Software Requirements Specification

for

Blackjack Game

Version 1.0 approved

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CSC305

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Revision History

Name	Date	Reason For Changes	Version

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1. Introduction

This document contains all of the software requirement specifics. It contains a general description of the types of users who will be using our application, how it is going to work, and what technologies we are using to make it work. We will also outline and describe specific components of the project.

1.1 Purpose

The purpose of this software is to emulate a game of Blackjack on the computer. It will provide full functionality to a game of Blackjack including a Dealer, Betting on hands, Player actions such as hitting or standing, and functionality for consecutive games.

1.2 Document Conventions

In the following document, any segments of code will be in `Courier New`, in font point size 11, in order to differentiate it from regular text. Also, a Graphic User Interface will be referred to as a GUI.

1.3 Project Scope

The software being made is a black jack game. Using the rules of the traditional blackjack game we are going to be using python and its libraries to code the game, the deck, the player, the bank, and the dealer. We are using strategies like pair coding and incremental releases to make sure that our product is working the way we want and everyone is on the same page.

1.4 References

- PyGame www.pygame.org
- PyOpenGl pyopengl.sourceforge.net
- Kivy kivy.org

2. Overall Description

2.1 Product Perspective

This is a new program designed to emulate a game of Blackjack for a PC user. It will operate as a stand-alone system, and will interface with no other programs. Results from this program will display to the user during and after the game, and will not require a file for storage. Inputs can be handled from simple command line interface or a Graphical User Interface.

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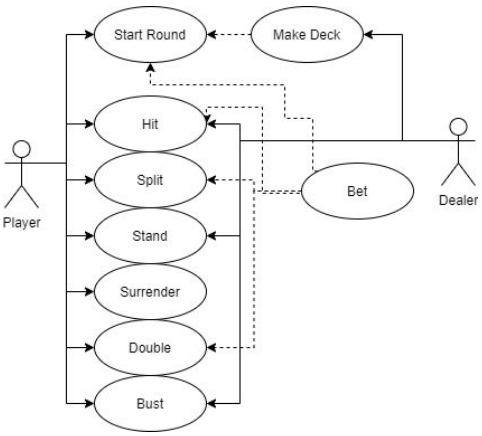
2.2 User Classes and Characteristics



2.3 Operating Environment

This program will work with Windows.
When a user downloads the game and opens it:
Registration:
• After entering in a username, email address and password, the user can register with the game.
Main Menu:

- The user can start a new game.
- The user can check chip balance.
- The user can decide how many players will be in the game.

Objectives:
• The purpose of this game will be to allow players to play Blackjack for free and without any real money.

2.4 Design and Implementation Constraints

Cannot use OS's other than Windows. Cannot use web based game play.

2.5 Assumptions and Dependencies

Constrained to one OS (Microsoft Windows 10), and no internet access or multi-machine play.

3. System Features

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3.1 Dealer

3.1.1 Description

The system must allow the user get cards from a dealer and have actions based on the cards dealt (High priority)

3.1.2 Stimulus/Response Sequences

3.1.2.1 Deal cards to players

Stimulus: User requests to add a grocery item to the cart.
Response: App temporarily stores product data in preparation for checkout, then displays the data in a "Shopping Cart" window.

3.1.2.2 Each player gets a set of actions

Stimulus:Player chooses an action and is dealt cards, holds the current cards, or doubles bet for a single card.
Response: The dealer deals cards according to what the player chose.

3.1.2.3 Winner is determined.

Stimulus:The dealer calculates all the cards of all the players.
Response: If there are any totals greater or equal to the dealer money is dealt out according to the total.

3.1.3 Functional Requirements

3.5.3.1 The system must be able to deal cards to each player to play the game
3.5.3.2 A set of actions pop up after player sees cards and picks one of the options
3.5.3.3 After all players have chosen an action the final total of all cards are calculated and a winner is determined and money is given out accordingly.

3.2 Decks (4 or 8 deck "shoe")

3.2.1 Description

As a player, I need a dealer, So that I can get a see and receive cards.

3.2.2 Stimulus/Response Sequences

3.2.2.1 New Game

Stimulus: the player clicks the new game button
Response: The player places a bet and the dealer will deal out cards for all players in the game who have bet.

3.2.2.2 Decks

Stimulus:When the game starts the decks are shuffled
Response: Once every card has been gone through in all the decks (4 or 8 deck "shoe") are shuffled again.

3.2.2.3 Game Over

Stimulus: Once the game ends the decks are no longer shuffled
Response: a game over message comes up, and the player is brought back to the main menu.

3.3.3 Functional Requirements

3.3.3.1 The system must be able to deal cards to each player in the game
3.3.3.2 Each time a card is dealt, it should consist of one card from the 4 or 8 deck shoe

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3.3.3.3 The correct amount of cards should exist in the deck (e.g. 4 Ace of Clubs for a 4 shoe deck, or 8 Ace of clubs for an 8 shoe deck.

3.3 Dealer

3.3.1 Description

The system must allow for the user to see what cards they have and one card that the dealer has, and be able to press whether they want to hit or stay.

3.3.2 Stimulus/Response Sequences

3.3.2.1 Deal cards to players

Stimulus: The round begins
Response: The game shows the user what cards they, and all other players playing have.

3.3.2.2 Each player gets a set of actions

Stimulus:After the player gets their cards they can choose to get more and try to get closer to 21 or they can stay where they are not to go over 21.
Response: The dealer dealers more if they want more or just moves on to the next person.

