creating a visual story using moving pictures and sound. The goal is to test participant's skills in shooting, directing, and editing a complete movie. Submissions must demonstrate technical proficiency in editing and production. Submitting music video clips, social video and/or social experiments is prohibited.

Registration Criteria:

- Provide full registration information (participant names, country, team name, etc.).
- Choose **one** of the following six topics for the short film:
    - *Digital Addiction and Screen Time*
    - *The Future of AI in Everyday Life*
    - *Education of the Future: Online Learning and Personalization*
    - *Balancing Tradition and Modernity*
    - *Acts of Kindness and Helping Others*
    - *Empowering Youth and Leadership*
- Upload a 3-5 minute short film created by the team to YouTube, with a brief description.
- Submitting films from previous years or films not created by the team is prohibited. Violating this rule will result in disqualification, and no member will be allowed to participate with other teams.
- The film should not be a direct copy of another work. While participants may seek inspiration, the final script and movie must be original creations by the team.

Judging Criteria:

- Ability to write a complete and coherent script.
- Skills in shooting video.
- Proficiency in video and audio editing.
- Originality and creativity.
- Relevance and interest of the chosen topic.
- Stand Presentation (Stand Check)

5.7. Arduino Hackathon

The Arduino Hackathon is a dynamic and engaging robotics competition designed for teams of students to showcase their technical and creative skills. Using Arduino-based kits, participants will build and program robot cars capable of both manual (Bluetooth-controlled) and autonomous operation.

This competition encourages innovation, teamwork, and hands-on learning in an exciting and competitive environment. Each team must complete a series of missions, testing their robot's functionality, speed, and precision.

Technical Properties

1. **Project Requirements**: Each team must create an Arduino-powered car that incorporates the following modules:
    - **Bluetooth Module**: Either HC-05 or HC-06 for wireless communication.
    - **Motor Driver**: L298N to control the car's movement.
    - **Servo**: A servo motor must be used to control the claws of the car.
2. **Presentation Video**: Teams are required to submit a presentation video showcasing the operation of their Arduino car and all the listed modules in action.
    - **Video Specifications**: The video should clearly demonstrate each module's functionality within the project.
    - **Submission Platform**: Upload the video to YouTube and provide a direct link to it as part of your submission.
3. **Pre-Final Evaluation**: After submitting your project video, the entries will undergo evaluation. Feedback and pre-final results will be shared with each team accordingly.

General Rules

1. **Kit and Equipment Provided**:
    - Each team will receive a specialized kit to build a Bluetooth-controlled robot car equipped with claws and line-following sensors.
2. **Robot Car Functionalities**:
    - **Manual Control**: The robot car must complete the mission under manual control via Bluetooth.
    - **Autonomous Mode**: The robot car should then complete a mission independently, operating autonomously.
    - **Reprogramming**: Teams are allowed to reflash and reconfigure the robot between the manual and autonomous missions.
3. **Time Limit**:
    - Teams have **5 hours** to complete the assembly and programming of the robot car for both missions.
4. **Technical Assistance**:
    - During the competition, teams are allowed to make repairs, restart, or adjust configurations as needed, but only under the supervision of the committee.
5. **Required Equipment**:
    - Each team must bring their own laptop to use for programming and controlling the robot during the competition.

Team Rules

1. **Team Composition**:
   - Each team must consist of **3 members** and be accompanied by a **mentor or leader**.
   - The mentor can be a teacher from the participants' school and may assist the team **only prior to the competition**.
2. **Mentor Role and Restrictions**:
   - During the competition, mentors are not allowed to help, provide hints, or give guidance to the team. All work must be carried out solely by team members.
3. **Organizing Committee Rights**:
   - The Organizing Committee reserves the right to request explanations regarding any aspect of the team's program, code, or overall project concept at any time.
4. **Robot Design and Code Creation**:
   - Only team members are permitted to design the robot, write code, and program the device. **External assistance or pre-written code** is prohibited and may result in **disqualification**.

