

CHAPTER 1

INTRODUCTION

1.1 PROJECT OVERVIEW

Nowadays, education faces the challenge of rapid changes and varied as the impact of advances in science and technology that rapidly increasing. Lifestyle with human continuous mobility increase led to a shift in the use of electronic devices. Nowadays, people are more likely to uses of electronic devices. Such as smartphones to access information, particularly smartphones based on the android operating system.

Android - based of mobile device become the choice of many people because having good performance with the availability of fair connection and application support with affordable price.

Android smartphone can be a very exciting opportunity to be utilized in education as learning media to compensate lifestyle with high mobility, so that the learning content can be accessed via smartphone anywhere and anytime, otherwise known as mobile learning.

Based on the statement above researcher then conducted the development of android mobile smartphone based learning media application on CIT for children or those who interested.

1.2 PROBLEM STATEMENT

Today, the development of education android smartphone is widely used, so that easy and understand on CIT. But the problem in development of it is contents are not interested and not understand. Learner or student does not want to learn or only take short period. Contents do not meet the needs of learners, as problem mention above, we will find out a way to solve the problem of creating more interesting of education android smartphone on CIT contents.

Problem in development of this is contents studying in the class are not interested and not understand for some student that hard to understand. And having this application is to support students for more understanding in learning computer components in this subject. The content will be in the form of integrating multimedia which will make contents more interesting.

1.3 PROJECT OBJECTIVE

- To develop mobile education learning in CIT.
- To study and develop android application used in Design of Mobile Computer Learning Game for children 12-15 year old and who interest in.

1.4 LIMITATION/SCOPES OF THE STUDY

The scope of this project it's suitable for android user only, whether the mobile phone or tablet. These applications have text, picture and sound. This application develop by using program Adobe Photoshop, Illustrator for design background, button, actor and using program Construct2 for create application. In this application includes meaning the type of input, output and processing. In addition this application also allows students to play game. The application

suitability for children 12-15 year old and who interest in computer and this application can play every time and anywhere without internet connection. But the students have to install first.

1.5 SOFTWARE AND HARDWARE REQUIREMENTS

Software Requirements

There are overall of software used in this project it following:

- Construct 2

Adobe

- Adobe Photoshop CC
- Adobe Illustrator CC

Microsoft Office

- Microsoft Office Word 2010

Hardware Requirements

- ASUS
- Memory (RAM) 4 GB
- Windows 10 Ultimate 64 bit Operating System
- Control Processing Unit (CPU) Intel(R) Core(TM) i5-8250U
- Keyboard
- USB Mouse
- Printer and Scanner
- Smartphone

- Apacer 8 GB
- Internet Connection

1.6 SIGNIFICANTS OF THE STUDY

Developer:

- To learned and make understanding about construct 2.
- To be a responsibility, planning the system and make the system run smoothly over time.
- To review knowledge and understanding about (Input, Processing and Output), tool such as Adobe Photoshop, Adobe Illustrator and construct 2.

User:

- This application makes the students easy and conveniently to use.
- To help self-study.
- Make the students understand more about Input, Processing and Output.
- Student fun in playing game.

1.7 ORGANIZATION OF THE DOCUMENT

The report contains five chapters.

- Chapter one: Introduction

This chapter is introduction discusses about the project overview, problems statement, project objectives, scopes of the study, significances of study, and organization of the document.

- Chapter two: Literature review

This chapter discusses the theories from many sources such as articles, case study, book and etc. That related to this project study in order to be benefits and guideline to develop Design and development of education learning on mobile.

- Chapter three: Methodology

This chapter explains the methodology that to design, material collection, assembly, testing and distribution of the project that used in this study in order to achieve the goal named MADLC.

- Chapter four: Implementation

This chapter discusses about how to use implementation the application for Design and development of education learning on mobile.

- Chapter five: Conclusion

This chapter concludes the study with conclusion that described how the application can be benefits for the user and directions for future work.

1.8 SUMMARY

In this chapter has explained the reason why the developer develops this application, the problem statement, objective, and the scope of application. The hardware and software to using and significant of develop the Design and development of education learning on mobile (Topic of CIT).

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The objective in this chapter discussion the various theories and provides the previous studies which are related to this project. And in order to provide benefits and guidelines to develop, the Design and development of education learning on mobile (Topic of CIT).

2.2 DEFINITION

2.2.1 Computing Components

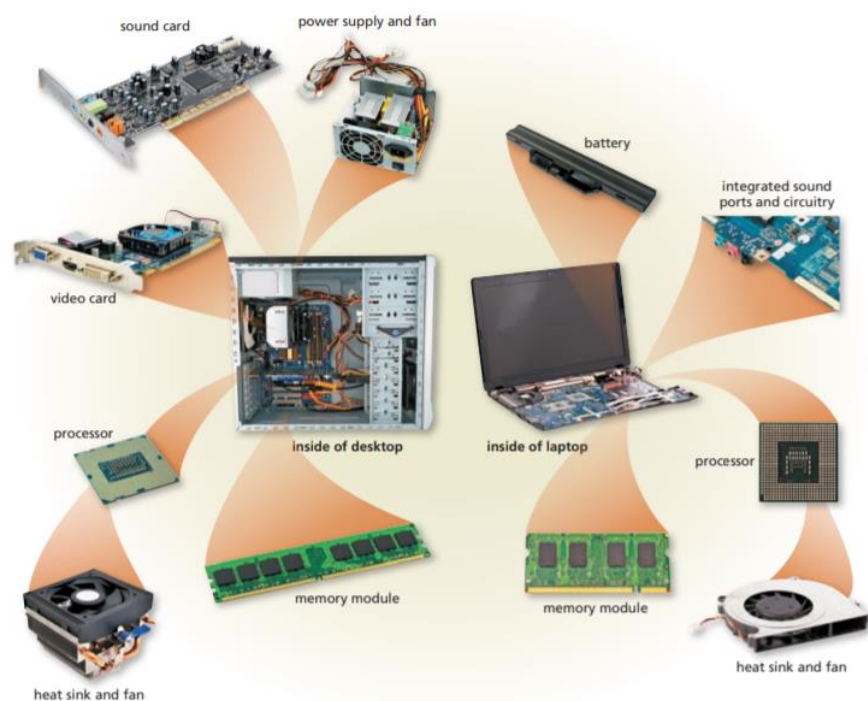


Figure 2.1 Computing Components

At some point, you might have to open the case on a desktop or access panels on a laptop to replace or install a new electronic component, or hire a professional to assist with this task. For this reason, you should be familiar with the electronic components inside the case, some of which are shown in Figure 2.2.2.1 and discussed in this chapter. (Shelly Cashman Series, 2016)

Describe: The figure 2.1 to show common components in high-end desktops and laptops. Many basic desktops have built-in audio and video capabilities, similar to the laptop images shown here.

Example component of computer such as power supply and fan, sound card, video card, processor, heat sink and fan, memory module and etc.

2.2.2 Input



Figure 2.2 Input

Input is any data and instructions entered into the memory of a computer. As shown in Figure 2.2, people have a variety of options for entering data and instructions into a computer.

Data is a collection of unprocessed items, including text, numbers, images, audio, and video. Once data is in memory, a computer or mobile device interprets and executes instructions to process the data into information. Instructions that a computer or mobile device processes can be in the form of software (programs and apps), commands, and user responses.

- Software is a series of related instructions, organized for a common purpose, that tells a computer or mobile device what tasks to perform and how to perform them. When software developers write programs or apps, they usually enter the instructions into the computer or mobile device by using a keyboard, mouse, or other input method. The software developer then stores the program in a file that a user can execute (run). When a user runs a program or app, the computer or mobile device loads the program or app from a storage medium into memory. Thus, a program or app is entered into a computer's or mobile device's memory.

- A command is an instruction that causes a program or app to perform a specific action. Programs and apps respond to commands that a user issues. Users issue commands by touching an area on a screen, pressing keys on the keyboard, clicking a mouse button to control a pointer on the screen, or speaking into a microphone.

- A user response is an instruction a user issues by responding to a message displayed by a program or app. A response to the message instructs the program or app to perform certain actions. For example, when a program or app asks the question, 'Do you want to save the changes made to this file?', and you respond with the instruction of 'Yes', the program will save

the file with the changes you made. If you respond with the instruction of ‘No’, the program will not save your changes before exiting.

Commonly used input methods include the keyboard, pointing devices, touch screens, pen input, motion input, voice input, video input, and scanners and reading devices. This chapter discusses each of these input methods. (Shelly Cashman Series, 2016)

Describe: Users can enter data and instructions into computers and mobile devices in a variety of ways.

2.2.3 Output



Figure 2.3 Output

Output is data that has been processed into a useful form. Recall that computers process data (input) into information (output). The form of output varies, depending on the hardware and software being used and the requirements of the user. Users view or watch output on a screen, print it, or hear it through speakers, headphones, or earbuds. While working with a computer or mobile device, a user encounters four basic types of output: text, graphics, audio, and video (Figure 2.2.3.1). Very often, a single form of output, such as a webpage, includes more than one of these types of output.

- Text: Examples of output that primarily contain text are text messages, Internet messages, memos, letters, press releases, reports, classified advertisements, envelopes, and mailing labels. On the web, users read blogs, news and magazine articles, books, television show transcripts, stock quotes, speeches, and lectures.
- Graphics: Many forms of output include graphics to enhance visual appeal and convey information. Business letters have logos. Reports include charts. Newsletters use drawings, clip art, and photos. Users print high-quality photos taken with a digital camera. Many websites use animation.
- Audio: Users download their favorite songs and listen to the music. Software, such as games, encyclopedias, and simulations, often include musical accompaniments and audio clips, such as narrations and speeches. On the web, users listen to radio broadcasts, audio clips, podcasts, sporting events, news, music, and concerts. They also use VoIP.
- Video: As with audio, software and websites often include video clips and video blogs. Users watch news reports, movies, sporting events, weather conditions, and live performances on a

computer or mobile device. They attach a video camera to a computer or mobile device to watch video or programs. (Shelly Cashman Series, 2016)

Describe: Four types of output are text, graphics, audio, and video.

2.2.4 Processors

The processor, also called the central processing unit (CPU), interprets and carries out the basic instructions that operate a computer. The processor significantly impacts overall computing power and manages most of a computer's operations. On larger computers, such as mainframes and supercomputers, the various functions performed by the processor extend over many separate chips and often multiple circuit boards. On a personal computer, all functions of the processor usually are on a single chip. Some computer and chip manufacturers use the term microprocessor to refer to a personal computer processor chip.

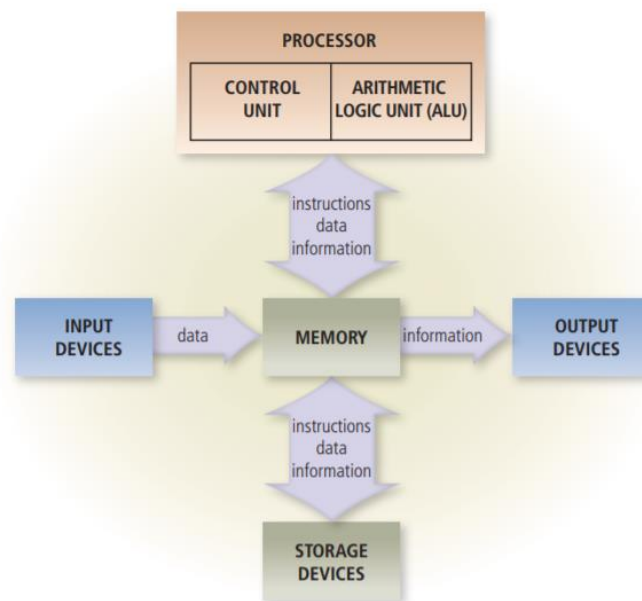


Figure 2.4 Processor

Most processor chip manufacturers now offer multi-core processors. A processor core, or simply core, contains the circuitry necessary to execute instructions. The operating system views each processor core as a separate processor. A multi-core processor is a single chip with two or more separate processor cores. Multi-core processors are used in all sizes of computers.

Processors contain a control unit and an arithmetic logic unit (ALU). These two components work together to perform processing operations. Figure 2.2.4.1 illustrates how other devices connected to the computer communicate with the processor to carry out a task. When a user runs an application, for example, its instructions transfer from a storage device to memory. Data needed by programs and applications enters memory from either an input device or a storage device. The control unit interprets and executes instructions in memory, and the arithmetic logic unit performs calculations on the data in memory. Resulting information is stored in memory, from which it can be sent to an output device or a storage device for future access, as needed.

The Control Unit

The control unit is the component of the processor that directs and coordinates most of the operations in the computer. That is, it interprets each instruction issued by a program or an application and then initiates the appropriate action to carry out the instruction. Types of internal components that the control unit directs include the arithmetic logic unit, registers, and buses, each discussed in this chapter.

The Arithmetic Logic Unit

The arithmetic logic unit (ALU), another component of the processor, performs arithmetic, comparison, and other operations. Arithmetic operations include basic calculations, such as addition, subtraction, multiplication, and division. Comparison operations involve comparing one data item with another to determine whether the first item is greater than, equal to, or less than the other item. Depending on the result of the comparison, different actions may occur. For example, to determine if an employee should receive overtime pay, software instructs the ALU to compare the number of hours an employee worked during the week with the regular time hours allowed (e.g., 40 hours). If the hours worked exceed 40, for example, software instructs the ALU to perform calculations that compute the overtime wage.

Machine Cycle

For every instruction, a processor repeats a set of four basic operations, which comprise a machine cycle: (1) fetching, (2) decoding, (3) executing, and, if necessary, (4) storing.

- Fetching is the process of obtaining a program or an application instruction or data item from memory.
- Decoding refers to the process of translating the instruction into signals the computer can execute.
- Executing is the process of carrying out the commands.
- Storing, in this context, means writing the result to memory (not to a storage medium).

(Shelly Cashman Series, 2016)

Describe: Most devices connected to the computer communicate with the processor to carry out a task.

2.2.5 Game

A game is a structured form of play, usually undertaken for enjoyment and sometimes used as an educational tool. Games are distinct from work, which is usually carried out for remuneration, and from art, which is more often an expression of aesthetic or ideological elements. However, the distinction is not clear-cut, and many games are also considered to be work (such as professional players of spectator sports or games) or art (such as jigsaw puzzles or games involving an artistic layout such as Mahjong, solitaire, or some video games).

Games are sometimes played purely for entertainment, sometimes for achievement or reward as well. They can be played alone, in teams, or online; by amateurs or by professionals. The players may have an audience of non-players, such as when people are entertained by watching a chess championship. On the other hand, players in a game may constitute their own audience as they take their turn to play. Often, part of the entertainment for children playing a game is deciding who is part of their audience and who is a player.

Key components of games are goals, rules, challenge, and interaction. Games generally involve mental or physical stimulation, and often both. Many games help develop practical skills, serve as a form of exercise, or otherwise perform an educational, simulational, or psychological role.

Attested as early as 2600 BC, games are a universal part of human experience and present in all cultures. The Royal Game of Ur, Senet, and Mancala are some of the oldest known games.

2.2.6 Types of Computer Games

Today's computer games are loaded with action, and there are many different categories or genres of games. But, many games can be considered to be more than one genre. For instance, a soccer game could be considered a sports game, as well as a simulation game. Here is some information that will help you to better understand the various computer game genres.

- **Massively Multiplayer Online (MMO)**

These games are played over a LAN (local area network) or via the Internet. Players use a network and interact with other players in the virtual game room. You can play against people from all over the world. The creation of these games involves thousands of hours of programming, giving you, the player, the most amazing gaming experience possible.

- **Simulations**

These games involve taking control of real-world vehicles, including tanks, ships, and aircraft. You learn how to control these vehicles, and use simulation games that can also be used to train professionals. In fact, many pilots are trained using airplane simulators before they actually take flight.

- **Adventure**

These are usually single player games, and are often set in fantasy or adventure worlds. You complete puzzles to advance levels. The game generally starts with a back story of your character, and let you know what your mission is. You have to figure out how to complete the mission.

- Real-Time Strategy (RTS)

For these games, you usually need to build up your inventory of items, armies, etc. Similar to a strategy game, RTS games move in real-time, and players can play at once without taking turns so you can play together at the same time.

- Puzzle

These games appeal to those who love to solve difficult puzzles. There are many levels, from beginner to expert, and games usually have coloured shapes and simple actions. These are brain games, with no action involved.

- Action

You need to be fast to enjoy these fast-paced games, and you need to have excellent reflexes. Complete challenges by fighting with enemies, and use a character of your choice to represent yourself and jump into the action.

- Stealth Shooter

These tend to be war games or spy-based games, where you use stealth to defeat your enemies.

- Combat

Fight one on one with opponents, up close and personal. You need good reflexes, and the ability to use the controls for all kinds of fighting moves.

- First Person Shooters (FPS)

You are the protagonist, and the game is viewed through your eyes. You can really get into these games. The only downfall is that you are not able to see how you look in the game, because you are seeing things through your own eyes.

- Sports

Play real-world sports like baseball, basketball, soccer, and more. As you work up through the various skill levels, your game will involve mimicking real professional athletes and how they move. The most popular sports games are usually based around specific popular sporting events.

- Role-Playing (RPG)

If you love fantasy, you will love role-playing games. You get to act out the part of the main character, be the hero, etc., and make decisions that go along with the games' story lines. Many of these games have narrative guides.

- Educational

While many parents and teachers complain about video games, there are some great educational games out there that can help with the learning process. Train in a variety of subjects, using games to make learning fun instead of boring. There are testing functions, where you can answer multiple choice questions. The most common types of education games are for math, science, and ICT.

2.2.7 Educational games

Educational games are games explicitly designed with educational purposes, or which have incidental or secondary educational value. All types of games may be used in an

educational environment. Educational games are games that are designed to help people to learn about certain subjects, expand concepts, reinforce development, understand a historical event or culture, or assist them in learning a skill as they play. Game types include board, card, and video games. An educational game is a game designed to teach humans about a specific subject and to teach them a skill. As educators, governments, and parents realize the psychological need and benefits of gaming have on learning, this educational tool has become mainstream. Games are interactive play that teach us goals, rules, adaptation, problem solving, interaction, all represented as a story. They satisfy our fundamental need to learn by providing enjoyment, passionate involvement, structure, motivation, ego gratification, adrenaline, creativity, social interaction and emotion in the game itself while the learning takes place.

2.2.8 Android



Figure 2.5 Android

Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed

Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics.

Initially developed by Android Inc., which Google bought in 2005, Android was unveiled in 2007, with the first commercial Android device launched in September 2008. The operating system has since gone through multiple major releases, with the current version being 9.0 "Pie", released in August 2018. The core Android source code is known as Android Open Source Project (AOSP), and is primarily licensed under the Apache License.

Android is also associated with a suite of proprietary software developed by Google, including core apps for services such as Gmail and Google Search, as well as the application store and digital distribution platform Google Play, and associated development platform. These apps are licensed by manufacturers of Android devices certified under standards imposed by Google, but AOSP has been used as the basis of competing Android ecosystems, such as Amazon.com's Fire OS, which use their own equivalents to the Google Mobile Services.

Android has been the best-selling OS worldwide on smartphones since 2011 and on tablets since 2013. As of May 2017, it has over two billion monthly active users, the largest installed base of any operating system, and as of June 2018, the Google Play store features over 3.3 million apps.

Mobile operating system

A mobile operating system (or mobile OS) is an operating system for phones, tablets, smart watches, or other mobile devices. While computers such as typical laptops are 'mobile', the operating systems usually used on them are not considered mobile ones, as they were originally

designed for desktop computers that historically did not have or need specific mobile features. This distinction is becoming blurred in some newer operating systems that are hybrids made for both uses.

Mobile operating systems combine features of a personal computer operating system with other features useful for mobile or handheld use; usually including, and most of the following considered essential in modern mobile systems; a touchscreen, cellular, Bluetooth, Wi-Fi Protected Access, Wi-Fi, Global Positioning System (GPS) mobile navigation, video- and single-frame picture cameras, speech recognition, voice recorder, music player, near field communication, and infrared blaster. By Q1 2018, over 383 million smartphones were sold with 85.9 percent running Android, 14.1 percent running iOS and other OSes negligible. Android alone is more popular than the popular desktop operating system Windows, and in general smartphone use (even without tablets) outnumber desktop use.

Mobile devices with mobile communications abilities (e.g., smartphones) contain two mobile operating systems – the main user-facing software platform is supplemented by a second low-level proprietary real-time operating system which operates the radio and other hardware. Research has shown that these low-level systems may contain a range of security vulnerabilities permitting malicious base stations to gain high levels of control over the mobile device. Recently Google introduced its new Android version called as “Android 9.0” or “Android Pie”.

Mobile operating systems have majority use since 2017 (measured by web use); with even only the smartphones running them (excluding tablets) more used than any other kind of device. Thus traditional desktop OS is now a minority used kind of OS; see usage share of

operating systems. However, variations occur in popularity by regions, while desktop-minority also applies on some days in regions such as United States and United Kingdom.

2.2.9 Mobile app

A mobile app or mobile application is a computer program designed to run on a mobile device such as a phone/tablet or watch.

Mobile applications often stand in contrast to desktop applications which run on desktop computers, and with web applications which run in mobile web browsers rather than directly on the mobile device.

In 2009, technology columnist David Pogue said that newer smartphones could be nicknamed "app phones" to distinguish them from earlier less-sophisticated smartphones. The term "app", which is short for "software application", has since become very popular; in 2010, it was listed as "Word of the Year" by the American Dialect Society.

2.3 RELATED WORK

2.3.1 Discovering computers 2016

2.3.1 Baby Insect Shape Blocks Puzzle - Educational Game



Figure 2.6 Baby Insect Shape Blocks Puzzle - Educational Game

- A puzzle is a game, problem, or toy that tests a person's ingenuity or knowledge.
- This game to Drag and drop the blocks for sorting insect shapes.

Objective

- This application creates for test the learning skill on your memory.

Scope

- This application for general people and who interest. This application of Drag and Drop is a learning game that test memory.

The Baby Insect Shape Blocks Puzzle game can be example designing of my game. In this game to Drag and drop the blocks for sorting insect shapes. Player can Drag picture and drop them to where they originally too correctly. The Game of Baby Insect Shape Blocks Puzzle resembles with Design of Mobile Computer Game (DMG) about drag and drop type.

The different between the Baby Insect Shape Blocks Puzzle and DMG are Baby Insect Shape Blocks Puzzle must thinking which picture as the same shadow image to put in the correct box but DMG the answers that we need to drag, if correct it will show the correct and if drag the wrong point it will show wrong in that score box.

2.3.2 Super Jungle World - Super Jungle Adventure 2019



Figure 2.7 Super Jungle Worlds - Super Jungle Adventure 2019

- Super Jungle World as in classic platform games with a super HERO boy.
- In the super world, must pass so much threat to run to target super world.
- Super jungle runs and jumps across platforms and atop enemies in themed levels.
- Super Jungle World is one of the best jungle adventure games.

Objective

- This application creates for learning and funny on the game.
- This application is designed to boost the fun of who player.

Scope

- This application for general people and who interest.

The Super Jungle the same with our game is running keep Coin game but be careful lots of dangers, enemies, troubles, obstacles, and have limit time to get coins and will have time for race against time to survive in the next level.

The different between the Super Jungle application and the Design of Mobile Computer Game are the actor of Super jungle runs and jumps to keep the coins but the actor of Design of Mobile Computer walk and jump to keep the coins and keep the correct answer of each level as many for accumulate score to go to the next level.

2.3.3 Guess English vocabulary

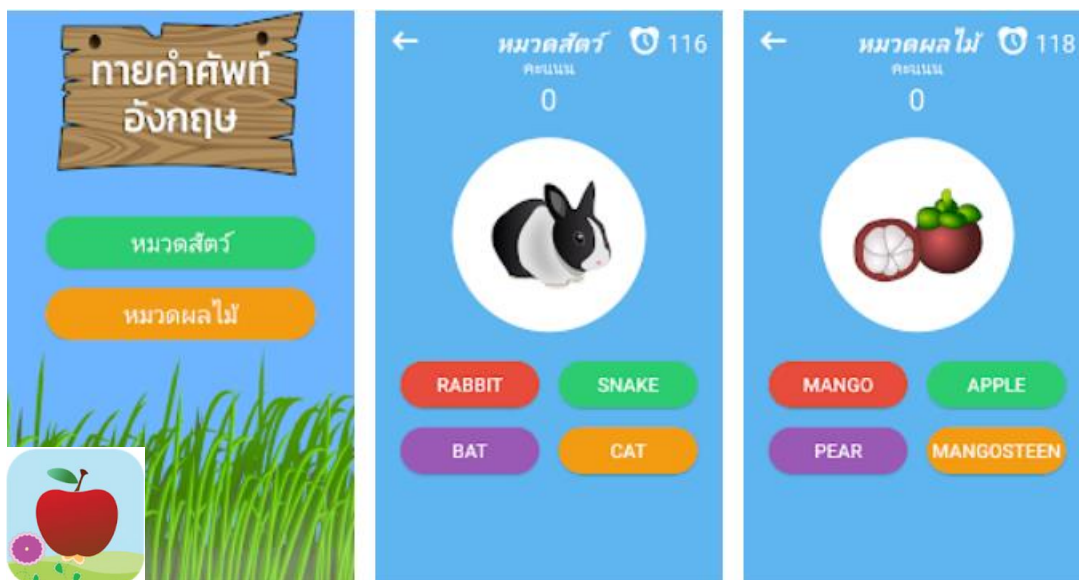


Figure 2.8 Guess English vocabulary

An application to guess the vocabulary from images in English it suitable for children that just learned to memorize vocabulary. Which is divided into 2 categories which are animals, fruits and there is a timer to help you learn to capture words and words faster. As well as a score system to see that children can you remember the words better?

Objective

- This application to make the understanding about the equipment of input and output of components the computer.

Scope

- This application for general people and who interest.

The Guess English vocabulary game can be example designing of my game. In this game is a game about choosing the right word vocabulary from picture. The games of Guess English vocabulary resemble with Design of Mobile Computer Game (DMG) about choose answer from question type.

The different between the Guess English vocabulary and (DMG) are Guess English vocabulary must choosing the right word vocabulary from question picture but DMG is an application to choose the image from question which image is the correct answer, if click on the correct answer it will show popup that information together with sound that word but if click on another image it will show icon wrong on that image. And it will show ten seconds time in each question, if we lost that question it will random another question and that question it will lost.

2.4 TOOLS USED

2.4.1 Adobe Photoshop CS6

Adobe Photoshop CS6 is an image-editing program that lets you create and modify digital images. 'CS' stands for Creative Suite, a complete design environment. Although Adobe makes Photoshop available as a stand-alone product, it also comes bundled with all of their Creative Suite options, whether your interests lie with print design, web design, or multimedia production. A digital image is a picture in electronic form. Using Photoshop, you can create original artwork, manipulate color images, and retouch photographs. In addition to being a robust application popular with graphics professionals, Photoshop is practical for anyone who wants to enhance existing artwork or create new masterpieces. For example, you can repair and restore damaged areas within an image, combine images, and create graphics and special effects for the web.

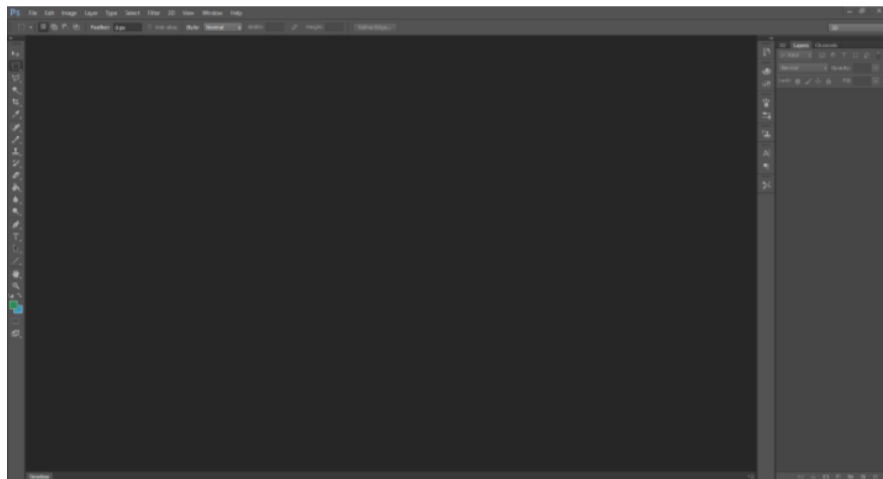


Figure 2.9 Adobe Photoshop CS6

Photoshop is available for both Windows and Mac OS platforms. Regardless of which platform you use, the features and commands are very similar. Some of the Windows and Mac OS keyboard commands differ in name, but they have equivalent functions. For example, the [Ctrl] and [Alt] keys are used in Windows, and [option] keys are used on Macintosh computers. There are also visual differences between the Windows and Mac OS versions of Photoshop due to the user interface differences found in each platform.

Photoshop allows you to work with images from a variety of sources. You can create your own original artwork in Photoshop, use images downloaded from the web, or use images that have been scanned or created using a digital camera. Whether you create Photoshop images to print in high resolution or optimize them for multimedia presentations, web-based functions, or animation projects, Photoshop is a powerful tool for communicating your ideas visually

For Design and development of education learning on mobile (Topic of CIT), the developers using program Adobe Photoshop to design form, actor and button.

2.4.2 Adobe Illustrator CC

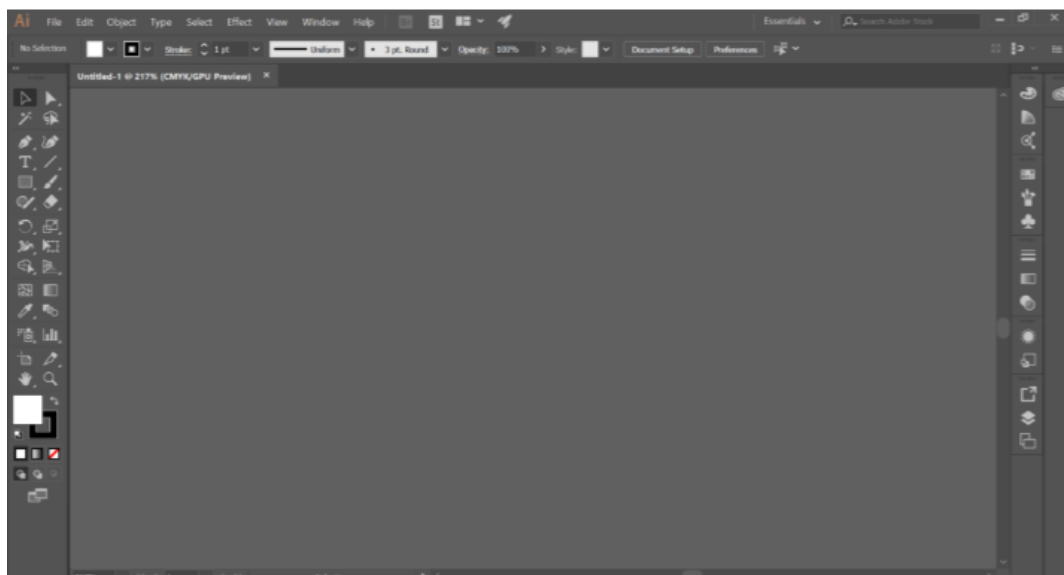


Figure 2.10 Adobe Illustrator CC

According to (Jennifer Smith, 2013) adobe Illustrator is the leading drawing and illustration software used to create artwork for a variety of media. The Adobe® Illustrator® CC Digital Classroom lets you create artwork for a variety of uses. Illustrator's drawing tools let you take advantage of many ways to control color, text, and artwork in your designs. Illustrator provides you with ways to express your creative ideas and experiment with the presentation.

For Design and development of education learning on mobile (Topic of CIT), the developers using program Adobe Illustrator to design form.

2.4.3 Construct 2



Figure 2.11 Construct 2

CONSTRUCT 2 is a program developed by SCIRRA LTD. The ASHLEY and THOMAS GULLEN brothers originally owned the CONSTRUCT CLASSIC, which used DIRECTX 9 for the WINDOW operating system, and with the introduction of HTML5 technology, changed and developed. CONSTRUCT 2 is based on the idea that creating games without programming.

Construct 2 is a program that allows creating games or App on the Smart Phone and on the site is easy do not write code.

For Design and development of education learning on mobile (Topic of CIT), the developers using program Ad Construct 2 to make an application learning games.

2.4.4 Audacity



Figure 2.12 Audacity

Audacity is the name of popular open source multilingual audio editor and recorder software that is used to record and edit sounds. It is free and works on Windows, Mac OS X, GNU/Linux and other operating systems.

Audacity can be used to perform a number of audio editing and recording tasks such as making ringtones, mixing stereo tracks, transferring tapes and records to computer or CD, splitting recordings into separate tracks and more.

2.5 SUMMARY

In this chapter, it shown begun in which describes previous study and used to develop the application. It also discussed about the definition of computer, Hardware & Software, Data & Information, Game, Types of computer games, Educational games, Android, Mobile App. In addition, also discussion about related work and tools used.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The objective in this chapter discussion the methodology using the Multimedia Development Life Cycle method is the most important part in guideline to success in the application. It is suitable for develop multimedia project and it will focus on the process of project development. For Design of Mobile Computer Game Application use only five phases are Concept Validity, Availability of content, Tool selection, Authoring and Testing. It shown and explained step by step of processing in each phase.

3.2 METHODOLOGY

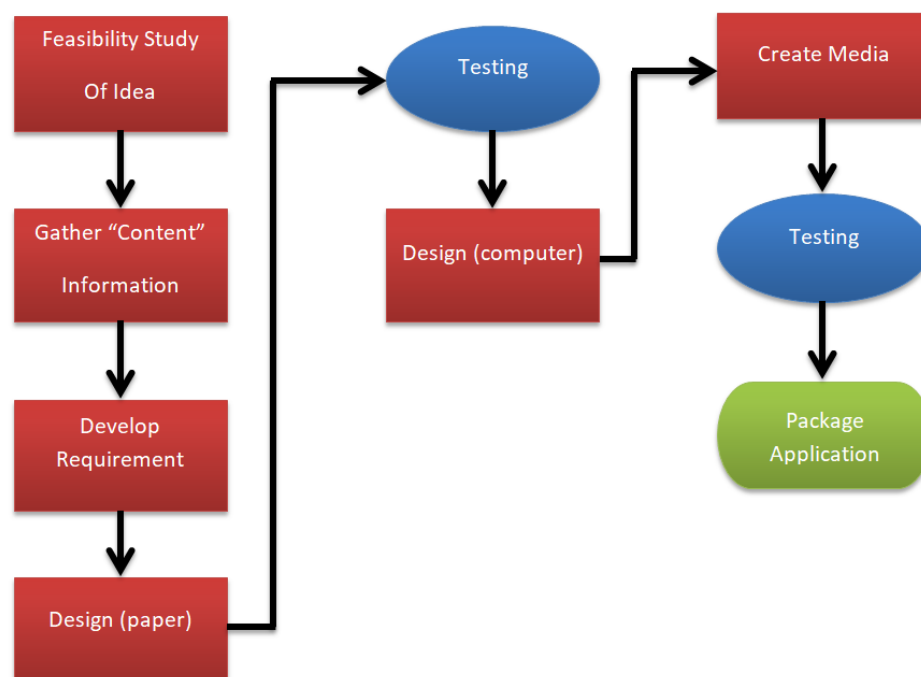


Figure 3.1 Multimedia Development Life Cycle Apply Method

This methodology consists of the different phases namely:

- Concept Validity Phase
- Availability of content Phase
- Tools selection
- Authoring Phase
- Testing

3.2.1 Concept Validity Phase

The Concept Validity Phase is a concept of the development project. It is including:

1. Idea:

The first phase that important to find the idea, plan before start develop Design and development of education learning on mobile (Topic of CIT), and it is importance step. It is easily of create project “which one doing first” and decrease of time table to develop project. Then visit advisor and gathering information for guide developer to the goal.

- The first one thinks about what I have to do, and finding topic.
- Then find the idea and plan about the topic of project.
- Next, visit advisor to make understanding about this project.


2. Propose:

This project proposes is developed Design of Mobile Computer Game application to cultivate knowledge and understanding the basic knowledge of Input, Processing and Output to study and develop android application used in Design of Mobile Computer Game.

3. Target:

Design of Mobile Computer Game application is developed for children 12-15 year old and who are interested in.

3.2.2 Availability of content Phase

Type	
Input	 <p>The diagram illustrates various input devices used for data entry and interaction. At the center is the text "input devices". Surrounding this central text are several images, each with a label pointing to it:</p> <ul style="list-style-type: none"> mouse touch screen touch-sensitive pad stylus graphics tablet game controller microphone (in headset) built-in webcam scanner marks read by OMR device bar code reader RFID reader magnetic stripe card reader MICR characters data collection device keyboard

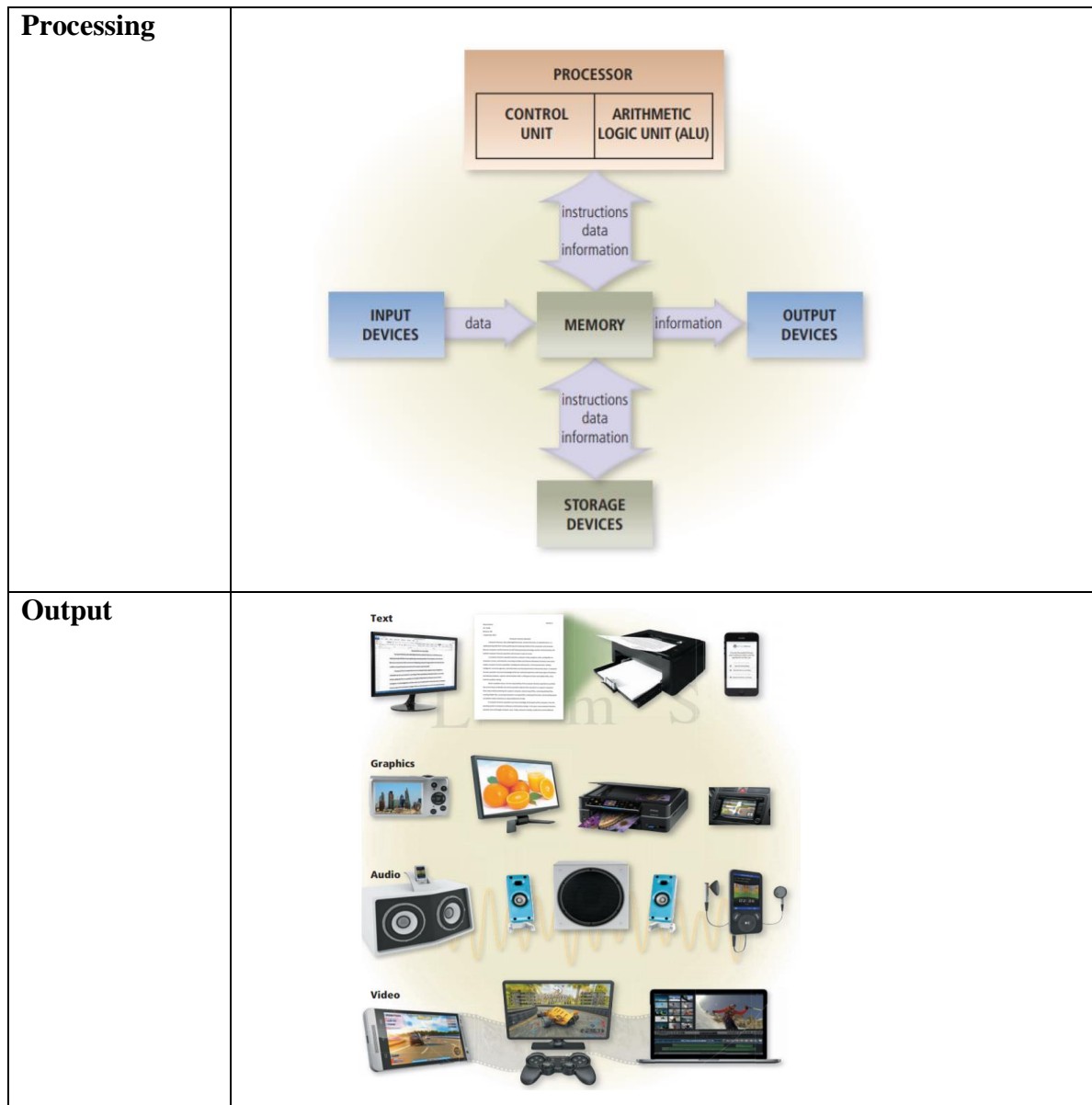
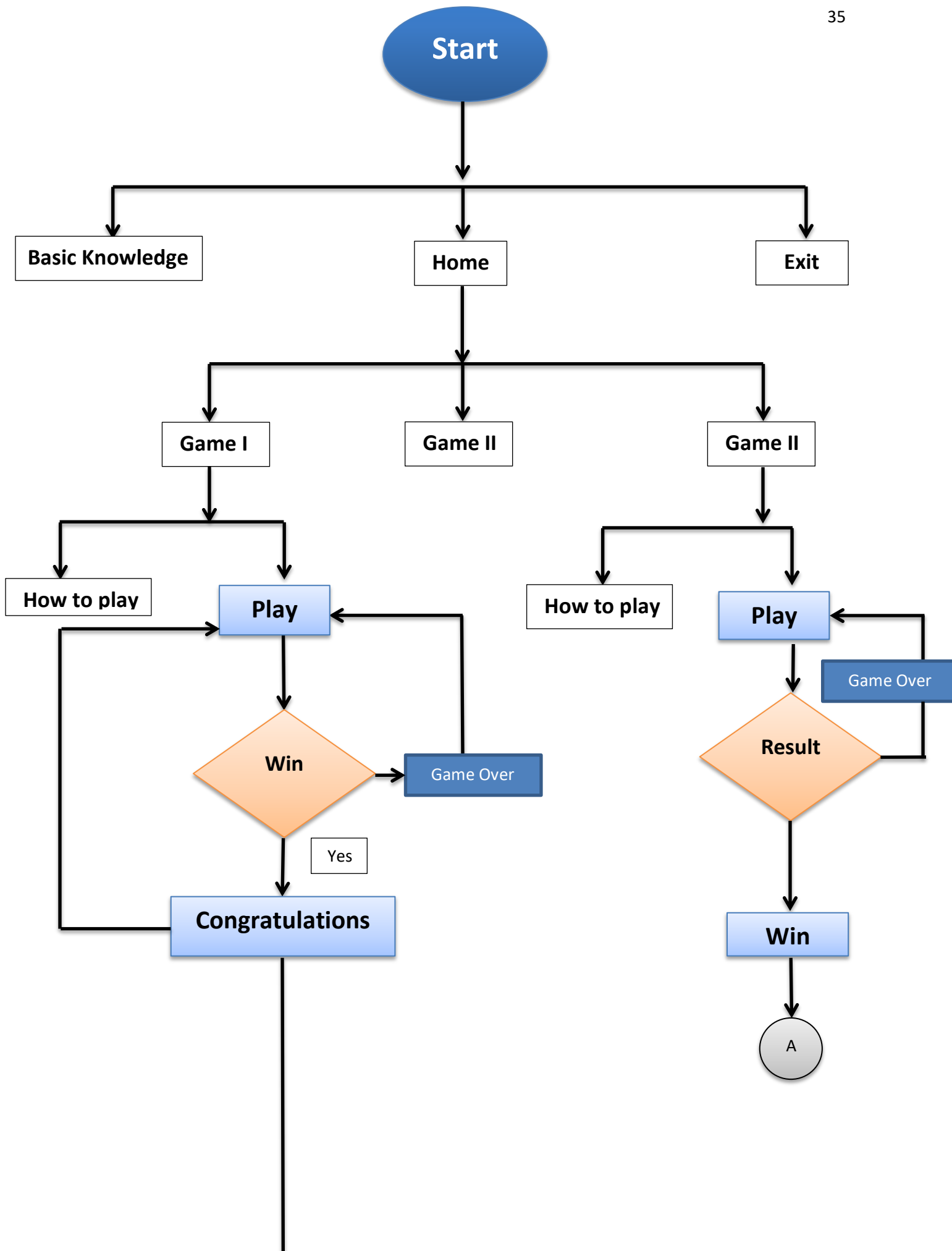


Figure 3.2 Availability of Contents

The content of Design of Mobile Computer Game it's refer to Discovering Computers 2016

3.2.2.1 Flowchart

The work flowchart shows the process, workflow of Design and development of education learning on mobile.



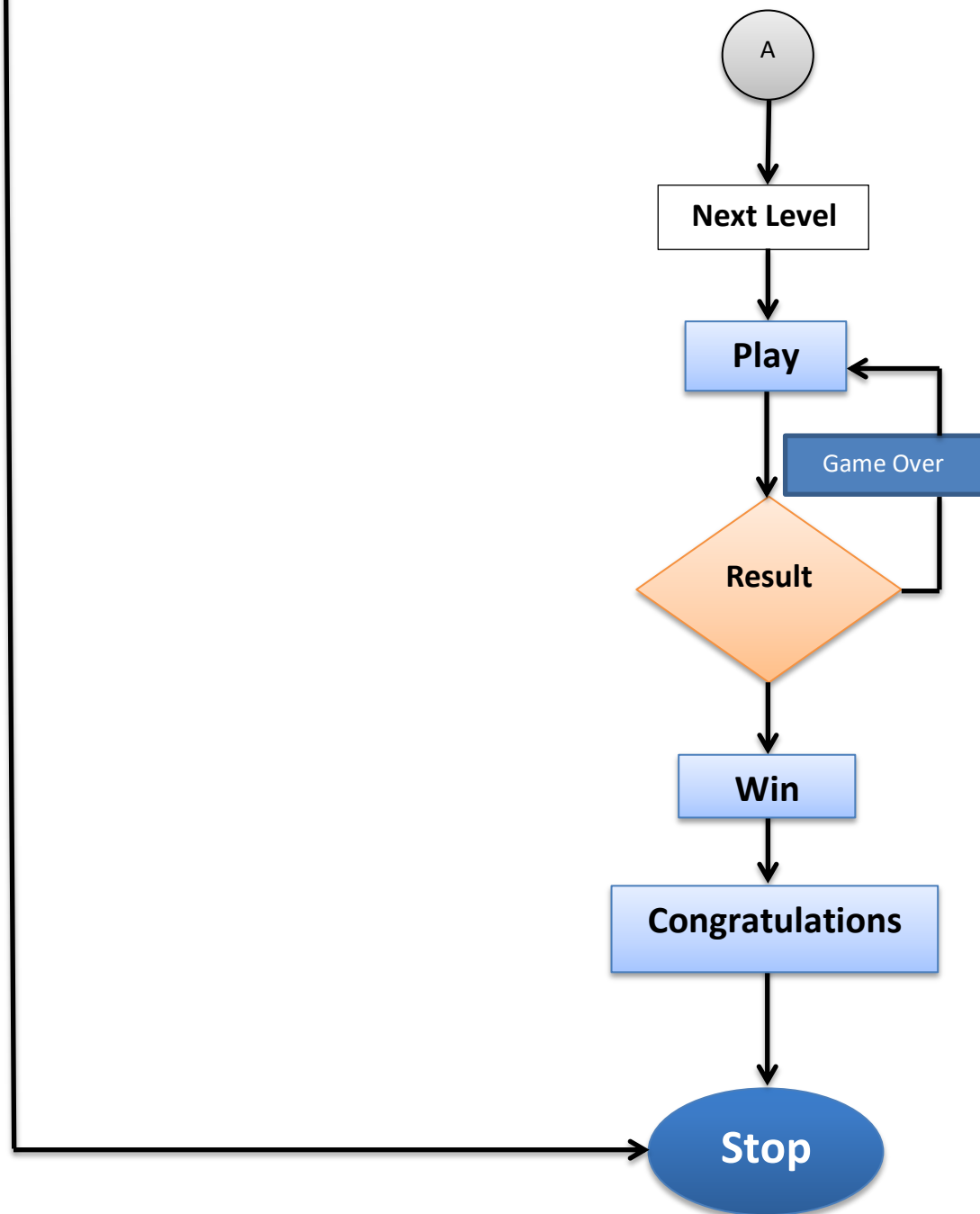


Figure 3.3 Flowchart Design and development of education learning on mobile

For Design and development of education learning on mobile will start the application from the start page. It will automatically go to the first page. On the first page, there will be knowledge, game, detail of app and exit.

- If players choose basic knowledge, player can learn information about inputs.

Processes and outputs

- If the player chooses the game button, player can choose the level of the game to play which has two levels itself after completing the game, the results will appear. When the player wins, player can choose another level to continue playing. But when the player fails in the game, it will ask to play the game again or when the game ends, player can back home button, play any game or exit the game.

3.2.2.2 Site Map

This structure chart shows the function of mobile application with including learning, Game, Close, and about game.

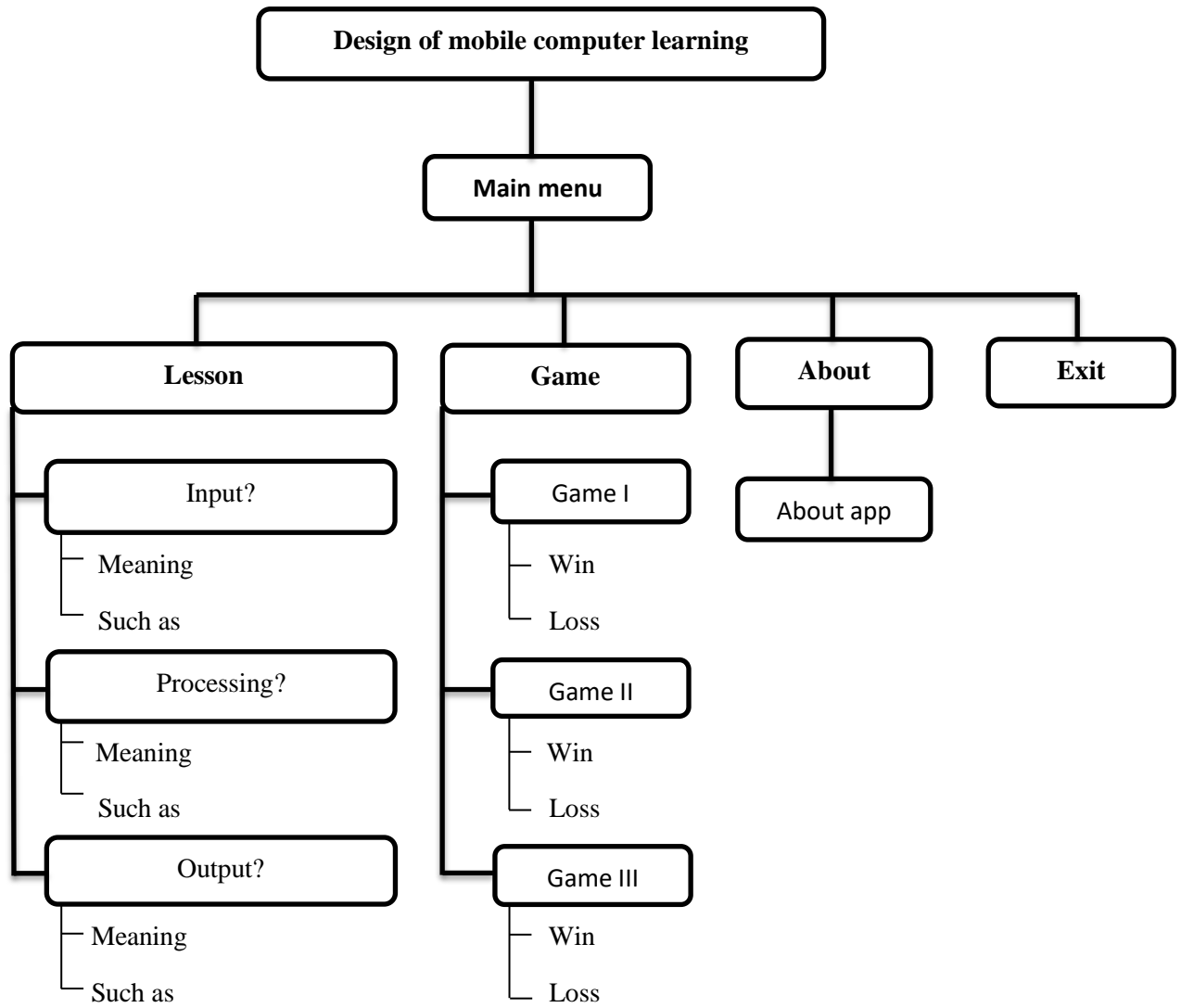


Figure 3.4 Site Map

3.2.2.3 Story board


Project Name: Design and development of education learning on mobile.	
<div style="text-align: center;"> <p>LOADING..</p>  </div>	Function info:
	-Show loading page
	Button: -
Note: This page to display the loading page	

Figure 3.5 Loading screen

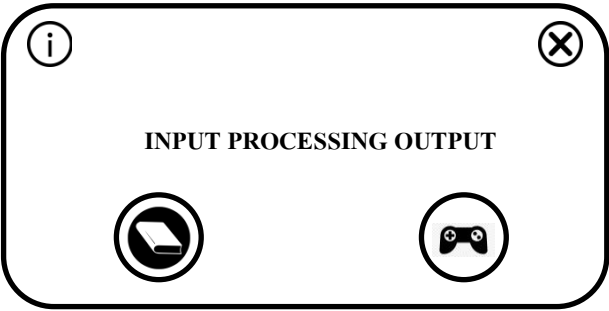
Project Name: Design and development of education learning on mobile.	
<div style="text-align: center;">  </div>	Function info:
	-Show Main menu page
	Button: -Learning -Game -About app -Close
Note: This page to display the Main menu page	

Figure 3.6 Main menu screen


Project Name: Design and development of education learning on mobile.	
 <div style="text-align: center; margin-top: 100px;"> <div style="background-color: black; color: white; padding: 10px; margin: 5px; display: inline-block;">INPUT</div> <div style="background-color: black; color: white; padding: 10px; margin: 5px; display: inline-block;">PROCESSOR</div> <div style="background-color: black; color: white; padding: 10px; margin: 5px; display: inline-block;">OUTPUT</div> </div>	Function info: <div style="border: 1px solid black; padding: 5px; margin: 5px;">-Show Type of learning page</div> Button: -Input -Processing -Output -Home
Note: This page to display the Type of learning page	

Figure 3.7 Type of computer learning page



Project Name: Design and development of education learning on mobile.	
 <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <div style="background-color: black; color: white; padding: 5px; display: inline-block;">Input is?</div> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 5px;"></div> <div style="border: 1px solid black; height: 40px; width: 100%; margin-top: 10px;"></div> </div> 	Function info: <div style="border: 1px solid black; padding: 5px; margin: 5px;">-Show details</div> Button: -Home -Next
Note: This page to describe about the input of computer	

Figure 3.8 describe the information page

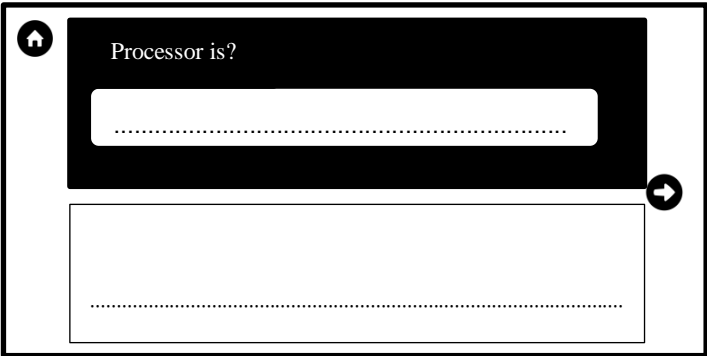
Project Name: Design and development of education learning on mobile.	
 <p>The mockup shows a mobile app interface. At the top left is a home icon. The main content area has a dark header with the text 'Processor is?'. Below the header is a white input field with a dotted line. At the bottom right of the main content area is a right arrow icon.</p>	Function info:
	-Show details
	Button: -Home -Next
Note: This page to describe about the processor of computer	

Figure 3.9 describe the information page

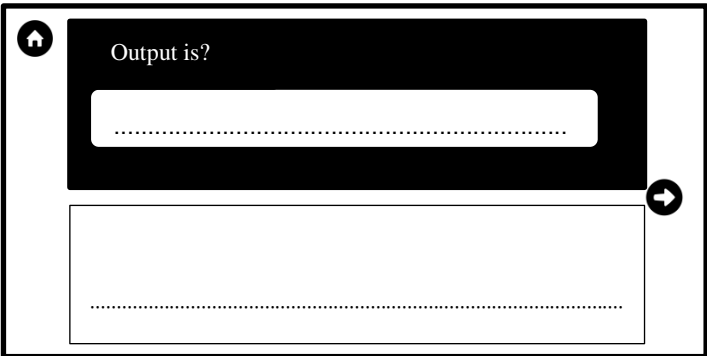
Project Name: Design and development of education learning on mobile.	
 <p>The mockup shows a mobile app interface. At the top left is a home icon. The main content area has a dark header with the text 'Output is?'. Below the header is a white input field with a dotted line. At the bottom right of the main content area is a right arrow icon.</p>	Function info:
	-Show details
	Button: -Home -Next
Note: This page to describe about the output of computer	

Figure 3.10 Describe the information page

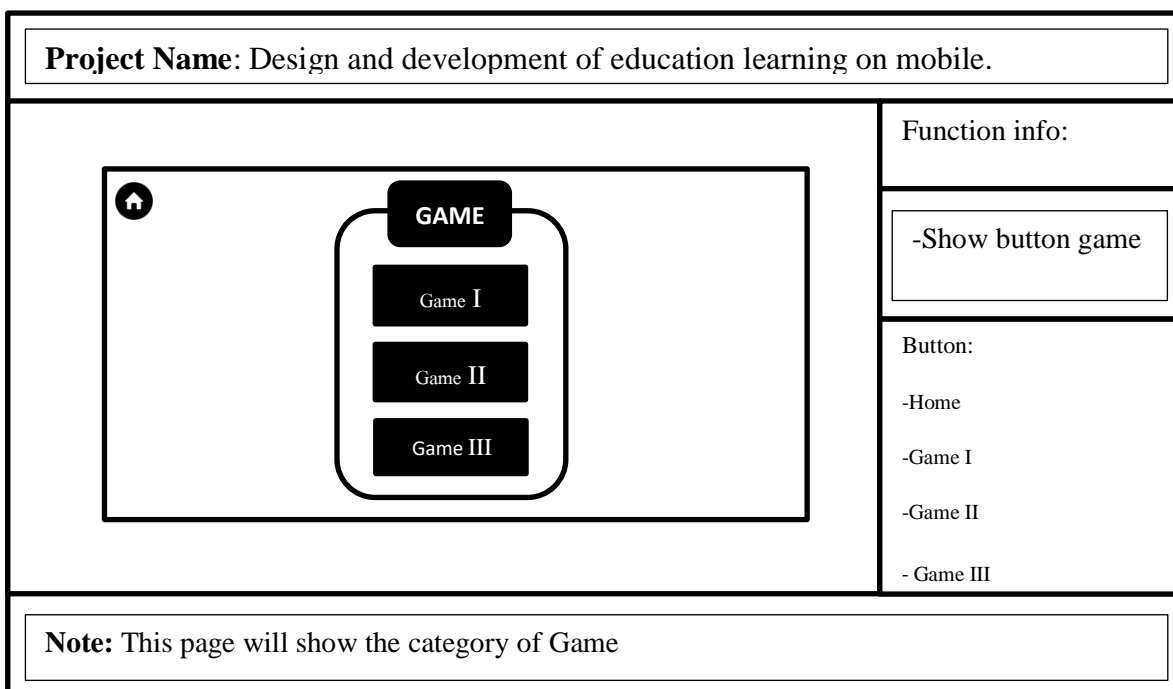


Figure 3.11 Category of Game

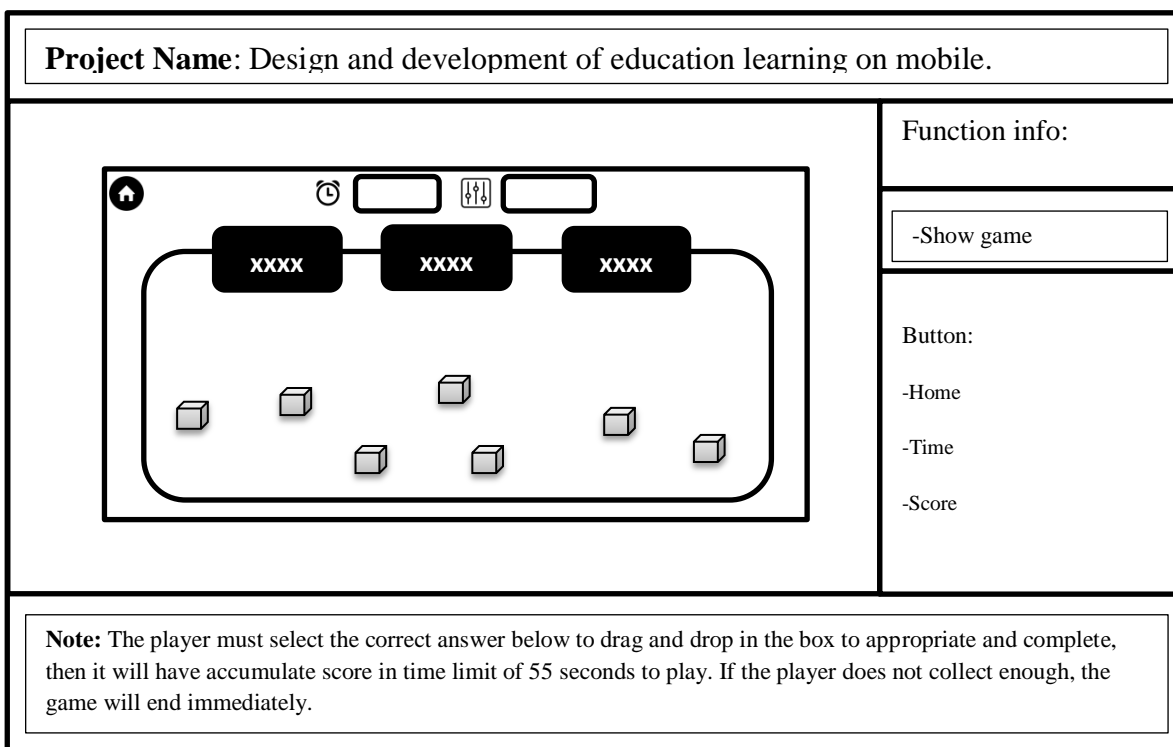


Figure 3.12 Game I page

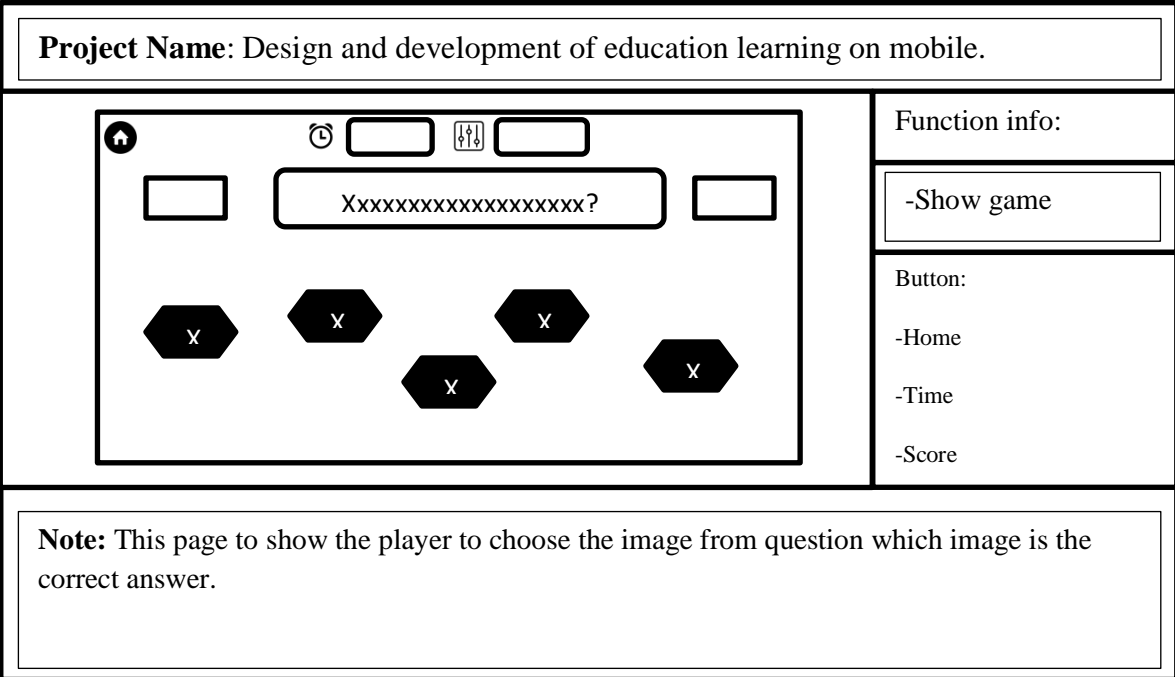


Figure 3.13 Game II page

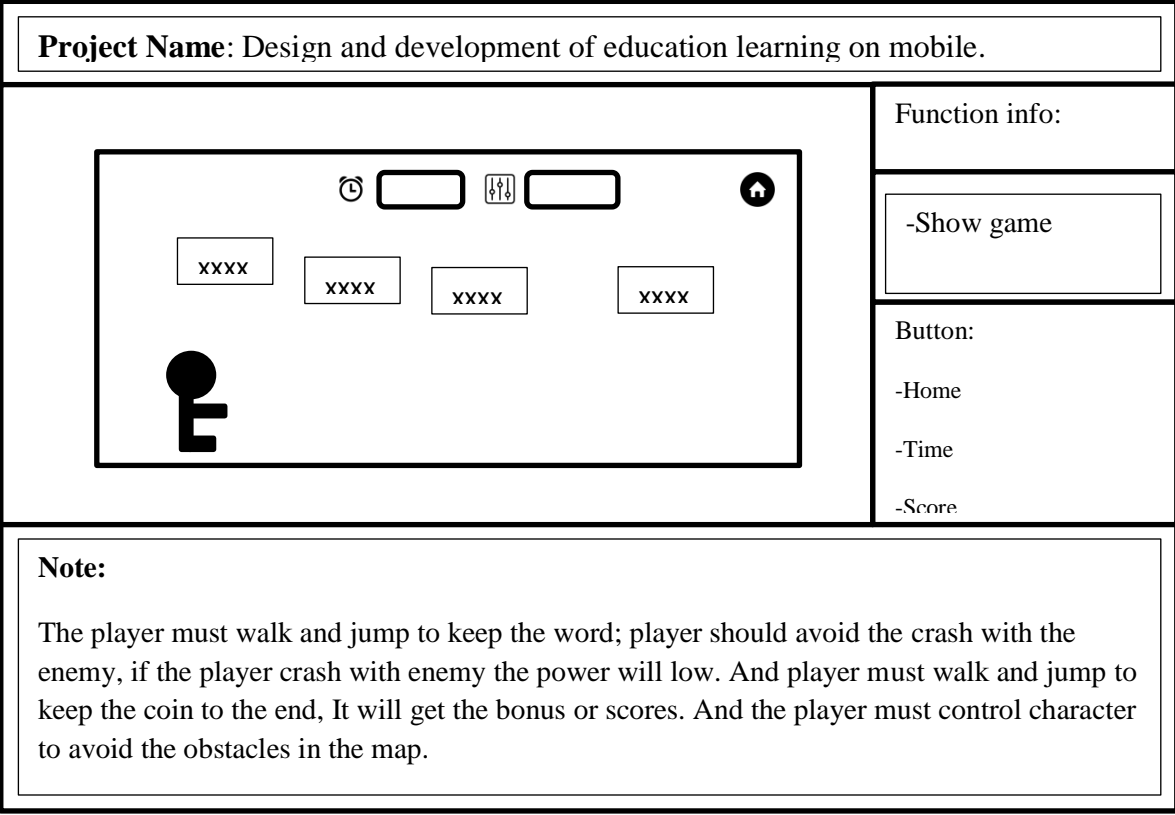


Figure 3.14 Game III page

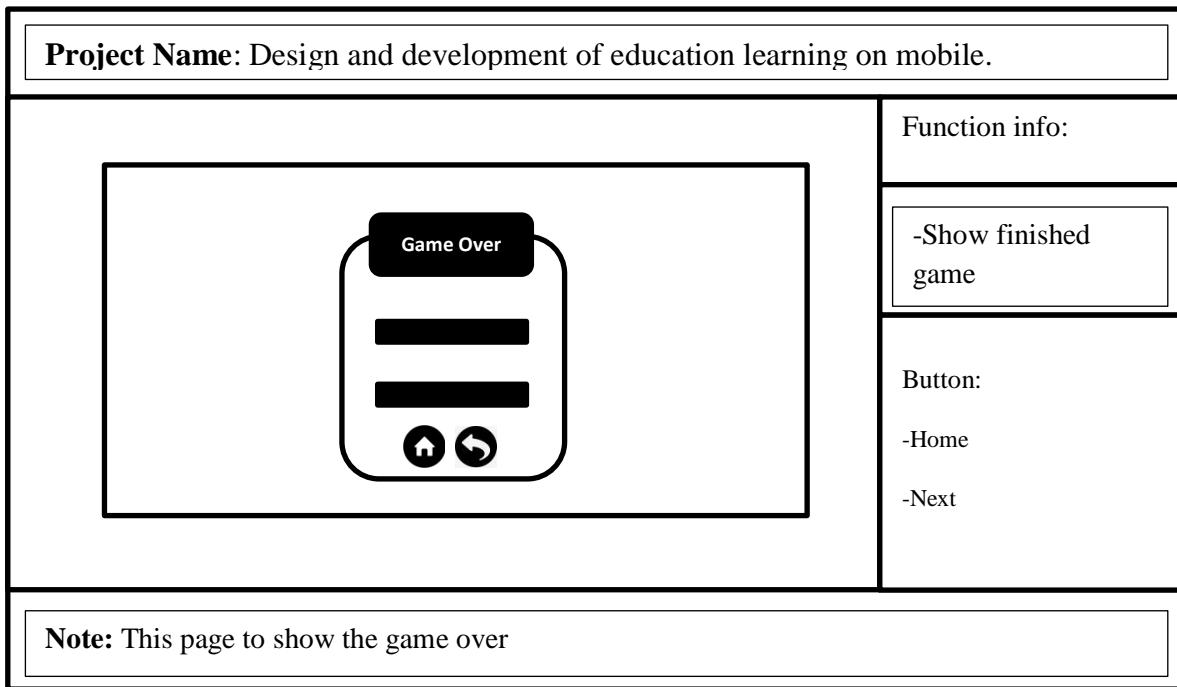


Figure 3.15 Show the game over page

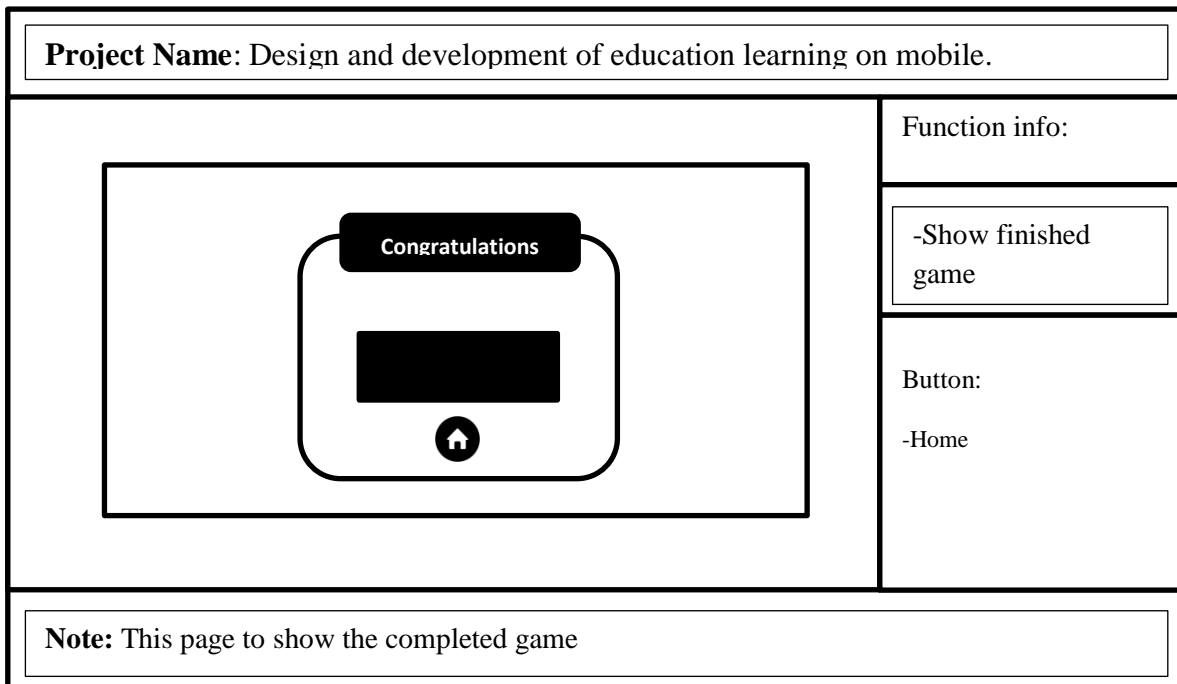


Figure 3.16 Show the completed game page

3.2.3 Tools Selection

- Adobe Photoshop
- Adobe Illustrator
- Construct 2
- Audacity

3.2.4 Authoring Phase

Authoring phase is all processing of doing project including: storyboard and designing. First step, the preparing of doing game in term of actor, interface, button, and background in Adobe Photoshop and Adobe Illustrator program.

3.2.5 Testing

In the testing phase, the developer will test an animation of the object to find error by using Construct2 to test it and editing by using Construct2 until the application is completed and meets user requirement. Testing after finish the project is the final rate of combination between animation and information text that is work correctly and match with each other. This test is the last task in development process of this project. This phase will be focus in the next chapter.

3.3 SUMMARY

The developer used the Mobile App Development Life Cycle and challenges involved to develop the Design and development of education learning on mobile. This method is suitable

for develop application project. It has 5 phases of Mobile App Development Life Cycle for DMCL including The Discovery Phase, The Design Phase, The Development and Testing Phase, The Deployment Phase, and Maintenance / Updates Phase, and I choose the Microsoft Word to design and interface. In addition describe the step by step of development project.