MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

PROJECT PROPOSAL

Academic Year: 2023/2024

Semester: Third Year, First Semester

Student Information:

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- **Registration Number:** COM/B/01-00162/2021
- **Course Code:** BCS 326
- **Course Title:** Computer Science Project I

Supervisor:

- **Dr. Dorothy Apondi Rambim**

Date Presented: 8th December, 2023

Contact Information:

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Project Title: VANTAGE - An Arcade Car Racing Game

BACKGROUND:

The gaming industry has experienced significant growth, with a notable surge in the popularity of arcade-style car racing games. This project aims to develop an innovative and engaging PC-based arcade car racing game titled "VANTAGE."

PROBLEM STATEMENT:

Despite the availability of various car racing games in the market, there is a persistent need for a unique and captivating arcade experience that integrates cutting-edge technologies and user-centric features. Current games lack certain elements that could enhance user immersion and overall gaming satisfaction. "VANTAGE" aims to address these gaps by offering a distinctive and feature-rich gaming experience.

OBJECTIVES:

The primary objectives of the project are as follows:

1. **Game Development:**

- Design and implement a visually appealing and immersive PC-based arcade car racing game.

2. **Technology Stack:**
    - Utilize Python 3.9.2 and Pygame 2.5.2 for development.
    - Implement version control using Git.
3. **Innovation Integration:**
    - Incorporate innovative features, such as virtual reality (VR) compatibility and dynamic weather conditions, to enhance the gaming experience.
4. **User-Centric Design:**
    - Prioritize user engagement by implementing intuitive controls, realistic physics, and a customizable user interface.
5. **Multiplayer Functionality:**
    - Integrate multiplayer capabilities to allow users to compete against each other, fostering a sense of community and healthy competition.
6. **Performance Optimization:**
    - Optimize the game for PC platforms, ensuring smooth gameplay across different devices and performance levels.
7. **Testing and Debugging:**
    - Conduct rigorous testing to identify and rectify any bugs or glitches, ensuring a seamless and enjoyable gaming experience.
8. **Licensing:**
    - License the game under the GNU Public License.
9. **Version Control:**
    - House the code in a private GitHub repository for version control and collaborative development.
10. **Installers:**
    - Store installers on a public GitHub repository for accessibility.

EXPECTED OUTCOMES:

Upon successful completion of the project, the following outcomes are anticipated:

1. A fully functional and visually stunning PC-based arcade car racing game, "VANTAGE."
2. Integration of innovative features, setting the game apart from existing options.
3. Positive user feedback and engagement, demonstrating the game's appeal and success.
4. Valuable insights into game development processes, fostering a deeper understanding of software engineering principles.

PROJECT TIMELINE:

The project is scheduled to be completed within a two-month duration, from January 2024 to February 2024.

BUDGETARY REQUIREMENTS:

The project budget will cover software development tools, licensing fees, and testing equipment related to Python 3.9.2, Pygame 2.5.2, and VR components.

DEVELOPMENT ENVIRONMENT:

- **IDE:** Visual Studio Codium
- **Operating System:** Parrot OS
- **Development Machine:** Lenovo Laptop (RAM 4GB, Hard Disk 465 GB)

CONCLUSION:

The development of "VANTAGE" aligns with the evolving landscape of the gaming industry, providing both a learning opportunity for the student and a valuable addition to the portfolio of the School of Computing and Informatics. The proposed project aims to deliver an exceptional PC-based arcade car racing game that not only entertains but also showcases the capabilities of our academic institution in fostering innovation and technological advancement.

This project proposal is hereby submitted for review and approval.

Yours Sincerely,

Michael Otieno Kasuku