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THE DEVELOPMENT OF THE DAM HAJI TRADITIONAL GAME USING JAVA

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DEDICATION

To my beloved parents who always supported my ups and downs, my lecturers and supervisor, and not forgetting my fellow friends.

DECLARATION

"I hereby certify that this project report entitled

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is entirely my work and that is no part has been plagiarized or copied without

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ABSTRACT

Dam Haji game is one of popular traditional game in Malaysia. Dam Haji game will be developed using Java SDK 1.5 as the main platform and a website will be created, so that user can download the game and get information about the game. Malaysian Dam Haji game is different from other checker game because it is developed using Malaysian"s Dam Haji rules which is king can move one step forward or backward on the check block. Malaysian's Dam Haji game also have score function which will calculate and show each score for each move that being made by user and save the score in dam haji directory. There are two modes to play the game which are human versus human or human versus computer. The game is tested using black box testing technique and some functions in dam haji game is tested using print out method to see whether the data is fulfill the requirement of the game. It is hoped that the development of this game will take interest of Malaysian's youngsters to play traditional game.

ABSTRAK

Objectif utama pembangunan perisian permainan dam haji ini adalah untuk Projek Sarjana Muda di mana permainan dam haji adalah merupakan permainan tradisional rakyat Malaysia. Permainan ini akan di bangunkan menggunakan perisian Java SDK 1.5 dan satu laman web akan di bina bagi memudahkan pengguna memuat turun permainan dam haji dan mendapatkan maklumat berkaitan permainan dam haji. Permainan dam haji game ini mengaplikasikan peraturan dam haji yang biasa di mainkan di Malaysia iaitu buah haji boleh jalan satu tapak ke hadapan atau ke belakang. Permainan ini juga boleh mengira markah tertinggi bagi satu sesi permainan dan setiap markah tertinggi akan di simpan dalam direktori dam haji. Terdapat dua cara dalam permainan dam haji iaitu manusia lawan manusia atau manusia lawan komputer. Permainan di uji menggunakan teknik kotak hitam dan sesetengah fungsi di uji menggunakan teknik paparan untuk memastikan data memenuhi keperluan permainan. Adalah di harapkan pembangunan perisian permainan dam haji ini akan menarik minat golongan muda di Malaysia untuk bermain permainan tradisional ini.

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CHAPTER I

INTRODUCTION

1.1 PROJECT BACKGROUND

Nowadays, traditional game such as *congkak*, spinning top and many more are slowly forgotten among young Malaysians although these traditional game have been played by Malaysian for a long time ago. Now, young Malaysians prefer to play modern games such as World Craft, Thang Online and Red Alert other than traditional game. One of the popular traditional game in Malaysia is Dam Haji and can be played by anyone, adult or children. The idea of developing this game comes because of lack traditional game in the internet being developed and to make traditional game interesting so that young Malaysians get interested to play traditional game.

Briefly , to play the game we need two players, a checker board with black and red block, and twenty four piece of checkers, twelve on each side of the check board. Each player will compete on one another and take out all opponents' pawn. When all the pawn or king of any side is out of game, the leftover player will be stated as winner. In Dam Haji game, pawn can evolve to king or "haji" when any pawns reach the end site of the check board.

Basically, the project will be developed using java tools and a website will be developed along with the java games so that user can easily download the game from the website.

1.2 PROBLEM STATEMENT

The problems that bring to the development of the Malaysian's Dam Haji are as stated below:

1.2.1 Lack of Traditional Game on the internet

There are only a few traditional games being developed as computer games in the Internet and existed in the market. One of traditional game existed in the internet is "congkak" game which can be download from Internet.

1.2.2 No Specific Place to find Dam Haji game

There is no specific place where people can search for Dam Haji game, so a website will be developed along with the game so that people can search for Dam Haji and download the game.

1.2.3 Lack of Interest on Traditional Game

Nowadays, people are obsessed of modern games such as War Craft, Grand Theft Auto and many more existed in the market. This phenomenon is making people loss interest in playing traditional games such as Dam Haji and Congkak. It is hoped with the development of Dam Haji will increase the interest of people to play traditional game.

1.3 PROJECT OBJECTIVES

The objectives of the proposed system that will be achieved are as stated below:

a) To develop a traditional Malaysian game using MiniMax algorithm for the opponent movement and also as a guide to user to make a move because there are highlighted space that show user only the block that pawns/kings can move the checkers.

b) To develop nice interface for the game so that user is more interesting to play the game.

c) Create top score function for the game to make the game more challenging. The top score function will be using mathematic algorithm to define score for user.

d) To develop a website for the game so that user can view info and download the game at anytime.

e) To develop winning status at the end of the game that show who the winner of the game.

f) Invalid sound output when user make invalid move, winning or losing dam haji game.

1.4 PROJECT SCOPE

Malaysian's Dam Haji will be delivered via online and can be used freely by anyone. There are three scopes of the game:

1.4.1 Data

Rules of Dam Haji game will be adopted from the normal rules of Dam Haji used by Malaysian. The data include background of checkers board with white and red blocks. Other images that will be used is pictures of king and pawn checkers. For top score list, data will be get from the score of current user. The top score will be using mathematic quotation by how many pawns and kings left after the game end using specific algorithm.

1.4.2 Users

Anyone can play the game either children or adult. Although Dam Haji look simple to play but there are strategies that can be use and quite challenging.

1.4.3 Functionality

Functions such as top score list, restart game, new game, pause game and select checkers color will be developed to make Dam Haji game more interesting and easy to play. For function top score list, user can view top score and for each new top score, the score will be updated in the next round of the game. Function like restart game, new game, pause game can be used depends on user needs. In select checkers color, user must make their choices before starting the game.

1.5 PROJECT SIGNIFICANCE

Nowadays, internet is being used widely by Malaysian and there are many Malaysian users online over the internet. With the development of this game, online user inside or outside Malaysia can download the game easily.

While developing Dam Haji game, a website will be developed to distribute the game in the website. The website will have nice and user-friendly interface. Info of the game will be put at the website.

1.6 EXPECTED OUTPUT

A user friendly website and graphical game will be delivered to user. The function and steps on both website and game are simple and easy to use.

The game will have 3 modules. The first module will control the game play, such as the movement of the checkers and the movement of the Haji checkers. This movement is control by MiniMax Algorithm which is an Artificial Intelligence code that will check if the movement is valid or not. The movement is control by mouse-event available in the Java platform.

The second module will determine the top score of players. The top score count and decide which player is the top scorer based on the time the play take place. The third module will control the new game, restart game, exit game and pause game functions of the game option. If a player exits the game, he will declare lose, if the game is restarted, the game will be restarted with recently selected playing mode and checkers colours. If the game is pause, the game will halt and if new game function is selected, the game will reset and user have to select playing mode and checkers colors of the game.

1.6.1 Website

This website will be locating the game so that user can easily download the game. The website will be user-friendly and anyone can download the game.

1.6.2 Graphical Game

The game will be developed using Java tools which is widely used in game development. The game will be graphical and in user-friendly interface. User will find it easy to play and also adorable.

1.6.2 Top Score List

In the game, the top score list will be automatically calculated and will count the top score for each winner. If the score more than the score in the current top score list, it will overwrite the score and the new top score will be displayed along with its login name. Ten top score ranking from 1 to 10 will be available in the top score list of the game. This will be an encouragement to player to keep playing Dam Haji.

1.7 CONCLUSION

In the early stage of development of Malaysia's Dam Haji game, there is no difficulty mode for the game. For the next development, more advance option for the game will be implemented such as playing online with other online players, position output for each step and other options. These options will make this game more adventure and more challenging.

Hopefully this game can be the popular game in the internet and being introduced to people outside Malaysia so that they know Dam Haji is one of traditional game of Malaysia.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 INTRODUCTION

This chapter covers the literature review and project methodology of the game that will be developed. There are also some studies done from the manual game and some game that used similar concept like Malaysian's Dam Haji. Studies had been done by searching, collecting, analyzing and drawing conclusion from all debates issues raised in relevant body of literature. All the finding will be conclude in this chapter. The goal of writing them is to inform others about what certain articles or books say, and to tell how valuable they to the writer's purpose, or agenda and also provided a background to the report of the project. A literature reviews also much more than an annotated bibliography or a list of separate reviews of articles and books. Thus it should compare and relate different theories, findings, rather than just summarize them individually.

[9]Project methodology is very formal precise game development process that defines a set of activities, method and best practices, deliverables and automated tools used to develop and maintain most web based game. Using appropriate methodology can help to ensure that user requirements are meet completely and giving better control of project execution including a reduction in overall development cost and risks.

These studies including make used of other people work. So, there will be some examples and proven that will help to make develop a better game than the existing manual game now. The methodology that selected in order to manage the development flow will also be described in this chapter.

2.2 FACT AND FINDING

This section describes the literature review which will look at genres of games, fundamental of developing Java 2D game, some aspect of functionality, the current approach and why a new function is necessary.

2.2.1 The Genres of Games[1]

2.2.1.1 Action Game

All games under this genre have one aspect in common-they are all twitch game. The key skills tested by the game play are reaction time and hand-eye coordination under pressure. One of the popular action games is *King of Fighters*.

2.2.1.2 Strategy Game

Strategy game, whether turn-based or real-time, all feature a core management mechanic. The primary factors that influence whether a strategy game is compelling are the theme, presentation layer and the perspective. One of the popular strategy games is *World Craft*.

2.2.1.3 Sports Game

Sports games emulate a world the player knows a lot about; sporting events as they are in real life such as professional football, basketball, tennis and many more. One of the popular sport games is *EA Football*.

2.2.1.4 Adventure Game

An adventure game is not a competition or a simulation. An adventure game does not offer a process to be managed or an opponent to be defeat through strategy and tactics. Instead, an adventure game is an interactive story about a character that is controlled by the player. One of the popular adventure games is *Diablo*.

2.2.1.5 Online Game

Online games played over the internet from all over the world have become popular these days such as *Thang Online, Ragnarok Online* and many more. Many online games take place in real time, with each player acting simultaneously and it offers opportunities for social interaction.

2.2.1.6 Artificial Life

Artificial Life, or A-life, as it is sometimes called, involved modelling biological processes, often to simulate the life cycles of living thing. The most famous A-life game is simply *Life* and was created by a mathematician named John Conway.

2.2.1.7 Puzzle Games

Puzzle games are games that primarily about puzzle solving, sometimes without incorporating the puzzles into a story line or larger goal. Puzzle game are usually variations on a single theme. To be a commercial success, a puzzle game needs to be challenging (but not too hard), visually attractive, and, above all, enjoyable to play with. An excellent example of puzzle game is *The Incredible Machine*.

2.2.1 Fundamentals of Developing 2D Games[1]

The fundamentals of developing 2D games are:

2.2.2.1 Interface Architecture

Interface is an important aspect in developing the 2D game because interface will show how users communicate with the game. Interface that has been choose must have elements such as nice interface, graphical interface, animated interface, good text presentation and many more. Approaches of the interface that is going to be developed must be successfully give interest for user to use it. A good and interesting interface always been the main factor for children to play the game, if interface is boring and the arrangement of texts and graphics is wrong, it will surely make children lost interest of the game.

2.2.2.2 Presentation of the Game

A good way of presenting the game such as user friendly game play is an important factor when developing 2D games. Game support function like *Help* button must be complete and easy to use so that it can help user when needed.

2.2.2.3 Audio

Audio is one of the factors that are important in developing 2D game. It is because, with the appropriate combination of the audio and interface, message can be send to user without problems. Audio that is chosen must be suitable with the game that is developed. For children, the audio that is appropriate is like cartoon sound theme and game developer must avoid using brutal sound because it can leave negative impact to the users.

2.2.2.4 Interactive

Buttons, icons, picture and texts must be clear so that it can successfully send message to user and can give good interactive between user and computer. In game development, there must not be too few interactive elements, it is because user can get easily bored with the game if they cannot interact with the game.

2.2.2.5 Speed

Time to execute for the game must be short because user will be bored if they have to wait for a long time to get information or response of the game. The architecture of the code that will be developed is important, so that there is not too much time use to execute the code.

2.2.2.6 Multi Level

Multi level is important in developing 2D game because, there are not only one level of user that will be playing the game. Level such as beginner must be suitable for children, advance level is harder than the beginner level and for expert level, is the hardest stage of the game.

2.2.2.7 Cost

Cost of the game must be suitable, if the cost is high but in low quality, the game maybe cannot survive in the game market.