

**MOBILE GAME APPLICATION TO ENHANCE MEMORY SKILL FOR
CHILDREN (MALAYSIAN ADVENTURE ISLAND)**

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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MOBILE GAME APPLICATION TO ENHANCE MEMORY SKILL FOR
CHILDREN (MALAYSIAN ADVENTURE ISLAND)

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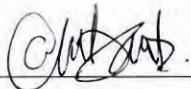
This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Interactive Media)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2011

DECLARATION

I hereby declare that this project report entitled
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is written by me and is my own effort and that no part has been plagiarized without
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SUPERVISOR :  Date: 14/07/2011

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DEDICATION

I dedicate special thanks to my parents who giving me support and motivation throughout my PSM. This dedication are also to my PSM supervisor, Mr En.Ahmad Naim bin Che Pee @ Che Hanapi for the consultation, advices, comments and support just to make sure that I can finish this PSM successfully. I also want to thanks to all my friends that always are by my side as I working on this project.

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ABSTRACT

Mobile game – Malaysia Adventure Island is a memory game developed for mobile Symbian operating system platform with Flash Lite technology. This mobile game will allow primary student to learn while gaming. This game has three main menus which are Start Game, Instruction and Exit. There are three stages in this game. The first stage is where player need to solve 2 matches while 4 matches at second stage and 7 matches at third stage. It can be played by school kids especially for kids' age between 8 to 10 years old. ADDIE methodology is used as the development method. It comprises five phases which are analyzed, design, development, implement and evaluation. By using several techniques in gathering information about mobile games, current system study, observation, reading materials and discussion with supervisor has been done. Research on mobile gaming characteristics, mobile gaming platform, games genre and games mechanics helps much in developing this project. Besides, review on the existing game describes several deficiency of the game such as no high score and lack of interface design.

ABSTRAK

Mobile game - Malaysia Adventure Island adalah permainan memori yang dibangunkan untuk telefon bimbit yang mempunyai sistem operasi Symbian dengan teknologi Flash Lite. Permainan telefon bimbit ini akan membolehkan pelajar sekolah rendah khususnya untuk bermain sambil belajar. Permainan ini mempunyai tiga menu utama iaitu *Start Game*, *Instruction* dan *Exit*. Permainan ini mempunyai tiga tahap. Tahap pertama adalah di mana pemain perlu untuk menyelesaikan dua padanan, empat padanan di tahap kedua dan tujuh padanan pada tahap ketiga. Permainan ini dapat dimainkan oleh kanak-kanak sekolah terutama untuk kanak-kanak antara lapan hingga sepuluh tahun. Metodologi *ADDIE* digunakan sebagai metodologi pembangunan permainan ini. Ia mempunyai lima fasa iaitu fasa kajian, fasa rekabentuk, fasa pembangunan, fasa pelaksanaan dan fasa pengujian. Dalam memperoleh maklumat kajian, beberapa kaedah telah dilaksanakan termasuk mengkaji sistem sedia ada, pemerhatian, melalui bahan bacaan serta perbincangan dengan penyelia projek. Penelitian tentang karakter permainan telefon bimbit, platform permainan telefon bimbit, genre permainan dan mekanik permainan banyak membantu dalam mengembangkan projek ini. Selain itu, kajian ke atas permainan sedia ada turut dijalankan bagi mengenalpasti kelemahan seperti tiada simpanan markah tertinggi dan kekurangan dalam rekabentuk antaramuka.

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CHAPTER 1

INTRODUCTION

1.1 Project Background

Mobile games tend to be small in scope and often rely on good game play over flashy graphics, due to the lack of processing power of the client devices. One major problem for developers and publishers of mobile games is describing a game in such detail that it gives the customer enough information to make a purchasing decision. Currently, Mobile Games are mainly sold through Network Carriers / Operators portals and this means there are only a few lines of text and perhaps a screen shot of the game to excite the customer. Besides that, the kids are likely to have entertainment than learn about something. So to create their interested in studies, there must have the entertainment to attract this people to learn and make themselves continues to learn. This project surely gave them a big opportunity in studying English word. This game also can introduce our country island by gaming product and the kids especially can know about Malaysia Island basically. This project focused on kids between ranges of age six to ten because this is basically game in studying English word. The general concept of this game is focusing in Adventuring that the player has to complete some mission to complete the task.

1.2 Problem Statement

Several problems relating with the existing mobile games have been figured such as most of the games focused on skills and actions but less games on IQ test and knowledge based. So this project is proposed to be develop, Adventured Malaysia Island is the game related with mind which our mind can be test in studies especially English tuition. Children nowadays had a lot of problem to know English word in their mind. They are very hard to remember or learn about English word without any attraction. Their mind just on playful mood. This game will help any children to easily them to know the English word because game will attract more for children. Besides that, this game will help to introduce our country island that can be tourist attractions. Most kids find the traditional way of studying is boring. The normal reading and learning using books or interactive CD is the most effective method in learning but a mobile application is to be built as an alternative, which support the traditional method.

1.3 Objective

In order to ensure that the project working properly and smooth, the objective of the project must be stated clearly. This will not only eased the development of the system but also others who are involve in this project. Below are the objectives for this project.

- To develop a mobile knowledge-based game.
- To develop a program with user-friendly interface.
- To apply multimedia and interactive elements such as audio, sound and graphic to the project.
- To develop the skills and technique in an attractive 2D mobile game.
- To create the game that will suitable for mobile application.

1.4 Scope

The scopes of this project are:

- i) This game is developing to test how attractive for children especially for school kids between range of age six to ten which new to know about English word besides to introduce the most popular island in our country.
- ii) Suitable for school kids who always spends their time playing with mobile game and like to play matching game of the picture and English word to build up their knowledge.
- iii) Suitable for hand phones with Symbian operating system and Flash Lite technology.
- iv) Several modules have been discovered for this game are as stated in Table 1.1 below.

Table 1.1: Project's module

Module	Description
Comprehension	Test player's knowledge about English word
Lifeline	Give chances to player if they cannot answer the question.
Time	Test player to solve the mission in time limit.

1.5 Project significance

Mobile game - Adventured Malaysia Island can be supported with Symbian OS platform hand phones and can be played especially for school kids. This game will test player's knowledge about English word which player must find the picture based on the word that player choose. Player will be ranked according to the highest level of score they get by playing this game. This mobile game will help the player to memorize the English word and the picture and its give another alternative to kids who needs extra guide or a different approach in studying.

1.6 Expected output

This project is expected to produce a mobile learning application, which will benefit students and make their learning process a fun time. Most students will use this project because it is a mobile based and it is easy to carry it everywhere. This mobile learning application expected to be a new way of learning in the modem era as most of the school students in Malaysia can afford a mobile phone. This application acts as a support to the conventional way of learning as it provides many benefit which will save time and much more appropriate to use. From this project, hopefully it will achieve the objectives and scopes in developing the games. Besides it will increase player knowledge relating with English lesson.

1.7 Conclusion

The project is proposed to be develop, Adventured Malaysia Island is the game related with mind which our mind can be test in studies especially English tuition. This game is based on 2D interactive game that combines all multimedia, software, hardware and also network elements using mobile as delivery medium. Adventured Malaysia Island is the adventure game that have mission to complete. Its 2D in graphic and it can be played on hand phone with Symbian operating system and Flash Lite technology. The target user of this product is for kids around 6 years to 10 years. The key aim of Adventured Malaysia Island project is to create an

intelligent interactive mobile application, specifically a serious game, which supports teachers' role to educate young people on how to know English word. This mobile education games can be considered as an alternative for pupils where they can use this application at anytime and anywhere they like it. This application acts as a support to the conventional way of learning as it provides many benefit which will save time and much more appropriate to use. In the next chapter, literature review and project methodology will be discussed. Literature review will describe all the research and findings related to this project and the methodology will cover on the selected approach to develop this project.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Recent years have seen the rise of mobile users with PDAs, laptops and particularly mobile phones. Worldwide there are over 2 billion mobile phone users or more. With so many mobile devices, it is crucial for a developer to target the right mobile platform and development environment, or a combination thereof. Portability across platforms will ensure the maximum target audience is reached. This is specifically important for mobile game development. So this chapter will discuss the analysis and existing or similar that is related to this project application and gets more understanding about the development of this project. This project will be stated and explained clearly by all fact findings related with any keyword.

The main purpose of these reviews is to compare with other education mobile game that relate to this project. In addition, this chapter also describes the selected methodology use in the mobile game will be developed. Methodology is the key of succeeding of finishing a project within time and being able to satisfy user's requirement. It is also a description of the selected approach that will be used when developing the project. Every step in the selected methodology will be justified to suit every task. Since there are many kind of methodology, it is vital to select appropriate methodology that will be used.

2.2 Domain

The domain of this project is Information and Communication Technology (ICT) in Education and Learning because the project is related to one of the basic subject in primary school, English learning. The kids especially for year 1 and 2 introduced English word and its very important basic learning to make the kids know more about English word. Mobile game is categorized under ICT in mobile application. This is because the game will be developed under Symbian operating system handphones platform.

2.3 Existing System

For existing system, reading materials revision and existing system review are made that relate with the project. There are several case studies or reviews that are related to this project - introduction to mobile gaming, mobile gaming platform, mobile games genre, games mechanics and existing online game – drag drop game and English Vocabulary Games with Pictures.

2.3.1 Introduction to mobile gaming

Mobile game has become the most popular and fastest growing market in game industry. However, it also is the most challenging product to develop. Unlike other game type, mobile games must be run in hand-held device like cell phones, PDAs and many more.

Before begin the development process, developer should realize that to develop a successful mobile game, it should contain one of these characteristics which are easy to learn, interruptible, rich social interactions, take advantage of mobile innovations and no explicit content.

The games will be easy to learn as it should be playable the moment it is download. Player will not spend a lot of time studying an operation manual of a game. So the game should be simple. The basic characteristic of mobile devices is multitasking. Users can play the game anywhere in anytime whether when they are waiting for a taxi or time break in a meeting. The same device they use for messaging, organizing schedule, working presentation and many more. A good mobile game with interruptible characteristic should provide entertainment for short time periods and allow user to switch mode from game to work. No matters how good the design of a game is it would be boring if player found out the same pattern in every level. It is interesting to apply rich social interaction in mobile gaming by involving other players as it can increase the intelligence and randomness of a game. Furthermore, there are a lot of mobile innovations from day to day as for example Global Positioning System (GPS), Short Message Service (SMS) / Multimedia Messaging Service (MMS). It is good if developer can apply those innovations in their games. As there are no limitation on gender and ages in playing the games, developer should develop a game with no explicit or sexual content that can influenced any kind of players.

2.3.2 Mobile gaming platform

A mobile game is a game played in mobile phone, PDA and other handheld devices. Normally these mobile games provided by phone manufacturer or can be downloaded from the internet via infrared, Bluetooth or any other connection cable and then it will be saved in memory card or mobile internal memory. There are different platform for mobile games such as Microsoft Windows Mobile, Symbian OS, J2ME, BREW and many more. Microsoft Windows Mobile is developed by Microsoft Corporation. It can be found on devices including Motorola, Palm, Dell, HP, Motorola, Palm, and i-mate. Windows Mobile powered devices are available on Global System for Mobile communications (GSM) or Code division multiple access (CDMA) networks. Example of game developed for Microsoft Window Mobile is Kokonotsu- Super Sudoku. Kokonotsu which pronounced as coconuts is a puzzle game consists of nine 3x3 boxes forming an 81-field matrix. The aim is to place nine different objects in each of the nine 3x3 boxes, each horizontal row and each vertical column as well as both major diagonals. This platform is designed for mobile device produced by Symbian Ltd formed in 1998. Based on In-

Stat / MDR report in August 2004, Symbian operating system will dominate smart phone market five years from now and followed by Windows platform. Symbian has the most partners and licenses of any mobile OS, including Nokia, Sony Ericsson, Motorola, Siemens, Samsung and others. Example of game developed for this platform is called Boat Way which is an adventure game. Player must reach destination safely on time, escape from dangerous sharks, crocodiles, fish and logs in the river. The river is full of dangerous species and mountain rocks so sometimes player have to sail the boat slower and faster. A Player aim is to navigate the boat through a dangerous river. Avoiding the obstacles will make player finish the journey. Java 2 platform Micro Edition is one of JAVA platforms that provide application development for mobile devices including cell phones and PDAs. J2ME is a technology that has two kinds of configurations that are Connected Device Configuration (CDC) and Connected, Limited Device Configuration (CLDC). Example game for this category is Pixeline Zoo. It described that Pixeline is a girl who loves animals and one day when she visits the zoo, she has a special crush on the hippopotamus. The hippo likes eating hay and also enjoys fruits. The only thing is it hates fish bones. So Pixeline helps feeding the hippo but it is difficult to move haystacks from one end of the Zoo to another with all fences. In this game, player will help Pixeline feed all the haystacks to the hippo in the given time. Player has to arrange strategies in order to make the right moves at the right moment. Any unconsidered move could result in loosing haystacks. Player can push all the items around and any of them can be fed to the hippo. However, some items pushed are disliked by the hippo especially fish bones. The level will be cleared when all hay is fed to the hippo. Player will earn extra points by feeding fruits to the hippo. Binary Runtime Environment for Wireless (BREW) is an application development created by Qualcomm for mobile phones equipped with CDMA chipsets. User can download applications such as text-chat, e-mail, and location positioning, games and internet radio. One of the games developed for this platform is Block Breaker Deluxe. It story begins when Palm Ocean, a town known for its wild nightlife, an eccentric billionaire is organizing a Block Breaker contest for the 10 best players on the planet. So, as a famous wall breaker champion, player is dying to take part. There is only one problem; the organizer has set the entry fee to 1 million dollars and the player only has \$100 in pocket. The only solution is to hit the city's games halls and accept the challenges thrown down by characters from the night-time scene to boost the funds. However, it