Simon Fraser University
Faculty of Applied Science
CMPT 276 - Introduction to Software Engineering

Term Project - Phase 4

Final Report

Group 5

The Game

Our game “Temple Escape” based itself on the adventure of our character, Timon who is a treasure hunter. He is trying to escape from the maze of the undead in the Hidden temple of Tiki Island along with the lost treasure hidden in it. However, the maze of the undead houses the army of the undead, deadly spikes and lava pits. The army's sole mission is to kill anyone who trespasses this sacred land. On top of that, another thing that stands in the way of Timon becoming a billionaire is multiple vault doors that can be only opened with its key. However, the keys lie somewhere in the dark unknown corridors of the maze. Will Timon become a billionaire or just another meal for the undead? The only way to find out is by playing the game.

The narration above is basically the entire storyline of our game. We added this story to bring out the narrative fun of the game. As the game progresses, the difficulty increases. Up to 3 enemies are added and the number of keys needed to open the exit increases. The game only ends when either the character is caught by one of the undead or getting a negative score resulted by stepping on too many traps.

Original Plan vs Final Product

Overall, the final product is really similar to the original plan. We tried to stay as faithful as possible towards the initial plan. The final product differs from the original plan in 3 main categories which are **Gameplay, Features and Code Design.**

1. **Overall Gameplay**

   In general, the core gameplay of the game still remains the same with some minor balancing done on it. During the initial design phase, our group decided to implement some gameplay experiences to make the game more challenging and emphasize the challenge type of fun in the game. One of which was to add a countdown timer where the player must finish the level in the respective time. Furthermore, we also decided to increase the enemy in respect to the levels. For instance, if the current level is level 5, there will be 5 enemies in the maze chasing the player.

   However we scrapped those ideas after a few test runs with those gameplay experiences incorporated into our game. We decided to scrap it mainly because of two reasons. First and foremost, the game will be absurdly difficult to a point it

is impossible to pass the level. After multiple simulations, we realized we could have a maximum number of 3 enemies in order to still make the game “playable”. Furthermore, we intended the game to be more inline towards casual gaming. A game that is too challenging will diverge it away from casual gaming and towards competitive gaming. Therefore, we need to attain the perfect balance between challenging and casual. After a quick discussion in our group, we decided it is best to not implement those gameplay experiences as it will break the balance and hamper the gameplay experiences of the player.

2. Features

The main catalyst of the adjustment in this area is the enhancement of flexibility. We decided to add 3 main features into our game. One of features is targeted at the control of the game while the other one is targeted towards the UI of the game. Another one targets to aid the player to understand the game.

Firstly, we added a feature where you can assign preferred key binding for the control to move the characters. Our intuition towards this change is that some people may be more comfortable using other keys on the keyboard to play the game rather than using the default WASD.

Next, for the UI, we added a feature where the player is able to change the skin of the characters. This feature will bring out much more randomness into the game so the player would not be bored of the game easily. In future iteration, we are considering adding more skins into the catalog of choices to provide more selection for the players.

Lastly, we implemented a help screen into the game which is a “How to Play” section that brings the player up to speed on how to play the game. This enhancement focuses more on the understandability of the program. In our own experiences of playing other games, we realized it is always helpful to have a help section to guide us on how to play the game rather than spending hours tinkering with the controls of the game and leaving the game with a bad first impression.

3. Code Design

The modifications in the code design are aforementioned in the Phase 3 report. To sum it up, we splitted our entire program into 2 main packages which are Gamelogic and UI. Gamelogic are responsible for the mechanics of the game while UI take charge of the aesthetics side of the program. It was a tough

decision to make considering the time constraints that we had. However, we managed to pull off the modification and successfully integrate it into our new design. Furthermore, during the testing phase, we observed that our initial designs suffered from multiple blemishes in terms of efficiency. One of which is being the disorderly structured Board Class which suffers from the issue of being a “god class”.

Multiple changes were made such as the modulation of Board Class to ensure a perfect parity between modulation and integration. All the specific changes made in this area of interest had been documented in the Phase 3 report.

Important Lessons Learnt From This Project

Throughout this project, we have learned a few important lessons that we are sure that it will benefit us in our career as software engineers in the future.

Importances of Good Design Pattern

We came to appreciate how important it is to have a good design pattern beforehand. Our initial UML Diagrams consist of some inefficiencies such as the lack of modularity and high coherence among one another. We managed to diagnose and fix those issues but it took a lot of effort for us to fix it as making changes around the initial design makes it highly prone to spaghetti code. Thus, we acknowledged that prevention is a better cure and a good design is always better than lots of debugging in the later phase.

