**Term Project Proposal**

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Course: Fundamentals in Programming and Computer Science

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**Project name: Space Typing Game**

**Project description**

In many fields, typing skills play an important role in one’s work efficiency. This skill set is not only necessary for adults and office workers, but also required from students nowadays whose main study platform has been shifting towards a computer environment.

**Space Typing Game** is a speed typing game in the form of a space video game that can give the user a fun time to practice their typing skills. The player will be given a limited amount of time and health at each level, and their mission is to use their typing skills to avoid asteroids from hitting them and survive within the given condition.

The game will consist of two main modes: Single-player mode and VS Computer mode. In the VS Computer mode, the player will be competing with a computer whose typing speed is the player’s best achievement. There will be a leaderboard to compile different players’ scores.

**Competitive Analysis**

There have been many typing games created and playable online from simple to more complex user interfaces. In 1991, for example, “Mario Typing Game” was released and playable on a personal computer. More recently, there is a game called “Ztype” by PhobosLab, which adopts the idea of typing in a limited time and health condition, and their graphics inspire me to develop the concepts for my game. There is also car racing typing games such as “TypeRacer” where players can compete with other players online or with computer. In the last year, there is a project called “Type and Learn” which has a feature to control words and objects based on user’s behavior.

I was inspired by these games and have been thinking of methods to make a typing game in the form of a video game that the user can enjoy more. In the games, each has its own strengths and limits. Some of the setbacks include fixed word sets for each level, not playable online, limited to single-player, or lacking analysis of users’ typing behavior and results. These limits have been solved by some of the past projects, but there are hardly any products that have been trying to combat all these restrictions completely. Therefore, this project will be developed based on these limitations.

**Structural Plan**

The final project will be packed in a folder, including (1) the main Python program file for the game, (2) some Python files for different modes of the game that will be imported to the main file, (3) a folder of all assets used, and (4) a README instruction file.

**Algorithmic Plan**

* Sorting and grouping individual objects into the class as a part of Object-Oriented Programming.
* Using clock in Pygame as the main method to keep track of all events and generate suitable outcomes.
* Using draw function in Pygame to draw the objects
* Divide the game into smaller modes and create different functions for each model.

**Timeline Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Task Name** | **Bullet points** | **Expected on** |
| 1 | Complete basic GUI | * Bullet shooting * Health bar indicator * Explosion/Vibration * Win/Lose Screen | Wednesday, Nov 17th |
| 2 | Build player’s score summation | * Word per minute * Number of mistakes * Personal Highest score * Progress log | Thursday, Nov 18th |
| 3 | Build VS Computer Mode | * Split the screen into two 2 parts * Draw the computer typer on the left side | Saturday, Nov 20th |
| 4 | Debugging for TP2 |  | Sunday, Nov 21st |
| 5 | Complete the SFX | * Sound effects and music | Tuesday, Nov 23rd |
| 6 | Build leaderboard |  | Wednesday, Nov 24th |

**Version Control Plan**

I have installed Google Drive to my PC and I will use this to update and backup my files

**Module List**

I this project, I will be using the following modules:

* Pygame
* Socket
* Other built-in modules (math, random, string, ...)

**TP2 Update**

**Changes:**

* I will not be implementing the “VS Computer Mode” and “Multiplayer Mode” for this project. I will be focusing on creating the leader board and user profile.
* The game is now consisted of one single-player mode with increased difficulty as the player continues the game

**Updated Algorithmic Plan**

* Sorting and grouping individual objects into the class as a part of Object-Oriented Programming.

+ App: create an instance called “app” from this class to control the variables of the game

+ ComputerWord: control the status of word and user’s behavior of typing

+ Spaceship: Bullet (subclass)

+ Asteroid

+ Explosion

* Using clock in Pygame as the main method to keep track of all events and generate suitable outcomes.
* Using draw function in Pygame to draw the objects
* Using socket to create leaderboard

**Updated Timeline plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Task Name** | **Bullet points** | **Expected on** |
| 1 | Adding special power feature to the game | * Special Words * Save progress * Game Pause * Choose time * Better Road * Change Animation for Missing words | Tuesday, Nov 22nd |
| 2 | Complete the SFX | * Sound effects and music * Vibration | Wednesday, Nov 24th |
| 3 | Build leaderboard |  | Thursday, Nov 25th |
| 4 | Debugging for TP3 |  | Friday, Nov 26th |

**TP03 – Update**

**New Features:**

**1. User Log in**

- When the app starts, you will first see a main menu screen:

+ Please type in your username. You have to do this step, otherwise you cannot proceed with other steps.

+ After finish typing, please press "Enter" to log in.

**2. Leaderboard**

- The leaderboard will store the score of top 3 players who ever played this game. The leaderboard is updated every time a user sends a score to the system.

**3. Game Pause**

- Now when you play the game, you can pause in the middle of the game and choose to continue or return.

**4. Bad Asteroid**

- The player has to avoid typing the word on the red asteroid. If they type, they will immediately lose health. This kind of asteroid won’t make the player lose health if the reach the end of the road

**5. Sound Effect:**

I have added sound effect to the game (asteroid explosion sound, bullet sound and background music)