Adventure Game Application as a Digital Media to Introduce Baturraden Folklore

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Abstract. Baturraden is a natural tourist attraction with famous folklore in Banyumas region. Not many people, even the citizens of Banyumas itself, know the story of Baturraden. Based on that reason, a game application named Baturraden Adventure is developed as a media to introduce Baturraden and its folklore. The method used in this research is Multimedia Development Life Cycle (MDLC). This game is developed in six stages consisting of concept, design, collecting materials, assembly, testing, and distribution. This application is developed using Unity program and C# programming language. This research produced a 2D game "Baturraden Adventure" as a digital media to introduce Baturraden folklore. This game can be run on smartphones with Android operating system. From the tests performed, all the functions and controls of the game were successful and met the expectation.

1. Introduction

Indonesia has quite many tourist attractions. Even each region has its typical places to offer, coming from its natural beauty to its cultural value. Baturraden is one of the tourist attractions valued by Banyumas citizens. Like most other famous tourist attractions, it has a popular legend as its historical background. However, not many people, even the native citizens, know the folklore of Baturraden. This brings up the need to develop an alternative way to introduce Baturraden folklore to people as it can serve as an individual attraction to tourists. The introduction of Baturraden to people can be conducted through information technology application. One of the studies using information media is web-based application development functioned as information delivery about Baturraden and its characteristics [1], and its location using GIS (Geography Information System) [2].

The extensive use of information technology enables people to access information more easily. Smartphone is a real instance of information technology which develops rapidly. A smartphone needs an operation system such as android. Android is much featured compared to other operation system such as IOS and windows phone. Android is a Linux-based operating system of a cellular phone. Android provides open source platform to the developers to create their own applications to be used in various dynamic devices [3]. As an open source system, android allows its platform-based applications to be more various and easy to develop. Android users are increasing every year. This fact encourages the developers to create supporting applications for Android, including an interactive game to introduce a tourist attraction in Banyumas.

Relating to information technology use particularly in game development, there was a study of education game development for students about introduction of Korean traditional culture. The study

showed that students easily gain vast knowledge about Korean traditional culture through a game [4]. Moreover, an adventure game was ever used as an education media. The strategy used here was to motivate students to study through their imagination by the game. It is caused game is an interactive thing with its own rules containing challenges and a win or lose condition which serves as an entertainment, a practice, or an education media [5].

Based on a previous research, an interactive game titled "Baturraden Adventure" was developed. This game is developed to introduce Baturraden folklore to people as well as to attract tourists to visit Baturraden as it contains information about places to visit in Baturraden. Moreover, this game is as an appealing introductory media with a nice interface for all ages also serves as an entertainment in the spare time. The benefit of this study is to help introduce folklore of Baturraden to people and provide information about it. Limitation of this research is that this game is not developed in high score system due to its story telling function. The game only consists of 5 levels suited its story plot.

2. Methods

The method used in the development of this multimedia was Multimedia Development Life Cycle (Figure 1). This development was performed in 6 stages, those are concept, design, material collecting, assembly, testing, and distribution [6].
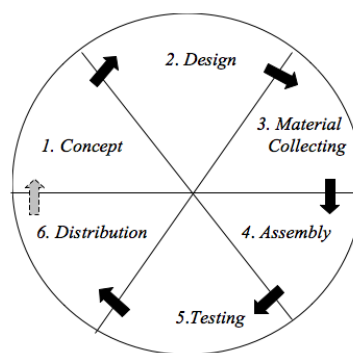
Figure 1. Multimedia Development Method

Based on Figure 1, the concept stage is a stage to determine the purpose and who will use the application. At this stage designed like what game Baturraden Adventure made such a plot, and other aspects. Design stage is the stage of creating the specification regarding architecture, display and program needs of the materials for the program. At the stage of material collecting, done everything that was needed in the application, i.e. the material to be conveyed and multimedia files such as audio and images will be included in the multimedia presentation. Assembly is a phase where the design will be converted into program code that can be understood by the machine. The coding is done using C# programming language with Unity Engine. The testing stage includes the overall testing of games that have been built. Tests conducted to determine whether the game is in accordance with the needs or not. If found error / not in accordance with the needs, it will be revised. System testing method used in developing this application is Black Box Testing Method. Black Box testing is performed by the programmer by providing certain input and see the results obtained. In other words, black box testing focused on system functionality. The last stage is distribution. At this stage, the completed project is then built into a. apk file. After becoming a. apk file, Baturraden Adventure games are ready to be published for the user.

