GAME DEVELOPMENT OF CREATING WAYANG GOLEK ON MOBILE BASED

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ABSTRACT

Wayang Golek is a form of wooden puppet show with Sundanese character carving. wayang golek other than as collections, ornaments, and souvenirs of wayang golek are also used as performances. But over time the puppet show began to fade. The cause is not knowing the younger generation about the tools and steps to make wayang golek. The community is also not aware of the importance of wayang golek art. Games are an effective tool for learning because games are able to offer a hypothetical environment for students, where they can explore alternative decisions without the risk of failure. The game is platform and simulated platforms, gaming platforms are instrumental in psychomotor development and spatial orientation. While the simulation helps in the development of all the intellectual ability and this game is based on mobile smartphone. Therefore, platform games are built, art-themed simulations with android-based mobile and methods used in the construction of this system is a Game Development Life Cycle (GDLC) method that includes pitch, pre-production, main production, alpha, beta, and master. By modeling the system using Object Oriented Programing (OOP). Based on the results of research in the form of game development to create a wayang golek based on mobile through testing, then obtained the results through games to make wayang golek the general public to know information about the steps to make head, body, and hands. And this game makes it easy to introduce the basic of making wayang golek

Kata kunci : Wayang Golek, Platform, Simulasi, Metode GDL, OOP

1. INTRODUCTION

Wayang Golek is a form of wooden puppet show with Sundanese character carving. The show is usually performed at night from 22:00 until early morning or at around 04.00, taking the story of Evos Ramayana by Valmiki or Mahabrata by Vyasa. [1] Puppet puppets other than as collections, ornaments and souvenirs are also used as performances. In Bandung there are 2 places that move in the field of wayang golek located in Baleendah Bandung namely Giri Laya and Giri Harja. Giri Laya with the making of puppet show and Giri Harja with her puppet performances. Both of them both want to preserve the original art of Indonesian culture. One effort to preserve the wayang golek is by way of making puppet show.

Based on questionnaires distributed to 86 respondents, the results obtained 80 respondents or 93% of respondents do not know how to make wayang golek and 78 respondents need tutorials to make wayang golek. Information on how to make wayang golek is not easily known by the general public. This is because not all regions have wayang golek craftsmen and also when there are artisans of wayang golek, not necessarily the craftsman has a training place and when it has a training ground, the obstacle that arises is the absence of a basic introduction how to make wayang golek using a medium of learning because when there learning media that introduces how to make wayang golek artisans parties need no hassles to prepare tools and materials and of course it can be accessed by the general public, said Mr. Suyanto.

Delivery of information to the general public can be done in various ways, one of which is through educational games. This type of educational game aims to provoke the general public's interest in learning materials while playing, so with a sense of fun expected the general public can more easily understand the material presented. The use of media used as a means of delivering information even more diverse. Currently, the use of mobile devices as an alternative learning media for the general public is increasingly favored. This can be because the mobile device has the display as a visual medium that is quite comfortable, and also very easy and practical to carry. Therefore, it would be nice if the mobile device is used as a means to deliver educational information, such as educational games that help teach about the basic introduction of how to make a puppet show.

1.1 Game

Games are an effective tool for learning because games are able to offer a hypothetical environment for students, where they can explore alternative decisions without the risk of failure. Thought and action are combined into behaviors that aim to achieve a goal. Game teaches how to strategize,

consider alternatives, and think flexibly. [2] The game has the 5 most important components [3]:

1. Features is one thing that distinguishes every game there. The feature here can be a feature that can help illustrate the story of a game into a viewable or perceived form.
2. Gameplay can help developers to know how a game works, where the features that have been created will form a gameplay
3. Interface is every view that is in the game. A good interface is with very minimum icons and not boring gamersAturan merupakan kumpulan peraturan peraturan dalam game.
4. Level Design Level design here includes style, background, and storyline of the game

The type of a game is as follows. [4]

1. Arcade and Game Platform can be instrumental in psychomotor development and spatial orientation.
2. Sports and dynamic games can facilitate psychomotor coordination and ease stress.
3. Strategy dan role game dapat membantu menstimulasi motivasi dari dalam dan refleksi akan nilai dari game tersebut.
4. Puzzles and question games can help to develop the ability to express reason and logical thinking.
5. Simulation games can help in the development of all intellectual abilities.

