The Development of Android Impossible Platformer Game "My Unfair Adventure"

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Abstract. This game was created using the Unity game engine with C# as its programming language. The goal of this game is to complete all the stages. At each stage, players will face various obstacles such as monsters, traps, and hazards. Testing is done by blackbox testing, alpha testing by the supervisor, and beta testing by 32 respondents through a questionnaire. The test results show that the game My Unfair Adventure can make players annoyed but still encourage them to play again.

1. Introduction
We have known the term game as a regular activity carried out to get entertainment since the beginning of the first civilization in Egypt about 3000 years BC. [1] Over time, the game is divided into 2 based by the media, traditional games and video games. Based on its perspective, video games can generally be divided into 3 types, 2D, 3D, and 2.5D. [2] 2D games have a flat 2-dimensional perspective and move sideways horizontally or vertically or commonly called side-scrolling. 3D games have a 3D perspective which puts the camera behind the character, or from the eyes of the character. 2.5D game is a combined viewpoint of 2D and 3D. The majority of 2D games have a platformer genre, which is a game that has a 2D environment that is focused on the platform on which the character moves. The platform can be arranged so that there are unlevel platforms that are higher and lower than the starting position of the player. The player must jump to that platform which is often crossed by enemies, difficult to reach, move, or even trap. [3] My Unfair Adventure has an impossible platformer genre, which means the game will have a harder difficulty level than any similar games. This will challenge the players to complete the game. Example of platformer games that have been made is Beyond and can be seen in Figure 1.

![Figure 1. Beyond](image)

2. Methodology
2.1. Game Design
When make a game, a design stage is required so that the game is made as desired. The stages in making the game are divided into [4]:

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1. High Concept
   This stage describes the game to be made. My Unfair Adventure is a 2D platform-side-scrolling impossible platformer for Android.

2. Gameplay
   Gameplay explains about the game being played along with the rules or features that are at play. The gameplay design can be divided into several sections as follows:
   a. Control Design
      Control on the game My Unfair Adventure using the on screen control or the buttons on the screen.
   b. Character Design
      The characters in the My Unfair Adventure are player character and enemy characters.
   c. Object Design
      The objects in the game are platforms and traps like thorn.
   d. Score Design
      In My Unfair Adventure, score is presented in the form of achievement.
   e. Level Design
      My Unfair Adventure game is designed to have 5 stages.
   f. Sound Design
      The sound used in this game is background music and sound effects.

3. Storyline
   Storyline is needed to increase the excitement of the player to the game. My Unfair Adventure is about an unnamed adventurer who wants to defeat the demon king.

4. Audience
   Audience is the target user, to whom the game is shown. This game is for children aged 13 years and over.

5. Hardware platform
   Hardware platform is the minimum specifications of the hardware needed to run the game.

6. Display Design
   A good display is needed in order to make it easier for players to interact with the game to be played. Display design of My Unfair Adventure consists of Main Menu and gameplay.

7. Game Making
   At this stage all the previous design stages that have been formed will be realized into a game. In this stage, making games involves collecting assets and scripting with Unity.

8. Testing
   After the game is finished, it is necessary to do the testing phase to see whether the final result is in accordance with the concept and whether there are still things that need to be repaired or flaws that found in the game.

2.2. Game Genre
   The word "genre" comes from French which means "type". [5] Genre or type of game is used to classify games based on interaction and gameplay. My Unfair Adventure game entered into the merger of the platformer and impossible genre. Platformer games generally have a 2D or side-scrolling point of view characterized by a platform or platform as a place for moving player characters. [6] Impossible game is a genre where games have difficulty levels that are more difficult than other games in general. My Unfair Adventure game has side-scrolling gameplay with unexpected traps.
3. Testing and discussion

3.1. Blackbox Testing

Blackbox Testing is done to check the modules contained in the game My Unfair Adventure by trying all the buttons on the module whether it is running well or not.

1. Main Menu
   The Main Menu consists of the game's logo image, the Stage Select button, the Settings button, the About button, the Exit button, and the player's level (see Figure 2).

