

**THE DEVELOPMENT OF PLATFORM GAME IN ORDER TO
ENHANCE USER'S MEMORY**



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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JUDUL: THE DEVELOPMENT OF PLATFORM GAME IN ORDER
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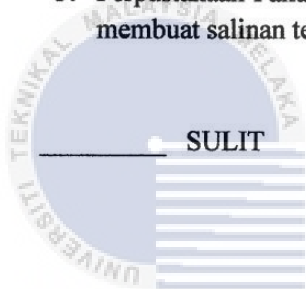
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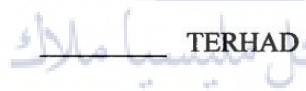
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THE DEVELOPMENT OF PLATFORM GAME IN ORDER TO ENHANCE
USER'S MEMORY

NUR BAHIRAH BINTI MOHAMED



This report is submitted in partial fulfillment of the requirements for the Bachelor of
Information Technology (Game Technology) With Honours.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2016

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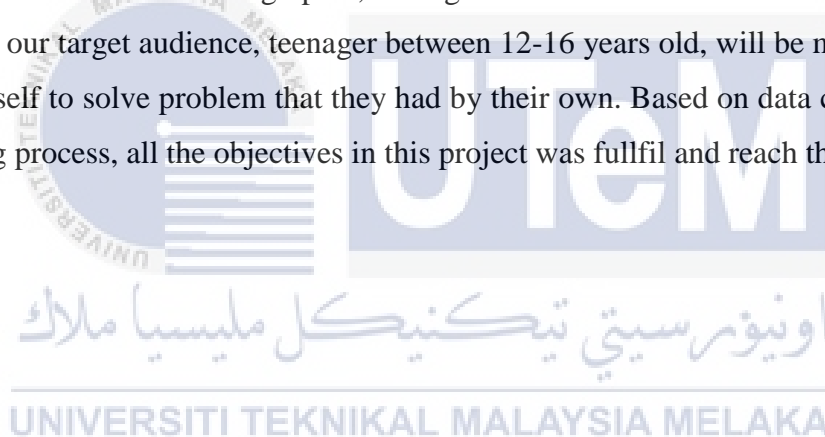
Special thankfull for my parent for supporting me from beginning of this project until the end of it. They also give me some idea on how to conduct this project fluently and give me some advice for not give up whatever problem I faced.

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ABSTRACT

Do something that can increase your brain function was good especially in education where you need to memories what you had study and after that implement it in your real life. Therefore, the purpose for this project is to develop a platform game in order to enhance user's memory. Based on Dora The Explore televisyen show, the objectives that involved in this project are to improve player ability in order to solve problem by their own, to make target audience feel the reality rather than just look on television and also to develop a game in personal computer (PC) environment. The development of this project are based on GDLC method where it start with make an idea, do some creation of graphic, testing and do refinement after that. Through this game, our target audience, teenager between 12-16 years old, will be more dependent them self to solve problem that they had by their own. Based on data collection from testing process, all the objectives in this project was fullfil and reach the target.



ABSTRAK

Melakukan sesuatu yang boleh meningkatkan fungsi otak anda adalah bagus terutamanya dalam bidang pendidikan dimana anda perlu mengingati apa yang anda telah belajar dan selepas itu melaksanakannya dalam kehidupan seharian anda. Oleh itu, tujuan projek ini adalah untuk membangunkan suatu permainan platform dalam usaha untuk meningkatkan memori pengguna. Berdasarkan program televisyen Dora The Explore , objektif yang terlibat dalam projek ini adalah untuk meningkatkan keupayaan pemain dalam usaha untuk menyelesaikan masalah yg dihadapi, untuk menjadikan kumpulan sasaran merasai sendiri dan bukan hanya melihat di dalam kaca televisyen dan juga untuk membangunkan permainan berasaskan PC. Pembangunan projek ini adalah berdasarkan kaedah GDLC di mana ia bermula dengan membuat idea, melakukan penciptaan grafik, pengujian dan melakukan perbaikan selepas itu. Melalui permainan ini, penonton sasaran kami, remaja berumur antara 12-16 tahun, akan lebih bergantung kepada mereka sendiri untuk menyelesaikan masalah yang mereka oleh mereka sendiri. Berdasarkan pengumpulan data daripada proses ujian, semua objektif dalam projek ini adalah memenuhi syarat dan mencapai sasaran.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Playing games is an extremely popular pastime. If we add up all the hours spent people who play games each week, it would equal over 3 billion hours. On average it is suggested a teenager can spend nearly 10,000 hours gaming by the time they are 21. Researchers from the Universite de Montreal in Canada (Dr Gregory West) have undertaken a preliminary study to answer this very question aiming and found that action gamers were twice as likely to use their caudate nucleus, the brains reward system (80%) during navigation rather than the non-gamers (42.42%) who tended to rely on the brain's spatial memory system, the hippocampus.

At the Max-Planck Institute of Human Development, in Berlin, Prof Simone Kuhn also researches the effects of the video games on the brain. In one study, she used fMRI (functional MRI) technology to study the brains of subjects as they played Super Mario 64 DS, over a period of two months. Remarkably, she found that three areas of the brain had grown-the prefrontal cortex, right hippocampus and cerebellum all involved in navigation and fine motor control.

1.2 Project Background

Do something that can increase your brain function was good especially in education where you need to memories what you had study and after that implement it in your real life. Therefore, the development of platform game in order to enhance the user's memory, Find Your Way is proposed to provide a real experience to player outside where the objective for this game is to make player feel the actual feeling when they need to find the right way by their own when they lost in jungle. Based on Dora The Explore televisyen show, Find Your Way is aimed to give an experience to player about being a helper in order to find the right way. The targeted players are young teeneger between 12-16 years old.

1.3 Problem Statement

World before this the major way that people outside used to learn and to memories something are based on reading from books. But when world start to accept IT, technology that we used today, people can get the information so much easier rather than just read from the book. This situation become more interesting when people outside can just download which one book that they want by searching it in the internet. From this situation, we know that when we create something by using internet we can people outside and make their work become easier. Therefore, a game is the one of the way to attract them to do something that interesting and also will give them benefit for it as the game proposed is aimed to enhance the user's memory.

1.4 Objective

The objectives of this project are:

1. To improve player ability in order to solve problem by their own.
2. To make target audience (teenager) feel the reality rather than just look on television.

3. To develop a game in PC environment.

1.5 Scope

This platform game is developed for players who are between the age of 12-16 years old. Through this game, players will be able to know how to escape their self and find the right way if lost in the jungle without nobody else around them. This game consist one level only with there different location that provide check point where each checkpoint contain problem that player need to solve before continue to the next checkpoint. Through this game, player will be able to feel the real situation when they lost in the jungle and need to find the right way to go out from that jungle by their own. This concept of this project is from the cartoon television series, Dora The Explore. From this television cartoon series, we use the concept but we relate it with boy who involved in association scout camp.

1.6 Goals and Genre

This game is designed to assists the teeneger in order to improve their memory via the game. The expected result or goals from this game is to improve their ability in order to solve problems by their own without anyone helper. With one level only where provided three different location that check point where each checkpoint contain problem that player need to solve before continue to the next checkpoint, from this game, it will attract players to the game with unexpected condition. Genre for this game is platform game.

1.7 Game Features

By using the powerful of internet application, game that will help other people with easier ways for them to memories something this can be the most effective way to gained recognition. It be natural to hear when people can spend more time to play

the game rather than just read the book during this century. Therefore, with this game, process of memories something will be take place in a fun and enjoyable way.

According to Lepper and cordova, 1992 stated that rewriting a lesson with a story context combined with a challenge for the student to overcome (making it into a game) significantly improves the learning performance of a person.

1.8 Conclusion

As a conclusion, Find Your Way game will be one of the game that will make player to be brave to faced with difficult situation like lost in the jungle and need to find their own way to save their live.



CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

The purpose of conducting a literature review is to convey to reader the knowledge and ideas that have been established based on objective in this project. As a piece of writing, the literature review must be defined by a guiding concept and it is not just a descriptive list of the material available, or a set of summaries (Dena Taylor, 2008). The ability to review, and to report on relevant literature is a key academic skill. A literature review will situate based on research focus within the context of the wider academic community in your field, reports your critical review of the relevant literature and identifies a gap within that literature that your research will attempt to address (SSDS, University of Leicester, 2010). Project methodology is the discipline of initiating, planning, executing, controlling, and closing the work to achieve specific goals and meet specific success criteria. In this project, the project methodology will discuss the approaches, techniques and tools used in developing of the game.

In this chapter, the literature review and project methodology will be conducted and discussed. The area of research in this chapter will involve the benefit of memories game, the comparison between the existing game and the proposed project as well as the elements required in developing a memories game. At the end of the chapter, the process of developing the game will be discussed as well.

2.2 Genre

Memory improvement is part of this memory game, the process can be done with few steps that can be easy and performed effortlessly. Many people have trouble remembering faces or names. How to remember things is only a technique that you need to utilize, for example to remember a face, just need to examine a person's face discretely when are introduced. In this project, player are be able to find and to remember by them self the right way to get out from the forest.

What is game? In the German language a game is any activity which is executed only for pleasure and without conscious purpose. In this definition every activity that brings pleasure is a game. For example, people dance, playmusical instruments, act in plays, and play with dolls and model trains. This definition people use today comes from the works of Johan Huizinga (*Homo Ludens*, 1938) and Friedrich Georg Jünger (*Die Spiele*, 1959). But there are more ways to define games. Manfred Eigen's and Ruthild Winkler's definition for game goes beyond the definition used by Huizinga. They see a game as a natural phenomenon: half necessity and half coincidence (*Das Spiel*, 1975). Their definition of games comes closer to Adornos' definition, who set himself apart from Huizinga by identifying games as an art form.

The domain of this project focuses on platform PC game. This kind of game designed to enhance player's memory where provide a real experience to user outside where the objective for this game is to make they feel the actual feeling when they need to find the right way by their own when they lost in jungle. With this, player will be able to improve their memory.

2.3 Existing System

Nowdays, there are many existing memories games has been developed by different company. Through this section, there are two types of platforms is chosen to make some comparison between two of it.

The first platform to be discussed is the Web Browser platform. Find Your Way game is a fun free platform game that created for teenager between 12 – 16 years old. It is an interactive game that can make player feel the real situation when they lost in the jungle and need to find their own way to get out from that jungle by them self. The teenager can enjoy this platform game and can learn how to face that situation if it real happen in their life. It consist three different parts where represent by three different background that player need to go to all that parts before arrive at campsite.

In this game, player will meet and fight with three different enemies(monkey, snake and big fish) that can give them into bad situation. Player also can get some point by collecting collectibles (banana,apple and fish) provided in each part. Player also be able to collect item that can increase their live. There are 3 lives provided at the beginning of the game where if player's health become zero so one live will be deducted. Through this game, player need to control the main character by using keyboard. To play this game, besides a laptop or computer, an internet connection is required to access the game.



Figure 2.1 : Example of Memory Game

The second platform of existing system is Sidescroller game which is a platformer game where it can be downloaded to PC free and can play without internet connection. Sidescroller game is a game which player can make a movement either forward, backward and also jump. The game is very easy where player just need to do some movement with less key to press rather than hardcore game. For this game, player will feel more exciting when they play from beginning until the end because the difficulties of the game based on the length of the game. Means, more deeper player make a movement, more difficulties will appear. From that, it can improve player skill and ability to solve different problems.

This game is very similar to “Mario” where player be able to collect some point and attack or avoid from enemy. This game require player to make good decision before make a movement. If player do not kill the enemy and if enemy attach with player so player’s health will be deduct one and if situation make player lost all three health, player live will be deduct also. Which mean, three healths represent one live.



Figure 2.2 : Example of Sidesrcoller Game

2.4 Project Methodology

Methodology is a system of broad principles or rules from which specific methods or procedures may be derived to interpret or solve different problems within the scope of a particular discipline. Unlike an algorithm, methodology is not a formula but a set of practices. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques. In this project, the instructional design model that is used is Agile Design Model.

Agile software development is a set of principles for software development in which requirements and solutions evolve through collaboration between self-organizing teams. It promotes adaptive planning, evolutionary development, early delivery, and continuous improvement, and it encourages flexible response to change.

This game project consists of learning goals, specific challenges players need to complete in the game, and the look of the system which are the things that could benefit from the Agile process, the collaboration and iteration.



2.4.1 Development Phase

During this phase, brainstorming about the idea that wants to be done will take place. First, identify problems and followed by the market opportunity. By analyzing the market opportunity and user requirements, the product requirements are identified. After that, the literature review is carried out to find the possibility of the product vision in the market.

2.4.2 Pre-Production

Pre-production or design phase is a planning phase of the project where focused on idea and concept development and production of initial design documents. In this phase, game design document (GDD) will take place where includes all tasks for this project which include the draft, concept, design, features, layout and also schedules documentation. This part will take over through out the development of the game.

2.4.3 Production

Production is the main stage of development where all assets and the it functionality are produced. During this phase, all source code that be able to run the whole game will attach to each assets involved. The planned features and interface progress followed the schedule and being demonstrated. The product for this project is being prototype rather than a single distinct phase for the process. Then it be tested and feedback is obtained from the tester and the target user for some evolution and also as product revision.

2.4.4 Post Production

This is the last phase, where adaptation between development iterations occurs in this phase. Some adjustments are made based on data collecting and analyzing during testing phase. User feedback are used in order to adjust the quality of the project as long as it is suitable and not out of main objective for this product. Identification of flaws and fixation of bugs can be carried out to ensure the quality of the product.

2.5 Conclusion

In conclusion, if compare with mobile application where give higher possesses market opportunity, PC game application also be able with this competition in this globalization era. As a fact, most of people nowadays had their own smartphone and this situation gave higher ranking to make a mobile game more popular than PC game. But not all people had a smartphone such as a child. So, this game will be able to make target user play just by using PC rather than mobile.

The Agile Production Cycle is applied in this project because this methodology is flexible, adjustable and can easily be adapt with this project needs. Besides, the project is small and this approach definitely suits for this project.



CHAPTER III

ANALYSIS

3.1 Current Scenario Analysis

Current scenario analysis contains the generic flow of existing scenario representation. There are two type of current scnario analysis where are non existing application and also for existing system. In Find Your Way game, current scenario analysis that involved inside the production of the game is existing system. This include puzzles where in this game actually provided a problem, which the player can find a solution based on previous knowledge or by systematically exploring the space of possible solutions embedded in the problem (Colton 2002). For puzzles, the process of finding the solution is the game itself and thus player will rewarding an experience based from that situation. The size of the solution space and the previous experience of the player largely determine the difficulty of a puzzle.

In this game also included storyboard where are the design aids for the player to play the game. Storyboards are often presented as comics, with sequential panels describing scene events through a visual or textual hybrid. Other than that, this storyboard can also be used to entertain and guide players throughout the game. Next,

the story of a game is often key in creating a good gaming experience where it will keeps the player motivated and provides a goal for the player to accomplish.

3.2 Requirement Analysis

There are some requirement analysis that involved in this project such as project requirement, technical requirement and also project schedule.

3.2.1 Project Requirement

Find Your Way game is 2D animation game which had been created by using Unity as a development software. There are some requirement gathering in order to build or create this game. This include the project specification to be produce in this game where the duration in creating this game take five months to complete all things such as creating an asset, testing the functional of all asset within this game and so others. The proposed storyline that will be developed in this game at the beginning stage is about a boy who joined scout camp for his school in a jungle and suddently lost in that jungle. In order to back to camp site, player as a main character need to find the right way to back to camp site even thought there are several different type of way that player will meet throught the game.

Almost all asset that used in this game got from an internet but it had been traced back and do some changes based on the requirement needed in this game. To play this game, at the beginning player will provided a main menu, where include play button, instruction and also exit button to exit from the game. If player click on play button, player automatically will start the game. If player want to know the details information on how to play the game or key that control player movement, player can

click on the instruction button. In this game just had one level with three different parts or backgrounds. In each background also had different type of asset such as an asset for collectibles, spikes and also for enemies. For each enemy, it had different stronger where player need to kill those enemy with different number of shooter as a weapon. For example, monkey as enemy for first background, snake for second background and big fish for last background. Player need to attack monkey for three times, snake for five times (available at head of snake only) and ten times for big fish to destroy it. Player had an healthy count for itself but each time player crash with spike and enemy, player will lost one health. One live of player will present as three health. If player crash with spike or enemy for three times, so player will lost one live. Backgrounds that involved in this game are based on jungle to make player feel more likely in the jungle itself. For designing player, it take critiria such as a boy who wear scout cloth. It must a child who look like know nothing about way to back to his camp site an player as a main role need to help him to back to camp site.

For the technique involved in this game, the Agile Production Cycle is applied in this project because this methodology is flexible, adjustable and can easily adapt to the project needs. Beside that, the project size is small and this approach definitely suits for this project. Differ from the other cycle, agile production cycle is more realistic life cycle where it is comprised of six phasees which include concept phase, iteration, construction, transition or release, production and retirement.

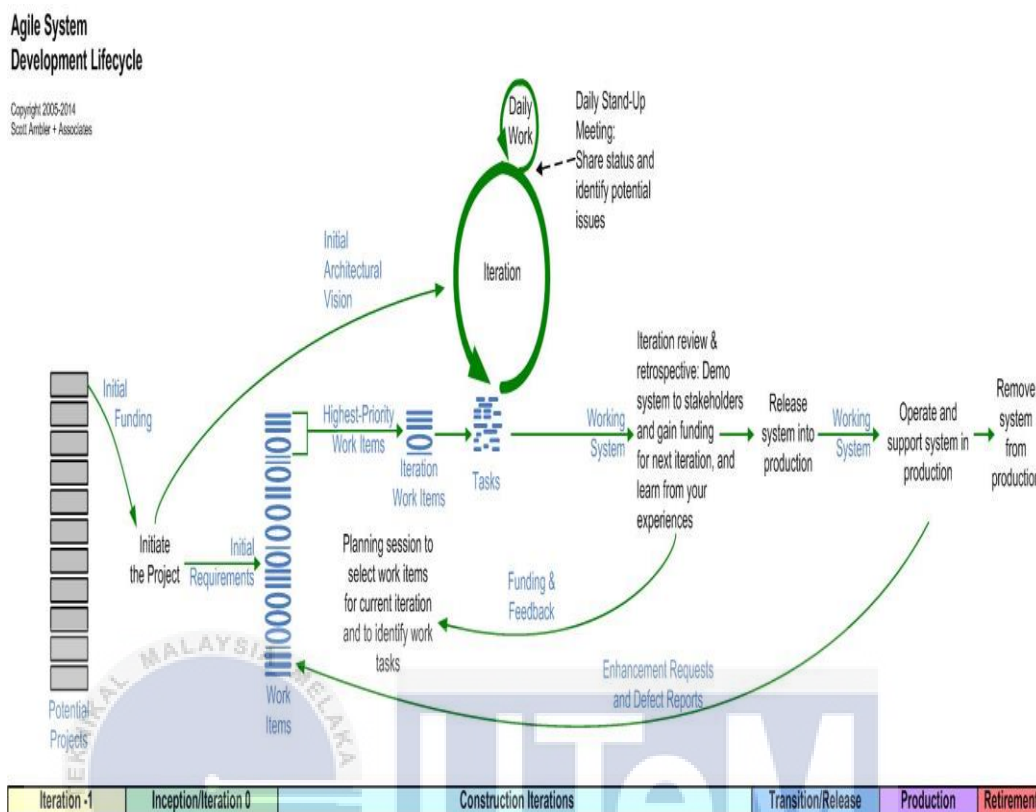


Figure 3.1 : Agile System Development Life Cycle

For the concept phase, there are some activities included to make it successfully functional. First, define the game opportunity where it is considered the bigger game pictures and it is focus based on what things inside the game that include how the new functionality will improve playability of the game. Next, identify a viable for the project where there are several issues to consider when identifying a potential strategy for this game project. For example, did this game is a new game or an existing game with some modifying on it. If do some modification, so what the different from the existing game had. Third, assess the feasibility for the game to determine if it makes sense to invest in the potential project where the feasibility analysis efforts should also produce a list of potential risks and criteria against which to make go or not decisions at key milestone points during this game project. Therefore there should had question the feasibility of the project throughout the life cycle to reduce overall project risk.

During inception or project initiation, need to do some task based on modeling, setting up the environment and also estimating the project. For modeling, in early stage in the project, there need to have at least a general idea of how to build the system. It is include such as some skecth out a potential architecture for the project although it is not in very detailed yet. For setting up the environment, this include things such as development tools that need to used. During estimating the project, need to put together an initial estimate for this game project based on the initial requirements. This estimate will evolve throughout the project.

During construction iterations agilists incrementally deliver high-quality working software which meets the changing needs of stakeholders.

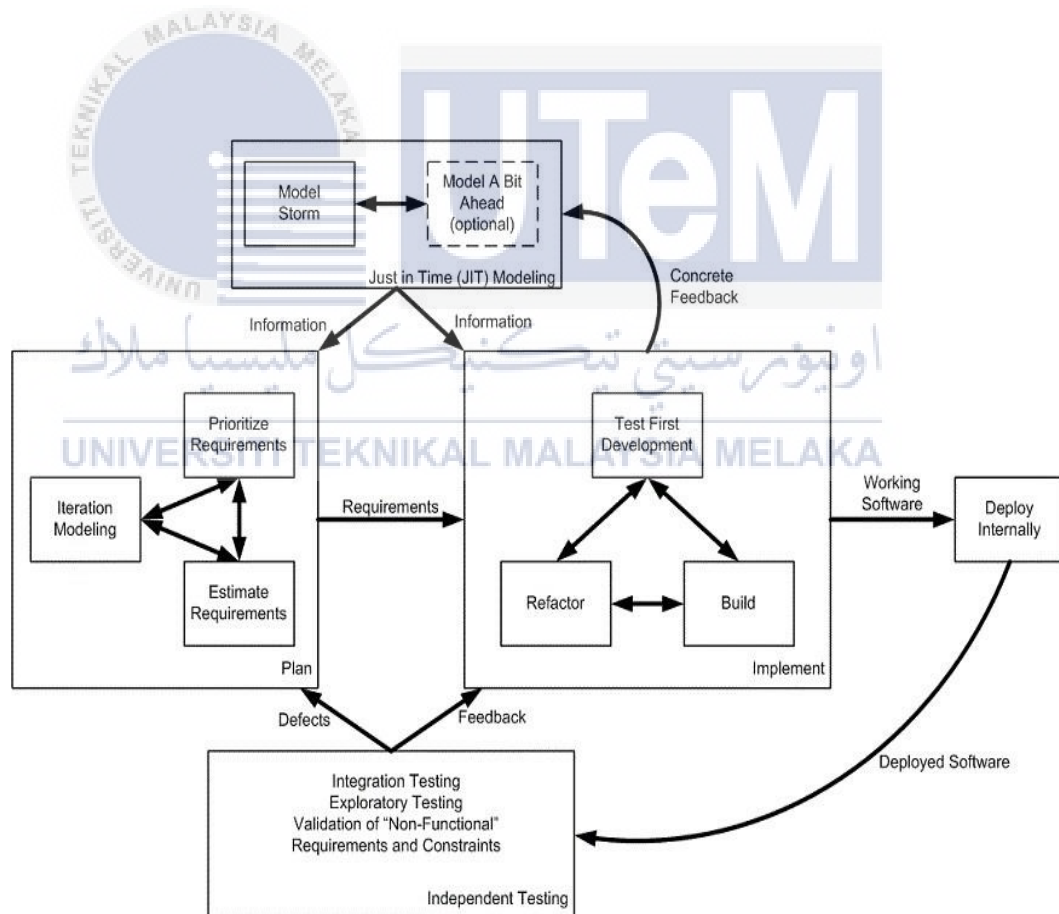


Figure 3.2: Construction Iterations Process

Throughout the figure, all of it can achieve by implementing functionality in priority order that will allow stakeholders to change the requirements to meet their exact needs as they see fit. Next, do the analyzing and designing for this game project. This process must fulfill the requirement that had been decided based on what actually the game asset need in this game. Lastly do the testing. Testing process will be held for many times until there are no bug or problem with this game product. This not the complete testing picture. Because this project based on producing working software on a regular basis, at least at the end of each iteration although ideally more often, there are in a position to deliver that working software to user tester during testing phase for investigative testing.

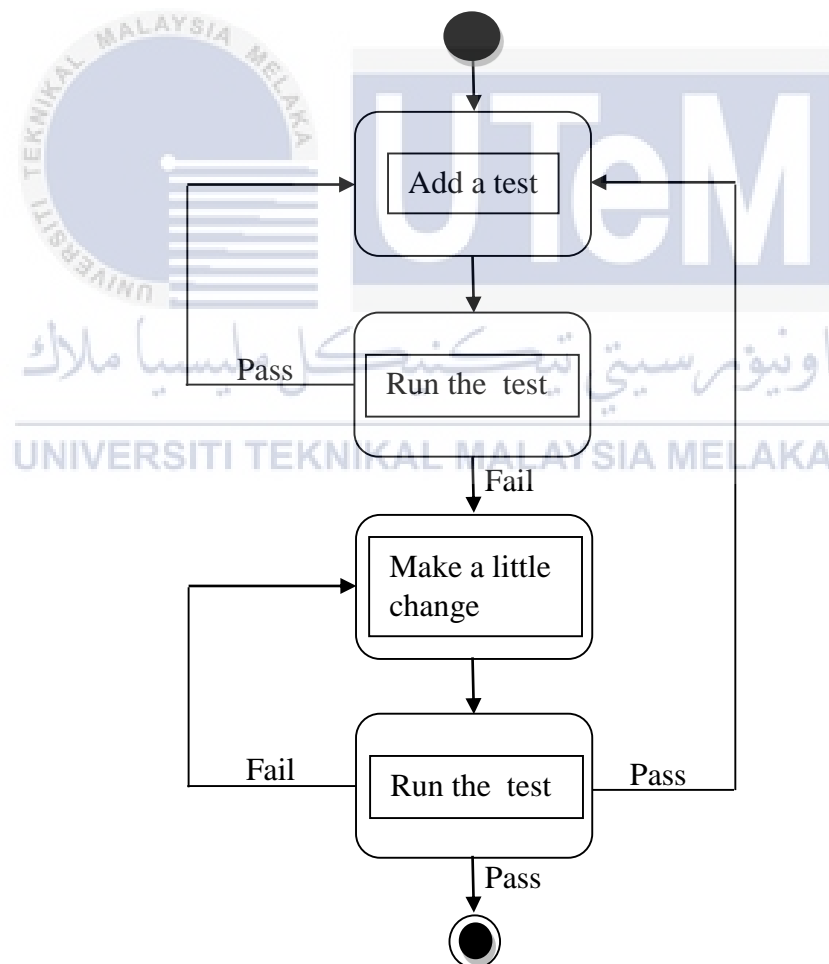


Figure 3.3 : Testing Activity Process

Next, do some transition for the game that had been develop. During transition, also known as deployment, the solution is released into the production. There are several important aspects to this effort include such as:

i. Final Testing of The System

This testing had been done while testing process by target user or targeted tester.

ii. Rework

This part include do some fix in some part which not functional well or not suitable.

iii. Deploy The System

After done all thing, this game project need to be deploy in order to create an easy way while target user or tester do testing process. At that time tester want to do testing, just open up project had been deployed and not the software that used to develop it.

During the production process, the goal of the production phase is to keep systems useful and productive after have been deployed to the user community in order to keep the system running and help users to use it. This phase ends when the release of a system has been slated for retirement or when support for that release has ended. This phase typically has one iteration because it applies to the operational lifetime of a single release of software had been used fot this game project.

Last but not least is retirement phase where main goal of this phase is the removal of a system release from production and occasionally even the complete system itself, an activity also known as system decommissioning. This effort must strive with minimal impact to business operations.

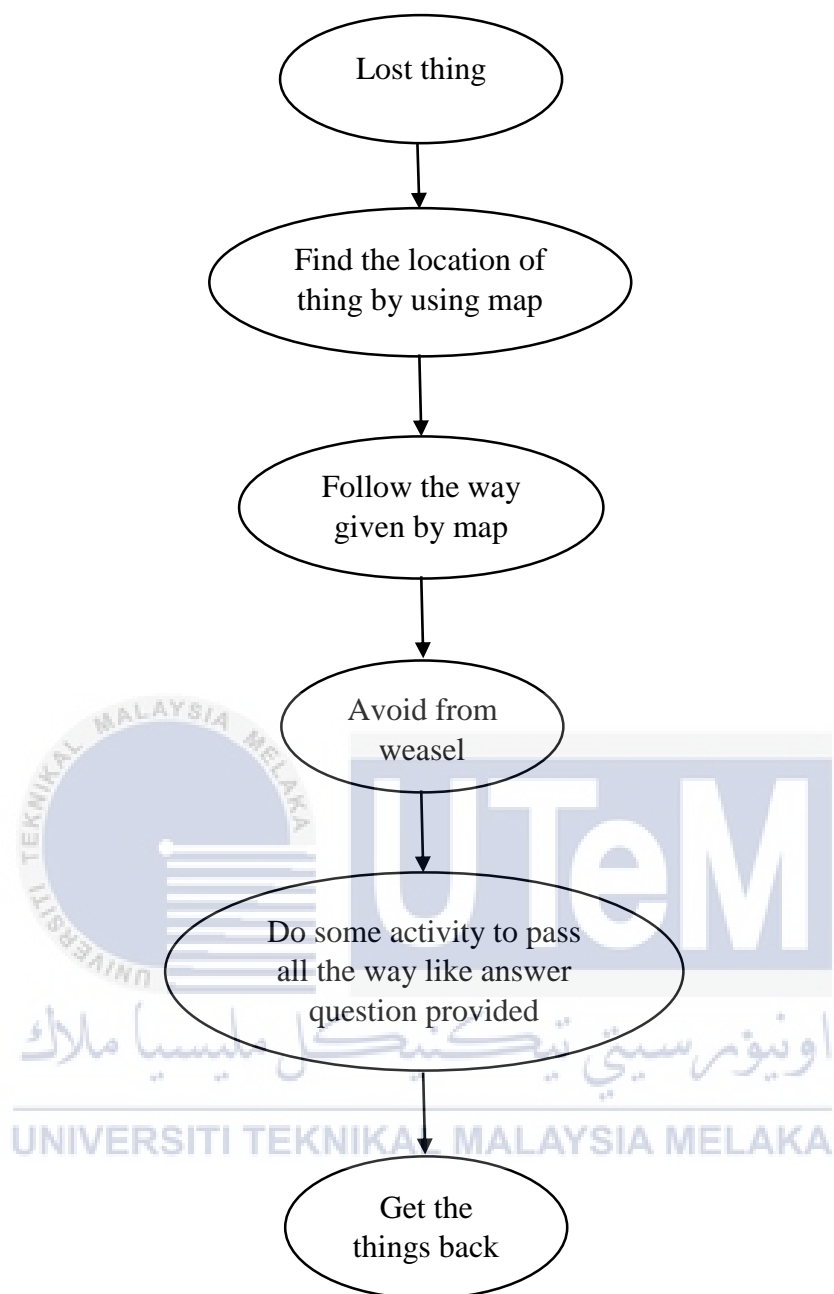


Figure 3.4 : Flow Chart Dora The Explore Cartoon Series

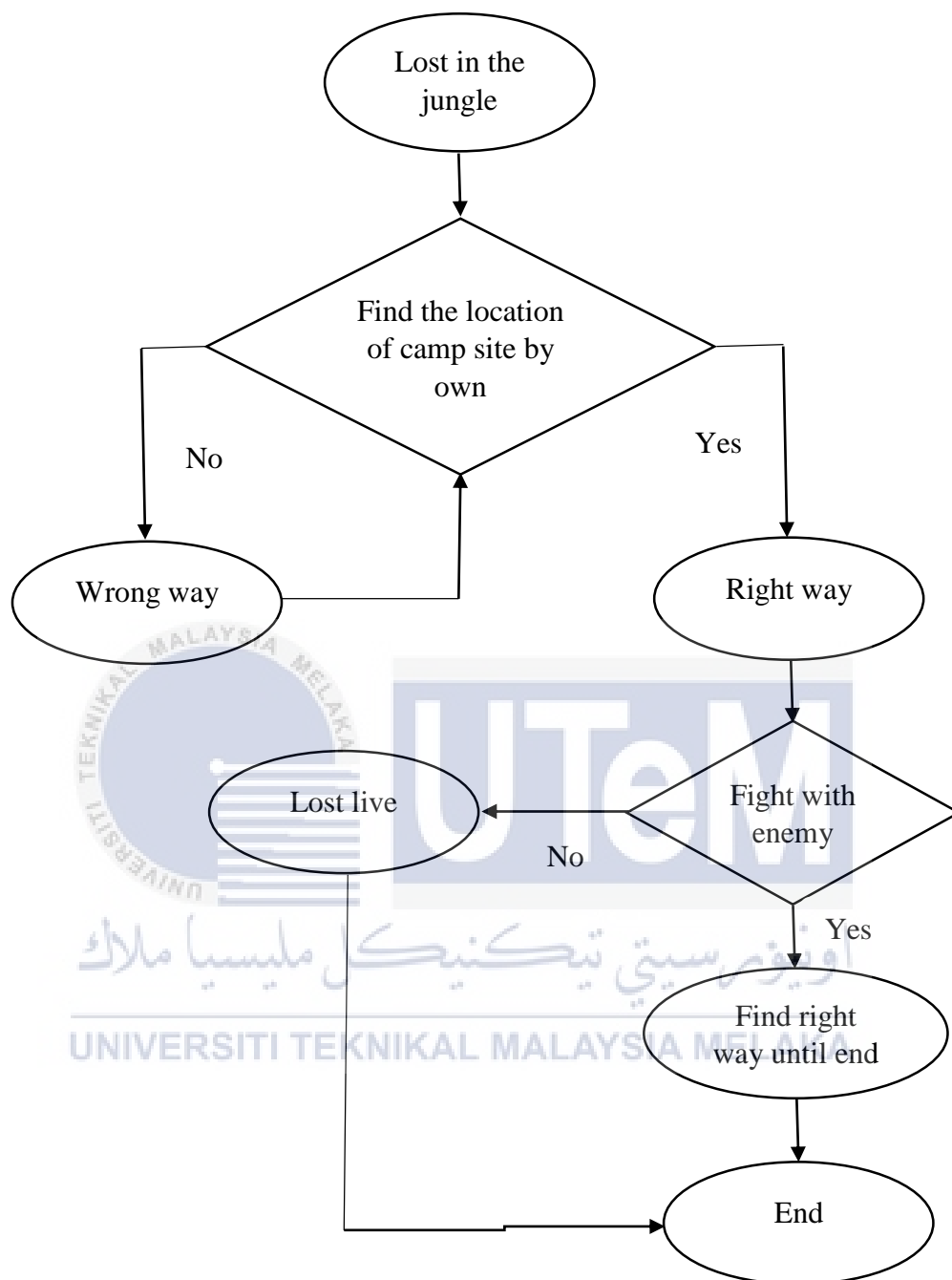


Figure 3.5 : Flow Chart Find Your Way Game

3.2.2 Technical Requirement

i. Software Requirement

Adobe Illustrator CS6

- Used to create and design the source material of vector images in this project especially for layout.

Adobe Photoshop CS6

- Photo editing and manipulation will be used. Design the source material used in this project.

Unity 2D

- The software used to develop this project. Character modeling and rendering will be done with this software.

ii. Hardware Requirement

This project need PC as hardware requirement inorder to create and play the game.

3.3 Project Schedule and Milestone

Activity/Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assigning students to supervisor																	
Discussion/ Verification of title and synopsis																	
Supervisor submits proposal to committee																	
Discussion with student on design of solution (Progress 1)																	
Discussion with student on design of solution (Progress 2)																	
Project Implementation (Progress 3)																	
Final Presentation																	
Submission of final report																	
Submission of marks and grades to committee																	

3.4 Conclusion

During analysis phase, all asset that include in the game had been determined such as the details about main character and background of the game. The requirement analysis also had been done where it is follow Agile Production Cycle where it is comprised of six phasees which include concept phase, iteration, construction, transition or release, production and retirement.



CHAPTER IV

DESIGN

4.1 Introduction



Game design is the art of applying design and aesthetics to create a game to facilitate interaction between players for entertainment, medical education or for experimental purpose. Game design also can be applied in game or the other interactions. It creates goals, rules, challenges to define sport, tabletop game, casino game, video game, role-playing game and also simulation game where from that it will produces desirable interactions among its participants. Academically, game design is part of game studies where game have historically inspired seminal research in fields of protability, artificial intelligence, economics and also for optimization theory.

In Find Your Way game, design that include in order to create this game are main character of the game(scout boy), background of the game and asset that involve on this game. At the beginning of the production, skecthes of all asset that include in this game had been done on paper only or it is just like undetailed design. This activity had been done in order to make the creation of the game follow the dateline or milestone without any delay.

4.2 Game Architecture

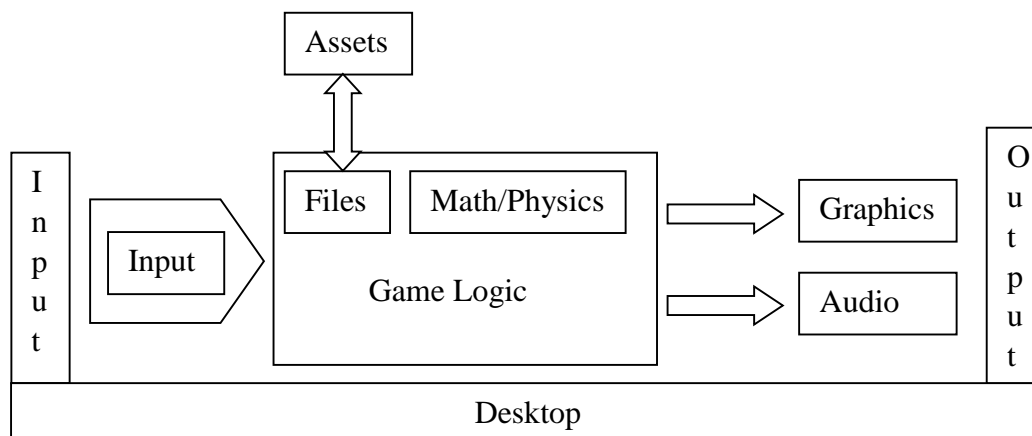


Figure 4.1 : Game Architecture

Game architecture is the conceptual model that defines the structure, behavior and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of system. It can comprise system components, the externally visible properties of these components, the relationships between both of it. It also can provide a plan from which products can be produced and systems used to develop it. This will work together to implement the overall system. From this system, the informational content will be convey the elements comprising system, the relationships among those elements and the rules governing those relationships. The components and set of relationship between these components may consist of hardware, software, documentation, facilities, manual procedures and also roles played by organizations or people. Game architecture primarily concentrates on the internal interfaces among the system's components or subsystems, on the interface between system and also its external environment, especially the user.

4.3 Game Design

There are some elements that involved in game design part which is gameplay, flowboard, level progression, storyline and user interface design.

4.3.1 Gameplay

Find Your Way game is one of the platformer game where the gameplay for this game is player need go through the jungle where there are contains different challenge that player need to complete. The goal of the game is to go back to the campsite by completed all the challenge provided. In this game, player need to control the main character in order to find the right way to back to campsite. The game will be using keyboard as a controller as it will be deployed on Windows platform. Player are be able to move forward or backward. Player also can jump or double jump to move upward.

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4.3.2 Flowboard

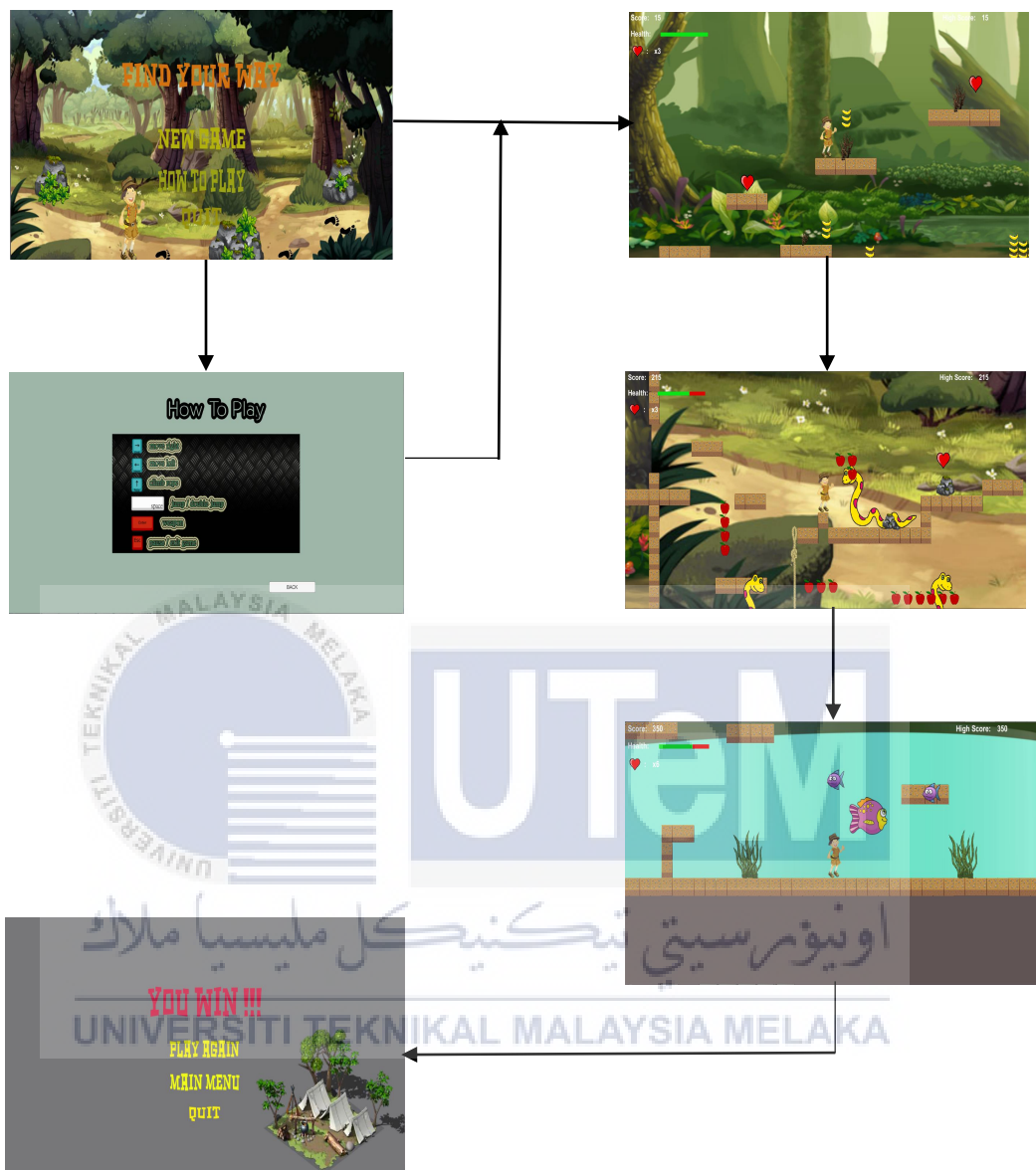


Figure 4.2: Flowboard for Find Your Way Game

4.3.3 Level Progression

Find Your Way game only had one level but there are three different background or part on it. Player need to go through to each part before meet with signboard that show where the location of the campsite. Each part contain different collectible and enemy. Player can avoid from enemy or kill enemy by using weapon provided. For each enemy in each part, stronger for those enemy will be different where player need to kill it in different number of attack.

4.3.4 Storyline

This game is linear game where there just had one level only. This game is about a boy, child scout, wholost in the jungle and need some help to back to campsite. In order to back to campsite, he need to go through three different place or background before meet with his campsite. There are different types of enemies, collectibles and also spikes that will give some feedback if meet with those things.

4.3.5 User Interface Design



Figure 4.3 : Main Menu of The Game

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In main menu page, there are three button provided for user, new game button, how to play and also quit or exit button. If player click on new game button, player will be automatically start the game. But if player click on how to play button, player will provided some information on how to play the game where it is include information about key to controller the movement of the player. Lastly, quit button are provided for player to exit the game. The design of the background actually one of the background that involve in the game itself. This page also provided picture of main character or player of the game.

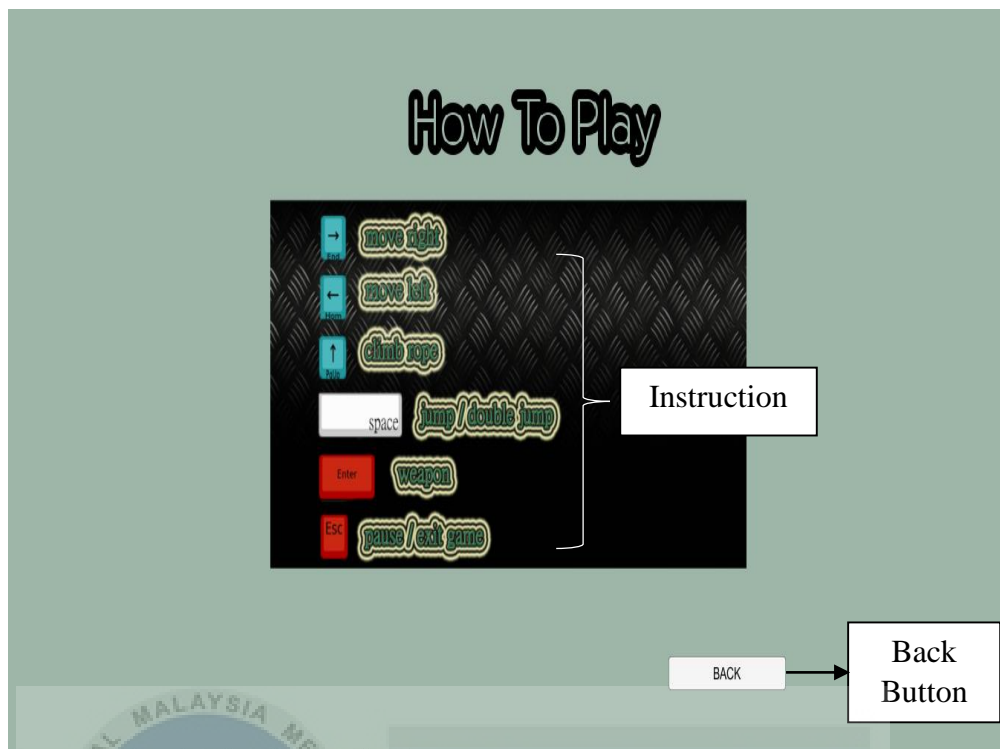


Figure 4.4 : How To Play Page

As mention above, this page will appear when player click on how to play button on main menu. In this page player will be provided some information on how to control the movement of the player during play the game. Player are be able to control player movement by using keyboard only.



Figure 4.5: First Part of The Game

In this part of the game, there is banana as a collectible, spike, monkey as an enemy and also love symbol that represent live for player. Each time player collect the banana, player will get five points for score. Health bar that appear at top left of the game is actually health bar for player where player had three health that represent one live. If player got crash with spike or enemy, player will lost one health. So if player crash with spike or enemy for three times, player will lost one live. Player also be able to attack or kill enemy where in each part, the stronger of the enemy will be differ from each other and for monkey, player need to attack three times to kill it.

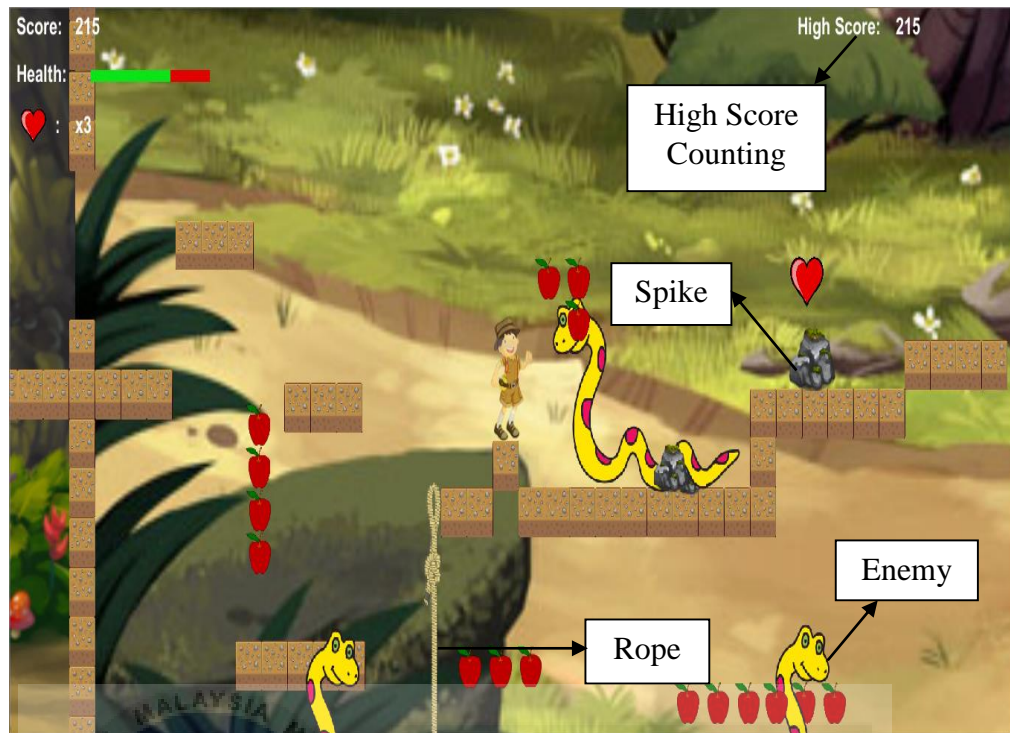


Figure 4.6: Second Part of Game

For second part of the game, there is apple as a collectible, spike, snake as an enemy and also love symbol that represent live for player. Each time player collect an apple, player will get five points for score. Health bar that appear at top left of the game is actually health bar for player where player had three health that represent one live. If player got crash with spike or snake, player will lost one health. So if player crash with spike or enemy for three times, player will lost one live. For snake, player need to attack five times, on head only, to kill it. There are also provided rope for player to climb. On this part player can make a choice either want to double jump to go up or climb the rope.

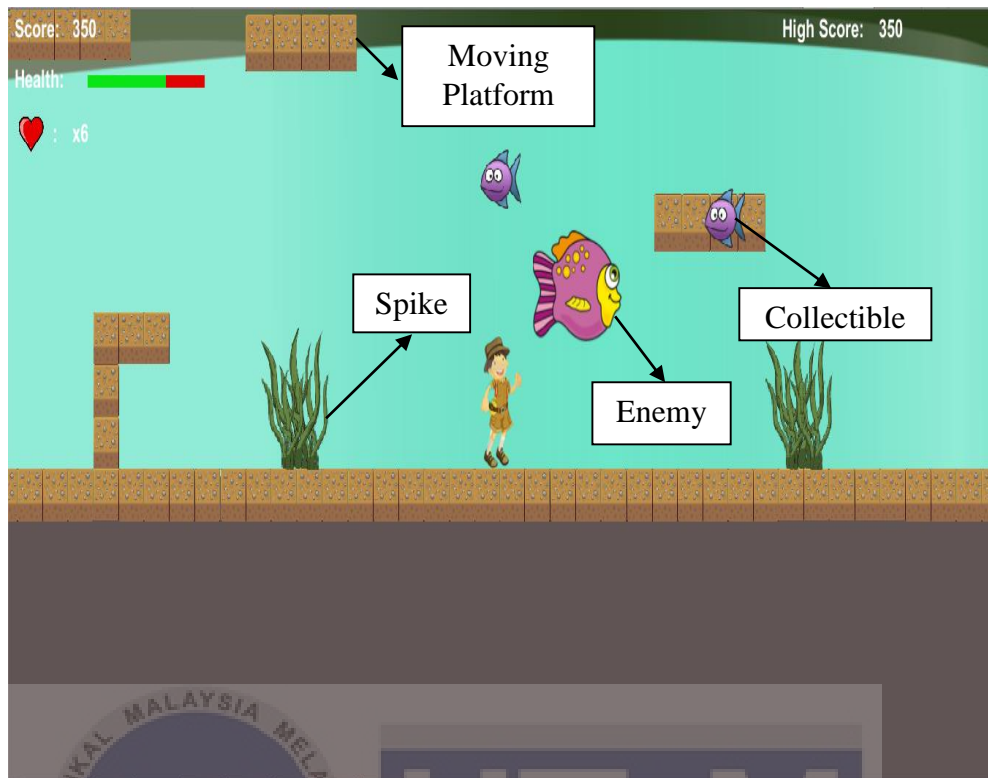


Figure 4.7: Last Part of Game

For last part of the game, there is small fish as a collectible, spike, bigfish as an enemy and also moving platform. Each time player collect a small fish, player will get five points for score. Same like part one and part two, if player got crash with spike or bigfish, player will lost one health. So if player crash with spike or enemy for three times, player will lost one live. For bigfish, player need to attack seven times to kill it. There are also provided moving platform for player to make some challenge in movement of player.

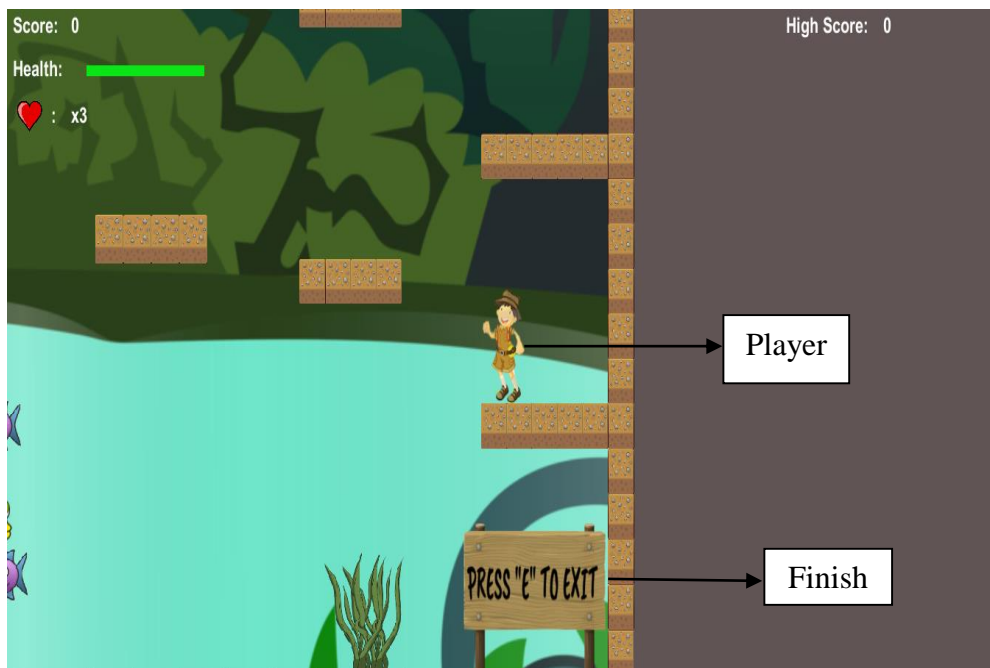


Figure 4.8 : Enter Camp Site

In last part of the game, at the end of it, there are one sign board that show to player how to enter the camp site. By press "E" button player will end or finish the game.

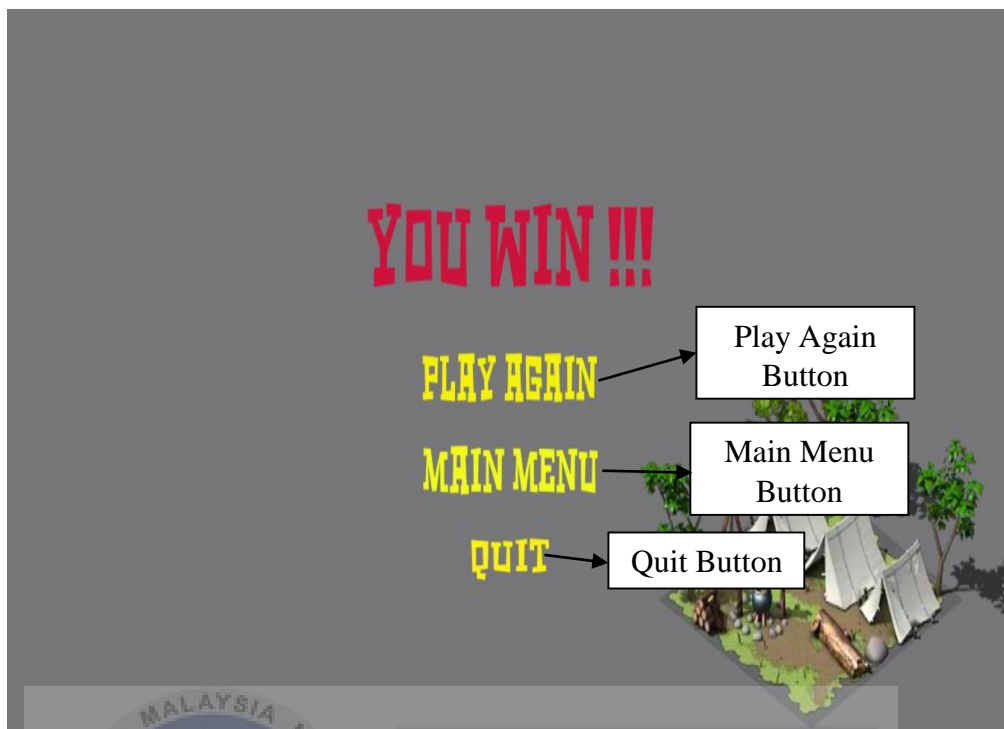


Figure 4.9: Win Condition

After player finished all three parts of the game and press “E” button, this page will appear as a sign end of game. This page provided play again button, main menu and also quit button for player. So player are be able to choice either one of it. If player click on play again, automatically player will start the game again. Main menu button will show main menu page to player and quit button to exit the game. Background of this page means, player had successfully back to camp site same as the objective for this game.



Figure 4.10: Game Over Condition

This page will appear if player live become zero and it will appear just for five second before main menu page appear after it.

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4.4 Game Art

There are four elements involved in game art part which is game world, character design, camera model and also audio or sound effect.

4.4.1 Game World

Game world for this game is in jungle where it is suitable with condition where player lost in jungle during scout camping. Although there are three different part or background that player need to go but player also been given border for each different

part. This may not make player feel confius when play this game. Other than that, an assets that involve in this game was a regular asset. Which mean player had been seen before this.

4.4.2 Character Design

In this game there are just one main character involve. The design for this character are based on scout identity where wear scout cloth.

4.4.3 Camera Model

This game is 2D based game where camera control for this game is following main character or player since had any movement occur. Each time player move, camera will follow the movement of player.



4.3.4 Audio or Sound Effect

In this game, there are sound effect for collectibles, enemy, spike and also when player collect extra lives. This sound just appear when player touch on that asset. There are no background sound during playing this game. It is because to avoid player be uncomfortable when hearing the same sound while playing the game. By putting soundeffect on collectibles for example, each time player collect it player will feel excited to collect more and more collectibles.

4.5 Conclusion


In this chapter, all the design that include in the game had been determine. This include main menu page, instruction page, part of game(part one, two and three), win condition and also game over page. All the design create according to target user criteria. This is one of the part to attract player expecially target user to play this game other than put sound effect for each time player crash with collectibles, enemy, spike and also when player collect extra lives.



CHAPTER V

IMPLEMENTATION

5.1 Introduction



Implementation is the carrying out, execution, or practice of a plan, a method, or any design, idea, model, specification, standard or policy for doing something. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happen. In this project, software or hardware implementation encompasses all the post processes involved in something operating properly in its environment, including analyzing requirements, installation, configuration, customization, running, testing, systems integrations, user training, delivery and making necessary changes.

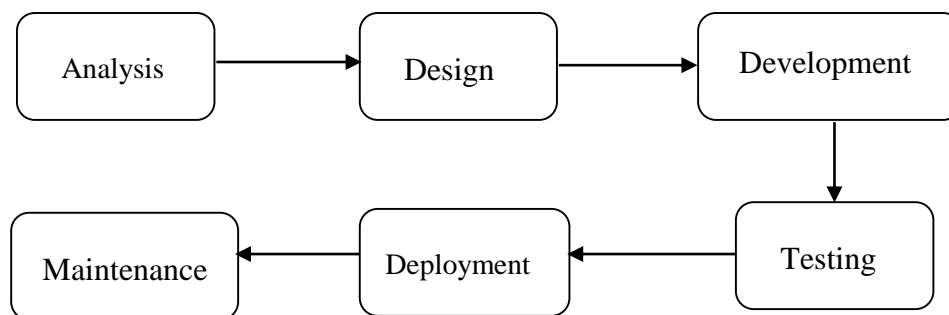


Figure 5.1 : Implementation Process

In this project, to make it fully functional, all the process involved had been done literally and the testing part also been done by each time the development process occur. Which mean, if any problem appear during development process, it will cover from the beginning and the problem will be fix during that time.

5.2 Media Creation

This project used several type of fonts that represent different things. For example on main menu page, pause, game over and win page type of font that had been used is “Kanover” where it make more easy for player or user to see and read by themself. But during playing the game there are several words that represent score, points and also live where all of it had been done by using times new roman fonts with 20 in size.



Figure 5.2: Main Menu Page

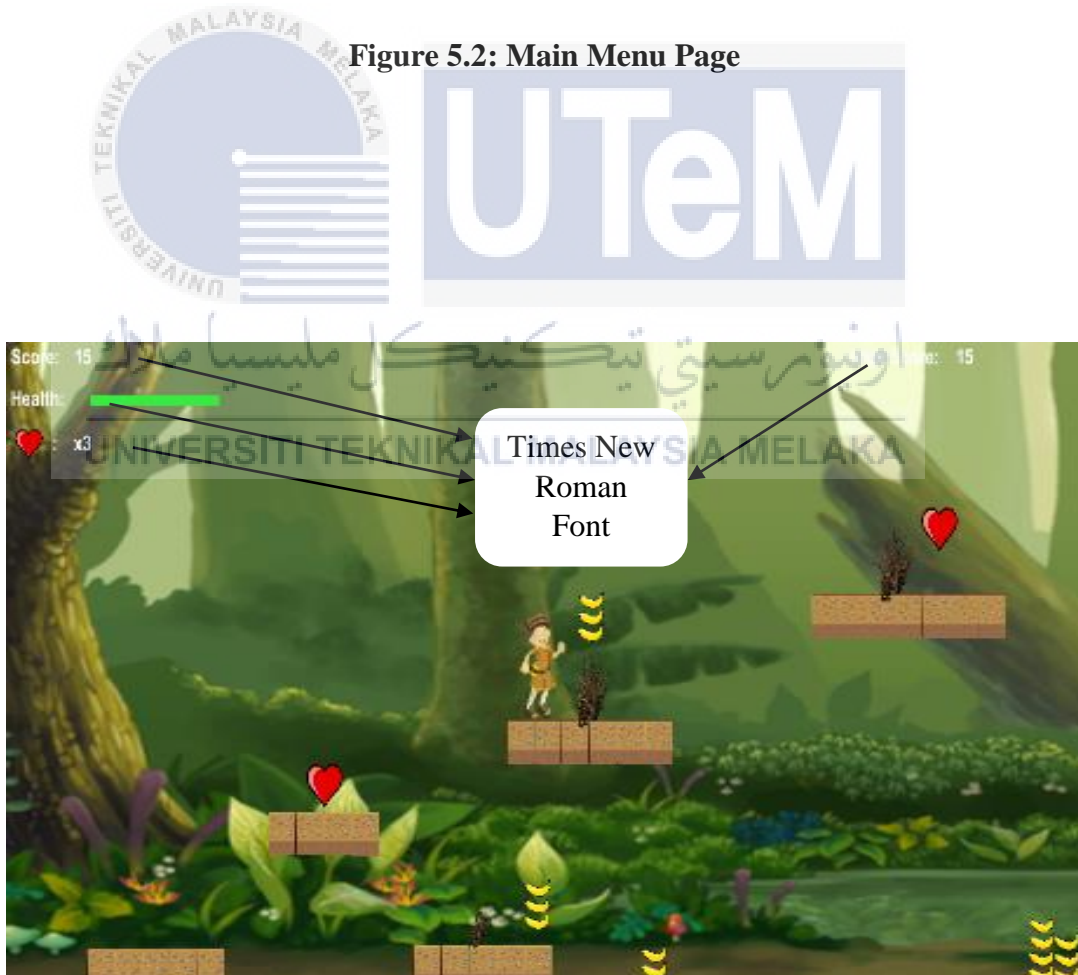


Figure 5.3: Part One of The Game

There are different types of graphics that been used in this project. This include main character, collectibles, spikes, enemies, collectibles, lives and also environment or background of the game itself. The production of all asset or graphics done during design phase. Adobe Illustrator and also Adobe Photoshop been used to complete this kind of work. For example graphic for collectibles. At the beginning tracing process occur by using Adobe Illustrator and to make it become more real Adobe Photoshop had been used in order to make some touch up. This project used bitmap picture for all graphic involved.

For the production of audio, there are some audio been used in this project such as audio for main character such as jumping and during attacking the enemies. Other than that, each time player collect the collectibles there are sound effect that represent that collectibles had been collected by player before it disappear. This project just had sound effect for each times player make an action such as jumping, but do not had background sound while playing the game.

To make some character in this project look like life thing, for example monkey, there are some animation had been done to it. Each time that enemy walk, it will show player the actually walking by combine several picture of walking to that enemy during production process using Unity 2D. This will show to player side view of movement so that player can clearly see the animation of the enemy.

5.3 Software Development Environment Setup

In this project there are several software had been used such as Adobe Illustrator CS6, Adobe Photoshop CS6 and also Unity 2D. All the asset involved in Find Your Way game had been done by using Adobe Illustrator CS6 and Adobe Photoshop CS6. This include the design for main character and also environment of the game. All

process during creating the asset is based on the design that had been approved during design process.

For Unity 2D, this game are fully making by using this software and all the functionality for the asset that had been done during design process tested by using Unity 2D. This include the movement of the main character, collectible functionality, enemies and also the environment of the game. Each time the new asset be added during construction process, the functionality for that asset also been tested inorder to make sure the production of the game become smooth without any problem later.

5.4 Product Configuration Management

This project involved product configuration management like configuration environment setup.



5.4.1 Configuration Environment Setup

Unity 2D had been used in this project with java language in order to set the functionality for each thing involved in this project. To make it ease, notepad editor had been used during coding session. For example main character in this project. All the behaviour that make the main character function such as walking, jumping and also attack the enemy, are set by using this editor. This situation same like the other assets that involved during construction process. Through this editor, it will give immediately after run the code.

5.5 Implementation Status

There are several asset that involved in this project such as main character, collectibles, enemies, platforms and also the environments. After do some research, it takes almost two weeks to come out with the idea. This idea include the whole part of the project such as the type of software that want to use, how long the project will be done, what type of character design and asset that want to used and the most important why this idea come out and what the problem that need to solve through this project. All the discussion about the things that need to include in this game had been done during design process and it take almost three weeks to settled down. After that the construction phase begin and it takes two month and half to make sure all the asset involved in this project fully-fuctional. Testing part also done during production and after whole project completed. This include several tester outside to try and feel by their own how actually this project go through.

5.6 Conclusion

In conclusion, this implementation phase had been recovered as one of the way to make sure all the things that need to be done in order to complete this project work succesfully. From the beginning of the project, all stages involved had been decided and in order to complete this project all of it need to follow throughout this project creation.

CHAPTER VI

TESTING

6.1 Introduction



Testing is one of the important part in development process. This part more focuses on software testing process for quality control of game that include functionality of all asset in this project. The primary function of game testing is the discovery and documentation of software bugs. Interactive entertainment software testing is a highly technical field requiring computing expertise, analytic competence, critical evaluation skills and endurance.

As mention above, this project do some testing in order to make sure all the functionality of all asset must be work nicely before it release to the others. There are some strategy had been involved for this phase. This included some tester outside from different age and gender or the other word is tester based on target audience for this project. Based on this activity all the information got from this session will be noted and if anything like problems or improvements that can be include to this project it will be look more deeply and if it suitable to do some changes, all of that things will be calculated after that.

This testing process had been recorded by giving questionnaire to targeted respondents. Each of the questions that focuses to this project need to be answer by respondents before the result be calculate after than.

6.2 Test Plan

There are different types of test plan involved in this report. This included test user, test environment and also test schedule.

6.2.1 Test User

This testing had been done by followed target audience for this project. There are 30 peoples or students involved from different type of gender during this session. All the answered given by all tester for this project had been recorded throughout the testing process.

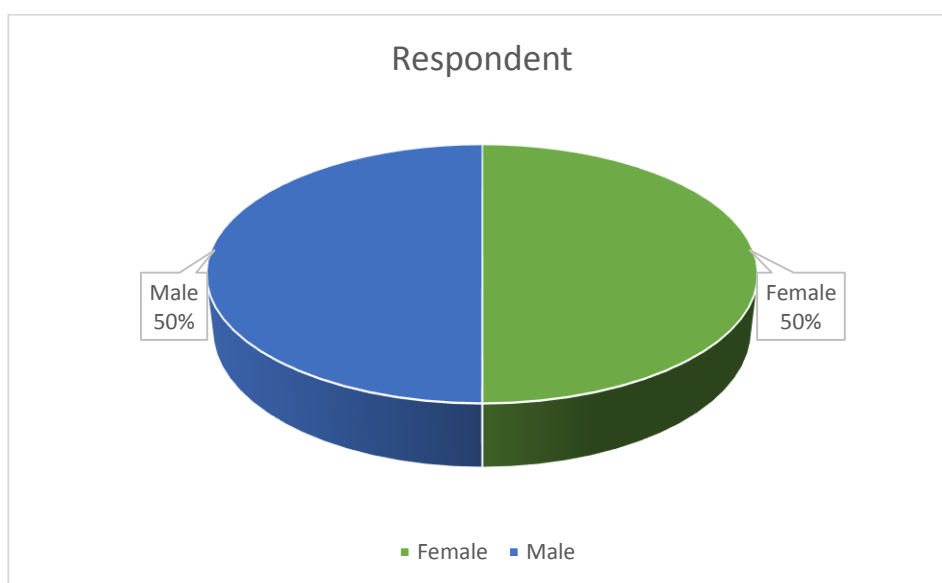


Figure 6.1 : Respondent Involved

6.2.2 Test Environment

The location or place for testing process for this project are located at Sekolah Menengah Kebangsaan Changkat Lada Perak Darul Ridzuan. This project had been created by using Unity2D and it was a PC platform, so for this type of project it just included PC as a hardware to play it. In order to do testing process, laptop had been used to show this project to all tester as an alternative.

6.2.3 Test Schedule

Testing process had been involved through out the production process. Each time an asset added into this project, testing process will occur in order to make sure the functionality for that asset. But for the tester, testing process had been take place after all of the work done and before the project release out.



6.3 Test Implementation

For test implementation in this project, there are two part invoved which is test description and test data.

6.3.1 Test Description

Testing process is to identify bug that occur in software that had been used for this project and from that some problem will be detected and after that can do some correction for it or removed that part. There are different forms of tests and testing can be categorized as Black-Box testing and White-Box testing.

Table 6.1: Differences Between Black-Box and White-Box

Black-Box Testing	White-Box Testing
Internal workings of an application are not required.	Knowledge of the internal working is must.
Also known as closed box or data driven testing.	Also known as clear box or structural testing.
End users, testers and developers.	Normally done by testers and developers.
Can only be done by trial and error method.	Data domains and internal boundaries can be better tested.

For this project, White-Box Testing had been used in order to collect all data from respondent involved.

6.3.2 Test Data

This project take down the real life data in order to carry out the information from testing process. All the information got from testing process during tester test this

product had been recorded base on answered question in questionnaire provided. All problem occur during testing process also had been solved after than to make sure product for this project fully functional without any problems before it release out.

6.4 Test Results and Analysis

In questionnaire, there are three part of question had been ask. This include part A (demographic), part B (based on scale from 1 to 5) and part C.

There are eight questions provided to respondent in Part A. After testing process occur, all the data and information get from that session had been recorded as follow:



Figure 6.2: Pie Chart For Question Ever Play Computer Game

Based on pie chart above, as a conclusion from 30 respondent that take over in this testing procesed, all of 30 respondent ever play computer games in their life.



Figure 6.3: Pie Chart Based On Hours Player Prefer To Play Game

Based on pie chart above, in total, 17 out of 30 respondent had play computer games not less than 1 hours in one sitting. 5 out of 30 respondent are be able to play computer in average of 1 to 2 hours, 6 out of 30 respondent play computer game within 2 to 3 hours and the rest of it, 2 out of 30 respondent are be able to play computer game more than 3 hours in one setting.

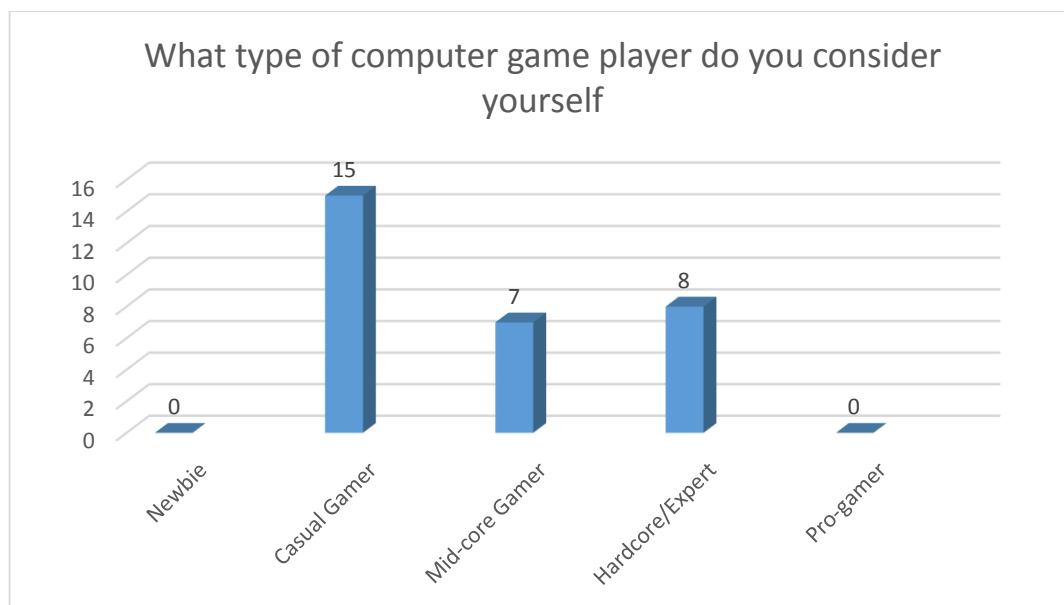


Figure 6.4: Bar Chart of Type of Computer Game Player

Based on bar chart above, there are none of respondent consider them self as newbie for computer game player. Half respondents had decide they are casual game player, 7 out of 30 respondent as mid-core gamer, 8 out of 30 respondent as hardcore/expert gamer and 0 respondent consider themselves as pro-gamer. Based on this data, majority of our respondent was a casual gamer.

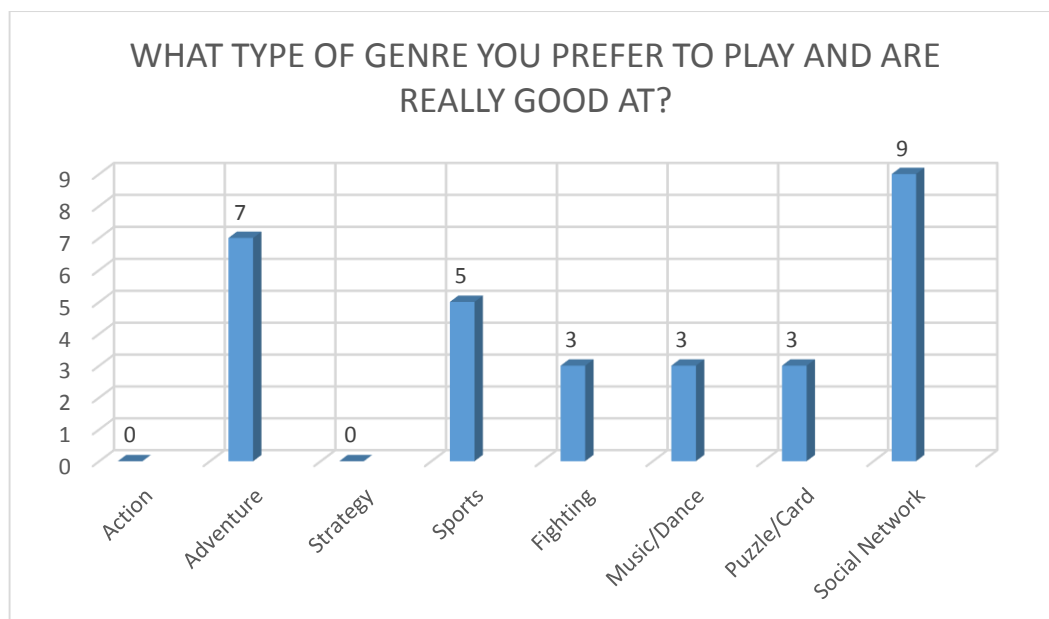


Figure 6.5: Bar Chart of Type of Genre

Based on bar chart above, there are nine choices for all respondent in order to answer question about what type of genre prefer to play and are really good at. None of respondent answered action, 7 out of 30 respondent choose adventure, none for strategy genre, 5 out of 30 prefer sports, 3 out of 30 for fighting, music/dance and also puzzle/card and the other 9 respondent more prefer to social network. As a conclusion, majority of respondent are more prefer to play and really good at social network genre.

There are several questions had been asked in part B questionnaire where it is include three things such as performance or functions, gameplay or challenges and also design or sound that involved in this game. All respondent need to answer all questions based on scale (1 for worst and 5 for excellent). All result or data had been recorded as follow.

There are five questions had been asked based on performance and functions in this project.

Question 1 : Did all buttons and menus work properly?

Table 6.2: Summary For Button Functionality

Scale	1	2	3	4	5
No of Respondent	0	0	0	23	7

Based on table above, an average all respondent fell the functionality of buttons and menus work properly during testing session occur.

Question 2 : Did you understand the instruction provided?

Table 6.3: Summary For Interaction Provided

Scale	1	2	3	4	5
No of Respondent	0	0	0	23	7

Based on table above, an average all respondent understand about the instruction provided in how to play page. It make an easy way for all respondent to do testing without any problem.

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Question 3 : Did all actions of roles or objects works properly?

Table 6.4: Summary For Action of Roles

Scale	1	2	3	4	5
No of Respondent	0	0	7	19	4

Based on table above, 23.33% respondent fell adequte about an actions of roles or objects that work properly during testing the game. 63.33% respondent give good in respond and the other 13.33% respondent give an excellent feedback that for that question.

Question 4 : Did interactions controlled between roles or objects works well?

Table 6.5: Summary For Interaction Controller

Scale	1	2	3	4	5
No of Respondent	0	0	5	23	2

Based on table above, 16.67% respondent fell adequate about interactions controlled between roles or objects that work properly during testing the game. 76.67% respondent give good in respond and the other 6.67% respondent give an excellent feedback that for that question.

Question 5 : It is easy to control the movement if main character?

Table 6.6: Summary For Character Movement

Scale	1	2	3	4	5
No of Respondent	0	3	1	21	5

Based on table above, 10% of respondent fell inadequate about to control the movement of main character during play the game, 3.33% of respondent fell adequate. 70% of respondent give good in respond and the other 16.67% respondent give an excellent feedback that for that question. Based on 10% (3 out of 30 respondent) that gave feedback inadequate about character movement for this project, the reason why they said that is the controller or key had been used to move the character used to many. Which mean they had some trouble in order to move character forward or backward and at the same time need to jump.

Based on gameplay, goal clarity, immersion and challenges, there are eight questions had been asked and the data had been recorded as follow.

Question 1: Did you understand clearly about the game play?

Table 6.7: Summary About Gameplay Understanding

Scale	1	2	3	4	5
No of Respondent	0	0	4	22	4

Based on table 6.6, 13.33% of respondent fell adequate to understand clearly about the gameplay. 73.33% of respondent give good in respond and the other 13.33% of respondent give an excellent feedback. From this data, almost all respondent agreed that the gameplay for this game or this project easy to understand. This make an easy way for them to complete the game.

Question 2: It is easy for you to follow the gameplay throughout the game?

Table 6.8: Summary For Gameplay

Scale	1	2	3	4	5
No of Respondent	0	0	3	25	2

Based on table 6.7, 10% of respondent fell adequate in order to follow the gameplay throughout the game. 83.33% of respondent give good in respond and the other 6.67% of respondent give an excellent feedback. Based on it, almost all respondent agreed that the gameplay had been involved in this game easy to follow while playing this game.

Question 3: Did you know and understand the goal clearly?

Table 6.9: Summary About Goal

Scale	1	2	3	4	5
No of Respondent	0	0	0	27	3

Based on table 6.8, 90% of respondent give good in respond about understanding the goal of this game and the other 10% of respondent give an excellent feedback. On the other word, all respondent know and understand the goal clearly before do testing or play this game. For that, there are no any problem while all respondent test the game.

Question 4: The goal is easy to achieve.

Table 6.10: Summary For Goal Achieving

Scale	1	2	3	4	5
No of Respondent	0	0	0	28	2

Based on table 6.9, 93.33% of respondent give good in respond about to achieve goal provided in this game and the other 6.67% of respondent give an excellent feedback. From that, all respondent agreed the goal is easy to achieve in order to win this game.

Question 5: I can become involved with this game.

Table 6.11: Summary For Involved in Game

Scale	1	2	3	4	5
No of Respondent	0	0	2	25	3

Based on table 6.10, 6.67% of respondent fell adequate in order to involved themselves with this game. 83.33% of respondent give good in respond and the other 10% of respondent give an excellent feedback for it.

Question 6: I prefer to attack and kill the enemy, not run away.

Table 6.12: Summary For Player Action

Scale	1	2	3	4	5
No of Respondent	0	1	1	19	9

Based on table 6.11, when the question asked about when meet with enemy, player prefer to attack and kill enemy and not run away, 3.33% of respondent give inadequate respond, 3.33% of respondent fell adequate, 63.33% of respondent give good in respond and the other 30% of respondent give an excellent feedback for it. The reason why 3.33% (1 out of 30 respondent) fell inadequate is more prefer to finish up this game earlier by run away from an enemy rather than kill it. It is because the goal of this game is find the right way to go out from the jungle and not to kill an enemy.

Question 7: When I start to play this game, I played until the end.

Table 6.13: Summary For Play The Game

Scale	1	2	3	4	5
No of Respondent	0	1	6	19	4

Based on table 6.12, the question asked about when player play this game, player prefer to play this game until the end and from all respondent 3.33% of respondent give inadequate respond, 20% of respondent fell adequate, 3.33% of respondent give good in respond and the other 13.33% of respondent give an excellent feedback for it. For 3.33% (1 out of 30 respondent) that fell inadequate to play this game until the end is because there are some easy and difficult part in this game. When reach at difficult part during play this game, for example in part two of the game there are snake as an enemy and in order to kill it player need to shoot at the head of snake for five time, this respondent decide to stop playing the game because of that factor.

Question 8: I enjoy while playing this game without feel bored or anxious.

Table 6.14: Summary For Feel When Play Game

Scale	1	2	3	4	5
No of Respondent	0	0	7	22	1

Based on table 6.13, 23.33% of respondent fell adequate in order to fell enjoy while playing this game without feel bored or anxious. 73.33% of respondent give good in respond and the other 3.33% of respondent give an excellent feedback for it. The reason is based on attraction of the game to the player that include factor of background of the game, how game is work and how player can achieve goal provided.

There are six questions had been asked based on design and sound that used in this project.

Question 1: What do you think about Main Menu layout?

Table 6.15: Summary About Main Menu Layout

Scale	1	2	3	4	5
No of Respondent	0	0	11	15	4

Based on table 6.14, 36.67% of respondent fell adequate about the layout of main menu page. 50% of respondent give good in respond and the other 13.33% of respondent give an excellent feedback for it. This conclude that main menu layout for this game is suitable for target user to play the game. Because the layout is very clear where it provided three different functions of button and all respondent understand what actually function for all button.

Question 2: Did the backgrounds design in this game looks nice?

Table 6.16: Summary About Background of The Game

Scale	1	2	3	4	5
No of Respondent	0	0	8	16	6

Based on table 6.15, 26.67% of respondent fell adequate about the the backgrounds design in this game. 53.33% of respondent give good in respond and the other 20% of respondent give an excellent feedback for it. In this game there are three different types of background where represent three different parts of the game, from all feedback, almost all respondent said it is an easy way to differentiate all three part of the game based on backgrounds provided. From that they know the current part of themself.

Question 3: Did the fonts used is suitable and easy to understand?

Table 6.17: Summary About Font Used in Game

Scale	1	2	3	4	5
No of Respondent	0	0	0	24	6

Based on table 6.16, 80% of respondent give good in respond about the fonts used whether it is suitable and easy to understand by player or not and the other 20% of respondent give an excellent feedback for it. This conclude that all respondents agreed with the statement where the fonts used in this game are suitable and easy to understand by them.

Question 4: Did the button location and coordination is in good position?

Table 6.18: Summary About Button Location

Scale	1	2	3	4	5
No of Respondent	0	0	3	25	2

Based on table 6.17, 10% of respondent fell adequate about the position of button based on location and coordination in this game. 83.33% of respondent give good in respond and the other 10% of respondent give an excellent feedback for it.

Question 5: Did all graphic used in this game can be easily differentiated?

Table 6.19: Summary About Graphic in Game

Scale	1	2	3	4	5
No of Respondent	0	0	2	23	5

Based on table 6.17, 6.67% of respondent fell adequate about the graphic used in this game can be easily differentiated. 76.67% of respondent give good in respond and the other 16.67% of respondent give an excellent feedback for it.

Question 6: Quality of sound effect for each asset works well?

Table 6.20: Summary About Sound Effect Used in Game

Scale	1	2	3	4	5
No of Respondent	0	1	1	17	11

Based on table 6.18, the question asked about quality of sound effect for each asset and from all respondent 3.33% of respondent give inadequate respond, 3.33% of respondent felt adequate, 56.67% of respondent give good in respond and the other 36.67% of respondent give an excellent feedback for it.

There are three questions in part C where actually those question ask about the objectives involved in this project. Based on feedback got from testing process, as a conclusion, the questions provided in part C already answered all objectives which mean the objectives for this project succeed in order to improve player ability to solve problem by their own, to make target audience feel the reality situation rather than just look on television and also the development of game in PC environment.

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6.5 Conclusion

In conclusion, in this chapter all about testing process had been recovered. This include ways that used in order to do testing process. All the data got from this phase had been recorded and from that some negative and positive feedback got and the improvement had been done in order to make this project fully functional.

CHAPTER VII

CONCLUSION

7.1 Observation on Weaknesses and Strengths

After complete whole things in this project, some testing session occur during testing phase, there are some observation based on weaknesses and strengths for this project.

Table 7.1: Comparison Between Weakness and Strengths

Weaknesses	Strengths
There are some bug while tester do testing process.	Help target user in order to solve problem by their own.
There are things that not suitable to use in this game.	Can attract player to play it from beginning until the end.
Animation for big fish must look like normal fish (move backward).	

Beside that, there are some positive response got from tester, which this project might be very nice if do in 3D platform. It is because the story and the gameplay for this project easy for people outside to understand and to make it more compatible and to attract more people to play this game, view in 3D is one of the way to do it.

7.2 Proposition for Improvement

There are some improvement that need to do such as the movement of main character where it must be look like normal person in term of movement. This project can attract more people to play it by change it into 3D platform. Based on some feedback got from tester, this game should put its background sound as one of the way to make this game know by people outside.

7.3 Project Contribution

Contribution that involved in this project are faculty, supervisor, evaluator and also tester that take over the successfully of project creation. At the beginning of this project, some research had been done in order to find out things that suitable and not suitable to used throughtout the process of creation for this project. Faculty as main supporter in hardware supply where can use faculty's facilities. Supervisor as a main guided start from an idea that come out, what should do next, what need to do next and other more. As evaluator, positive and negative feedback that had been gave are one of the way to improve the strength of the product.

7.4 Conclusion

This project had been done successfully by helper from faculty, supervisor,evaluator and also all tester throughout the creation of this project. All the positive and negative feedback had been recorded and in order to make this project done, those feedback had been calculated again to make sure it is suitable or not to this project.



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APPENDIX A

2D PLATFORM GAME TO ENHANCE USER'S MEMORY

Introduction: This survey will be used for the purpose of gathering data on 2D platform game genres to enhance user's memory in order to find the right way by themselves. All results will be confidential and used solely for research.

Part A : Please tick (/) to fill your answer.

1. Gender:

() Male

() Female

2. Did you ever play computer games before?

() Yes

() No

3. Do you prefer playing games alone or with friends?

() Alone

() With friends

4. On average, how many hours do you play computer games in one sitting?

() Less than 1 hours

() 1 -2 hours

() 2 – 3 hours

() More than 3 hours

5. What type of computer game player do you consider yourself?

() Newbie

() Casual Gamer

() Mid-core Gamer

() Hardcore/Expert

- Pro-gamer
6. What type of genre you prefer to play and are really good at?
- Action (e.g., Call of Duty)
- Adventure (e.g., Grand Theft Auto)
- Strategy (e.g., Starcraft)
- Sports (e.g., FIFA)
- Fighting (e.g., Mortal Kombat)
- Music/Dance (e.g., Guitar Hero)
- Puzzle/Card (e.g., Bejeweld)
- Social Network (e.g., Farmville)
7. What is/are your MAIN reason for playing computer games?
- Boredom
- To socialize with other people
- To compete with other people or computers
- To challenge my mind
- To follow a storyline
8. Would you be willing to pay a small subscription to play a game?
- Yes
- No

Part B: Please tell me how much you agree or disagree with each of the following statements by circle in the question box based on scale :

1	2	3	4	5
Worst	Inadequate	Adequate	Good	Excellent

No.	Questions	1	2	3	4	5
1.	Performance / Functions					
	i. Did all buttons and menus work properly?	1	2	3	4	5
	ii. Did you understand the instruction provided?	1	2	3	4	5
	iii. Did all actions of roles or objects works properly?	1	2	3	4	5
	iv. Did interactions controlled between roles or objects works well?	1	2	3	4	5
	v. It is easy to control the movement of main character?	1	2	3	4	5
2.	Gameplay / Goal Clarity / Immersion / Challenges					
	i. Did you understand clearly about the game play?	1	2	3	4	5
	ii. It is easy for you to follow the gameplay throughout the game?	1	2	3	4	5
	iii. Did you know and understand the goal clearly?	1	2	3	4	5
	iv. The goal is easy to achieve.	1	2	3	4	5
	v. I can become involved with this game.	1	2	3	4	5
	vi. I prefer to attack and kill the enemy, not run away.	1	2	3	4	5
	vii. When I start to play this game, I played until the end.	1	2	3	4	5
	viii. I enjoy while playing this game without feel bored or anxious.	1	2	3	4	5
3.	Design / Sound					
	i. What do you think about Main Menu layout?	1	2	3	4	5
	ii. Did the backgrounds design in this game looks nice?	1	2	3	4	5
	iii. Did the fonts used is suitable and easy to understand?	1	2	3	4	5
	iv. Did the button location and coordination is in good position?	1	2	3	4	5

v.	Did all graphic used in this game can be easily differentiated?	1	2	3	4	5
vi.	Quality of sound effect for each asset works well?	1	2	3	4	5

Part C: Please answer the questions given below.

- 1) Did the game help you to find your own way when you lost in the jungle?

- 2) Did this game make you interested to do by your own in order to solve any problem?

- 3) Any suggestion:

