HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY
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A Project Proposal on:

A Java-based Top Down Rhythmic Shooting Game

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Table of Contents

1.Overview:

Top down shooting is a popular sub-genre of video game, where player has limited spatial control of his or her character, and the focus is almost entirely on the defeat of the character's enemies using weaponry.

A top down shooter is often fast-paced and is characterized by the straight down camera angle, which everything on the screen is viewed as if the camera were directly above it.

Hero Siege, example of a top-down shooter

We want to create a top down shooter, with the addition of rhythmic aspect, in which the enemies will react and attack accordingly to the music. Therefore, the game will deliver a new, immersive experience to the player, and has a high entertainment value.

2. Reasons for Choosing This Project:

Firstly, video game is a great application of Object-Oriented Programming (OOP). A great number of games makes heavy use of OOP techniques (objects, classes, inheritance, etc.). In fact, one of the most popular applications of Java is Minecraft - a very popular video game.

Secondly, this is a challenging project, dealing with audio and graphic libraries of Java. Therefore, we will have a better understanding and more experience in OOP by completing it.

Thirdly, because it is fun! This will be an exciting project for us, since we both have a passion for video game making.

3. Method and Approach:

This is a brief description of the plan, everything is subject to change in the final deployment.

a. Tools:

- Java Eclipse
- OpenGL library for Java
- TarsosDSP audio processing library for Java

b. Gameplay:

The main objective of the game is to defeat a Boss through shooting. Player has a limited health, and the game is over when player's health is depleted.

c. Main Features Implementation:

- Rhythmic: The Boss behaves accordingly to music. We plan to orchestrate his attack through a high-frequency cue-track that matches the rhythm of the song. The frequency of the track will be high enough so that human ears cannot pick up any sound, then the track will be layered into the main music for the library to process.

- Boss - Player interactions: The game will have incremental difficulty based on the Boss' health point. The Boss will have the ability to track player's position on the

map, and his attack accuracy towards player will depend on the difficulty.

- Phases and attack patterns: The Boss will have four phases with different attacks and patterns, each provides a differently challenging experience for player.

d. Development Map:

We created a progress map and to-do list using Trello, progress can be found here:

https://trello.com/b/3isEfWWT/java-bullet-hell-project

4. Conclusion:

By doing this project, through trials and errors, we believe that we will get quite familiar with java programming as well as OOP and will be a great example for reference in our future projects.

Moreover, we love to play video games and always wanted to make one, so this is a golden opportunity for us. Therefore, we write this proposal to show our vision and briefly describe our methods in approaching this project.

We hope that our proposal will be accepted so we will have more time to prepare.

Thank you for your consideration.