1.2 Mobile

The use of mobile devices such as smarthphone and tablets is increasing. According to the Ministry of Communications and Informatics, the number of gadget users in Indonesia touched 240 million units considering the population of Indonesia is currently in the range of 230 million people. [5] Another thing that is accessing the internet is experiencing rapid growth, ranging from 40% in 2012 to 68% in 2016. [6]

Although access speed is still normal and internet tariff in Indonesia is still relatively expensive. Smartphone users in Indonesia love to download apps. The average user download app is 0.65 apps per day. Most of the most downloaded smartphone users are games with a percentage of 43.71% and the second is a tool with 8.96%. [7]

1.3 Game Development Life Cycle

According to Blitz Game Studio, game development methodology consists of six stages, namely pitch, pre-production, main production, alpha, beta, and master.



Gambar 1. Metode GDLC Versi Blitz Game

Here is an explanation of Figure 1:

1. Pitch

The pitch stage is the preparatory / basic concept stage of the game to be built.

2. Pre-Production

The pre-production stage is the design stage of game design.

3. Main Production

The main production stage is the stage of asset creation and implementation.

4. Alpha

The alpha stage is a testing phase where checks are in the form of an asset that is still not finished but the game being played is up to the end

5. Beta

The beta stage is the testing stage where all the assets are already there and finished, but there are still bugs (bugs)

6. Master

The master stage is the game distribution stage. [8]

2. RESEARCH CONTENTS

2.1 Analysis of Applications To Be Built

Here is an analysis of the applications to be built.

1. Android based applications.
2. 2 dimensional graphics.
3. Having a platformer genre,
4. Touch control
5. Goals of the general public
6. Discussion materials include instrument types, puppet head, puppet body, puppet hand and assemble wayang

It can be concluded that the game will be built themed puppets and players are not just looking for objects that exist. But players can know to know the information of the object.

2.2 Storyline

Here is the storyline of the game puppet show:

1. Scene 1 Instrument Introduction

Action : In scene 1 introduction tool, players will play as arili and adventure to collect tools puppet show. On every journey arili must take the mission, the mission will be explained by abah Anto. Arili must take the tool according to direction from abah anto.

Mission : Collecting puppet show.
Obstacles : Wooden blocks and falling
Outro : After completion of collecting tools the player will get a complete level notification, then can continue the mission to the head-making scene

2. Scene 2 Making a Golek Puppet Head

Action : This 2nd Scene is to create a puppet head, before making a player's head puppet looking for a tool used to make a puppet head. After that just go to the making stage.

Mission : Make head puppet show
Obstacle : Time (30 seconds)
Outro : After completion of searching tool the player will be able to proceed to the stage of making the puppet head, after making the head of the puppet finished the player will go to scene 3 to create the puppet show.

3. Scene 3 Create a Golek Puppet Board

Action : The 3rd Scene is to create a puppet body, before creating a wayang player body looking for a tool used to create a puppet body. After that just go to the making stage.

Mission : Create a puppet show body

Obstacle : Time (30 seconds)

Outro : After finishing searching for the tool the player will be able to continue to the stage of making the puppet body, after making the wayang body finished the player will to scene 4 make puppet show hand.

4. Scene 4 Making a Golek Puppet

Action : This 4th Scene is making a puppet hand, before making a puppet's hand a player looking for a tool used to create a puppet body. After that just go to the making stage.

Mission : Make puppets hand puppets

Obstacle : Time (30 seconds)

Outro : After finished searching tool the player will be able to continue to stage of making of tangna wayang, after making tangna wayang finished player will to scene 4 make hand puppet show.

5. Scene 5 Assembling Wayang Golek

Action : The 5th Scene is to assemble a puppet show. The player will be asked to assemble the puppet show starting from choosing the body first then afterwards the player chooses the hand.

Mission : Make puppets hand puppets

Obstacle : Time (30 seconds)

Outro : After finished assembling wayang golek game ends.

2.3 Analysis of Non-Functional Requirements

The analysis of non-functional needs is divided into three, namely the analysis of hardware requirements, software requirements analysis, and user needs analysis.

The following is a non-functional SKPL requirement can be seen in Table 1.

Tabel 1. SKPL Non-Functional Requirements

SKPL-ID	Non Functional Requirement Specification
SKPL-NF 1	The system can run on hardware specifications
SKPL-NF 2	The system can run on software specifications
SKPL-NF 3	The system can be used on the user

The analysis of hardware requirements is used to simplify the process of application design and implementation can be seen in Table 2.

Tabel 2. Hardware Requirements

No	Hardware	Specification
1	Processor	Dual-core 1.3 GHz
2	Operating system	4.4 kitkat
3	Screen	1280 x 720
4	RAM	512 MB
5	Storage (Free Space)	4 GB
6	Multitouch	Yes

Analysis of software requirements of the system to be built can be seen in Table 3.

Tabel 3. Software Requirements

No	Software	Program name
1	Operating System (OS)	Windows 7
2	Application Development Program	Construct 2 r244
3	Material Making Program	Adobe Photoshop CS 3, Corel Draw
4	BPMN Modeling Program	Bizagi Modeler 3.1
5	UML Modeling Program	Visio 2013, Start UML 2.8, Dynamic Draw 5
6	Interface Design Program	Balsamiq Mockups 3.5

The user needs analysis can be seen in Table 4.

Tabel 4. User Characteristics

User Knowledge and Experience	
Smartphone Knowledge	Can operate smartphone basics
System Experience	Understand the application installation
Application Experience	Can use general applications on smartphone
Education	Junior High School (Junior High School)
Language skill	Indonesia
Age	13 years and above
Gender	Male and Female
Use of Hands	Both are in good condition
Disability	No

2.4 Functional Requirements

Functional needs analysis is a process of drawing, planning and making a sketch or arrangement of several separate elements into one unified whole and functioning. The tool to describe it is Unified Modeling Language (UML), where the stages contained in this game is Use Case Diagrams, Activity Diagrams, Class Diagrams, and Sequence Diagrams. The following are functional requirements.

A. Use Case Diagram

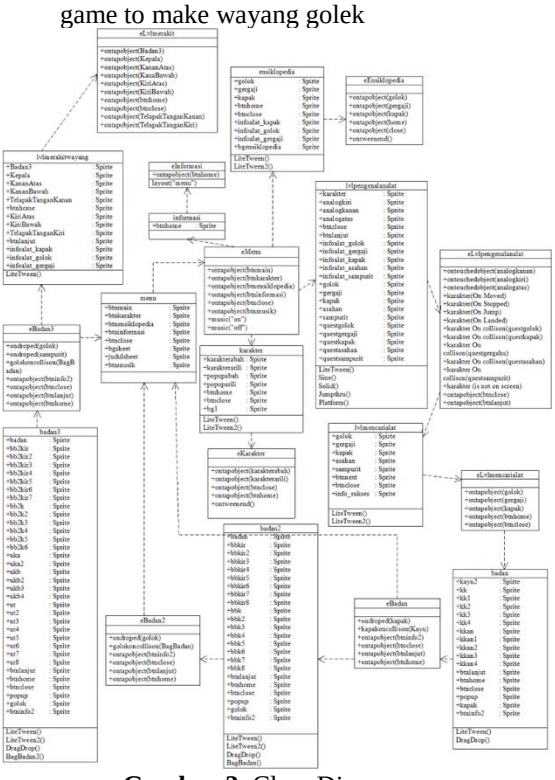
Use case diagram is a diagram to describe the relationships that occur between actors and activities. Use Case Diagram shown in Figure 2..



Gambar 2. Use Case Diagram

B. Class Diagram

Class Diagram is a description of the structure and description of the class of the game to make wayang golek

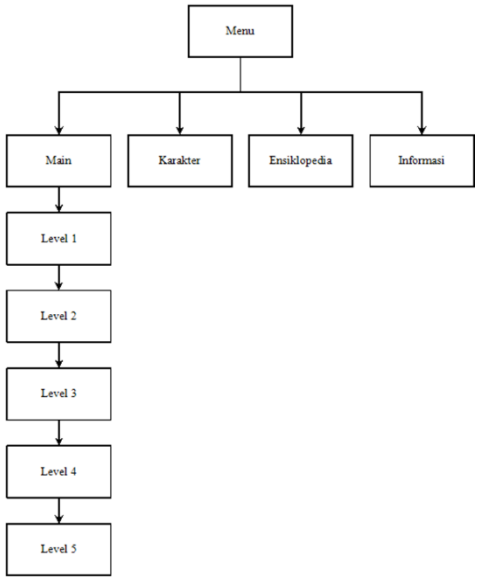


Gambar 3. Class Diagram

2.5 System Design

The design of the system describes the design of games that are built.

The menu is used by students to interact with the system. The selected menu will determine the response of the system in Figure 3.



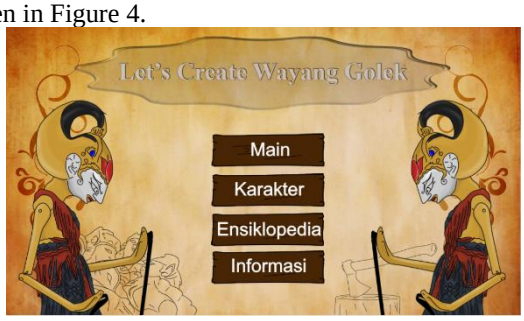
Gambar 3. Menu Structure

2.6 Interface Implementation

Implementation of the interface is done with each program display built. The interface presented below is the interface that represents the entire program.

2.6.1 Main Menu Interface Implementation

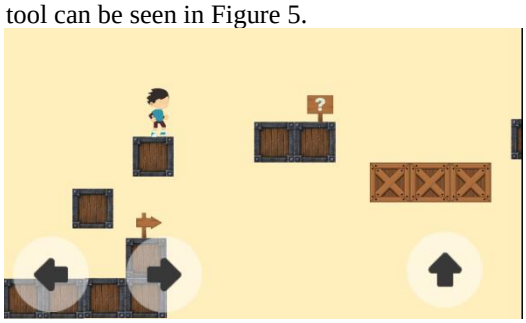
Implementation of the main menu interface can be seen in Figure 4.



Gambar 4. Main Menu Interface

2.6.2 Implementation Between Finding Tools

Implementation of the interface looking for the tool can be seen in Figure 5.



Gambar 5. Finding tools

2.6.3 Interface Implementation Quest

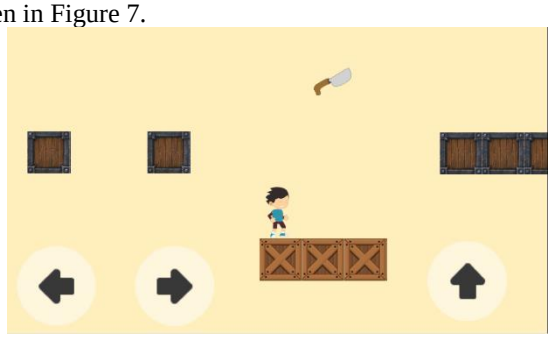
Implementation of the quest interface can be seen in Figure 6.



Gambar 6. Quest

2.6.4 Interface Implementation Taking Tool

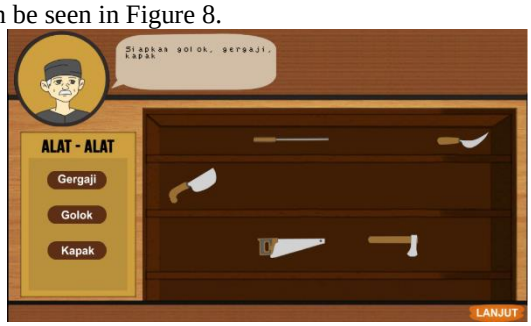
Implementation of interface picking tool can be seen in Figure 7.



Gambar 7. Take a tools

2.6.5 Implementation Between Selecting Tool

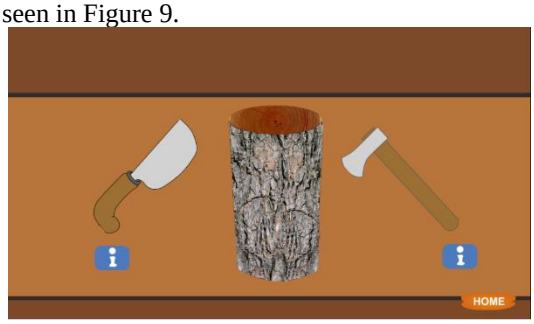
The interface implementation of selecting tools can be seen in Figure 8.



Gambar 8. Choose Tools

2.6.6 Implementation Between Cutting Materials

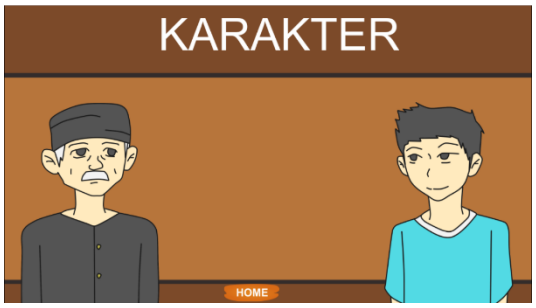
Implementation of interface cutting material can be seen in Figure 9.



Gambar 9. Cutting Material

2.6.7 Character Page Interface Implementation

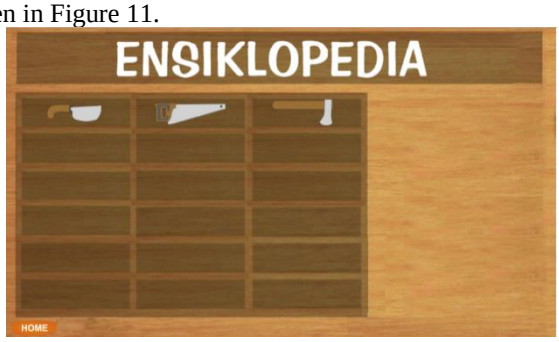
Implementation of the page character interface can be seen in Figure 10.



Gambar 10. Character Pages

2.6.8 Implementation of Encyclopedia Interface

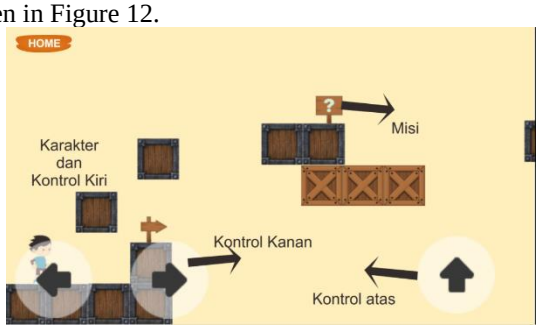
Implementation of the main menu interface can be seen in Figure 11.



Gambar 11. Encyclopedia

2.6.9 Implementation of Information Interface

Implementation of the main menu interface can be seen in Figure 12.



Gambar 12. Information

2.7 System Testing

Testing The software system is the stage to find errors and deficiencies in software built so it can be known whether the software has met the criteria in accordance with the purpose or not. The test used to test game development made wayang golek based on mobile is done by using checklist testing, and testing device.

2.7.1 Checklist Testing

The type of checklist testing is a type of test that contains a collection of test cases covering certain game areas

2.7.1.1 Testing Checklist Results

The following is the result of checklist testing, can be seen in Table 5.

Tabel 5. Testing Checklist Results

Test	Hasil
Collison	Pass
Animasi	Pass
Karakter - Respawn	Pass
Checkpoint	Pass
Musik	Pass
Splashscreen	Pass
Background	Pass
Main	Pass
Karakter	Pass
Ensiklopedia	Pass
Informasi	Pass
Keluar Game	Pass
Layout	Pass
Popup	Pass
Teks	Pass
Control	Pass
Layar Landscape	Pass

2.7.2 Device Testing

Device Testing is a stage where testing the android smartpone is used. In testing phase of this device perngkat tested is Lenovo Vibe K4 Note and Xiaomi Redmi 4 A.

2.7.2.1 Device Test Result

Here are the results of device testing of each device.

Tabel 6. Hardware Testing Scenario Lenovo Vibe K4 Note

No	Hardware	Spesification
1	Processor	MediatTek MT6753 1,3GHz
2	Operating System	6.0 Marshmallow
3	Screen	1920 x 1080
4	RAM	3 GB
5	Storage (Free Space)	3 GB
6	Multitouch	Yes

Application testing scenarios in Lenovo Vibe K4 Note are shown in Table 7.

