

Sky Bluster: A Cross Platform Based Game

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Computer Science and Engineering.

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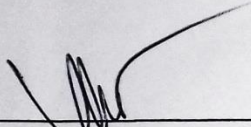


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APPROVAL

This Project titled “**Sky Bluster: A Cross Platform Based Game,**” submitted by Probir Bhowmik ID: 152-15-6238, Ashim Shome ID: 152-15-6208 and Md. Shuvo Mia ID: 152-15-6163 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 06 May 2018.

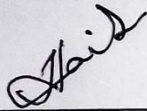
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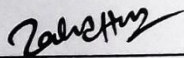
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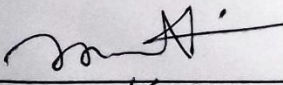
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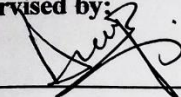
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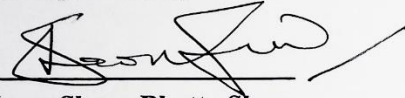
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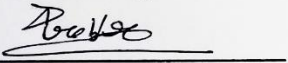
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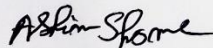


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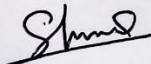


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ABSTRACT

Sky Bluster is a single Player, offline based mobile (i.e. Android) game. The game is a reflection of Air/Space Shooting game which is playing on mobile devices. This game aims to bring fun and simplicity of a Space Shooting game. It has the features of time trial which generates an excellent user experience among the gamers. Games are played by all kinds of people all over the world. Mobile phones and internet now allow portability in gaming experience. E-sport are also getting popular day by day. So gaming industry has a strong market including developing countries. We found that single player Air shooting style game is Very Popular. So we decided to make an Air shooting game named Sky Bluster which is very popular in western countries as well as people used to play this type of game in a shop or café. Designing a game takes a lot of time. Construct 2 gave us the advantages of ease of use and greatly organized tools so we were able to manage it in time. We found excellent resources available in the internet. Project gave us a good outlook. Putting this aside the software development life cycle (SDLC) helped us organize task, goal and time. This project will inspire us to make more games in future. This report discusses the goal, designs and development issues, gameplay, shortcomings and future work of the game. At first, it introduces features of the game Air Bluster. Secondly, it discusses the design and implementation of the game. Finally, the outcomes of the game have been described as a concluding remark. In addition, this report includes the lessons for team members that were learned from the hurdles and successes of this project.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Game means entertainment and most of the game help us to learn something new. Games are two types: indoor and outdoor. People play many games in the real world. Like chess, football, cricket, puzzle, card games etc. In the meantime, people also play virtual game there also similar games like chess, football, puzzle. But no one can play shooting games mostly air shooting games. So only virtual games can give people satisfaction about this kind of games like racing games, air shooting games and so on. People like challenging and new interface to play to get entertainment. In this game which was very much popular as arcade game now this is easy to play at computer or any other smart device. Anyone can play this game and have entertainment.

1.2 Motivation

We're motivated by popularity of Air Shooting Game, Especially A Very Popular Air Shooting Game Named Sky Force.

Sky Force is a vertically looking over shoot them up computer game arrangement made by the Polish computer game engineer Infinite Dreams Inc. The gameplay is reminiscent of Capcom's 19XX arrangement and Seibu Kaihatsu's Raiden arrangement, including a weapon update framework and expansive end of stage managers.

We're motivated by popularity of Air Shooting Game, Especially A Very Popular Air Shooting Game Named Sky Force [1].

1.3 Objective

Games are two types: indoor and outdoor. People play many games in the real world. Like chess, football, cricket, puzzle, card games etc. In the meantime, people also play virtual game there also similar games like chess, football, puzzle. But no one can play shooting games mostly air shooting games. So only virtual games can give people satisfaction about

this kind of games like racing games, air shooting games and so on. People like challenging and new interface to play to get entertainment. In this game which was very much popular as arcade game now this is easy to play at computer or any other smart device.

1.4 Expected Outcome

The difference between real life game and virtual is: real life games played physically and other hand, virtual games played virtually by some devices like: Mobile, Desktop, Laptop, Xbox, Google Cardboard, and Microsoft HoloLens etc. Now-a-days virtual games keep real life satisfactions. However, you can't always play physical game so this game will give virtual satisfaction.

1.5 Report Layout

This report is organized in six (6) chapters. Chapter one (1) gives an overview. Chapter two (2) include background study of the entire project. In chapter three (3), requirement specification is described. Chapter four (4) described about design specification. Chapter five (5) implementation and testing. Chapter six (6) conclusion.

CHAPTER 2

BACKGROUND STUDY

2.1 Introduction

Background study is planning and scope of the project. In this section we will provide the strategy we adopted while development. The first step of planning is collecting the issues and demands. Then analyzing user satisfaction data and finally deploy.

2.2 Related Works

At first we decided to plan how our project is going to start. We are three people team. We have distinct quality from each other and we have good communication and understanding. This gave us a good advantage. We decided to make a game project with construct 2. By visiting many websites and playing many different games we saw opportunity in cross platform games. Most of the games are for limited platform as well as almost every people can use browser so we planned to make web application. Our instructor supported the idea and helped us through the project.

Then we studied the new tools named construct 2 and this is very new for us. This is very easy to use but hard to understand the logic. We also tried to understand the market and we found that lots of people are having interest on this kind of games. As well as, we studied the current market which was not bad if we continuously build more exiting games.

2.3 Comparative Studies

We have divided project work into three parts documentation, design and implementation. Also made a plan to work on this project. One member always made documentation for the project and others doing implementation.

2.4 Scope of the Problem

Gaming industry is expanding day by day; in near future indie games developer will be able to take their full potential into reality. The research of market and public demand confirm us about the necessity of this project. We assure that people will get the zest of the Space Air Shooting game in every device in near future.

2.5 Challenges

Gaming industry is expanding day by day; in near future indie games developer will be able to take their full potential into reality. The research of market and public demand confirm us about the necessity of this project. We assure that people will get the zest of the Space Air Shooting game in every device in near future.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Business Process Modeling

The computer game business has grown to significant business in revenues and surpassed the music and movie industry. The Video game business' size and development throughout the most recent 25 years has advanced from a relatively nonexistent market to an immense industry. Another marvel which has additionally had a gigantic development amid the most recent decade is online business, the purchasing and offering of items and administrations over the Internet. Computer games are normally associated with PCs and the Internet. This together with the way that they are computerized items makes them perfect for web based business and opens up for some intriguing potential outcomes for new plans of action. In the examination the most mainstream plans of action in the computer game industry are presented and ordered through an exploration show based upon web based business writing. An overview has then been done went for catching purchaser's mindfulness, experience and demeanor towards these models. Six center plans of action for computer games are displayed. These are: Retail, Digital appropriation, Subscription, Player to player exchanging, Micro-exchange and Advertising.

3.2 Requirements Collection and Analysis

Although several, all methodologies start with the induction of user requirements, their analysis and subsequent specification. The Requirements Engineering is a dedicated branch of software engineering aimed at developing precise and effective specification of user requirements.

3.2.1 Methodology

Rapid Application Development (RAD) is a type of Incremental Development method which is shown in figure 1. In our project we used RAD methodology. We used this method to develop our project. As Rapid method we design a quick skeleton process to make a basic structure of the project. After making that skeletal structure, we continuously Developed-Tested and Re-designed the previous structure. When we had a good progress final testing phase was done for making the previously made things to put together. Finally, the latest build was done [2].

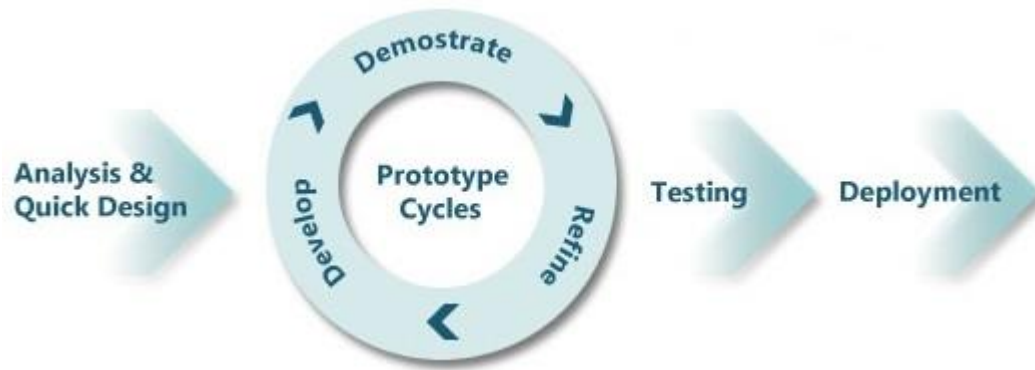


Fig 1: RAD Methodology.

Rapid Application Development systems regularly have these points of interest: expanded speed of improvement and expanded quality. The speed increments can be accomplished utilizing an assortment of strategies including, quick prototyping, virtualization of framework related schedules, the utilization of CASE apparatuses and different procedures. Quality, as characterized by RAD, is both how much a conveyed application addresses the issues of clients and additionally how much a conveyed framework has low support costs. RAD expands quality through the contribution of the client in the examination and configuration stages. A few frameworks likewise convey focal points of interoperability, extensibility, and the versatility.

3.2.2 Block diagram

A block diagram represents the principal parts of functions by blocks and the lines represent relationship between blocks. The block diagram is mostly used in engineering in hardware design, software design and process flow diagrams. Typically, it's used for higher level work. It is a diagram that less detail described diagram that clarify overall concepts about the system. Block diagram depend on the principal of the black box system where the contents are hidden and we can't know how the box works [3].

Block diagram of our system is shown on the following figure 2:

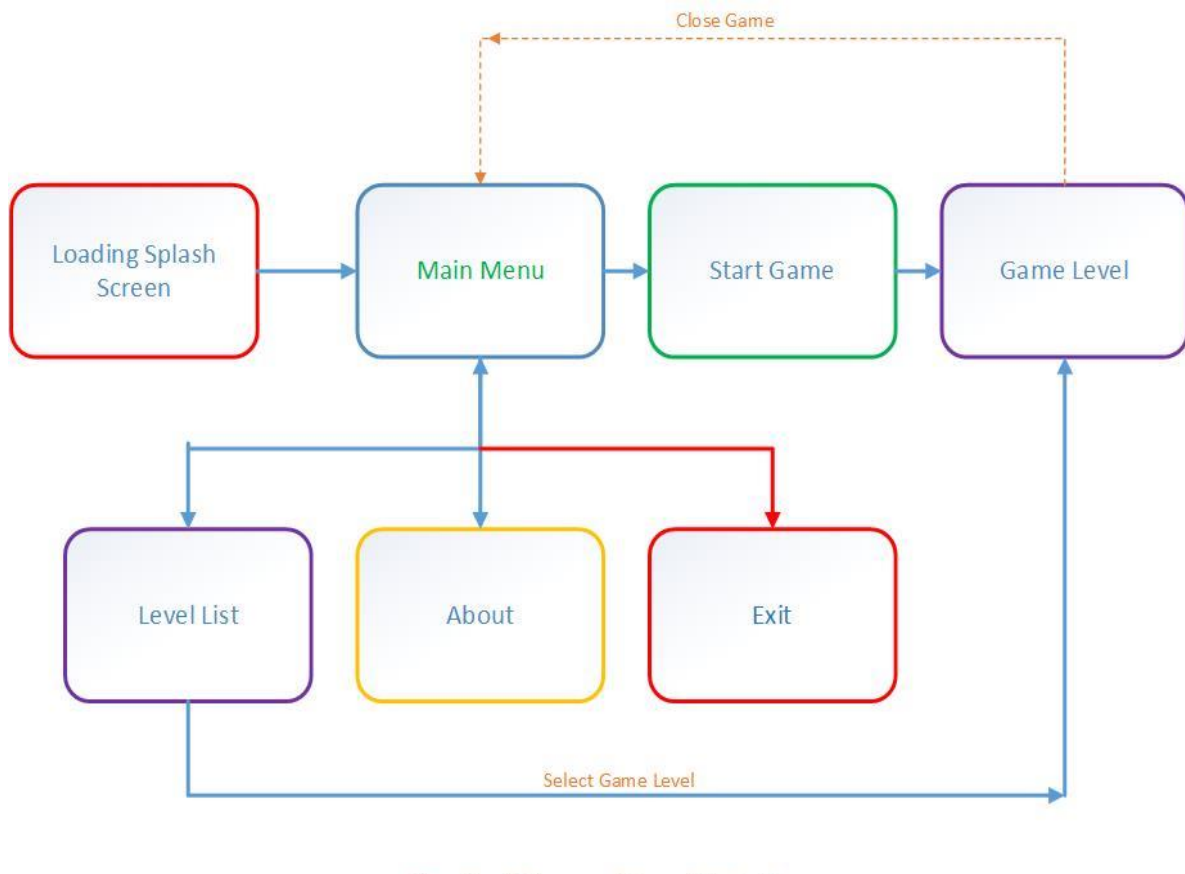


Fig 2: Block Diagram of Game Life

3.3 Use Case Modeling and Description

3.3.1 Use Case Diagram

The use case diagram depicts how the user interacts with the system and the specific sequence of activities that occur. A use case is defining the interaction between a role (known in the Unified Modeling Language) and a system. The main purpose of a use case diagram is to show what functions are performed for which role or actor. We have created the use cases based on the UI view of the game. Here in our game user is the single person. So we describe our use case diagram for the player [4].

Use case diagram of our system is shown on the following figure 3:

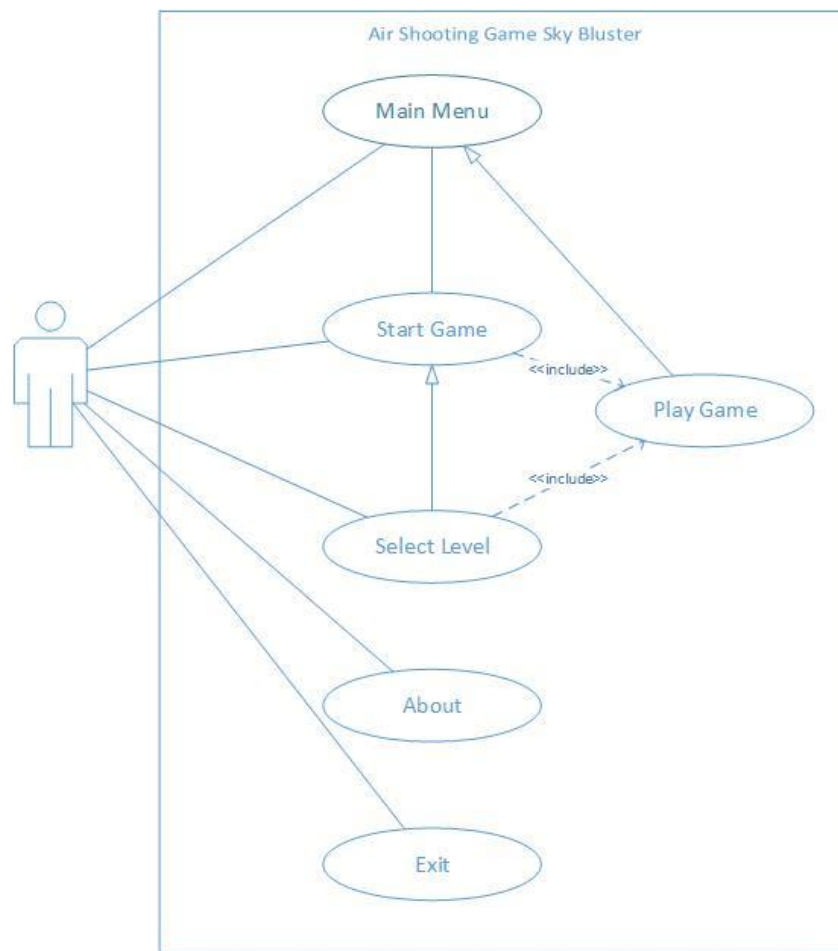


Figure 3: Use Case Diagram of Player activity.

3.5 Design Requirements

To Design this game, we use construct for implementing events and Photoshop cc for make gaming environment, and adobe audition cs6 for audio system.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Introduction

Design and development is a major issue of a game. Design is how application looks like. And the other hand, development is the process of making an application. This is a vital part for any kind of application making like desktop software, mobile software, game development etc. If there is no good design, then there is no hope for game. People nowadays wants better graphics to play games.

4.2 Font-end Design

A unique design can capture many user of an application. Gorgeous user interface (UI) and nice user experience (UX) is mandatory to focus any application or game. Our game is made up with new graphical user interface (GUI) design. On the other hand, development is a process to make an application. Development means multiple assets collaborating.

In our game we design player air plane and enemy Air plane and also boss air plane for giving an experience to the user. User can easily move their plane and shoot enemy by using mouse.

4. 3 Backend Design

The back end is the code supporting that front end (responsible for database access, business logic etc.). In simple term, application front end is what you see (i.e. the user interface) and application back end is the application engine that you do not see. The "back end" is the code supporting that front end (responsible for database access, business logic etc.). Though construct 2 don't need any code but we have to use logic which is back end properties.

4.4 Interaction Design and UX

For every enterprise product two key terms of design are very important [5]. They are:

- User Interface (UI)
- User Experience (UX)

4.4.1 User Interface (UI)

User interface (UI) is a looking of an application. User interface (UI) defines how the application looks like. It is a main part of an application. For a game user interface (UI) must have attraction. User can get their experience from user interface (UI). User interface (UI) is everything designed into a system that human being interact. A good user interface (UI) provides good user experience (UX).

4.4.2 User Experience (UX)

To avoid unnecessary product features, simplifying, and customer-facing technical public at, incorporating business and marketing goals UX design is must. User experience (UX) is a user's experience with a given system, including the interface, graphics, design, physical interaction, and the manual in most cases. UX stands for mainly relevant access of usability, accessibility and Human-Computer Interaction (HCI).

4.5 Implementation Requirements

After starting the game initially player will get 0 score and player have to shoot laser towards enemy and earn score. Player will get 100 health which is defined by health bar on left top of the interface. There are also enemy who are shooting to destroy player health and kill the player so player must be careful about those enemy and enemy lasers. Player also can destroy them. If player hit the enemy, enemy will destroy instant and player will be rewarded with 100 point for each. After doing 5000 point the boss will come to take down player with huge power and boss will get 1000 health as health bar. So player have to careful about that and have to destroy the boss to win the game.

4.5.1 Player

You can move player by using mouse and player also get health bar which defines that player can survive that time until health bar is gone. In every hit of enemy or enemy laser player will lose 10 health.

4.5.2 Enemy

Enemy will come randomly and shoot 2 laser toward player and player have to dodge those to survive. There are only one type enemy with lots of design.

4.5.3 Boss

Boss is stronger than both enemy and player. Boss have so much power to shoot on player. Player must dodge those lasers and destroy the boss to gain the victory.

4.5.4 Graphical User Interface

GUI stands for Graphical User Interface (GUI). Mainly GUI is the main view of the game play. The following pictures show the appearance of the game below:



Figure 4: Screenshot of Main Menu activity.

4.5.5 Game Play

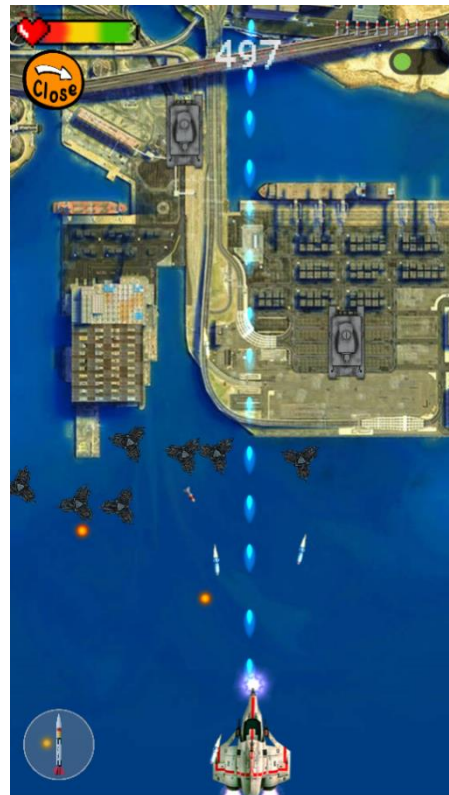
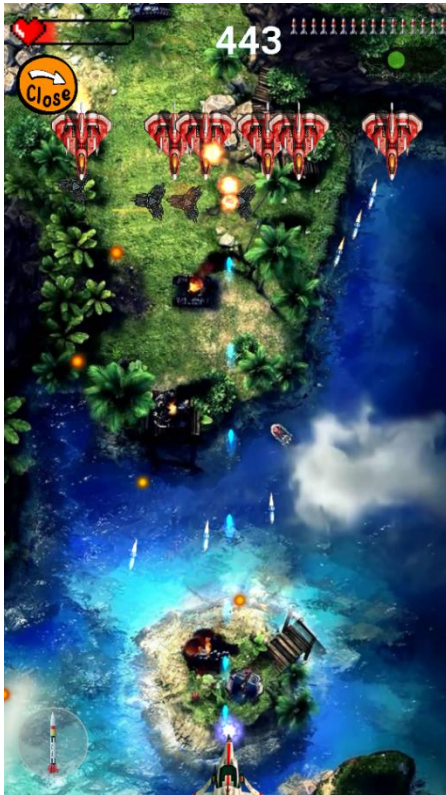


Fig 3: Screenshot of Game Paly in different Level .

4.5.6 Game Level List and About activity:

User can play or jump to any level from level list activity. And user can see developer information in about activity.



Figure 4: Screenshot of Game Level List and About activity.

4.5.7 Summary

For making nice user interface (UI) and better user experience (UX) we use some tools that provide the result that we expected. Application should be reliable for the users. So design and development is major fact of the project. For maintain standard of the game we use the essential buttons and maintain professional game logic and methodology.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Introduction

For making a game always need some tools and a game engine or a system. Many kinds of tools or engine is used like: Unity3d, Unreal Engine, Blender, Build engine, Core3D, Cry Engine, Crystal Tools, Cube, Delta3D, MT Framework, Panda3D, Torque3D, Z Game Editor and many more. But need to choose a specific game engine for making a game. Here we chose some tools below:

- ☐ Construct 2
- ☐ Adobe Photoshop CC
- ☐ Adobe Audition cs6

5.2 Implementation of Interactions:

The amusement substance can be static or dynamic, in connection to development, and relying upon how it is made (set or procedural) and even a blend of both, age can likewise be continuously or from capacity information, this is generally reliant by the level of cooperation or equipment ability.

5.2.1 Construct 2

Construct-2 is a flexible and multiplatform based game engine for making 2D and 3D games. Construct-2 is very helpful for making cross-platform based game. You can deploy your game in mobile, desktop and web. For that reason, if you make a game in construct-2 platform it could deploy in web as HTML5. The game also could deploy in desktop platform like windows, Linux. Construct-2 has also a big asset store. Some assets are free and some are paid. Asset can easily use in project. You can also make single or multi player based game easily in Construct-2. Construct-2 has also a large amount video and text tutorials that you can easily learn a lot about this tool [6].

Here we use latest version of construct-2 for making our game. This platform is so easier for combine assets and logic. The platform is flexible and powerful for making multiplatform or cross-platform based game.

Construct-2 is very easy tool to make games and it is very easy to use. Even we can do animation on it also no programing is required to use this tool. All is about to use logic with assets placement. Construct-2 is getting popular day by day and lots of people making games by using this. Also it has its own bug testing mode. This software is a package and anyone can make games with this software but people must know logic and graphics have to be very fantastic. So we used construct-2 as our tool or engine to make this game.

5.3 Implementation of Front-end Design:

Adobe Photoshop CC

Adobe Photoshop CC is the best software for doing graphical works. We selected this software for making background and some objectives. You can edit your graphics or image quickly and easily by Photoshop software. The tools also helpful for making many materials for game like custom fonts, character, button, object, etc [7].

Adobe Audition CS6 and

Adobe Audition is a very effective software where anyone can make sound to use on their game. And as construct-2 supports obb or wav sound this Adobe Audition can make them easily. I have used this Software and some website for making sounds and used to the game [8].

5.4 Testing Implementation

We play this game in different platform and device to test this game. All device run this game smoothly and any kind of lagging problem. Even this game can run in low configured device.

CHAPTER SIX

CONCLUSION

6.1 Discussion and Conclusion

A software project means a lot of experience. In this section we summarize the experience gained by project team during development. We will discuss about challenges faced by the team during this project and what made us withstand these challenges.

Working with a game project is a new experience to us; we faced many difficulties over time. We needed to implement many difficult logic problems for some task. Construct-2 as a game engine is excellent. But as a game engine it requires a sound knowledge. Without strong understanding of how a game engine works it might not be possible to make games.

The purposes of games are enjoyment of the people. Games are not only for entertainment but also for learning. In the busy life everyone needs entertainment. Today's most people have internet. So people can easily gain access to play this kind of game.

We hope to make more games in near future. Please give us your feedback, suggestions, ideas and help us improve.

Limitation:

Every Game or application have limitation. Our game has also some limitations. They are:

- ☐ Multi user didn't Support.
- ☐ Can't play in online

6.2 Scope for future Developments

Every application needs to update with more functionality and facility. Our game also need to update or future work for more facility or better user experience. They are:

- ☐ Multiplayer will be supported.
- ☐ More level will be added.
- ☐ User Interface (UI) and User Experience (UX) will be better and comfortable.
- ☐ User can buy and use coin to boost power of aircraft and weapons

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Appendices

Appendix A: Project Reflection

As what I have learnt during this project, a superior group would be unified with elite and high relationship.

When we initially began off, I didn't surmise that our group was not the commonplace high-errand one. In any case, I think our gathering is exceptional as it were that each gathering part has his/her own particular one of a kind character and we really supplement each other.

It's much the same as how vital for the arrangement of a group is. You have to enroll the correct individuals to shape a superior group. Maybe, we were very fortunate to be placed in a similar group.

Albeit numerous would believe that the errand part would be more imperative than the relationship segment, I think both are as similarly vital and supplement each other.

What makes our group in the long run forms into a high-errand group is really the great relationship we set up in route. As we develop nearer together (particularly after the DID visit), we really built up a feeling of having a place with the group. It's a "we're all in this together" sort of feeling. We need everybody to do well since we are a group.

With everything taken into account, in the wake of doing this gathering venture together, I have come to understand that high relationship is a vital segment in a group. It might be the factor that goads the group to accomplish a high-undertaking execution.

In conclusion, what could be enhanced is our train. There was a considerable amount of time given to us to do this gathering venture so we could sort of slacked off toward the beginning of the semester. In any case, if I somehow happened to be in a gathering with shorter due date later on, I trust that my group would require a superior teach to guarantee that everything is completed on time and legitimately.

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