3. Results and discussion

Baturraden is one of nature-based places in Banyumas. It is popular of its natural tourist attractions as well as its folklore. Its folklore tells about a romance between a servant and a princess of a kingdom

[7]. This game tells a story about Suta, a servant of a kingdom, who fell in love with a princess in his mission to reveal the name of Baturraden.

According to the research method, this game was build using 6 stages: concept, design, material collecting, assembly, testing, and distribution as follow.

3.1 Concept
Baturraden Adventure is a hybrid game of action and adventure with a goal to run a mission as in the folklore of Baturraden. This game has 5 levels where to unlock a new higher level it is obligatory to win a lesser level.

3.2 Design

3.2.1 Storyboard. Storyboard represents a scenario in stages which consists of each scene in a game. This storyboard explains the arrangement of the materials made within this game.

3.2.2 Flowchart. This following flowchart (Figure 2) shows an algorithm of the system when a user plays the Baturraden Adventure game, started from the moment when a user takes an action by pushing a button of "start game" followed by the appearance of a level Map 1 to 5. In every level, there is a requirement to fulfil to access the next level.
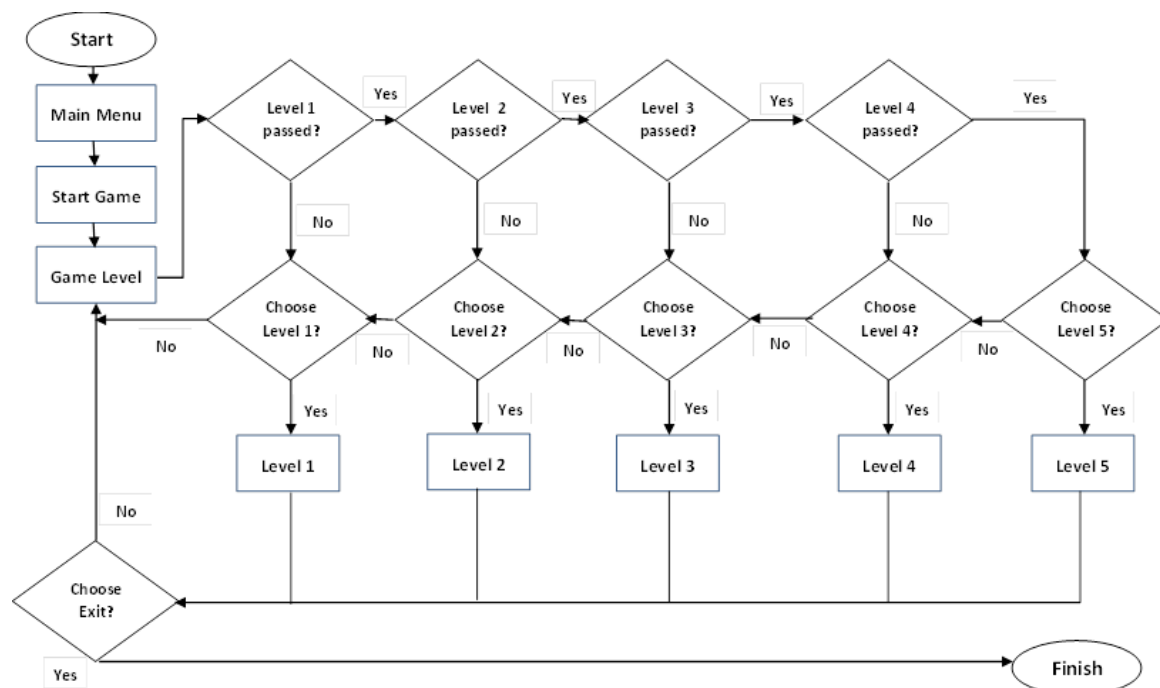
Figure 2. System working flowchart