Scoring

1. **Missions and Points**:
   - The competition will consist of multiple missions, each carrying a designated point value. Teams will accumulate points based on mission completion.
2. **Tie-Breaker**:
   - If two or more teams achieve the same point score, the team that completes the missions in the **shortest time** will be ranked higher.

Tasks

1. **Step 1**: **Build a Bluetooth-Controlled Robot Car**
   - Teams must assemble and program a robot car that can be controlled manually via Bluetooth. This setup will be used for the first mission.
2. **Step 2**: **Build an Autonomous Robot Car**
   - Teams must configure the robot car to operate autonomously, utilizing sensors for navigation (e.g., line-following). This setup will be required for the second mission.
3. **Step 3**: **Mission 1 – Controlled Mode**
   - Using the Bluetooth-controlled setup, teams must manually drive the robot to locate and collect **3 items** within the designated mission area.
4. **Step 4**: **Mission 2 – Autonomous Mode**
   - Using the autonomous setup, teams must program the robot to navigate the area independently and collect **3 items** without manual control.

Each step should be completed sequentially, and reconfiguration or reprogramming is allowed between steps.

Mission

1. **Objective**:
   - On the competition track, there will be **3 target objects**. The goal is to retrieve each object and return it to the **Start Zone** as quickly as possible.
2. **Mission 1 – Manual Control**:
   - Teams will manually control their robot car via Bluetooth to locate and collect all **3 target objects**.
   - The robot must return each object to the Start Zone.
   - Speed is crucial, as teams are scored based on both the successful retrieval of all objects and the time taken to complete the mission.
3. **Mission 2 – Autonomous Mode**:
   - In this mission, the robot car must operate autonomously to locate, collect, and return all **3 target objects** to the Start Zone.
   - The robot should navigate independently, utilizing sensors to perform this task without any manual intervention.
   - As with Mission 1, the time taken will be factored into scoring, so teams should aim to complete the mission as quickly as possible.

