SMART INDIA HACKATHON 2022

Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation: AICTE, MIC-Student Innovation.

PS Code: SIH1496

Problem Statement Title: Vort3x: Gamified IoT Learning Experience

Team Name: sudo rm rf /*

Team Leader Name: Yash Herekar

Institute Code (AISHE): C-1439

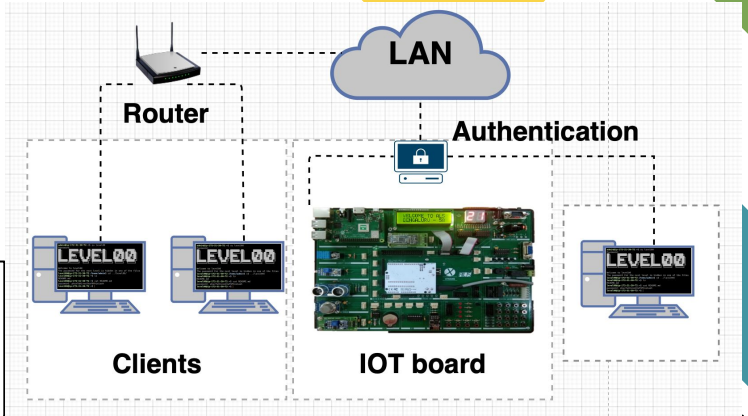
Institute Name: KLS Gogte Institute of Technology

Theme Name: Smart Education

Idea/Approach Details

Describe your idea/Solution/Prototype here:

- **Vort3x Project Overview:**
  - Command line game focused on teaching to program various sensors and actuators.
  - Powered by a Raspberry Pi 3 linux server.
  - Linux OS as the game with user accounts as levels.
- **Learning Approach:**
  - Players solve hardware challenges.
  - Programming sensors and actuators for specific outputs.
  - Success unlocks the next level user account by providing a hidden password.
- **Progressive incentivised learning:**
  - Each user account (level) teaches a new sensor or concept.
  - Difficulty increases with progression.
- **Supporting Resources:**
  - A website locally provides level-specific documentation and resources



Describe your Technology stack here:

- **IOT Hardware:** Raspberry pi
- **Sensors:** DHT11, LDR, ultrasonic, gas, switch
- **Actuators:** LED, Buzzer, LCD, relay, seven segment.
- **Operating system:** Raspbian Linux
- **Web Server:** Nginx
- **Version Control System:** Git, Github
- **Game Backend Development:** Bash, Python
- **Web Frontend Development:** HTML, CSS, JS
- **Documentation:** Markdown

Idea/Approach Details

Describe your Use Cases here

- **University curriculum:** The game is designed keeping in mind university courses. So it can be used as a course activity or teach IOT related courses.
- **Slow learners:** self paced learning enables them to learn the concepts more effectively.
- **Self based learners:** There are no prerequisites and the course will take students from beginner to advanced.
- **Open Source and Education Advocates:** Those who are seeking for free and accessible resources can benefit from the Vort3x project's open nature.

Describe your Dependencies / Show stopper here

- **Researched based methodology:** levels are designed based on research based learning concepts such as self-paced learning, spaced repetition and active learning
- **Open source subscription model:** The Vort3x team believes that education should be free of cost. But will charge for support and maintenance.
- **No internet required:** The raspberry pi can create its own network where users can join via LAN
- **Hardware requirements:** The IOT board is optional, the raspberry pi along with breadboard and the sensors is enough to solve all challenges.
- **Prerequisites:** basic of python and linux commands like navigating the file system, running programs which is already covered in engineering courses.

Team Member Details

Team Leader Name: Yash Herekar

Branch: Btech Stream: CSE Year: IV

Team Member 1 Name: Nidhi Patil

Branch: Btech Stream: CSE Year: IV

Team Member 2 Name: Shradha Mallikarjun Patil

Branch: Btech Stream: CSE Year: IV

Team Member 3 Name: Srushti Mudennavar

Branch: Btech Stream: CSE Year: IV

Team Member 4 Name: Vinit Gunaki

Branch: Btech Stream: CSE Year: IV

Team Member 5 Name: Declan Rodrigues

Branch: Btech Stream: CSE Year: II

Team Mentor 1 Name: Dr. Sharada Kori

Category: Academic Expertise: Embedded system and IOT Domain Experience (in years): 18 years