3.2.3 Design character. Baturraden Adventure game has a main character of Suta who is a decent servant of a kingdom. His job as a servant is performing rough works and serving security in the kingdom. Nowadays, a couple of Suta and a princess of the kingdom is used as mascots of Baturraden. Figure 3 is a design of character Suta in Baturraden Adventure game.
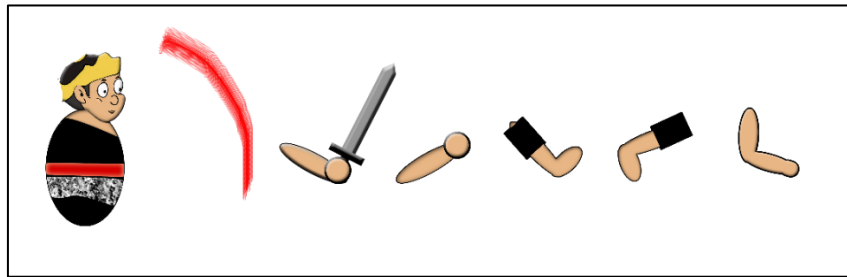
Figure 3. Suta Character in The Game

3.3 Material collecting
Material Collecting is a stage to collect materials needed. Those materials are as follows:

3.3.1 Figures, all figures are in .png and .jpg type.

3.3.2 Audio, audio files are in .wav and .mp3 type

3.4 Assembly
This stage is where all objects or multimedia materials are compiled. The application is made based on design stage. The following is a result of assembly stage which consists of interconnecting scenes.

3.4.1 Intro scene. This scene (Figure 4) shows the first display of Baturraden Adventure game.


Figure 4. Intro Scene

3.4.2   Menu scene. Menu scene shows a main menu of the game where it serves to help user to start a game. The main menu consists of buttons: "Bermain" (to start a game), "Info" (to get information), and "Keluar" (to quit a game). The display of menu scene is as follows (Figure 5).


Figure 5. Menu Scene

Menu scene has 3 buttons with each different function. "Bermain" button is pushed to start a game. "Info" button functions as information provider to users about Baturraden Adventures game. "Keluar" button is pushed when users want to quit a game.

3.4.3 Info scene. Info scene shows information about Baturraden Adventure game. There are 4 buttons within the scene. Two scenes of them consist "Karakter" (Figure 6) and "Baturraden" (Figure 7). "Karakter" scene told us about Suta, the actor of this game. While "Baturraden" scene explained term "Baturraden" came from.
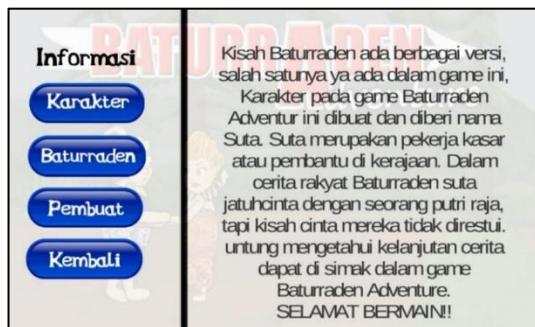
Figure 6. Karakter Information Scene
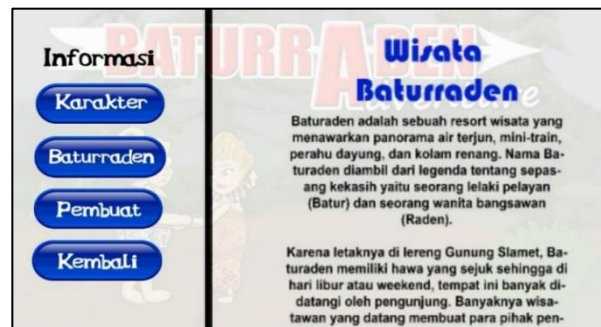
Figure 7. Baturraden Information Scene

3.4.4   Level map scene. Level map scene shows a map of 5 levels within Baturraden Adventure game. All levels are based on Baturraden folklore. To unlock each level, user needs to complete the previous level. There is a back button to guide user back to the main menu. The following is a figure of level map scene (Figure 8).


Figure 8. Level Map Scene

3.4.5   Prolog scene. Prolog scene contains a story of Baturraden folklore followed by missions based on the story plot. This scene was designed more interactive. Figure 9 and Figure 10 are screenshots of prolog scene.

3.4.6   Game scene. Game scene contains level 1, level 2, level 3, level 4, and level 5 game in accordance to the plot of Baturraden folklore. When a character reaches the finish line, the scene will change and the next level is unlocked. On the top left corner of the screen there is an HP icon consisting of 3 lives. A pause button is on the top centre of the screen.

