

## Android puzzle game “Digitus”

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**Abstract.** In this game, player is asked to drag arrow to their pair. There are 2 modes in this game, i.e. one hand and two hands. 10 different stages for each mode. This game use multitouch features. Stage 2 to 10 have a minimum point to be able to open and play the next stage. This game has been tested by blackbox method, alpha testing and beta testing using a questionnaire through Google Form and Google drive to save Digitus game files. The results show that digitus is fascinating to be played over and over again, how to play feature can be understood easily, and attractive design.

### 1. Introduction

Video games are complex activities in which there are rules and sometimes have cultural elements raised. A video game is a system where a player is involved in an artificial conflict, here the player can interact with a conflict system in a game that is fabricated or artificial. In the game there are rules that aim to limit the behavior of players and also determine the game [1].

Other benefits of video games besides entertaining are sharpening the brain, training emotions, problem solving, developing motor skills and practicing patience [2].

Types of video puzzle games are logic puzzles that use logic, examples of logic puzzle games such as crosswords, sudoku and there are jigsaw puzzles commonly played by children, examples of jigsaw puzzles are tangram puzzles, mathematical puzzles, and others. There is a combination puzzle, is a puzzle that can be solved through several combinations, examples of combination puzzles are rubik and others [3].

### 2. Methodology

#### 2.1. Game Design

The first stage of a game made is a design method that is useful as a benchmark in the process of making a game and also determines the scope of the game to be made. There are several things that must be considered, namely [4]:

##### 1. High Concept

Digitus game is made using Unity Game Engine with multitouch features and neon nuances as the main features. All objects in Digitus are made using Adobe Photoshop and Adobe Illustrator.

##### 2. Gameplay

There are several things that are part of the gameplay, namely:

###### a) Control Design

Digitus game control design used multitouch to drag multiple arrows at the same time.

Pink arrow needs timing and enter bar to get points from it.

###### b) Object Design

The object designs in the Digitus game are green arrow, pink arrow, yellow arrow, bomb, timing bar and enter bar.

c) Sound Design

The background music used is titled The Wandering Hero from the RPG Game Development.

3. Audience

The target audience of game Digitus has no gender restrictions to be able to play it and it is recommended that players are aged 8 years or above

4. Hardware and software

The hardware used in the Digitus game is the Asus TUF Gaming FX550G laptop, mouse, and the Xiaomi Note 5 Smartphone, while the software used is Unity, Adobe Illustrator and Visual Studio.

5. User Interface Design

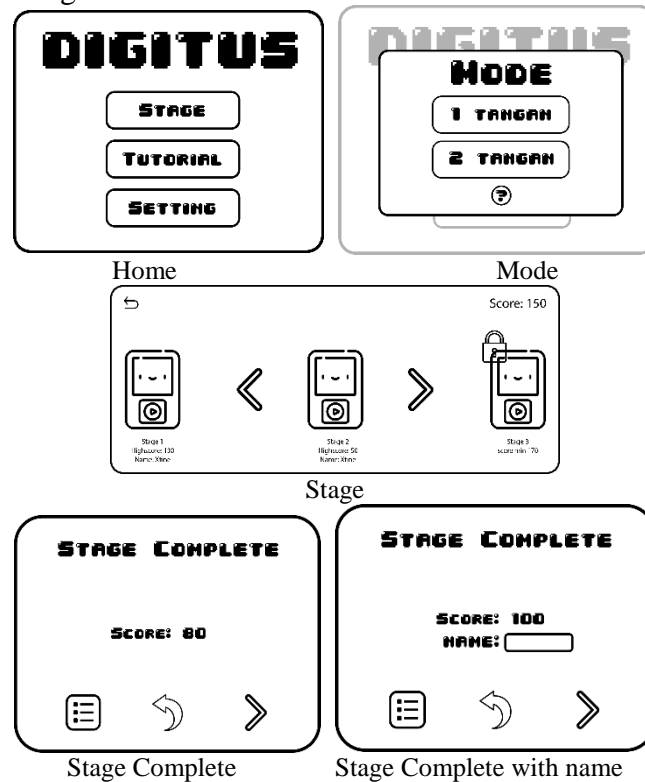
User Interface helps players to interact between players and the game. Every game requires a display, therefore a display design is needed. User interface design Digitus can be seen in **Picture 1**.

6. Game Making

In game Digitus, the planned concepts will be realized into a game. The first step is to create assets using Adobe Illustrator and Adobe Photoshop. Merge assets and scripts using the Unity game engine and C# programming language.

7. Testing

After the game is successfully made, it is necessary to do the testing phase to see the results in accordance with the concept and whether there are still things that need to be fixed or found errors in the game. The testing phase is divided into blackboxes, Alpha testing and Beta Testing.



**Picture 1.** User Interface

## 2.2. Game Genre

Genre of video games are used to classify video games based on the interaction of the playing field. Video games are classified independently based on the settings or contents of the game's structure, not like movies or books.

Rather than presenting a random collection of puzzles to solve, puzzle games typically offer related puzzles that are a variation on a single theme. This theme could involve pattern recognition, logic, or understanding a process. The puzzle genre is not much different from traditional puzzles.