Below figure shown track with one target object as an example
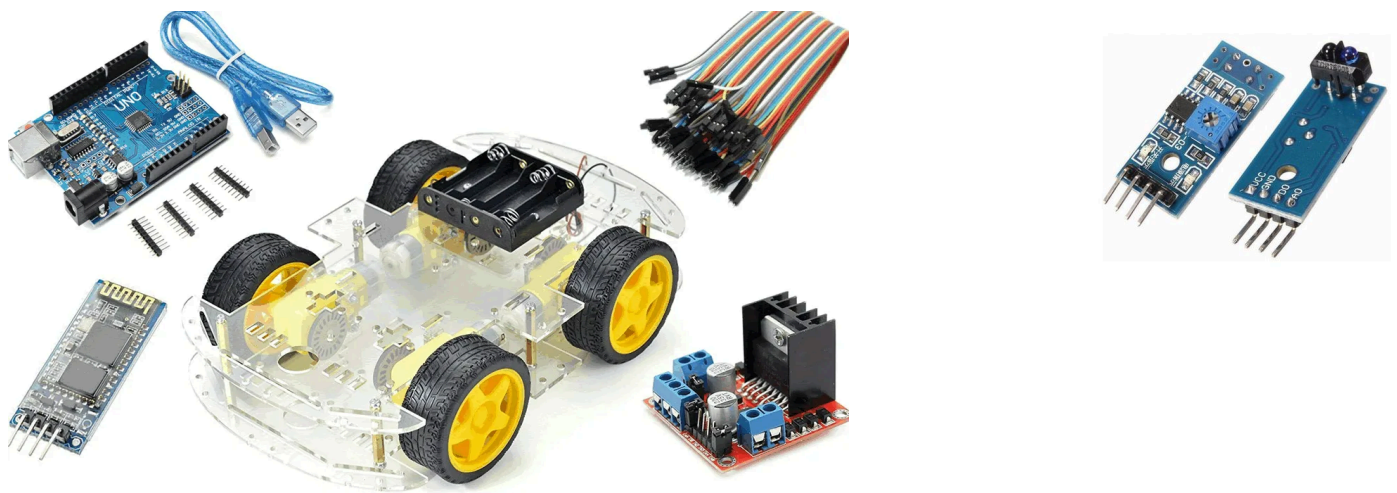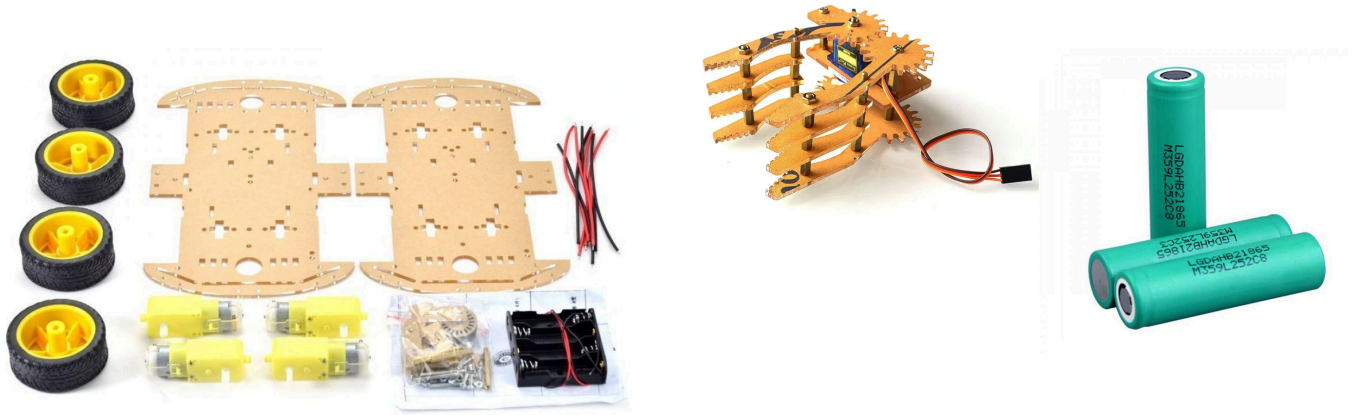• Map
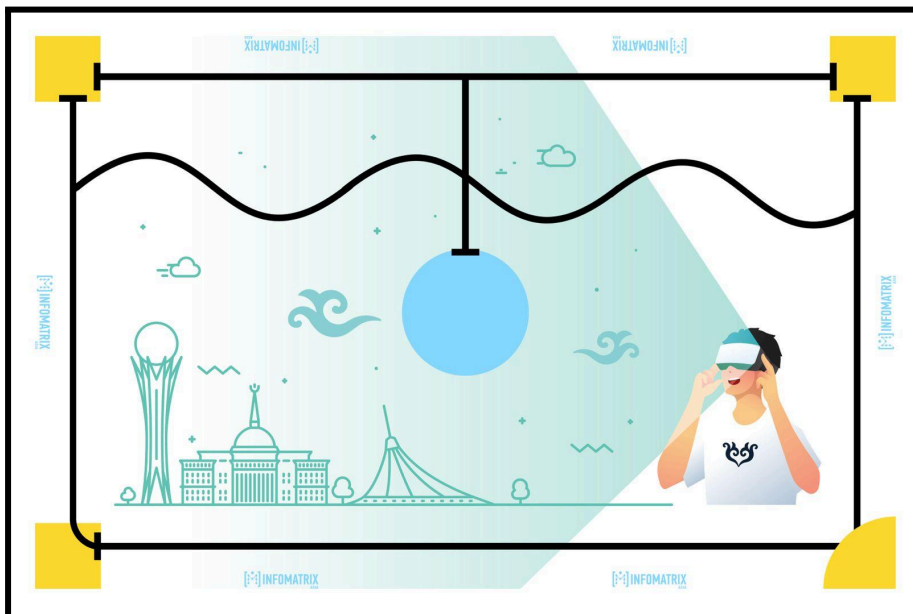
Car Components:

Each team will use the following components to build their robot car:

- **Arduino UNO** × 1: Main microcontroller for the robot car.
- **Servo SG90** × 2: Used for controlling movements, such as in the motorized claws.
- **Breadboard** × 2: For connecting various components and wiring.
- **Motorized Claws** × 1: For grabbing and transporting target objects.
- **4WD Car Assembly Kit** × 1: Four-wheel drive kit for car structure and movement.

