Flappy Jayhawk

Maintenance Plan

EECS 448 – Spring 2016

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Overview

This maintenance plan is for the game Flappy Jayhawk, and provides information for the system description, support environment, and system management, including essential information such as costs and management fees. This maintenance plan is meant to only be utilized until May 2017, which should then have its maintenance reorganized and replanned.

1. Introduction

All information in this maintenance manual is concurrent up to early May 2016. Any future inflation costs or new system management methods should be taken into account appropriately.

1.1 Purpose

The maintenance plan seeks to set a framework for future development of the Flappy Jayhawk program and provide some structure for how the future of the program will be managed.

1.2 Points of Contact

All parts of the current version 2.0 was developed during projects in Spring 2016 of EECS 448 at KU by Team 14. Team 14 can be contacted through the online messaging system Slack, through usernames victorluiz, c715v349, jaytee0913, or j574y923.

1.3 Project Reference

Currently Flappy Jayhawk can be run with pygame 1.9.1 and python 2.7, and has a database that can be connected through mysql_connector 2.0.4. The game is designed to be overall similar to Flappy Bird with a KU Jayhawk used as the bird protagonist and other visual changes. The bird jumps on spacebar inputs and score is added when the bird passes through pipes. The game is over when the bird crashes into a pipe. Additional powerups are added to the project as well as differing sound effects.

2. System Description

Currently the Flappy Jayhawk system is coded entirely in python (version 2.7), using the imported pygame (version 1.9.1) library.

2.1 System Application

The Flappy Jayhawk game is designed to be a recreational side-scroller with pleasant graphics, meant to energize or relax a target audience. Monetary profit can be obtained through various methods, such as through power upgrades or ads and donations. Integer based high scores are to be stored into a database to allow competitivity.

2.2 System Organization

The program is divided into a pipes, bird, background, and runtime file, named Pipes.py, Jayhawk.py, Background.py, and FlappyJayhawk.py, respectively. Documentation and images are stored in separate folders. See: “uml state diagram.png”, “uml class diagram.png”, and “uml use case.png”

2.3 Security

Currently the database is not secure, though personal information allowed is limited. Upgrades are expected, as high score inputs can be easily altered. The game is also possibly vulnerable to hacking, and further research is required to enhance its security.

3. Support Environment

The game is includes the capability of being played on Windows/Linux/Unix/Macintosh/etc. as long as the system includes pygame 1.9.1 and python 2.7. Database can be accessed by having mysql_connector 2.0.4.

3.1 Computer Hardware

The game requires approximately a 1.0 GHz processor, a dual core, 200 MB of RAM, and 1 MB available hard disk space to run effectively. As of Flappy Jayhawk version 2.0, the game is designed only to be run on computer-based operating systems.

3.2 Support Software

Python 2.7 (https://www.python.org/download/releases/2.7) and Pygame 1.9.1 (http://www.pygame.org/download.shtml) are both essential to Flappy Jayhawk’s release. Mysql_connector (http://www.lfd.uci.edu/~gohlke/pythonlibs/) is not necessary to run the game but

allows database access. The game also uses multiple external images for its bird, backgrounds, and pipes.

3.3 Database Characteristics

The database is currently hosted on a class account on MySQL servers at KU. Less than 10MB of space is available for database storage.

4. System Management

Flappy Jayhawk is expected to be expanded and grow in outlook and user playability.

4.1 Priorities

Flappy Jayhawk is expected to expand into most browsers including mobile based browsers, Steam, and both the android and iOS app stores. Given the indecisive timeframe of integrating a game into Steam, the project is expected to try to expand towards android and iOS app stores first, then Steam, then web based browsers.

4.2 Tasks

The team is expected to hire a graphics designer, then find ad handlers for web-based and app revenue. The project is currently expected to implement Google Adsense for its website and Chartboost for its apps.

4.3 Project Team

The original team is expected to continue to work on the project. Expected positions to be hired include a graphics designer to add to the original team of four software engineers.

4.3.1 Roles and Responsibilities

The original team is expected to work with the Steam SDK to integrate Flappy Jayhawk into Steam's software, as well as working with bootstrap for browser compatibility and managing any customer support. The team expects to delegate roles into security and iOS development, security and android development, Steam development and team management, and website development and customer support. Website development is expected to be coded with bootstrap. Steam development is expected to be coded according to the Steam SDK, the Apple

app with Cocoa (Objective C), and the android app with Java. The graphics designer is expected to design original images for the game, compatible with the differing platforms. Expansions such as online multiplayer play will be added to each version as soon as the delegated team member can manage.

4.4 Costs and Revenue

Graphics Designer[4] - Based on averages $65-$75/hourly for graphics design cost, logo, as well as the the prospect that graphics will have to be refactored to fit differing platforms, expected price range is currently estimated at approximately $2000-$2400.

Database[1] - Database costs are expected to be $149/monthly for a 10gb SQL server. The server will be hosting all of the high scores across all the expansions, and shouldn't be expected to exceed a 10gb range. This is only necessary if the KU mySQL server cannot hold the current scores.

Website Domain[7][8] - A .com domain is expected to be $9.95/yearly, with web hosting expected to be approximately $60/yearly based on the fact the server will be relatively new and most likely will not generate too much traffic, with an expected long term contract.

App Stores[5][6] - Expected prices for the Apple App store are estimated to be $99/yearly. Android app store costs are expected to be $25/one time for the Google Play store.

Steam[9] - Steam costs are expected to be $100/one time, though revenue expected is unaccountable. Prices are set by a Steam team, therefore unreliable.

Software Engineers[10] - Based on the median salary of $68,082/yearly or approximately $28/hourly for software engineers, the expected salary for the original team of four members would be $272,328/yearly.

App Store Ads[2] - Ads are expected to be run through ChartBoost, which contain ads that generate revenue that can be $0.045 - $0.40 each time the app is opened or closed. If the game is downloaded by about 150 active users that open and close the app several times a day, expected revenue would be approximately $75/day which would amount to $27,375/yearly.

Website Ads[3] - Ads are expected to be run through Google Adsense, which might average CTR 1% with CPC $0.25. With an assumed 1,000 page views/daily and about 50 ad clicks/daily, this approximates to $15/daily, or $5,475/yearly.

The following chart has the previous cost and revenue related information summarized, rounded to the nearest whole dollar.

Table 4.4. Expected Costs and Revenue for Expansions in Flappy Jayhawk

	Data-base in SQL	Website Domain	Steam	Apple App Store	Google Play	Graphics Designer	Software Engineers (4)	App Store Ads	Website Ads
One Time			$100		$25	$2000-$2400			
Hourly Cost						$65-$75	$112		
Monthly Cost	$149								
Yearly Cost		$70		$99			$272,328		
Expected Revenue Yearly								$27,375	$5,475
Total Costs/Yearly	$276,810	Total Cost/Yearly - Software Engineers (4)	$4,482		Total Rev./ Year	$32,850			

As seen, revenue is expected to falter compared to costs. However, expansions can be halted if necessary, and once expansions are complete, revenue is expected to steadily outweigh costs. The

team should expect to only obtain any leftover revenue, rather than expected median salary values of software engineers.

5. Sources

[1] https://azure.microsoft.com/en-us/pricing/details/sql-database/

[2] http://www.gamesbrief.com/2012/03/how-to-make-3000-per-day-from-advertising-in-your-free-to-play-game/

[3] http://www.incomeactivator.com/15027/100-with-adsense.htm

[4] http://smallbusiness.costhelper.com/graphic-designer.html

[5] http://www.techrepublic.com/blog/software-engineer/app-store-fees-percentages-and-payouts-what-developers-need-to-know/

[6] http://developer.android.com/distribute/googleplay/start.html

[7] http://www.hostway.com/domain-name/pricing.html

[8] http://www.whoishostingthis.com/resources/web-hosting/

[9] https://www.steampowered.com/steamworks/FAQ.php#Submission

[10] http://www.payscale.com/research/US/Job=Software_Developer/Salary