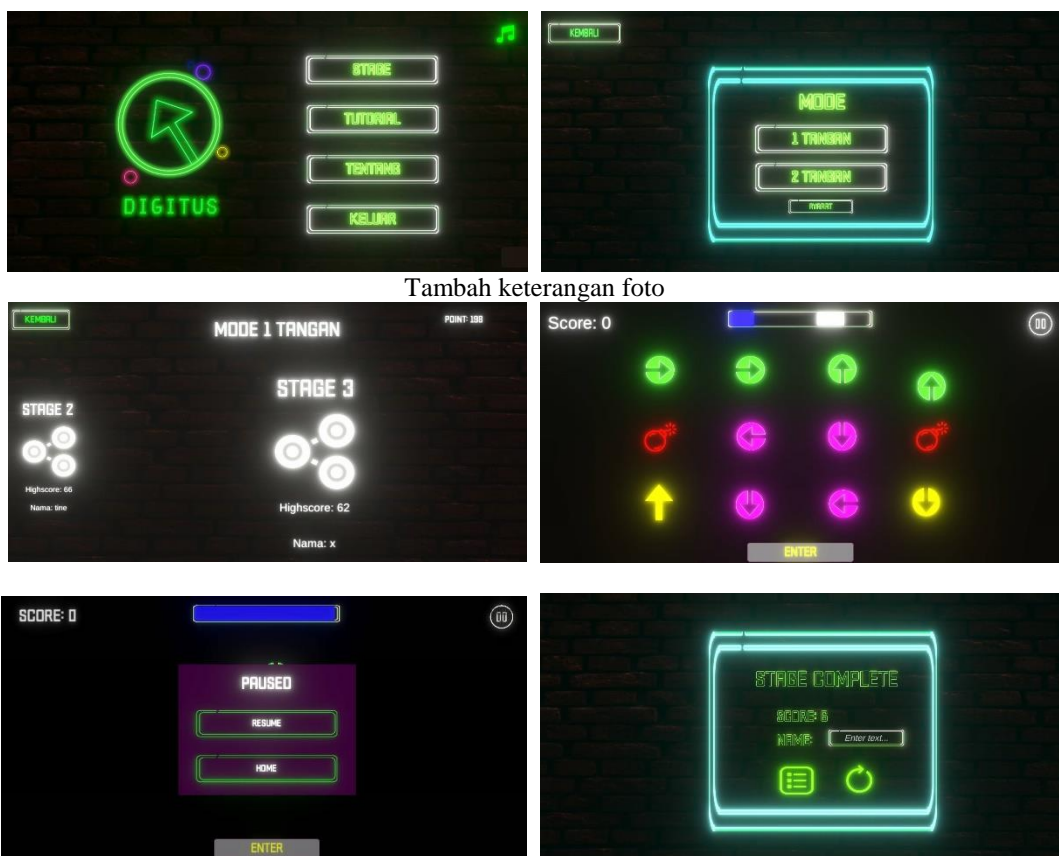
In the Digitus game, players are required to drag an arrow to another arrow with same direction. The purpose of making this game is to increase concentration and speed and precise hand coordination.

## 3. Testing and discussion

The purpose of this test is to test and make sure the game that is designed and made has been functioning properly and in accordance with the results of the test shows that this game has been running well and correctly. This test is done by blackbox, alpha testing and beta testing.

### 3.1. Blackbox testing

Blackbox Testing is done to check the modules in the Digitus game. Each module has been tested and the results of the test show that all modules have been running well. Blackbox testing can be seen in Picture 2.



Tambah keterangan foto

Picture 2 Blackbox Testing

### 3.2. Alpha Testing

Alpha Test Testing on the Digitus game is carried out by people who can act as representatives of the game players. the representative who acts as an alpha tester is the thesis advisor "Digitus". Tests conducted by supervisor 1 gave a less attractive appearance comment and the solution provided was to improve the appearance of Home. Then the test conducted by Guide 2 commented that some waves are too fast while the keynote arrows are too many and the solution provided is to make the timing bars for each wave different. All comments and flaws have been fixed.

### 3.3. Beta testing

Beta testing is done openly to anyone who want to play "Digitus". Beta testing is done on 6 to 14 June 2020, with Google Drive to share game's file and Google Form to share questionnaire file. There are 33 respondents who fill the questionnaire.

### 3.4. Discussion of Beta testing.

Based on the responses collected from questionnaire, derived the following results:

1. All respondents said that in-game tutorials were easy to understand, so respondents could play the game with multi-touch features is run well.
2. For (81.8%) respondents the timing bar is well-suited. Thus, the duration of the game is suited properly.
3. In 1-hand mode, the respondent gives an average value of 2 (easy) for stage 1 to stage 3. The most difficult stage according to respondents is stage 8 to stage 10.
4. In 2-handed mode, respondents give a value of 2 (easy) for stage 1 while the most difficult stages are stage 7 and stage 10.
5. As many as 75.8% of respondents said that the leveling of each arrow keynote was appropriate.
6. As many as 84.8% of respondents said the Digitus game was interesting to play back. (picture 3)

Based on beta testing that has been done on the Digitus game, the UI (User Interface) display is good and the placement of each arrow keynote is appropriate, the tutorial display is easy to understand so that it can help players understand how to play the Digitus game.



Picture 3 Interesting Digitus game percentage

#### 4. Conclusion

Based on the test results, the conclusion that has been obtained in the Digitus game is that this game is interesting to play again, the tutorial is easy to understand and multitouch on the pink arrow has worked well and correctly.

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