- **18650 Battery** × 2: Power source for the robot.
- **18650 Battery Charger** × 1: For recharging the batteries.
- **18650 Battery Box** × 1: Holds the batteries for easy integration with the robot.
- **Line Sensor** × 1: Enables autonomous navigation for the line-following mode.
- **HC-05 Bluetooth Module** × 1:
- **Additional Parts**: Various wires, resistors

Recommendations

1. **Teamwork and Sportsmanship**:
   - Be friendly and cooperative. You may assist other teams if they need help, as long as it doesn't interfere with your own progress.
   - Demonstrate good sportsmanship: avoid any actions that could disrupt another team's work, and maintain a respectful and positive attitude throughout the competition.
   - **No Conflicts**: Arguments, quarrels, or physical altercations are strictly prohibited.

2. **Preparation Tips**:
    ○ To prepare effectively, consider assembling a similar robot and developing a basic program at your school before the competition. This practice will give you a head start and build familiarity with the components and coding required for the event.

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Safety

1. **Safe Use of Equipment**:
    ○ Ensure you handle batteries, motors, and electronics carefully. Incorrect connections or mishandling can lead to damaged components or accidents.
2. **Using Tools**:
    ○ If assembly requires tools (such as screwdrivers or pliers), exercise caution. While working, ensure that tools do not pose a hazard to you or other participants.

Additional Tips for Teams

1. **Code Optimization**:
    ○ Aim to write efficient code so that the robot can quickly respond to commands and perform autonomous tasks. Optimized programming can enhance the robot's performance.
2. **Testing and Debugging**:
    ○ After assembly, test that all modules (Bluetooth, servo, motors, and sensors) are functioning correctly. Pre-competition testing can help avoid malfunctions during the event.
3. **Power Management**:
    ○ Minimize energy consumption whenever possible. This will allow the robot to run longer on a single battery charge, which is especially crucial for the autonomous mode.

Bonus Points for Merchandise and Decorating the Work Area

1. **Merchandise**:
    ○ Teams will earn **bonus points** for wearing their **unique team t-shirts** designed specifically for the competition. This helps create a team identity and adds to the competition atmosphere.

2. **Decorating the Work Area**:
   ○ Teams will also receive **bonus points** for creatively decorating their **workstation**. The decoration should reflect the team's spirit and creativity, adding to the competition experience.

LEGO Relay Race Competition Rules

1. General Rules

- Each team must have **3 robots** to participate, with specific control rules for each:
  - **Robot 1 (Zone 1)**: Must operate autonomously.
  - **Robot 2 (Zone 2)**: Must be **self-controlled** (manual input allowed).
  - **Robot 3 (Zone 3)**: Must be **self-controlled** (manual input allowed).
- Robots **cannot skip Zone 2** (e.g., by throwing cubes far into Zone 3).
- The entire relay must be completed within **5 minutes**.
- The competition area consists of **3 sequential zones**, each with specific tasks.
- The competition area consists of 3 sequential zones, each with specific tasks and covered by a 10 cm tall border around the map.
- A total of **10 cubes** will be used in the game, and the maximum score is **600 points**.

