CODE FESTIVAL
GUIDE BOOK

ISKILLSMASTERS GLOBAL

2026

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WELCOME MESSAGE

Welcome to **Code Festival 2026!**

2026 is a year of many firsts. Join me in officially welcoming our Patron, **Hon. Jonathan Mueke** to the Code Festival family. I am happy too, to welcome Uganda, Tanzania, and Rwanda teams on board.

For decades, the story of technology in Africa has been one of consumption. We use the apps, we buy the hardware, and we follow the trends, it is time to flip the script.

Most STEM competitions for kids end when the trophies are handed out. At iSkillsmasters Global, that's actually where we begin: We don't just see a student in a classroom; we see a future CEO. We don't just see a project; we see the prototype for a smarter African city. We understand that "learning to code" is only the first step.

Without a bridge to the real world, the most brilliant innovations often stop at the trophy presentation. iSkillsmasters Global is that bridge.

Through our high-octane competitions across the continent, we give them the stage. And through our Incubation Hub, which we launch in November 2026, we give them the engine, turning competition winners into commercial founders. We must be the game-changers! Those winning prototypes must be turned into market-ready startups.

We aren't just competing; we are ensuring that the future speaks with an African accent.

By 2028, we aren't just going to have more coders in Africa; we're going to have a new generation of tech CEOs who started their journey with us: We're building the pipeline for the continent's next tech unicorns.

VISION STATEMENT

To be the primary catalyst for a world where every African child is not just a consumer of technology, but a global architect transforming raw curiosity into commercialized innovation.

MISSION STATEMENT

To empower the next generation of digital pioneers by providing world-class training in coding and robotics, hosting high-stakes global competitions, and nurturing fledgling innovations through a dedicated incubation ecosystem to ensure every great idea finds its way from the classroom to the boardroom.

OUR CORE PILLARS:

- **Empower:** Equipping learners with the technical "DNA" of robotics and software engineering.
- **Compete:** Creating pan-African and global stages that challenge and celebrate technical excellence.
- **Incubate:** Bridging the gap between a competition prototype and a market-ready product through mentorship, IP support, and seed-readiness.

CATEGORIES

01. ACCORDING TO AGE

Learners will compete in various age-appropriate categories:

- **Under 10**
- **10 to 14 Years**
- **15 to 18 Years**
- **19 to 21 Years**

02. ACCORDING TO PROJECTS

Learners will compete in two broad categories:

- **App Development, Web Development, and IoT.**
- **Robotic solutions.**

APP DEVELOPMENT, WEB DEVELOPMENT AND IOT

1. COMPETITION CATEGORIES & EXPECTATIONS

Because a 10-year-old and a 21-year-old have vastly different technical capabilities, the projects should be judged based on the following tiers:

Category	Age Group	Focus Area
The Explorers	10 – 14	Creativity, storytelling, and basic logic. (e.g., Scratch, basic Python/HTML).
The Innovators	15 – 18	Problem-solving, UI/UX design, and functional application. (e.g., Java, C++, Web Apps).
The Visionaries	19 – 21	Technical complexity, scalability, and real-world impact. (e.g., AI/ML, Data Science, IoT).

2. PROJECT THEMES (THE "GREEN EARTH" CHALLENGE)

Participants should choose one of the following sub-themes to guide their project:

Climate Action: Tools to track or reduce carbon footprints.

Biodiversity: Apps that help identify or protect local flora and fauna.

Waste Management: Solutions for recycling, upcycling, or reducing plastic use.

Sustainable Energy: Simulations or calculators for renewable energy sources.

3. SUBMISSION GUIDELINES

To keep the judging process streamlined, all participants must provide:

The Source Code: Hosted on a platform like GitHub or submitted as a ZIP file.

Demonstration: A 2–3-minute explanation of what the project does, and a demonstration of it in action.

The "Green Statement": A 1 to 2-page document (600 words max) explaining how their project helps the Earth.

Read me File: A 1 to 2-page document (600 words max) listing the programming language used and instructions on how to run the code.

4. JUDGING CRITERIA (TOTAL: 100 POINTS)

Judges will evaluate entries based on the following rubric, adjusted for age appropriateness:

(***Refer to the Judging Rubrics)***

5. RULES & ETHICS

Originality: All work must be original. Using open-source libraries is allowed, but the core logic must be the participant's own work.

Collaboration: All participants are encouraged to work in teams. Each team **MUST** have between 2 to 4 member with a coach.

No "Pay-to-Win": Participants should avoid using expensive paid APIs or software that gives an unfair advantage over those using free tools.

Safety: Projects must not contain any inappropriate content, hate speech, harmful materials like explosives, or politically sensitive material.

SCORING RUBRICS FOR EACH CATEGORY.

01. Category 1: The Explorers (Ages 10–14)

Goal: To encourage interest in coding and environmental awareness.

Criteria	Points	Focus Areas
Theme Alignment	30	Does the project clearly teach or show something about the "Green Earth" theme?
Creativity & Story	30	Is the idea unique? Does it use characters, animations, or a narrative to engage the user?
Basic Logic	20	Does the code work without breaking? Are loops, events, or variables used correctly?
Visual Appeal	10	Is the project visually appealing, neat, and easy to navigate?
Effort & Passion	10	Did the participant show enthusiasm in their video demo/description?
Total	**100**	

02. Category 2: The Innovators (Ages 15–18)

Goal: To demonstrate functional problem-solving and user-centric design.

Criteria	Points	Focus Areas
Problem Solving	25	Does the project provide a functional solution to a specific green issue (e.g., a recycling sorter or carbon calculator)?
Code Efficiency	25	Is the code organized? Did they use functions/methods and avoid unnecessary repetition?
UI/UX Design	20	Is the interface intuitive? Would a stranger know how to use this app immediately?
Innovation	20	Does this project offer a "fresh" take compared to common green apps?
Documentation	10	Is the Readme file clear? Does the video explain the technical hurdles they overcame?
Total	**100**	

03. Category 3: The Visionaries (Ages 19–21)

Goal: To showcase technical mastery, data handling, and real-world scalability.

Criteria	Points	Focus Areas
Technical Complexity	30	Use of advanced concepts (APIs, databases, ML models, or complex algorithms).
Real-World Impact	25	Could this actually be deployed? Is it scalable or based on accurate environmental data?
Code Professionalism	20	Clean code practices, proper naming conventions, and effective use of version control (GitHub).
Sustainability Focus	15	Does the solution address a deep-rooted environmental challenge with scientific accuracy?
Presentation	10	Is the pitch professional? Does the demo highlight the "Why" as much as the "How"?
Total	**100**	

KEY INSTRUCTIONS FOR JUDGES:

Encouragement First: Judges should provide constructive feedback that encourages the students.
The "Any Language" Rule: Judges should not penalize a student for using a "simpler" language like Python or Scratch if their logic and creativity are superior to a student using C++.

Originality Check: Judges will penalize students from the innovation criteria if a project looks like a common tutorial found online (e.g., a basic "To-Do" list with green colors).

Context Matters: For the Explorers, judges will seek the "Spark." For the Visionaries, judges will seek the "System."

The Code Check: Judges should open the source code. Even if the project looks great, judges will check that the logic belongs to the student and isn't just a copy-pasted template.

SAMPLE JUDGE'S EVALUATION FORM: CODE FESTIVAL 2026

Judge Name: _____ Date: _____

1. Project Overview

Participant/Team Name: _____

Project Title: _____

Age Category: *(Tick where appropriate)*

[ ] The Explorers (10–14)
[ ] The Innovators (15–18)
[ ] The Visionaries (19–21)

Programming Language(s) Used: _____

2. Scoring Rubric

Please refer to the specific criteria for the participant's age category.

Criteria	Score	Comments/Notes
Theme Alignment / Impact		*How well does this solve an earth-centric problem?*
Technical Execution / Logic		*Is the code functional, clean, and appropriate for age?*
Creativity / Innovation		*Is the idea fresh and original?*
UI / UX / Design		*Is it user-friendly and visually cohesive?*
Presentation / Demo		*Did they explain their work clearly?*
TOTAL SCORE	**/ 100**	

3. Qualitative Feedback

This section is vital! These comments will be shared with the participants to help them grow.

Key Strengths:

(What did they do exceptionally well? Consider logic, design, or the specific solution they chose.)

Areas for Improvement:

(What could make this project "market-ready" or more technically sound?)

"Green Earth" Reflection:

(Did the participant show a deep understanding of the environmental issue they tackled?)

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4. Final Recommendation

[ ] Winner/First Place Potential

[ ] Honorable Mention (e.g., Best UI, Most Creative, Most Complex Code)

[ ] Needs More Development

Judge's Signature: _____

ROBOTICS SOLUTIONS

GENERAL GUIDELINES

Theme: Robotics for a Sustainable Planet

Goal: To design, build, and program autonomous and/or tele-operated robots to solve real-world environmental challenges, promoting creativity, originality, and innovation.

General Competition Rules (All Categories)

1. Team Size: 2 to 4 members per team, plus one adult mentor (mentor participation in design/build/code is strictly limited to guidance, not execution).

