4Leaf Co.

PROJECT PLAN

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Table of Contents

1.0 Introduction

1.1 Project Scope 3

1.2 Major Software Functions 3

1.3 Features 3

2.0 Project Resources

2.1 Team Members 4

2.2 Tools 4

3.0 Project Schedule

3.1 Iteration 1 6

3.2 Iteration 2 7

3.3 Iteration 3 8

3.4 Iteration 4 9

3.5 Iteration 5 10

4.0 Management and Staffing

4.1 Team Roles 11

4.2 Communication 12

5.0 Tracking and Control Mechanisms

5.1 Document Revision History 13

1.0 Introduction

4 Leaf Co. was tasked to create a program that teaches a user the correct way to play Blackjack. The game will serve as the dealer and will play the user in a game following a blackjack strategy table. This program will be used as both a learning experience and interactive activity to provide users with a better understanding of this fun game.

1.1 Project Scope

The scope of the project is to create a blackjack game that teaches a user how to correctly play blackjack. The program will be playing the role of a dealer which will play against the user. The distinctive trait to this program is that if a user makes a mistake, the program will let the user know what mistake was made and present them with the correct move.

1.2 Major Software Functions

In addition to playing the game of blackjack against a user, the 4 Leaf Co. blackjack software will show the user the correct way to play blackjack by the rules as well as show the user how to win blackjack game through several instances of trial and error.

1.3 Features

- Desktop program
- Engages the user to develop their skills in blackjack

- Teaching program and isn't competitive in the sense of winning
- Database to hold *n* combination of hands
- Calculated odds of winning with the use of a strategy table
- Calculated overall probability using strategy card
- Scenarios: split, stand, hit and double down

2.0 Project Resources

2.1 Team Members

- Jordan Quick (PM)
- Frances Coronel (2nd in Command)
- Calvin Chambers
- Anesha Passalacqua

2.2 Tools

The tools we plan on using to complete this project are:

HTML

Hypertext Markup Language (HTML) is the standard markup language used to create web pages. Web browsers can read HTML files and compose them into visible or audible web pages. Browsers do not display the HTML, rather uses them to interpret the content of the page.

CSS

Cascading Style Sheets (CSS) is a stylesheet language used for describing the look and formatting of a document written in a markup language. CSS is a cornerstone technology used by most websites to create visually engaging web pages, user interfaces for web applications, and user interfaces for many mobile applications.

MySQL

SQL (Structured Query Language) is a freely available open source Relational Database Management System (RDBMS) that uses Structured Query Language (SQL). SQL is the most popular language for adding, accessing and managing content in a database. It is most noted for its quick processing, proven reliability, ease and flexibility of use. MySQL is an essential part of almost every open source PHP application. Good examples for PHP/MySQL-based scripts are phpBB, osCommerce and Joomla.

jGrasp

jGrasp is a lightweight dev environment created specifically to allow for the automated generation of software visualization in order to further software comprehension. This program acts as a minimalistic IDE that can run the desktop console application effectively across either Mac, Windows, or Linux. This program is used to code, debug, and execute the desktop console application.

3.0 Project Schedule

Iteration	Date Due
1	01/21/2016
2	02/11/2016
3	03/03/2016
4	03/31/2016
5	04/27/2016

3.1 Iteration 1

- Design database record layout
    - Columns of database: `idBlackJackDatabase`, `CardValue`, `FaceValue`
    - The database is required to hold *n* combinations of possible hands
    - Each individual will receive a certain amount of points to start off with and will use the points each turn to receive more spendable points. This does not include the number of possible outcomes and points received from each individual game.
    - All probabilities will have three decimal points:

Dealer's Hand	User's Hand	Split	Double Down	Hit	Stand
3	10	.000	.000	.000	.000

6	5, 5	.000	.000	.000	.000
10	8	0	0	.000	.000

- Create Plan Documentation
    - A document that details every step of the development of the project.
- Create Requirements Document
    - A document that details the needs of the stakeholder for final delivery.

3.2 Iteration 2

- Write program to generate database
    - This is a program to write the database in SQL to generate the cards and the values
- Design program to calculate probability
    - Calculate the probability of both splitting and not splitting. If it is possible to double down calculate the probability of both doubling and not doubling
- Write program to calculate hands probability
    - This is a program that will calculate the probability of winning against the program itself
- Verify the hands probability against the program
    - This program is the verify that the probability of the user winning that hand is producing the correct results

- Design the tables required and the program logic
    - Used SQL statements to design tables and generate the database. To display database outside of terminal java code was used
- Update plan documentation
    - Each iteration this document will be updated each time the Microsoft Project plan is updated.
- Update requirement documentation
    - This document will be updated each iteration as needed.
- Add all other documentation
    - All remaining documentation will be updated and ready for delivery.