2.Robot Size Specifications

- All robots must fit within the following size limits:
  - Maximum Length: 25 cm
  - Maximum Width: 25 cm
  - There are no specific restrictions on the height of the robot, as long as it fits within the competition zones.
- Robots will be inspected and measured before the competition. Any robot exceeding these dimensions will be disqualified.
- All robots must be built using official LEGO robotics kits: LEGO Mindstorms (EV3), SPIKE Prime, SPIKE Essential, WeDo, or LEGO Education NT.

3. Competition Layout and Task Breakdown

Zone 1: Cube Placement Over/Behind a Wall

- **Dimensions**:
  - Zone Length: **75 cm**
  - Wall Height: **8 cm**
  - Wall Width**: 1.6 cm.**
- **Task**:

  The first robot, operating autonomously, must pick up cubes and place them either on top of the wall or behind the wall.The robot can pick up a maximum of 3 cubes per move.

- **Scoring**:
  - Placing a cube successfully on top of or behind the wall earns **10 points per cube**.
  - Maximum points for this zone: **100 points** (10 cubes x 10 points each).
- **Rules**:
  - The robot must operate autonomously.
  - The robot must operate only within the 75 cm area designated for Zone 1.
  - No points are awarded for cubes dropped outside the designated area or that do not clear the wall.

- ○ **At the start of Zone 1**, teams are allowed to manually place up to **3 cubes** on their robot by hand before the robot begins its task.
- ○ If you wish to replace your autonomous robot during Zone 1, you must:

Take permission from the jury before making the replacement.Accept a penalty of -5 points for the replacement.

Zone 2: Transporting Cube to the Second Wall (Self-Controlled)

- **Dimensions**:
  - ○ Distance between the first wall and the second wall: **75 cm**
- **Task**:
  - ○ The second robot must self-control to pick up cubes from Zone 1 and transport them to Zone 2.
  - ○ Cubes must be placed fully behind or top the second wall.
- **Scoring**:
  - ○ Successfully delivering a cube to the second wall earns **20 points per cube**.
  - ○ Maximum points for this zone: **200 points** (10 cubes x 20 points each).
- **Rules**:
  - ○ The robot can be controlled manually but must operate only within the designated Zone 2.
  - ○ No points are awarded for cubes dropped outside the designated area or that do not reach the second wall.
  - ○ If the robot fails to transport a cube or goes out of bounds, no points are awarded for that cube.
- **Robot Replacement**:
  - ○ If you wish to replace your robot during Zone 2, you must:
    1. Take **permission from the jury** before making the replacement.
    2. Accept a penalty of **-10 points** for the replacement.

Zone 3: Throwing Cube into the Final Target Area

- **Dimensions**:
  - ○ Distance from the second wall to the final target area: **120 cm**.
  - ○ **Robot Movement Limit**: The robot can move forward by **60 cm** towards the target, but must throw the cubes from within this range.
- **Task**:
  - ○ The robot, operating under self-control, must place chess pieces into their correct positions on the board.
- **Scoring**:

  Full Points (30 Points): If the piece is placed in the correct position as per chess rules (e.g., pawns in the second row, knights in their starting squares, etc.).

  Half Points (15 Points): If the piece is placed one row away from its correct position (e.g., a pawn meant for the second row is placed in the third row).

  No Points:

- If the piece is placed two or more rows away from its correct position.
- If the piece is placed outside the board or in an invalid position.
  - **Rules**:
    - The robot can be manually controlled, but it is restricted to move forward by only **40 cm**, throwing the cube from within this range.
    - **If a cube lands across multiple zones**, the **jury will measure the cube's placement using a ruler**, and the scoring will be based on the **zone in which the largest part of the cube lies** (i.e., the zone covering the majority of the cube).

No points are awarded if:

- The cube lands outside the designated target area.
- The cube fails to stay in any scoring zone after landing.

Robot Replacement

If you wish to replace your robot during Zone 3, you must:

1. Take **permission from the jury** before making the replacement.
2. Accept a penalty of **-20 points** for the replacement.