Tabel 7. Application Testing Scenarios In Lenovo Vibe K4 Note

Test	Result
Splascreen	Pass
Keluar game	Pass
Music on	Pass
Music off	Pass
Main	Pass
Ensiklopedia	Pass
Karakter	Pass
Karakter Abah	Pass
Karakter Arili	Pass
Home	Pass
Lanjut	Pass
Close	Pass
Next	Pass
Kontrol kiri	Pass
Kontrol kanan	Pass
Kontrol atas	Pass
Volume up	Pass
Volume down	Pass
Landscape	Pass
Object bergerak ke kanan kiri	Pass
Object bergerak ke atas bawah	Pass
Checkpoint 1	Pass
Checkpoint 2	Pass
Checkpoint 3	Pass
Checkpoint 4	Pass
Checkpoint 5	Pass
Misi 1	Pass
Misi 2	Pass
Misi 3	Pass
Misi 4	Pass
Misi 5	Pass
Gergaji	Pass
Kapak	Pass
Golok	Pass
Sampurit	Pass
Pisau Ukir	Pass
Popup gergaji	Pass
Popup kapak	Pass
Popup golok	Pass
Test	Pass
Popup sampurit	Pass
Popup pisau ukir	Pass
Pembuatan Kepala	Pass
Pembuatan Badan	Pass
Pembuatan Tangan	Pass
Merakit Wayang	Pass
Drag drop	Pass
Collison	Pass
Touch	Pass
Posisi badan Tengah	Pass
Posisi kepala dengan badan	Pass
Posisi badan dengan tangan	Pass
Background	Pass

Tabel 8 Hardware Testing Scenario Xiaomi Redmi 4A

No	Hardware	Spesification
1	Processor	Quad-core Max 1,4GHz
2	Operating System	6.0 Marshmallow
3	Screen	1280 x 720
4	RAM	2 GB
5	Storage (Free Space)	16 GB
6	Multitouch	Yes

Application testing scenarios in Lenovo Vibe K4 Note are shown in Table 9.

Tabel 9. Application Testing Scenario At Xiaomi Redmi 4A

Test	Hasil
Splascreen	Pass
Keluar game	Pass
Music on	Pass
Music off	Pass
Main	Pass
Ensiklopedia	Pass
Karakter	Pass
Karakter Abah	Pass
Karakter Arili	Pass
Home	Pass
Lanjut	Pass
Close	Pass
Next	Pass
Kontrol kiri	Pass
Kontrol kanan	Pass
Kontrol atas	Pass
Volume up	Pass
Volume down	Pass
Landscape	Pass
Object bergerak ke kanan kiri	Pass
Object bergerak ke atas bawah	Pass
Checkpoint 1	Pass
Checkpoint 2	Pass
Checkpoint 3	Pass
Checkpoint 4	Pass
Checkpoint 5	Pass
Misi 1	Pass
Misi 2	Pass
Misi 3	Pass
Misi 4	Pass
Misi 5	Pass
Gergaji	Pass
Kapak	Pass
Golok	Pass
Sampurit	Pass
Pisau Ukir	Pass
Popup gergaji	Pass
Popup kapak	Pass
Popup golok	Pass
Test	Pass
Popup sampurit	Pass
Popup pisau ukir	Pass
Pembuatan Kepala	Pass
Pembuatan Badan	Pass
Pembuatan Tangan	Pass
Merakit Wayang	Pass
Drag drop	Pass
Collison	Pass
Touch	Pass
Posisi badan Tengah	Pass
Posisi kepala dengan badan	Pass
Posisi badan dengan tangan	Pass
Background	Pass

3. CLOSING

3.1 Conclusion

Based on the results of the implementation and testing of the game can be taken a conclusion as follows.

1. Through games to make wayang golek the general public can find out information about the steps to make head, body, and hands.
2. This game makes it easy to introduce the basic of making puppet show.

3.2 Future Works

To improve the quality and functionality of this application then the suggestions that can be put forward for future improvement and consideration are as follows.

1. The system has been built can be developed with the addition of features of the character puppet show.
2. The system has been built can be developed with the addition of feature story puppet.\
3. Built-in systems can be developed with the addition of game guide features.

Such suggestions can be given author, hopefully these suggestions can be used as input materials that can be useful for writers in particular and for general users.

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