Figure 9. Prolog Scene 1   **Figure 10.** Prolog Scene 2

Level 1 scene (Figure 11) is a scene to show level 1 where the horse riding character needs to run, search for blue plant, and jump to avoid obstacles until the amount of blue plant collected reaches 10.
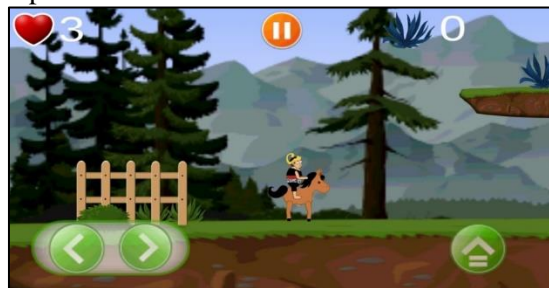
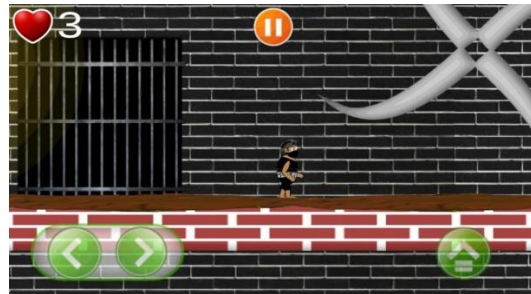**Figure 11.** Level 1 Game Scene

Level 2 scene (Figure 12) is a scene where the character must run and jump to avoid obstacles until he reaches finish line to beat a snake and save the princess.
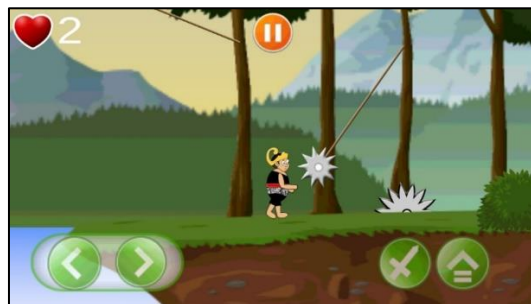
Figure 12. Level 2 Game Scene

Level 3 scene (Figure 13) is a scene where the character must avoid obstacles and bring the princess to the finish line safely.

Figure 13. Level 3 Game Scene

Level 4 scene (Figure 14) is a scene where the character has to find a key to save his love who is inside a prison.

Figure 14. Level 4 Game Scene

Level 5 scene is a scene where the character needs to run the princess away until they reach the finish line safely.

3.4.7   Ending scene. This scene will appear when a user has completed all the levels and get the full story. Figure 15 in ending scene contains final text of the story.

Figure 15. Ending Scene

3.5   Testing
In this stage, a test is performed using black box method to evaluate functions within the application. Each menu and button is run to reveal errors and bugs (Table 1).

Table 1. Table Integration Testing Result

Test Name	Aim	Scenario	Expected Result	Status
Opening game	To see if the game runs without errors	Attempting to open the game	Game runs properly, showing splash screen and a main menu appears	Success
Starting a new game	A player can start a game	Pushing "Bermain" button	Showing level menu and choosing a level	Success
Choosing a level	A player can choose a desired level	Choosing unlocked and locked levels	Only able to choose an unlocked level	Success

Table 1.Cont.

Playing the game	A player plays the game by rule	Playing game to win	Character Suta appears and runs avoiding obstacles until reaching the finish line and his lives decrease every time he fails	Success
Finish level	Application is able to save finish data in the database at the end of the game	Win a game to unlock the next level	Data is saved and the next level is unlocked	Success
Exit	User can exit the game	Pushing "Keluar" button	The application can close perfectly	Success

3.6 Distribution.
In this stage, project file is built into .apk file using version 1.0. Then, this. apk file will be distributed via internet by its developer or contributor email.

4. Conclusion

This 2D game named Baturraden Adventure. This game was developed as an introductory media of Baturraden folklore. Baturraden Adventure game run on Android-based smartphones. From the tests performed, all functions and controls run as expected. This game can be further developed to provide better quality and additional features such as high score.

Acknowledgments

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