Importances of Good Communication and Team Dynamic

Due to the unfortunate outbreak of COVID-19 following the disbandment of in-face lectures in SFU, our team did suffer some challenges regarding team communication and role allocation. However, our team was able to overcome all these obstacles and adapted fairly quickly. As we were not able to continue our weekly meeting in person, our team all were willing to take an extra step in informing their progress online and help one another during these unfortunate times. This facilitates our progress in implementing the code and we were able to complete all the necessary tasks within the time frame. Hence, we would like to acknowledge the importances of good communication within a team. Good communication is a key to a team’s success.

Artifacts

To provide easy access to our game, we uploaded our Jar file of the game and JAVADocs into the Artifacts folders in our git repository.

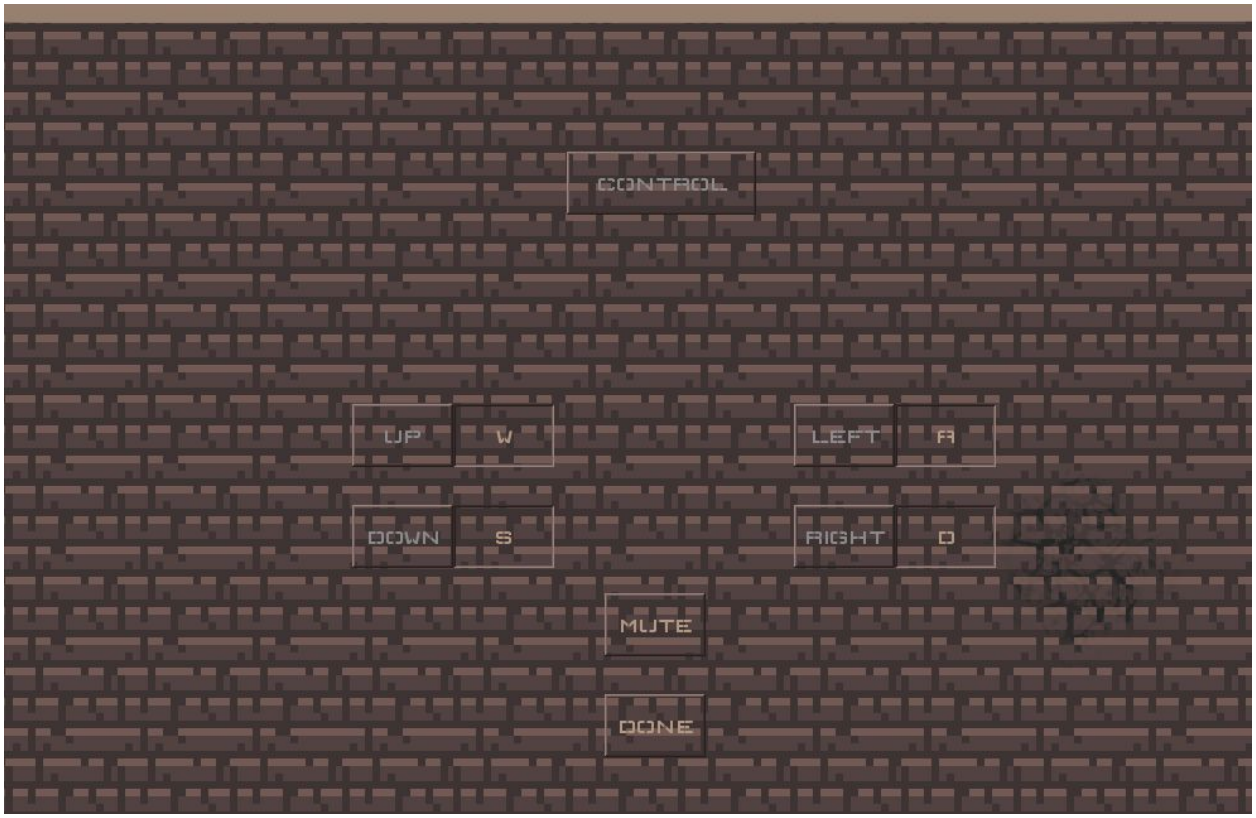
Tutorial

In the game, there are few screens that holds specific functions/features:

Main Menu : This will be the first screen a player will see when they launched the game.

Main Features:

- Start the game with either difficulty level which are EASY, MEDIUM and HARD.
- Go to Control Menu to mute background music and change key bindings for control.
- Go to Help Menu to see the “How To Play Guide”.
- Go to Skins Menu to choose different skins for character.
- Exit the game.



Control Menu: Menu that holds the control keybindings and music mute/unmute.

