GENERAL CHAMPIONSHIP 2023

ROBOTICS AND INTELLIGENT SYSTEMS CLUB

ARDUGEM

ARDUINO-BASED GAME DEVELOPMENT CHALLENGE

STARTING ON:

27th March, 2023

SUBMISSION DEADLINE:

11:59 PM , 30th March,2023

ARDUGEM: ARDUINO-BASED GAME-DEV CHALLENGE

Start Date: 27th March 2023
Submission Deadline: 11:59PM, 30th March 2023
No. of teams per branch: 2
Type: Open
Participation Points: 50 (except the top 3)

Gaming is one of the most popular computer activities. New technologies are constantly arriving to make it possible to develop better and more powerful games that can be run in any standards-compliant system. Game development on the Arduino can push both the hardware resources and the developer's imagination to their potential.

Game theme: -

Teams have to develop a game under a popular gaming genre called Platformers. Platform games (or platformers) have gameplay primarily centered around jumping and climbing to navigate the player's environment. They may have enemies or obstacles to avoid and fight or may just be pure jumping puzzles. Generally, the playable character in a platform game can jump many times their height, and the player is offered some control over their movement in mid-air as well as the height and distance of their jumps Settings tend to be vertically exaggerated with much uneven terrain that the player can leap up to or fall off of.

The game should also have a scoring mechanism.
Teams have to give a name to their game.
Teams are provided with a kit containing the following:

1. ***Arduino UNO with Connection cable.**
2. ***ADXL345 Accelerometer**
3. ***Color LCD TFT Display**
4. Breadboard
5. Male2Male Jumper Wires
6. Male2Female Jumper Wires
7. Female2Female Jumper Wires

- Further, teams could request for resistors and capacitors if required.
- **The components marked with '*' are mandatory to use in the development.**
- Teams are allowed to use their personal components.

Key Challenges: -

- Storage Space: Arduino boards come with minimal RAM or flash memory. Not only does this limit the amount of code they can run, but it also presents challenges when it comes to working with variables.
- Processing Power: The Arduino we used has a low-power CPU, so creating resource-hungry applications is impossible.
- Components: The game must incorporate accelerometer-based controls.

Guidelines: -

1. Any form of plagiarism in the submitted solution will lead to direct disqualification.
2. Organizers will provide the required kit for the problem statement only once any damage to the kit won't be replaced.
3. The kit must be returned after the completion of the competition; failing to do so will result in a penalty of 1000 points.

4. A team can submit only one entry for the hackathon. Participation in the challenge is subject to a “per-team” basis, i.e., you cannot be in multiple teams.
5. No development may start before the actual date and time of the event. Any team that violates this rule will be automatically disqualified. All code must only be written after the problem statements have been released.
6. **Participants need to add POC Vidit Srivastava(https://github.com/vidit21srivastava) as a collaborator to the GitHub Repository, which should contain the following:**
    - **The repository should be named IITBBS_GC_RS_<unique_team_id>.**
    - **The repository should be private.**
    - **Brief block diagram representation describing the code functionalities.**
    - **Circuit Diagram.**
    - **Detailed documentation of code**
    - **All source code files**
    - **A readme file containing an overview of the directory hierarchy and solution approach**
    - **Team Size: 2-6 members.**
7. All submissions should be anonymous; by any means, the name of the participants or their branch should not be there in their submission, and if found will lead to disqualification.
8. Failure to submit in time will result in disqualification. The team should regularly commit to the team repository throughout the challenge.
9. Submissions post-time limit will be ignored.
10. Post-submission changes to the repository won’t be considered.
11. These rules are subject to change and may be modified later.
12. In case of discrepancy, the organizer's decision will be considered final.

Submission: -

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- A demonstration video of the gameplay of duration shorter than 2mins.
- Repository Link.

Evaluation Metrics: -

- Adherence to Theme and Problem Statement: 25%
- Report Submission and Documentation Clarity: 25%
- Familiarity and Ease of Use of the Game: 15%
- The Originality of the Approach & Quality of code: 15%
- Demonstration: 20%

Resources: -

- https://randomnerdtutorials.com/guide-to-1-8-tft-display-with-arduino/
- https://www.engineersgarage.com/adxl345-accelerometer-sensor-how-to-use/

Point of Contact:

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