Project Book

On

Android Based 2D Game

FLY TO INFINITY

Project Supervisor

…….

……..

Department of Computer Science and Engineering

Leading University, Sylhet

Submitted by

……..

Batch: ….

Date of Submission: ……..

Acknowledgement

At first I would like to express my gratitude towards Almighty God for His blessings which made me to work on this project successfully.

It has indeed been a great privilege for us to have …….. (……, Department of Computer Science & Engineering) as my mentor for this project. Without his/her help, guidance and inspiration this project may won't have been completed successfully.

I am also thankful to all teachers of the Computer Science & Engineering department for their support and valuable guidance.

Application

Date: 7th January 2019

To
Head of the Department,
Department of Computer Science and Engineering,
Leading University, Sylhet.

Subject: Application for project approval.
Sir,
With due respect and humble submission, I would like to state that that I am a student of CSE department, 43rd batch. I am interested to make an android based 2D game '**Fly to Infinity**' under your guidance.
So, I therefore pray and hope that you would be kind enough to grant my proposal for the project work.

I remain,
Sir
Your most obediently,
…….Name…..

Approval

The project is “Fly to Infinity” (Android based 2D game) submitted by …… to the department of Computer Science and Engineering, Leading University, Sylhet. It has been accepted as satisfactory in partial fulfillment for the requirement of the degree of Bachelor of Science in Computer Science & Engineering as to its style and contents

Approved By

……..

……..

Head of the Department

Department of Computer Science and Engineering

Abstract

I have tried my best to describe the project in details. I have discussed the parameters regarding the project. And I hope that the target audience will be entertained with this game.

Day by day the world is getting more used to using smart phones for solving daily life problems. From communication, socialization, recreation to learning, almost all sectors have use of smart phone. My android based 2D game is focused on entertaining the target audience who are mainly kids of age 7 to 12.

“Fly to Infinity” is an android based 2D game that is built for android platform. There are two levels in this game with two different mode in each. Player will have to avoid multiple obstacles in order to save its life. There is a user friendly interactive menu with buttons for different functionalities in the game scenario.

Table of Contents

Chapter – 1:
The Project Plan

This chapter covers the project proposal and feasibility of the proposal along with background study, product and business perspective, the scopes and some preliminary idea of our game.

1.1 Background of this Project

Background is a set of events invented for a plot, presented as preceding and leading up to that plot. It is a literary device of a narrative history all chronologically earlier than the narrative of primary interest. In my project it's a single player per level that basically focuses on providing entertainment to its target audience. The player can achieve a good score based on how long it can survive.

1.2 About the Project

It's a 2D game. For each level the gamer will have to save the character from several obstacles that will come in front of it. In order to increase difficulty, the gamer should change the level from home screen.

1.3 Scope of the Game

This Report describes all the requirements for the project. The purpose of this research is to provide a virtual image for the combination of both structured and unstructured information of my project "Fly to Infinity". It is a single-player per level 2D game on the Android platform.

Chapter – 2:
Software Requirements Specification

2.1 General Description

This section includes the perspective of my product and the system environment it requires. It specifies the QFD (Quality Function Deployment) of the game and also the User Story of it.

2.1.1 System Environment

Gamer can interact with system by giving input (press key to start game) to the system. System give those inputs to script, if any change occur (if the value is changed) this object send to renders to display the things.

2.1.2 User Story of the game

After running the game, the UX view of the "Home Screen" of the game will appear on the screen. The term UX means User Experience which is used to explain all aspects of a person's experience with a system. However, then the gamer can directly select any mode using the buttons in the home screen and start playing the game All the score's will appear in the top left corner on the screen and lives will be on top right.

2.2 Specific Requirements

This section covers the project external requirements of our game and also indicates the user characteristics for this project.

2.2.1 External Interface Requirements of the Game

2.2.1.1 User Interfaces

Every game must have a home screen with necessary options so that it can be user friendly enough and gamers can easily fulfill their need.

2.2.1.2 Hardware Interfaces

“Fly to Infinity” is a mobile gaming application designed specifically for the Android platform and is functional on both mobile smart phones and tablets. “Fly to Infinity” has been developed for Android developed version and all subsequent releases. Now the Android platform is graphically adaptable with a 2 dimensional graphics library.

2.2.1.3 Software Interface

"Fly to Infinity" has been developed using a series of game development tools.