Main Features:

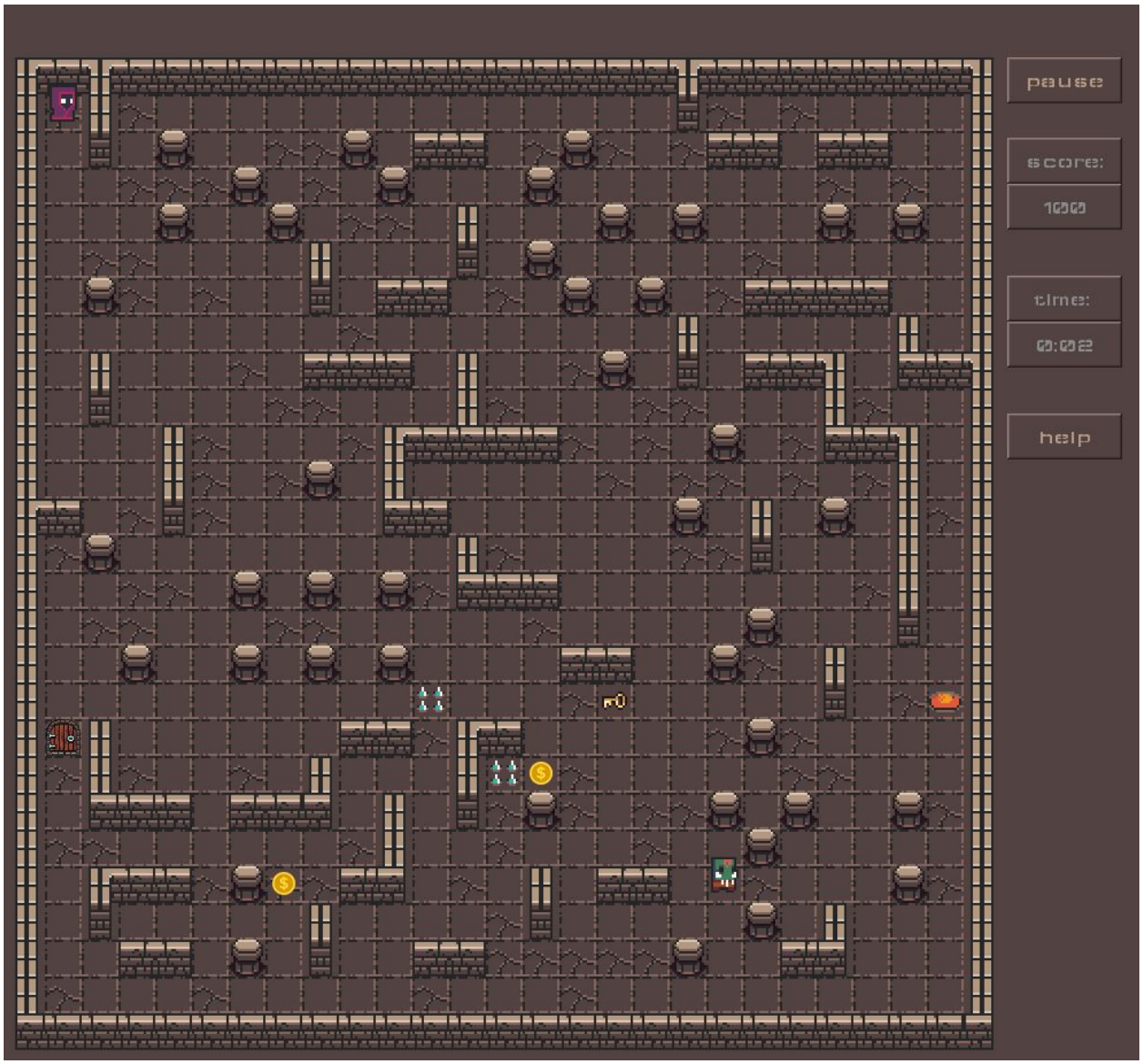
- Change control to a new set of key bindings.
- For example: Instead of WASD, arrows key could be used.
- Mute and unmute background audio.

Skins Menu: Menu that holds different skins that player can choose from.

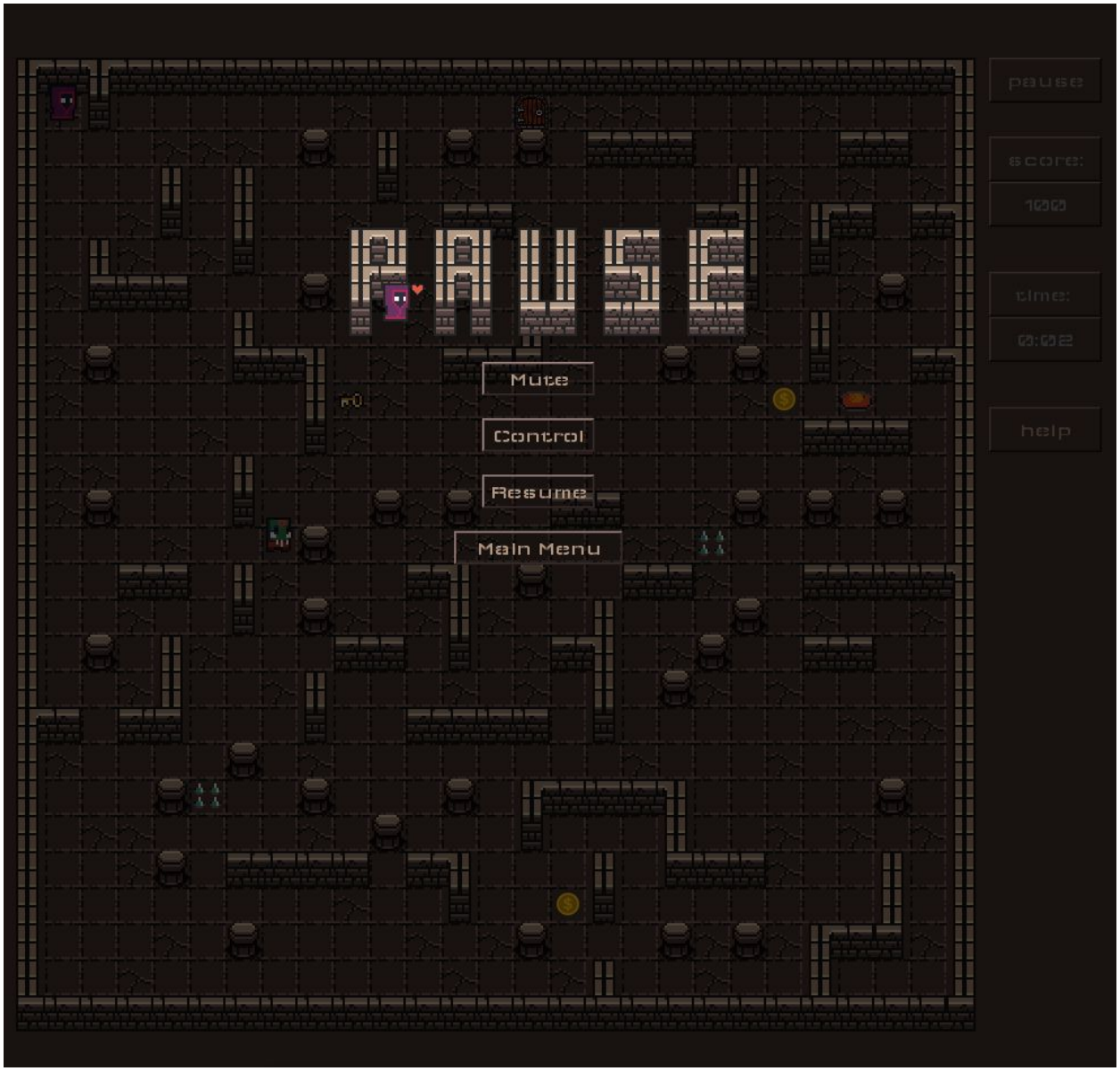
Main Features:

- Left and Right Arrow to scroll through the skins.

Help Menu: Menu that shows the “How To Play” guide.



Gameplay: An example of the gameplay itself.



Pause Menu: Menu shown when pause button is pressed during gameplay.

Main Features:

- Go to control menu to change key bindings.
- Mute and unmute background audio.
- Go back to main menu.

How To Play

Goal of the game: Get through as many levels as you can and try to get a high score.
How to Pass a Level: Collect all the keys (Yellow Circle) to unlock exit (White Circle).
Go to exit without getting caught or getting negative score to go to next level.
Things to Avoid Stepping On: Avoid stepping on traps and lava (Red Circle). Points are deducted when they are stepped on. (Refer to left diagram)
Things You Should Try to Get: Coins (Yellow Circle) should be collected. Points are added when they are stepped on. (Refer to left diagram)
Important: If the enemy (Green Circle) catches your character (Blue Circle), the game is instantly over (AVOID AT ALL COST)!
Enemy move a step closer to the character when any move key is pressed.

Tutorial Video:

To complement our tutorial guide in this report, our group created a gameplay/tutorial video.
URL Link to Tutorial Video: