FLAPPY BIRD

Team Name: The Brainy Fools

Course Title: Software project lab1

Course Code: SE 2112

Project Supervisor

Falguni Roy

Lecturer

IIT, NSTU

Team Members

1. Md Al-Adnan (ASH1825008M)

2. Moonmoon Das (BKH1825027F)

3. Akash Debnath (ASH1825037M)

Submission Date: 09 May, 2019

Introduction

Our software project is Flappy Bird. It's a game application. The game was designed and built by **Dong Nguyen**, a developer who lives in Vietnam. Flappy bird is a side-scroller game where the player controls a bird, attempting to fly between columns of green pipes. The bird will be flying until it collisions with a pipe or it fall on ground. It's a simple game of infinite level type. It's a challenging game for all.

Software Project Description

Story

We choose game for our first software project. Actually game is entertaining for anybody and in leisure time we can spend our time nicely by playing game. The flappy bird game implemented for only desktop.

Requirements

A requirement is a singular documented physical or functional need that a particular design, product or process aims to safety. It can be divided into functional requirements and non-functional requirements.

Functional – 2D animation, objectives selection, moving wall, collision detection, moving background etc.

Non-functional – We can keep the bird playing by pressing mouse and move it in the space of pipes.

2D Animation

Animation is a complex subject in game programming. Animation is rapid display of sequence of images which creates an illusion of movement. Java games are expected to run on multiple operating systems with different hardware specifications. Threads give the most accurate timing solutions.

Objective Selection

We create a bird object which is flying until any collision occurred and the bird is flying in the wall objectives which are begin from top and bottom of the screen.

Moving Wall

The wall moving on and it will come randomly in size and distances. The bird is flying in the middle of the wall.

Collision Detection

When the bird touch the anywhere of a wall it cause a collision. Collision detection is one of important task of the game. If the bird touch any wall (pipes) the game will end.

Moving Background

The picture used as background image is moving on analogously. We used two same image which are coming one after another regularly.

Score Counting

Score counting is the interesting for user. By the score the player knows his/her performance. If the bird cross a pipe without collision or not fall in ground his/her score increment one.

Proposed Process Model

A **s**oftware process model is a simplified representation of a software process. Each model represents a process from a specific perspective.

Types of model:

1. The Incremental Development Model.
2. The spiral model.
3. Evolutionary model.
4. The phases of iterative development.
5. The principles of agile methods.
6. The Waterfall Model.

We used evolutionary model in our project. In this way, we accomplish work in a iterative way.

Evolutionary Model

Evolutionary model is a combination of iterative and incremental approach to software development. The Evolutionary development model divides the development cycle into smaller, incremental **waterfall** models in which users are able to get access to the product at the end of each cycle. Waterfall project management is a sequential, linear process of project management. It consists of several discrete phases. No phase begins until the prior phase is complete, and each phase's completion is terminal waterfall management does not allow you to return to a previous phase. We use this process model.

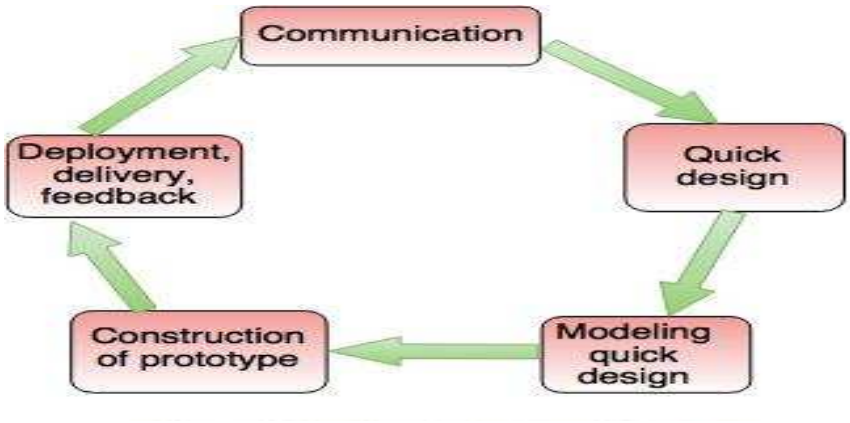

Figure 1: Evolutionary Process Model

Project Team

Team Name: The Brainy Fools

Members: Al Adnan Sami (ASH1825008M)

Moonmoon Das (BKH1825027F)

Akash Chandra Deb Nath (ASH1825037M)

Proposed Timeline and Actual Timeline

Proposed timeline is the timeline which are made by guess in a time bound and actual timeline means the work history which is make after completed work.

Table 01: Proposed Timeline Table

Task	Deadline
Proposal	Within 3rd week of January
Requirement Analysis, Specification	Within 20th January
Designing, Study	Within 3rd March
Coding	Within 1st April
Final Testing	Within 8 May

Table 02: Actual Timeline Table

Task	Deadline
Proposal	Within 3rd week of January
Requirement Analysis, Specification	Within 20th January
Designing, Study	Within 3rd March
Coding	Within 1st April
Final Testing	Within 8 May

Requirements Traceability Matrix

A Traceability Matrix is a document that co-relates any two-baseline documents that require a many-to-many relationship to check the completeness of the relationship.

Req1 = 2D Animation

Req2 = Objectives Selection

Req3 = Moving wall

Req4 = Collision Detection

Req5 = Moving Background

Req6 = Score Counting

Table 03: Requirement Traceability Table

Requirement Test Case	Req1	Req2	Req3	Req4	Req5	Req6
Test Case 1						
Test Case 2	✓					
Test Case 3	✓	✓				
Test Case 4	✓	✓				
Test Case 5	✓	✓	✓	✓		
Test Case 6	✓	✓	✓	✓	✓	✓

Tools

Language: JAVA

IDE: An IDE (Integrated Development Environment) contains a code editor, a compiler or interpreter, and a debugger, accessed through a single graphical user interchange (GUI). Our IDE is Eclipse.

Future Direction

We will add more feature to the game and will change the bird and background scenery according to user choice. The status and the history will be saved and we show a graph where user can see his total performance whether it increasing or decreasing.

Software Project Metrics

Code Level

LOC - Line of code in the whole project. The Total number of code lines in whole project.

NCLOC - Non-comment line of code. The line which are not commented and this code accomplish our objective.

CLOC - Comment line of code. The line of code which are not working to calculate output.

Density of Comments - It means the number of comment line proportion to average code**.**

Average LOC in a Class - The average number of line of code in each class.

Table 04: Code Level Table

LOC	970
NCLOC	778
CLOC	192
Average LOC	88
Density of Comments	19.8%

Design Level

Package: Package in Java is a mechanism to encapsulate a group of classes, sub packages and interfaces.

Class: A class, in the context of Java are templates that are used to create objects, and to define object data types and methods.

Package Name: flappyBird

Classes:

1. HomePage
2. MenuPanel
3. GamePanel
4. GameFrame
5. MainBird
6. BirdImage
7. WallImage
8. About
9. Help
10. MenuPage
11. Settings

- Static Variable Percentage : 1.022%
- Methods per class: 7

Collaboration

LOC addition and deletion

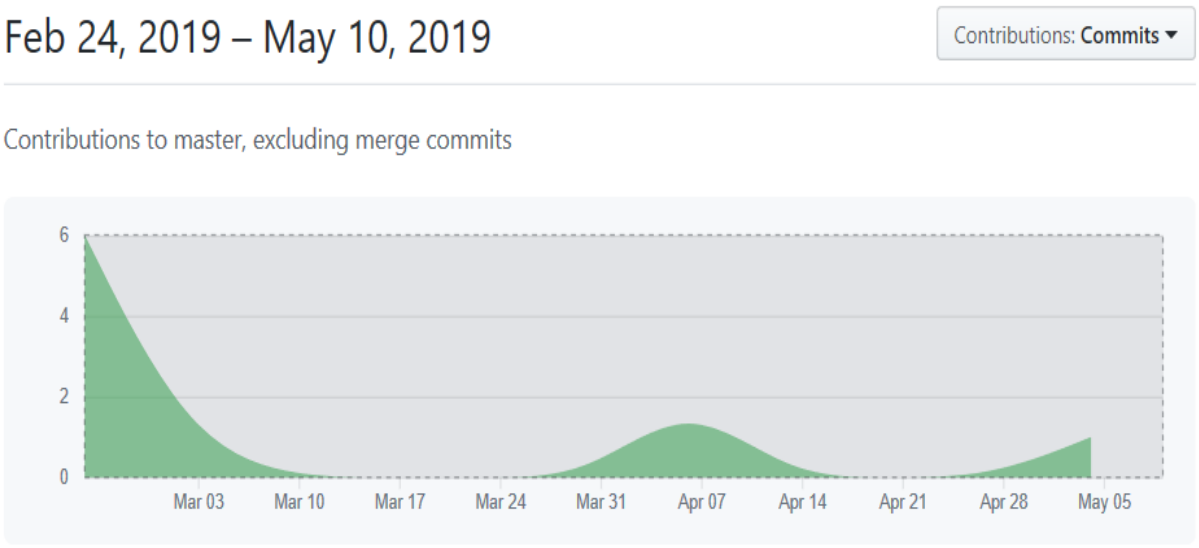

Figure 2: Total Collaboration

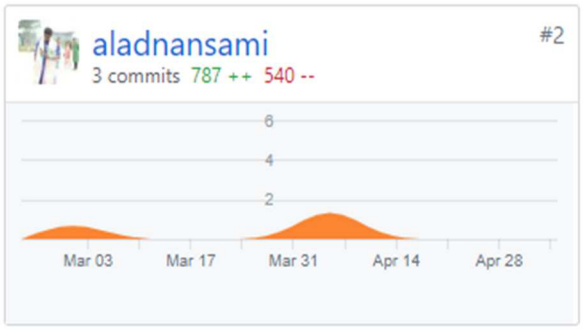

Figure 3: Collaboration of Al Adnan Sami

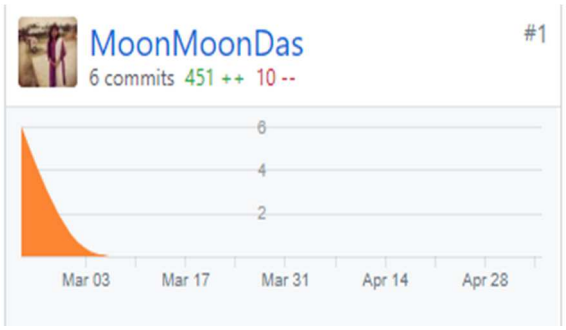

Figure 4: Collaboration of Moonmoon Das

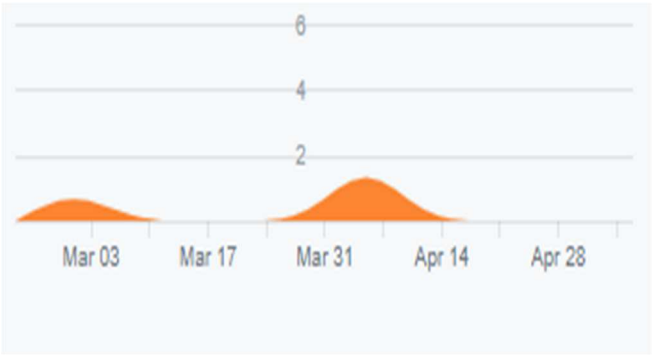

Figure 5: Collaboration of Akash Deb Nath

Software Project Deliverables

1. PowerPoint Microsoft Open XML
2. Project report
3. Softcopy user manual
4. Source Code

Summary

We choice the project to gain proper knowledge to make desktop application. It increased our knowledge for Object Oriented Language (JAVA).Getting experience java GUI. The another important issue is, it's a game application and it will be recreation for all.

Reference

1. **https://www.wikipedia.org/flappybirds**[Accessed at Jan 17, 2019]
2. **https://mashable.com/2014/02/10/flappy-bird-story/**[Accessed at Jan 24, 2019]
3. **https://www.wired.com/2014/02/flappy-bird/**[Accesed at Feb 09, 2019]
4. **http://frivetenskapligpublicering.blogspot.se/**[Accessed at Feb 23, 2019]