3.3 Iteration 3

- Write the program for Statistical Component
    - This program will handle all of the statistical components of the program
- Write program to calculate hands probability (Continued From Previous Iteration)
    - This is a program that will calculate the probability of winning against the program itself
- Verify the hands probability against the program(Continued From Previous Iteration)
    - This program is the verify that the probability of the user winning that hand is producing the correct results

- Create the strategy card
    - A blackjack strategy card will be created using the probabilities that were calculated in the probability of each hand program.
- Calculate the overall probability of winning
    - This program will be used to calculate the probability of winning by multiplying the probability a hand occurs by the probability of winning with the current hand.
- Design a simulation program to compute the overall probability
    - This design will show how the simulation aspect of the game that will get the overall probability of winning for the user based upon the hands they were given
- Write the simulation program
    - This is the creation of the simulation program
- Design the game program
    - Have a design of the actual game of blackjack utilizing the programs that was created in previous iterations
    - Generate *n* possible hand combinations
        - Iterates 1 time but not multiple times
- Update and add all documentation
    - All remaining documentation will be updated and ready for delivery.

3.4 Iteration 4

- Write the game program

    - Write the actual game program that will implement all of the previous programs as well as create the actual game of blackjack
- Create the strategy card(Continued From Previous Iteration)
    - A blackjack strategy card will be created using the probabilities that were calculated in the probability of each hand program.
- Calculate the overall probability of winning(Continued From Previous Iteration)
    - This program will be used to calculate the probability of winning by multiplying the probability a hands occurs by the probability of winning with the current hand.
- Testing
    - Each program or component will be tested to find any flaws and to make sure that they are all producing accurate results.
- Update all documentation
    - All remaining documentation will be updated and ready for delivery.

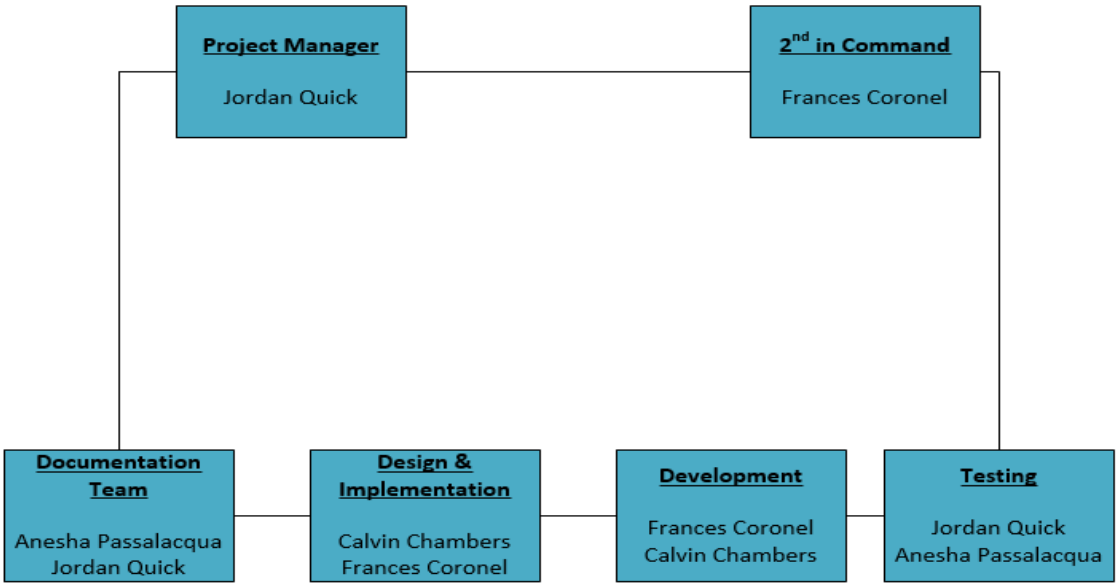
3.5 Iteration 5

- Write the game program
    - This is the final version of the blackjack game
- Testing
    - Each program or component will be tested to find any flaws and to make sure that they are all producing accurate results.
- Update all documentation

- All documentation will be updated, finalized and ready for final delivery.

4.0 Management & Staffing

4.1 Team Roles



Roles	Requirements
Project Manager	• Planning what work needs to be done, when and who's going to do it.

	• Looking at the risks involved in a particular project and managing these risks.
Documentation Team	• Handles all documentation and continuously update all documentation to make sure it meets the qualifications of the client.
Design Team	• Handles all aspects of the design of the product • Has an understanding of how to implement the design components
Development Team	• Has an understanding of all of the development tools that are needed and used to make a functional product • Knows how to implement every part of the application

Testing Team	• Tests all of the components of the application to check the accuracy and the applications • Understands the correct ways to the product effectively

4.2 Communication

Meeting Dates and Times

- Tuesdays and Thursdays 5pm to 7pm
- *Mondays and Wednesdays 5 to 6 if needed
- Time and days vary depending on schedules
- Location: ST 126 or ST 319

Mobile Communication

4Leaf Co. uses GroupMe as their primary means of communication. GroupMe is a group messaging application that can be accessed from any mobile device or internet browser.

5.0 Tracking and Control Mechanisms

5.1 Document Revision History

Version	Implemented By	Approved By	Date	Reason

1.0	Jordan Quick	Jordan Quick	1/21/2016	Iteration 1
2.0	Anesha Passalacqua and Jordan Quick	Jordan Quick	2/11/2016	Iteration 2
3.0	Jordan Quick	Jordan Quick	3/3/2016	Iteration 3
4.0	Jordan Quick	Jordan Quick	3/31/2016	Iteration 4
5.0	Jordan Quick	Jordan Quick	4/26/16	Iteration 5