4. Timing and Scoring

- The entire competition has a strict time limit of **5 minutes**.
- The final score is the sum of points from all 3 zones, with a maximum possible score of **600 points**.
- **Scoring Summary**:
  - **Zone 1**: 10 points per cube, up to 100 points.
  - **Zone 2**: 20 points per cube, up to 200 points.
  - **Zone 3**: 30 points per cube, up to 300 points.

5. Additional Rules and Guidelines

- **Robot Specifications**:
  - Robots in Zones 2 and 3 can be controlled using remote control or any other manual input.
  - The robot in Zone 1 must be fully autonomous and cannot be controlled during its task.
- **Cube Specifications**:
  - **Material**: Made of soft, durable fabric with reinforced stitching to maintain shape during repeated use.
  - **Filling**: Light padding or dense foam inside to ensure the cube retains its form while being lightweight for easy handling by robots.
  - **Dimensions**: Each cube measures **7 cm x 7 cm x 7 cm**.
- **Penalties**:
  - **-5 points** for any cube dropped outside the designated area in Zones 1 or 2.
  - **Disqualification** if any robot in Zone 1 is manually controlled during its task.

6.Zone Material Specifications

- **Base Material**:
  All zones (Zone 1, Zone 2, and Zone 3) are constructed using **LDSP wooden material** (laminated particleboard).
- **Surface Finish**:
  The surface of the LDSP material in all zones is covered with **matte stickers** to:
    - Reduce glare for better visibility during the competition.
    - Provide a uniform, smooth surface for consistent robot operation.
    - Enhance the durability of the zones by protecting the wood underneath from scratches or damage caused by robots or cubes.

7. Winning Criteria

- The team with the **highest total score** at the end of 5 minutes wins.
- In case of a tie, the team with the **fastest completion time** will be declared the winner.
- If there's still a tie, the team with the highest score in Zone 3 (throwing task) will win.

8. Safety and Fair Play

- All robots must pass a safety check before the competition.
- Teams must adhere to fair play principles; any attempts at cheating or interfering with other teams' robots will result in disqualification.

5.9. Startup

Selection Criteria:
1. Innovative Idea: The project must offer an innovative solution to an existing problem or create a new product.
2. Feasibility: The idea must be technically feasible using current technologies. Projects at the minimum viable product (MVP) stage will have priority over projects at the concept stage.
3. Market Potential: The project must demonstrate an understanding of the market size using three metrics: TAM (the entire possible market), SAM (the portion of the market that can realistically be targeted), and SOM (the share of the market that can be conquered in the near future). Teams must conduct an analysis of market trends and the potential customer base to show how many customers they can attract and how much revenue they can generate. Sources for evaluation may include research from Statista, McKinsey, and other analytical agencies.
4. Teamwork: The team's ability to collaborate is assessed, as well as the individual achievements and unique skills of each team member that contribute to the success of the project. Teams must demonstrate what their "superpower" is - the unique talents or experience they bring to the project.

Selection process:
1. Application: Fill out the form and attach a completed pitch deck.
2. Pre-selection: Experts evaluate applications for compliance with the main criteria.
3. Semi-final: Selected teams present their projects to the jury in the form of a short pitch (3 minutes) online. This is followed by a question and answer session lasting from 2 to 5 minutes.
4. Final: The final takes place on stage in front of the jury and the audience. The Pitching time limit is strictly 3 minutes. After the time has elapsed, the microphone will be turned off. This is followed by a question and answer session lasting from 2 to 5 minutes.

Project evaluation:
1. Innovation (25%): Originality of the idea and approach.
2. Feasibility (25%): Technical and financial feasibility of the project, with priority for projects at the MVP stage.
3. Market potential (25%): The project should demonstrate an understanding of the market size using three metrics: TAM (the entire possible market), SAM (the part of the market that can realistically be targeted), and SOM (the market share that can be conquered in the near future).
4. Presentation and pitching (25%): The quality of the presentation and the ability to convincingly present the project, showing its advantages and potential to the jury and potential investors. How the participant answered the jury's questions.