“Serenade Tower” Hack and Slash Game

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Abstract. “Serenade Tower” is a hack-and-slash game build for PC platform. Player will play as Hero to slay monster and destroy a tower called Serenade Tower which cause misfortune. “Serenade Tower” use keyboard as the main control to character movement such as moving, attacking and using skill. This game created by Unity game engine with C# as the programming language. Testing has been done by Black Box Testing, Alpha Testing by lecturer and Beta Testing by sharing and doing survey to 30 respondent. The result is the game have neat and nice user interface with balanced gameplay.

1. Introduction
In this era, games have developed rapidly and can dominate cyberspace. Besides being entertainment, games can be used for communicating each other all around the world or as business. Many large companies are engaged in video games such as EA, Ubisoft, Square Enix, Capcom, and Bandai Namco [1]. The game itself means as an activity or contest physically or mentally that has a rule and carried out by people for their pleasure [2]. The designed game title is “Serenade Tower”, this title implies that players will play inside the tower to defeat monsters that cause the tower to appear. This game is designed by using Unity because Unity has features thats easy to use for beginners or professionals. “Serenade Tower” is 2D hack-and-slash game with pixelated view. Hack-and-slash means player will fight close-combatly with monster fast pacely and need to raise character level to beat bosses [3]. Monster and Bosses will be controlled with Finite State Machine, so they can respond to character movement. Game developed with similar design is “Knight Fantasy Online” by Davin Pratama, student from Computer Science Department, Faculty of Information Technology Tarumanagara University. Character of Knight Fantasy Online can be seen in Figure 1 [4].

Figure 1. Character of Knight Fantasy Online

2. Basic Theory
2.1. Game Design
There’s some step in Game Developing and it’s separated into [5]:
1. High Concept: To describe the game to be develop. “Serenade Tower” is a hack-and-slash game developed for PC platform.

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2. Gameplay: to describe how the game will be played. In “Serenade Tower” player will slay monster, levelling their character and beat bosses to clear the game.
3. Audience: who is the target player, “Serenade Tower” target player is at least 12 years old.
4. Hardware Platform: hardware needed to develop and run the game. Hardware specification used to develop and develop this game is Intel Core i5-6200, 12.0GB RAM and using Nvidia GeForce 930MX.
5. Display Design: designing the game display, including the User Interface, Asset and the gameplay design. Character asset used as main character for “Serenade Tower” can be seen in Figure 2.

![Figure 2. “Serenade Tower” Main character](image)

6. Game Building: After all the concept has been made, time to build the game into app including making or collecting the asset and scripting
7. Testing: After the game has been finished, the game will be tested with Alpha Testing and Beta Testing

2.2. Game Genre
To differentiate game, each game will be separated and grouped into a certain category. Genre will categories game based on player interaction [6]. Action is one of most popular game genre which need player to have a fast reaction to fight enemies and avoiding obstacles [7]. Choosing hack-and-slash as the main topic because hack-and-slash is an easy topic to understood for beginner [8].There’s also no hack-and-slash genre yet in Game Developer Computer Science in Tarumanagara University, so this is the first and can help the next generation to develop the same genre.

2.3. Unity
Unity is a multiplatform game engine created by Unity Technologies and can support many feature such as PhyX and Animator. Other than beginner friendly, with C# language, Unity can easily exporting game to 25 different platform [9].

2.4. Finite State Machine (FSM)
Finite State Machine is a model of a device that has a number of conditions at a time an can operate on inputs to make transition from one state to another [10]. “Serenade Tower” monster fsm can be seen in Figure 3.
3. Game Design and Development

“Serenade Tower” has 2 modules:

1. Home Module
   In this module, there’s background image, game title and 5 button, New Game button for starting a new game, Load Game button to load the game progress, About button to know the information about developer, Delete Save File button to delete the game progress, and Quit Game button to exit from the game. Home Module can be viewed on Figure 4.

2. In-Game Module
   In-Game Module divided into:
   a. In-Game
      In-Game displaying character sprite, character health, level and experience bar, and monster. In-Game can be viewed on Figure 5.
   b. Pause Menu
      Pause Menu displaying button to Resume Game, Save Game, Return to Main Screen and Quit Game. Pause menu can be viewed on Figure 6.
   c. Character Status Window
      Displaying player status character in current level including attack, defense, healthpoint, life-steal and current experience/maximum experience. Character Status can be viewed on Figure 7.
   d. Help Window
      Displaying the control for character movement. Help can be viewed on Figure 8.
   e. Skill Window
      Displaying the skill can be used by player character. Skill can be viewed on Figure 9.
4. Testing
Testing is a phase done after the game has been completed. Testing aims to ensure the game have run according to design and to identify error when playing.

4.1 Blackbox Testing
Black box testing is a method to checking every module have works properly. “Serenade Tower” Module have works properly according to the design.

4.2 Alpha Testing
Alpha Testing is done by an expert in the field. Alpha Testing has been done by Instructors, resulting a minor changes such as change in player character and monster status for balancing and adding attack movement interrupt for player character.
4.3 Beta Testing
Beta Testing has been done by sharing game link via Google Drive on 12 June 2020 – 15 June 2020, there are 31 respondents who played the game and filled in the questionnaire.

4.4 Beta Testing Results Discussion
Based on respondent’s answers, the following results were collected:

1. 61.3% who love hack-and-slash genre never played similar game to “Serenade Tower” which has different concept from usual hack-and-slash games.
2. Respondent state that the controls for player character is easy with an average value of 4 on a scale of 5. Diagram can be seen in Figure 10.
3. User Interface for “Serenade Tower” is quite neat with an average value of 4 on a scale of 5. Diagram can be seen in Figure 11.
4. Help in game can help player to learn how to control character with an average value of 4 on a scale of 5.
5. Respondent state that character combos is flexible, with average value of 4 on a scale of 5.
6. Respondent state there’s no difficulties to level up player character, with an average value of 4 on a scale of 5.
7. Respondent state the background music and sound effect has matched with the game, with an average value of 4 on a scale of 5. Diagram can be seen in Figure 12.
8. Respondent state the difficulties of “Serenade Tower” is quite hard, with average value of 2 on scale of 3 based on all stages difficulties.

In this game, monsters movement are controlled by Finite State Machine and there’s no negative comment from the respondent, so that the Finite State Machine design has worked properly.
5. Conclusion
A conclusion has been made from the questionnaire:

1. “Serenade Tower” is considered as a balance game by most players
2. The User interface is considered neat by most players
3. Most player feel raising player character is quite easy.
4. Finite State Machine for monster’s and bosses have worked properly

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