2. Robot Size Limit: At the start of a match, the robot must fit within a 30 cm x 30 cm x 30 cm cube (Categories 1 & 2). Category 3 teams must adhere to a maximum prototype size specified in their Project Brief.

3. Time Limit: Each match/run is limited to 2 minutes 30 seconds.

4. Autonomous vs. Teleoperated:

- Categories 1 & 2: Robots must be fully Autonomous. No human interaction is allowed after the start signal, except for one designated "Reset/Recovery Touch" per match (with a score penalty).
- Category 3: Prototype must be demonstrated in a controlled environment and may include teleoperation for complex tasks, but its core innovative function must be autonomous.

5. Materials: Teams are encouraged (and rewarded in judging) to use sustainable, recycled, or upcycled materials in their robot construction (especially for Category 3 prototypes).

CATEGORY 1: ECO-MAKERS (AGES 10–14)

Aspect	Design Detail
Competition Name	Eco-Harvester: The Smart Garden
Focus/Skills	Basic robot movement, simple sensors (color, touch), block-based programming (e.g., Scratch, LEGO Mindstorms/SPIKE), teamwork.
Challenge	The robot must autonomously navigate a garden-themed mat to complete essential tasks: collecting trash, planting saplings, and sorting recyclable waste.
Robot Task	1. Clear the Debris: Identify and move "trash blocks" (e.g., black/grey color) from the main path to a designated "Landfill Zone."

Aspect	Design Detail
Robot Task	2. Plant the Forest: Transport "Sapling blocks" (e.g., green cylinders) from a "Nursery Zone" and place them into designated "Planting Spots" (circles).
	3. Sort the Recyclables: Push different colored "Recycling Cubes" (e.g., blue for plastic, yellow for metal) into the correct color-coded "Recycling Bins" on the perimeter.
Innovation Goal	Teams must design a simple, yet effective, attachment/mechanism to handle the game pieces (e.g., a simple plow, scoop, or pusher).

CATEGORY 2: GREEN ENGINEERS (AGES 15–18)

Aspect	Design Detail
Competition Name	Urban Renewal: Sustainable City Grid
Focus/Skills	Advanced sensors (ultrasonic, rgb, gyro), text-based programming (e.g., Python, Arduino), mechanical design (multiple actuators, complex linkages), strategic planning.
Challenge	The robot must autonomously manage a model city grid to optimize energy use and mitigate pollution. This includes deploying solar panels, repairing damaged oil pipelines, and cleaning polluted water.
Robot Task	1. Solar Deployment: Use a precision mechanism to lift and place "Solar Panel tiles" (flat, square blocks) onto tall "Building Zones" (raised platforms).
	2. Pipeline Repair: Navigate a narrow line-following path (the pipeline) and use a tool to precisely place a small "Repair Cylinder" onto a designated "Leak Spot."

Aspect	Design Detail
Robot Task	3. Water Cleanup: Collect small "Pollutant Spheres" (marbles) from a designated "Water Zone" and deposit them into a "Filtration Unit."
Innovation Goal	Teams must focus on efficiency and precision in their mechanical and code design. The robot is autonomous, and scoring relies heavily on reliable sensor feedback and path planning.

CATEGORY 3: ECO-INNOVATORS (AGES 19–21)

Aspect	Design Detail
Competition Name	Climate-Adaptive Systems (CAS) Challenge
Focus/Skills	Advanced AI/Machine Learning concepts, Computer Vision, custom electronics/hardware (e.g., Raspberry Pi, Jetson Nano), complex mechanical subsystems, project management.
Challenge	This is a Design & Demonstration Challenge focused on developing a prototype for a real-world, innovative climate adaptation solution that utilizes robotics or intelligent systems. The project is presented in two parts: Technical Demonstration and a Business/Impact Pitch.
Robot Task	Project-Based: Teams select one pre-approved sub-theme (e.g., Wildfire Prevention, Coastal Erosion Mitigation, Precision Agriculture Optimization) and design a proof-of-concept robotic system.
	Example Project: A "Smart Crop Defender" robot that uses computer vision (camera) to autonomously identify diseased plants or pests and administer a targeted micro-dose of bio-pesticide.

Aspect	Design Detail
Innovation Goal	Originality and Real-World Impact. The solution must be novel, demonstrate a strong understanding of the underlying environmental science, and have a viable path to scale or implementation.

ROBOTICS CHECKLIST

This checklist outlines the specific technical skills and hardware requirements for each category as defined in the competition guidelines.

CATEGORY 1: ECO-MAKERS (AGES 10–14)

Focus: Foundational robotics and reliable performance.

Programming Skills:

- Proficiency in block-based programming environments such as Scratch, LEGO Mindstorms, or SPIKE.
- Ability to program basic robot movement and navigation.
- Logic for simple sensor-based triggers.

Hardware & Mechanics:

- Use of simple sensors, specifically color and touch sensors.
- Design of effective manual attachments such as plows, scoops, or pushers.
- The robot must fit within a 30 cm X 30 cm X 30 cm cube at the start.

CATEGORY 2: GREEN ENGINEERS (AGES 15–18)

Focus: Efficiency, precision, and advanced mechanical design.

Programming Skills:

- Proficiency in text-based programming languages such as Python or Arduino.

- Implementation of advanced algorithms, including PID (Proportional-Integral-Derivative) control and state machines.
- Strategic planning for optimized pathfinding and sensor feedback.

Hardware & Mechanics:

- Integration of advanced sensors, including ultrasonic (for distance), line-tracking, and gyro sensors.
- Mechanical design using multiple actuators and complex linkages.
- Ability to build mechanisms capable of precision tasks, such as lifting tiles onto elevated platforms.
- Robot must fit within a 30 cm X 30 cm X 30 cm cube at the start.

CATEGORY 2: GREEN ENGINEERS (AGES 15–18)

Focus: Originality, real-world impact, and advanced system integration.

Software & AI Skills:

- Application of advanced Artificial Intelligence (AI) and Machine Learning concepts.
- Implementation of Computer Vision for object and pest identification.
- Project management skills to coordinate a technical demo and a business/impact pitch.

Hardware & Systems:

- Use of custom electronics and advanced hardware controllers like Raspberry Pi or Jetson Nano.
- Development of complex mechanical subsystems for specific environmental tasks (e.g., targeted micro-dosing systems).
- Prototype size must adhere to the specific requirements outlined in the team's Project Brief.
- Innovation Requirements:
- Development of a "novel" solution that has a viable path to scale or real-world implementation.

MISSION INSTRUCTIONS FOR EACH CATEGORY

CATEGORY 1: ECO-MAKERS (Ages 10–14)

Mission: Eco-Harvester – The Smart Garden
General Run Rules:
The robot starts fully inside the Robot Depot (30 cm × 30 cm).
The robot must operate fully autonomously.
Maximum run time: 2 minutes 30 seconds.
One optional manual reset allowed (penalty applies).

Mission 1: Clear the Debris (Trash Collection)
Objective:
Remove trash from the garden path to keep it clean and accessible.
Setup:
5 trash blocks (dark grey/black cubes) placed randomly on the black path.
Landfill Zone clearly marked on the mat.

Instructions
Robot must detect and approach a trash block.
Robot must push, lift, or scoop the trash block.
Trash block must be fully placed inside the Landfill Zone.
Trash block must remain in the Landfill Zone at the end of the run.

Completion Criteria

The trash block is fully inside the Landfill Zone.
No part of the block is touching the path.

Mission 2: Plant the Forest (Sapling Placement)

Objective

Plant trees to restore the garden ecosystem**.**

Setup

Sapling blocks are located in the Nursery Zone.
White planting circles are distributed on the mat.

Instructions

- The robot collects one sapling at a time from the Nursery Zone.
- Robot transports the sapling to any empty planting spot.
- Robot releases the sapling so it stands upright within the circle.

Completion Criteria:

The sapling is fully inside a planting circle.
Sapling remains upright at the end of the run.

Mission 3: Sort the Recyclables

Objective:

Correctly sort recyclable waste by material type.

Setup:

- Recycling cubes placed near the center:
  Blue = Plastic
  Yellow = Metal
- Matching color-coded recycling bins on the perimeter.

Instructions

The robot identifies the color of a recycling cube.

- The robot moves the cube to the matching color bin.
- Cube must be released fully inside the correct bin.

Completion Criteria:

- Cube is inside the correct color bin.
- Cube is not touching any other zone.

CATEGORY 2: GREEN ENGINEERS (Ages 15–18)

Mission: Urban Renewal – Sustainable C

General Run Rules

The robot starts inside the Maintenance
(30 cm × 30 cm).
The robot must be fully autonomous.
Maximum run time: 2 minutes 30 seconds.
One manual recovery allowed with a penalty.

Mission 1: Solar Deployment

Objective

Increase renewable energy use in the city.

Setup

Solar panel tiles start on the mat.
3 elevated Building Zones (approx. 10 cm high).

Instructions

- Robot picks up a solar panel tile.
- Robot navigates to a building zone.
- The robot places the tile flat on top of the platform.

Completion Criteria

- The tile lies flat on the platform surface.
- The tile does not fall or hang off the platform.

Mission 2: Pipeline Repair

Objective

Fix a leaking oil pipeline to prevent pollution.

Setup

- Black winding pipeline line printed on the mat.
- Red Leak Spot marked along the pipeline.
- Repair cylinder placed on the mat.

Instructions

- The robot follows the black pipeline line.
- Robot reaches the red Leak Spot.
- Robot places the repair cylinder directly on the red circle.

Completion Criteria

- Repair the cylinder to cover the Leak Spot.
- The cylinder remains in place at the end of the run.

Mission 3: Water Cleanup

Objective

Remove pollutants from the city's water supply.

Setup

- 10 pollutant spheres inside the Water Zone.
- Filtration Unit positioned off-mat.

Instructions

- The robot collects one or more pollutant spheres.
- Robot transports them out of the Water Zone.
- Robot deposits the spheres into the Filtration Unit.

Completion Criteria

- Pollutant spheres are fully inside the Filtration Unit.
- Spheres are no longer touching the Water Zone.

CATEGORY 3: ECO-INNOVATORS (Ages 19–21)

Mission: Climate-Adaptive Systems (CAS) Challenge

General Rules

This is a Design & Demonstration mission, not a timed run.

Teams use a 2 m × 2 m demonstration area.

Core function must be autonomous, even if teleoperation is used for setup.

Mission 1: Solar Deployment

Objective

Increase renewable energy use in the city.

Setup

Solar panel tiles start on the mat.

3 elevated Building Zones (approx. 10 cm high).

Completion Criteria

- System successfully demonstrates the intended function.
- Autonomy is clearly evident.

Mission 2: Real-World Scenario Simulation

Objective

Show how the solution works in a realistic context.

Instructions

- The team explains the environmental problem.
- Robot interacts with simulated real-world elements.
- Sensor data, vision output, or analytics are displayed live or recorded.

Mission 3: Impact & Business Pitch

Objective

Demonstrate viability beyond the competition.

Instructions

Present a 5–7 minute pitch covering:

- Problem statement
- Technical solution
- Environmental impact
- Scalability and cost

Judges ask technical and impact-focused questions.

Completion Criteria

- Solution is feasible and scalable.
- Environmental impact is clearly justified.

Completion Criteria

- Clear link between problem, data, and robotic action.
- System responds correctly to environmental inputs.

SCORING RUBRICS FOR EACH CATEGORY

01. Category 1: Eco-Makers (Ages 10-14)

Primary Focus: Reliable Performance

Criteria	Points	Description
Mission Score	50	Based on the percentage of tasks completed (e.g., clearing debris, planting saplings) and penalties incurred.
Programming Clarity	20	Evaluates if the code is well-structured, easy to follow, and includes clear blocks or
Mechanical Design	15	Focuses on a simple, durable, and effective mechanism for handling game pieces.
Teamwork & Spirit	15	Measures collaboration, equal contribution among members, and positive enthusiasm.
Total	100	

02. Category 2: Green Engineers (Ages 15-18)

Primary Focus: Efficiency and Precision

Criteria	Points	Description
Mission Score	40	Rewards high precision and speed in achieving maximum point potential.
Code Sophistication	25	Looks for advanced algorithms (e.g., PID control, state machines) and effective sensor use.
Mechanical Innovation	20	Focuses on original, robust, and compact designs using advanced kinematics like complex arms.
Technical Interview	15	Teams must explain the engineering and science behind their solution and strategic choices.
Total	100	