2. Menu Stage Selection
   The Stage Select display can be accessed by the player by pressing the Stage Select button in the Main Menu. Stage Select consists of buttons to enter the Tutorial stage and stages 1 through 5 (see Figure 3).

3. Menu Setting
   Players can adjust the volume of this game (see Figure 4).

4. Achievement
   Player can see the achievements of the game (see Figure 5).

4. About
   The About display contains information about the game maker in the form of a name and NIM and also the names of the supervisors along with a button to return to the Main Menu (see Figure 6).

5. Exit
   Exit Display can be accessed by players from the Main Menu by pressing the Exit button. The Exit display contains a confirmation dialog when the player presses the Exit button located on the Main Menu (see Figure 7).

6. Gameplay
   Gameplay Display can be accessed by players from Stage Select by selecting the stage to be played. Display gameplay is the display when the game is in progress (see Figure 8).

7. Menu Pause
   Display Pause can be accessed by players while the game is in progress by pressing the Pause button located on the top right of the screen. In the Pause display there is a Resume button to continue playing, the Settings button to enter the Settings view, and the Main Menu button to return to the Main Menu (see Figure 9).

8. Game Over
   The Game Over display will appear when the player's life has been used up. Game Over consists of a Try Again button to retry the game from the last stage and a button to return to the Main Menu. In the Game Over display there is also a writing Level Up when the player has leveled up (see Figure 10).

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![Figure 2. Main Menu](image1)

![Figure 3. Menu Stage Selection](image2)
3.2 Alpha Testing

Alpha testing method is done internally by certain people who have specific knowledge in the field of programming. Alpha testing game My Unfair Adventure is done by a thesis supervisors. There are some flaws that must be fixed and feature that must be added such as sound is too weak and add information when the character arrived at the checkpoint. All those flaws have been fixed.

3.3 Beta Testing
Beta testing method is done after the alpha testing phase has been completed and game’s errors that found when alpha testing has been corrected. Beta testing is conducted starting from June 13, 2020 until June 15, 2020 online and the download link of the game is using Google Drive that is shared on various social media such as Line and Discord, then respondents can fill out questionnaires using Google Form. There are 32 respondents who have done the beta testing. After all stages of testing have been completed, the test results produce the data needed to make analysis of the test results. The following are the analysis of all the testing stages:

1. 62.5% of respondents have played the game with impossible platformer genre. These results indicate that more than a few respondents have played the impossible platformer genre game. (see Figure 11).

2. 28.1% of respondents only managed to finish the game until 4th stage, 21.9% managed to finish the game, another 12.5% reached 2nd stage, another 9.4% reached 3rd stage, 3.1% only managed to finish until 1st stage, and the remaining 25% choose to give up on 1st stage.

3. 21.9% of respondents who successfully completed the game, on average it took more than 15 minutes to finish the game, and of the 25% of respondents who surrendered on stage 1 on average to play the game for a period of 6-10 minutes.

4. 3.1% of respondents stated that he was very annoyed after playing the game My Unfair Adventure, 34.4% stated that they were quite annoyed, 43.8% stated that they were quite annoyed, and the remaining 18.7% stated that they were not annoyed at once. From this it shows that more or less some of the respondents feel quite annoyed after playing the game My Unfair Adventure (see Figure 12).

5. 68.8% of respondents want to play the game My Unfair Adventure again, where 81.4% from the 68.8% of it are respondents who are annoyed after playing the game My Unfair Adventure, making some of the respondents want to play the game My Unfair Adventure even though they are annoyed after playing their game (see Figure 13).

6. There are respondents who want a new mode such as a mode with unlimited health or a mode with permanent death.
4. Conclusion
After the testing phase of the game My Unfair Adventure with a total of 32 respondents completed, based on data and comments from the discussion of the test results along with the questionnaire received conclusions can be drawn as follows:

1. My Unfair Adventure game has a genre that is already quite popular.
2. This game has five stages with a high degree of difficulty. Most of the respondents stated that overall, stage 4 is the hardest.
3. Due to the high level of difficulties of the game My Unfair Adventure, most of the respondents stated that they were annoyed after playing this game.
4. Some of the respondents, even though they were annoyed, still they interested in playing the game My Unfair Adventure again.

5. References
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