Working tools and platform

- Android Studio
- Adobe Photoshop
- Android Software Development Kit (Android SDK)**:** Software development kit for applications on the Android platform. We want to release this game in the Android platform.

2.2.2 User Characteristics for the System

There is only one user at a time in this software and the user interacts with the game (system) in different manner.

So, Gamer is the only one who communicates with the system through playing the game. And this gamer can be any person.

2.3 Analysis Model of the Game Project

This section describes the Software Requirements Specification of the project by analyzing the proper models of requirement engineering.

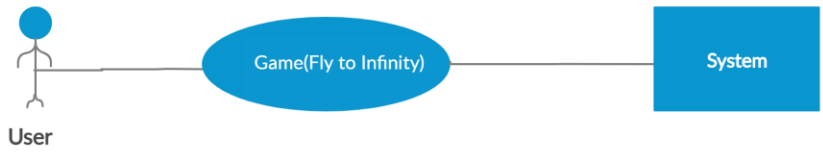
2.3.1 Scenario Based Model

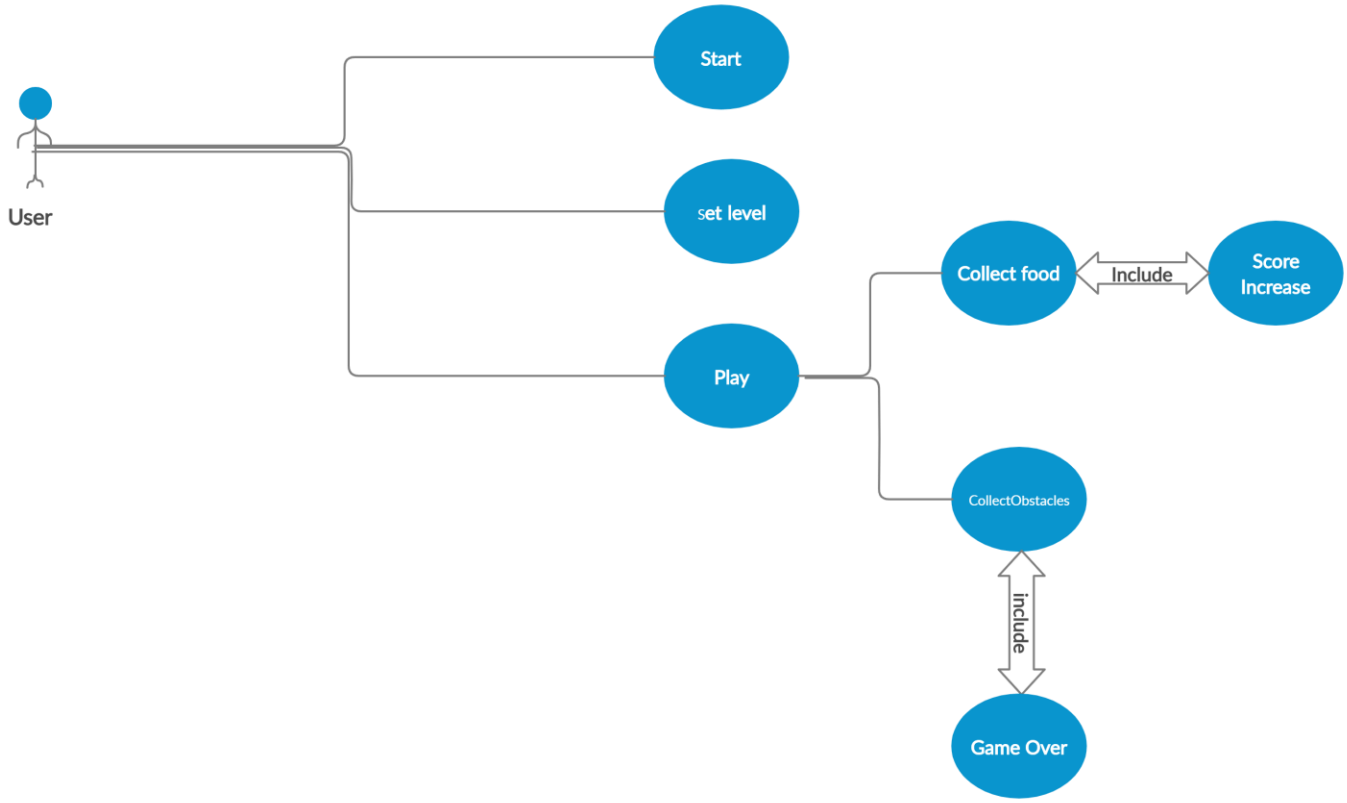
This Model depicts how the user interacts with the system and the specific sequence of activities that occur as the software is used.