03 Category 3: Eco-Innovators (Ages 19-21)

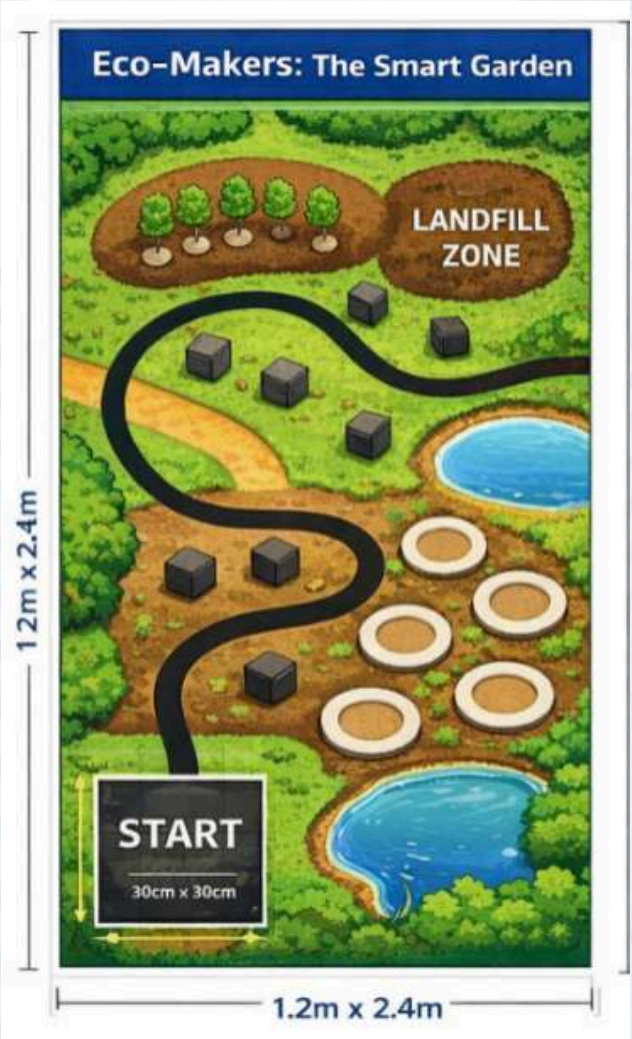
Primary Focus: Originality and Impact

Criteria	Points	Description
Originality & Innovation	30	Evaluates if the concept is truly novel and addresses a significant environmental problem.
Technical Execution & Demo	30	Based on prototype robustness and the successful execution of its core autonomous function.
Real-World Impact & Viability	25	Assesses the scalability, market potential, and the presence of a detailed budget/resource plan.
Presentation/Pitch	15	A professional, compelling pitch justifying the environmental need and the robot's role.
Total	100	

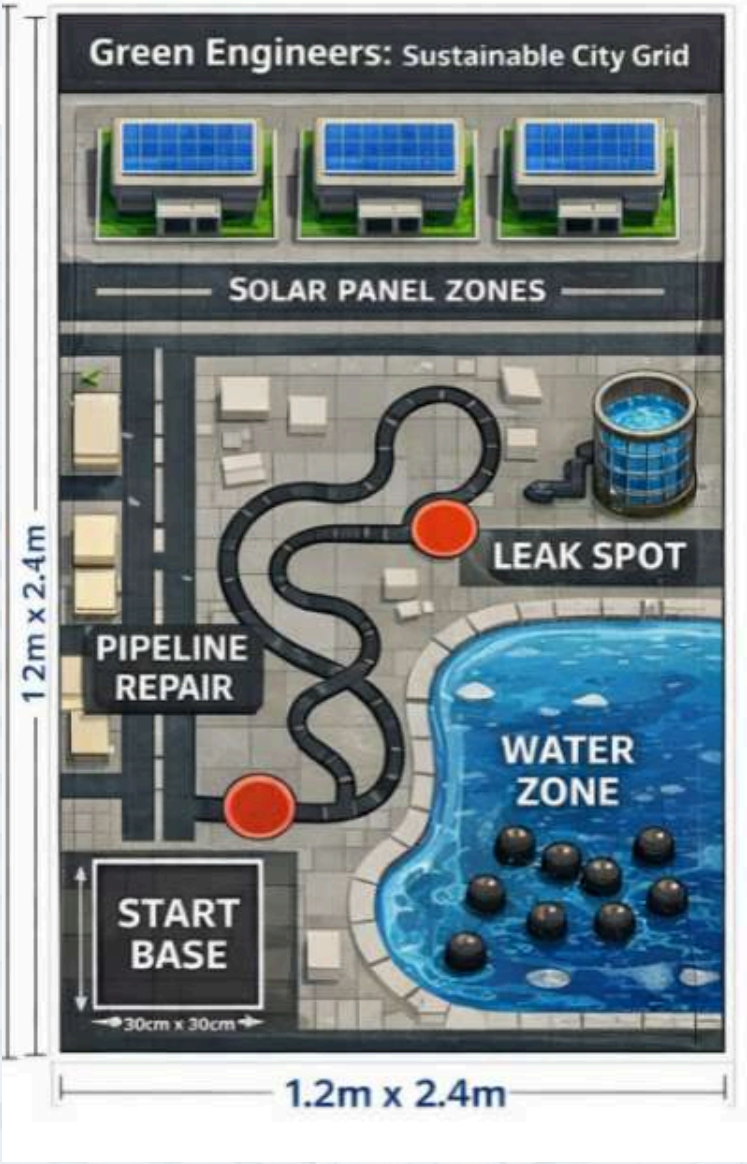
FSustainability: Bonus points or judicial favor are given to teams using sustainable, recycled, or upcycled materials especially in Category 3.

MATS FOR ROBO MISSIONS

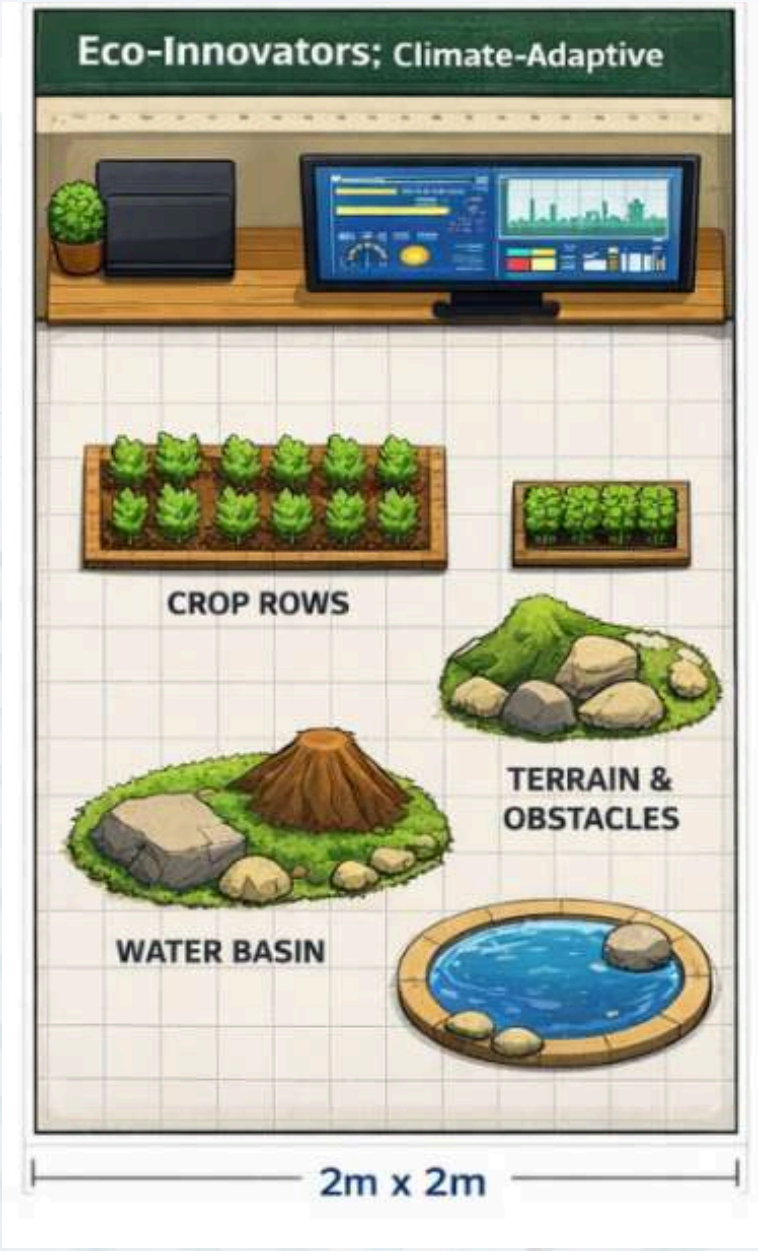
01. Category 1: Eco-Makers (Ages 10-14)



02. Category 2: Green Engineers (Ages 15-18)



03. Category 3: Eco-Innovators (Ages 19-21)



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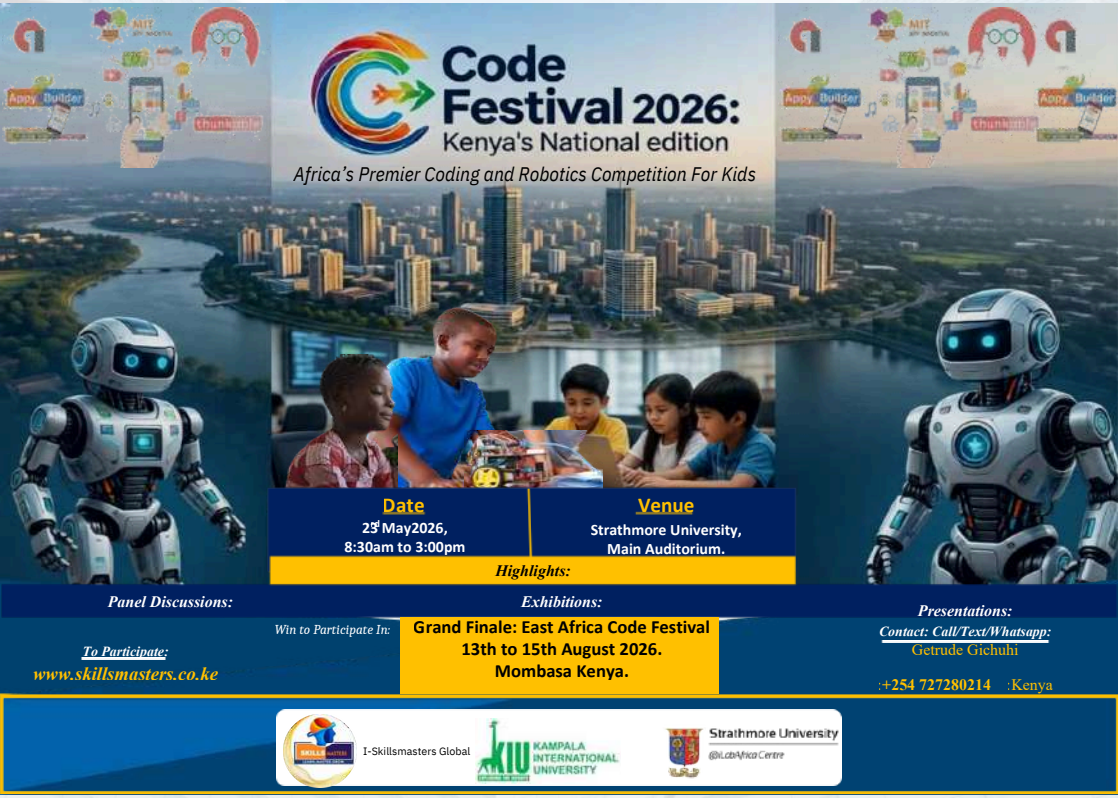


Code Festival 2026

Africa's Premier Coding & Robotics Competition for Kids

Uganda's National Edition

Highlights:

- Panel Discussions:
- Exhibitions:
- Presentations:

Date 10th April 2026

8:30am to 3:00pm

Venue Kampala International University, Main Campus

Win to Participate in :

East Africa Code Festival

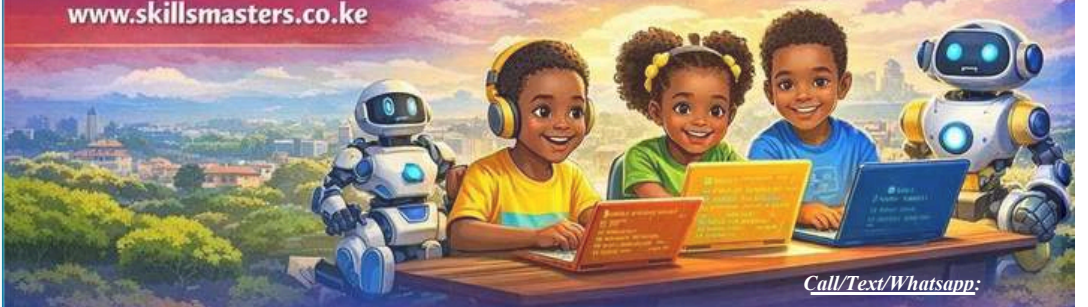
13th to 15th Aug 2026,

Mombasa, Kenya.

I-Skillsmasters Global

To Participate:

www.skillsmasters.co.ke



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Code Festival 2026

Africa's Premier Coding & Robotics Competition for Kids

Highlights:

- Panel Discussions:
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- Presentations:

TANZANIA'S National Edition!

Date 30th May 2026

8:30am to 3:00pm

Venue Kampala International University, Main Campus

Win to Participate in :

East Africa Code Festival

13th to 15th Aug 2026,

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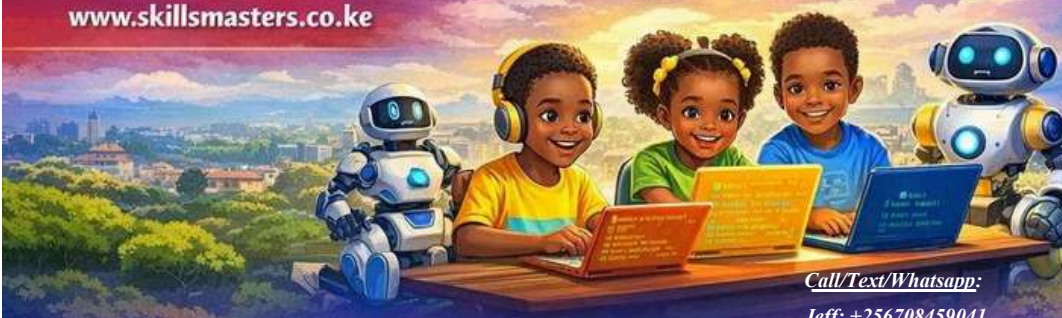
I-Skillsmasters Global

To Participate:

www.skillsmasters.co.ke



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