2.3.1.1 Use Case Scenario

The following table summarizes the use cases of the system. I have created the use cases based on the UX view (mentioned in “User Story Part”) of the game. The activity diagram shows the flow of UX view which are the two important views of a game SRS (Details of these two terms are in section 3.1).

2.3.1.3 Use Case Diagram





2.3.1.4 Data Flow Diagram (DFD)

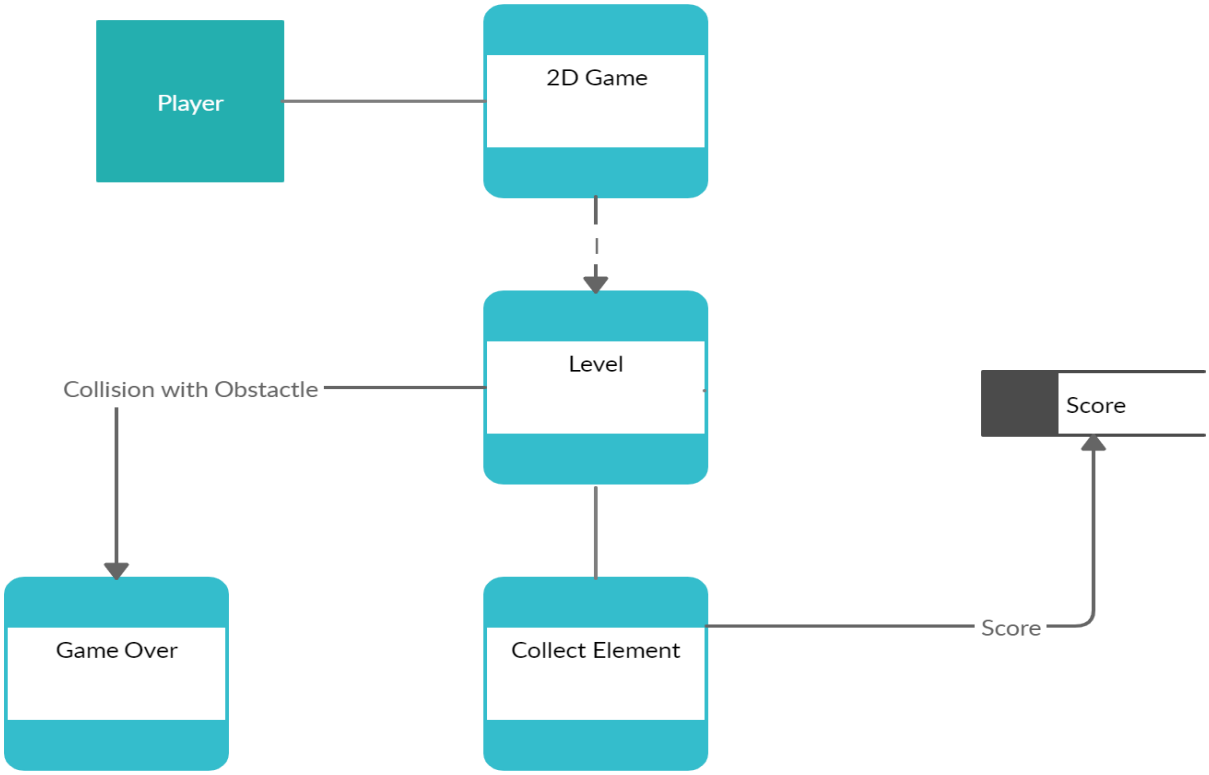


Fig: Data Flow Diagram of the game

2.3.2 Data Model

If software requirements include the need to create, extend or interface with database or if complex data structures must be constructed and manipulated, the software team may choose to create a data model as part of overall requirements modeling. Although our game has some data objects, it does not have any data storage. All the objects and their related data are handled by the game engine. So the developers need not think about data storage. For this reason, data model is redundant for this game project.

Chapter – 3
Literature & Project Review

This chapter provides research and idea source information of the project.

3.1 Introduction

For developing “Fly to Infinity” we had to go through some research on similar android games. I have played few platform games from play store which provided the basic idea for the development of the game. Here we have compared two games with “Fly to Infinity”. Below are the details and comparison and contrast between “Fly to Infinity” and the other games.

3.2 Research Sources

Following are the details about the games that we played for research purpose.

3.2.1 Another 2D Platformer

“Another 2D platformer” is a platform game in which the player will have to help the character to pass through some holes or empty spaces to complete his mission. It also requires, to touch the screen in order to control the character.

3.2.1.1 Comparison and Contrast with “Fly to Infinity”

1) Both are platform games where the characters are going up and down on a platform and avoiding obstacles in order to stay alive. But, both have different type of obstacles.
2) “Another 2D platformer” has scrolling background whereas; “Fly to Infinity” has an image as a background.
3) Both games require the player/character to collect objects to score. But, for “Fly to Infinity” it is some food or balls and for “Another 2D platformer”-coins.
4) “Fly to Infinity” has two levels with two different difficulty level. “Another 2D platformer” has multiple levels with the same character.

Chapter – 4:
User Manual

This chapter provides a user instruction for the players. It includes the procedure of playing and also contains some snapshots to give some ideas of the game to the player before starting playing it.

4.1 Playing Procedure

To start a New Game, Player should select “Play” button from the Home Screen. To get proper instructions, there is a button in the home screen clicking which will load a scene with the steps to play the game. After that, the game will be started and score will be counted till the female character dies. There will be some randomly spawning objects (roses) which should be collected by the player to move on to the next level. After collection of a specific number of roses, the game scene will automatically move on to the next level. The next level consists of a male character which will also have to save itself from the obstacles coming towards it and here the speed of the obstacles will be higher than the previous level. There is also a button in the home screen to turn the sound on/off and another button to clear the previously saved best score.

Chapter – 5:
Future Plan & Conclusion

A software project means a lot of experience. In this section I summarize the experience gained during development of “Fly to Infinity”.

5.1 The Obstacles

1. Working with android was completely a new experience for me.
2. I adopted these things by video tutorials, text tutorials, and internet and learning materials given by the tools themselves. It's a matter of time, patience and hard work.
3. It is very sensible work and it demands much time because the game engines try to connect game environment with the real world.
4. Creating a 2D model is very difficult because you need to work with each and every point of the model.

5.2 The Achievements

1. Now I could learn about game engines. How it works, the properties, objects and others.
2. I know how a model is constructed and how it is animated.
3. Growing creative thinking and imagination capability.

5.3 Future Plan

- Level Extension
- Gamer can change character
- Improve Graphical Representation
- Introduce new environment and scenes

5.4 Conclusion

I learned a lot while working with this project. This project has sharpened my concept of android game, animation and the software-hardware interface.

I learned a lot about different documentation. The piece of software we developed is intended to provide entertainment among the little gamers of the world. The success of this project may give pleasure to billions of little game lovers among the universe. This project not only tested my technical skills but also my temperament.

There were times that I almost lost hope but I recovered through constant concentration and hard work.

Appendix

Appendix A: References

[1] Self-Study: “Java basic concepts”, retrieved from https://www.tutorialspoint.com/java/index.html, accessed on 1st January 2020

[2] Self-Study: “Java OOP concepts”, retrieved from https://www.youtube.com/user/ANIS3730/, accessed on 24th January 2020

[3] Self-Study: “Java game”, retrieved from https://www.androidauthority.com/android-game-java-785331/ accessed on 3rd October, 2018.

Appendix B: Abbreviation and Acronyms

Term	Definition
Game engine	A game engine is a system designed for the creation and development of video games.
UX	User experience (UX or UE) involves a person's emotions about using a particular product, system or service.
Animation	Animation is the rapid display of a sequence of images to create an illusion of movement.
Android	Android (Google product) is a Linux-based operating system.
Scripting	A scripting language or script language is a programming language that supports the writing of scripts, programs written for a special runtime environment that can interpret and automate the execution of tasks which could alternatively be executed one-by-one by a human operator.
Graphics	Graphics are visual presentations on some surface, such as a wall, canvas, screen, paper, or stone to brand, inform, illustrate, or entertain
2d Model	In 2D computer graphics, 2D modeling is the process of developing a mathematical representation of any two-dimensional surface of object (either inanimate or living) via specialized software.
SRS	Software Requirements Specification
UI	User Interface
Gamer	A person who plays a game or games, typically a participant in a computer or role-playing game.
System	A system is a set of interacting or interdependent components forming an integrated whole or a set of elements (often called ‘components’) and relationships which are different from relationships of the set or its elements to other elements or sets.