3.3.2.3 Winner is determined

Stimulus: You either go over 21 or you have higher than the dealer without going over 21.
Response: If you go over 21 you lose, if you beat the dealer you get double the amount you bet back.

3.3.3 Functional Requirements

3.5.3.1 The system must be able to deal cards so that the player can see them.
3.5.3.2 The player is presented with two options following seeing their cards.
3.5.3.3 System determines who wins and loses at the end of the round.

3.4 GUI

3.4.1 Description

As a player, I need the simulation to include the chips to see how much money I had bet and cards on table. (mid priority)

3.4.2 Stimulus/Response Sequences

3.4.2.1 Betting

Stimulus: the player goes to the betting screen.

Response: will see how much you will be able to bet for the game

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3.4.2.2 Table

Stimulus: the player went to the table screen.

Response: will see the different color chips representing different amount which will add up to the amount you betting on for the game

3.4.2.3 Game Over

Stimulus: The player and or the dealer had reached their limit by standing where they are at, hitting 21 or going over 21.

Response: a game over message comes up, and the player is brought back to the menu to start betting again if they want to continue playing till they run out of money

3.4.3 Functional Requirements

3.4.3.1 The system must allow player to bet certain amount of chips

3.4.3.2 have a table where you will see cards and chips as well as your next move for the game

3.4.3.3 game will decide if they win or not depending on the card dealer number is higher or lower than the player or player and dealer pass 21

3.5 Bank

3.5.1 Description

As a player, I need to interact with the bank, so that I am able to place bets, collect winnings, and know if I am close to losing.

3.5.2 Stimulus/Response Sequences

3.5.2.1 New Game

Stimulus: the player clicks the new game button
Response: the bank will get a predetermined amount of money (probably 1000$) added to it

3.5.2.2 Bet

Stimulus: the player places a bet by choosing amount and clicking the place bet button.
Response: the amount that the player bets is removed from the bank.

3.5.2.3 Game Over

Stimulus: the player bank hits 0 dollars at the completion of a hand
Response: a game over message comes up, and the player is brought back to the menu

3.5.3 Functional Requirements

3.5.3.1 The system must be able to display amount of money the player has
3.5.3.2 Must be able to subtract the money currently being bet by the player
3.5.3.3 Must be able to add and subtract money based off of result of the hand
3.5.3.4 Must initialize to a certain value when the game starts

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3.6 Tip

3.6.1 Description

As a player, I want to be able to get some advice on my hand.

3.6.2 Stimulus/Response Sequences

3.6.2.1 Tip button is pressed
Stimulus: the player clicks the tip button
Response: A hint will come up telling the player what they should do with their hand.

3.6.3 Functional Requirements

3.6.3.1 The system must be able to see the player's hand and dealer's hand.

3.6.3.2 Must be able to give the user a printed message with what the best move is if the user uses that command.

3.7 NPC

3.7.1 Description

The system should fill the Blackjack game with NPCs in order to make an interesting game atmosphere. A blackjack game with one dealer and one player is only marginally entertaining. (Low priority)

3.7.2 Stimulus/Response Sequences

3.7.2.1 Betting

Stimulus: At the beginning of a hand, each player is required to place a bet in order to participate.

Response: The NPC places a bet that makes sense for his current bank status.

3.7.2.2 Hitting and Standing

Stimulus: The NPC is dealt two cards. It now needs to decide whether to Hit and continue playing, or Stand and relinquish the hand.

Response: The NPC will respond to a series of if-else statements, based on both his own hand and the dealer's up card.

3.7.2.3 Leaving the Table

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Stimulus: Upon losing too much money, or winning a substantial amount, the NPC should decide to leave the table with his winnings or his remaining bank.

Response: Upon passing a positive or negative bank threshold, the NPC should display a message and leave the table.

3.7.3 Functional Requirements

3.7.3.1 The NPC must be an extension of the Player class.

3.7.3.2 The NPC must make wise decisions in order to hit or stand.

3.7.3.3 The NPC must be able to monitor his bank progression.

3.7.3.4 The NPC must be able to leave the table to promote realism.

3.8 Hand

3.8.1 Description

As a user, I need a way of tracking what I am currently holding. This includes the actual cards I am holding and however many split hands it turns into, but also information on the values of those hands, the number of cards, and if its 'busted' or not. These numbers are needed for both scoring purposes and for other systems such as betting and dealing.

3.8.2 Stimulus/Response Sequences

3.8.2.1 New Game
Stimulus: The player starts a new game from the menu.
Response: The player is assigned an 'empty' hand to begin the game. The dealer deals two cards to each player in the game to initialize a round.
3.8.2.2 Dealt a Card
Stimulus: The player is dealt a card from the deck to their hand by the dealer.
Response: The card is added to the players hand.
3.8.2.3 Hitting 21
Stimulus: The player has a value in a hand worth exactly 21.
Response: The hand stops allowing cards to be dealt to it, and the player wins unless tied by another player, and loses if tied with the dealer.
3.8.2.4 Hitting 7 Cards
Stimulus: The player is dealt a seventh card in their hand.
Response: The players hand wins automatically.
3.8.2.5 Splitting a Hand
Stimulus: The player is dealt two of the same value card.
Response: The player may split their hand into two separate hands, doubling their bet as well.
3.8.2.6 Busting, or Hand Value > 21
Stimulus: The players hand value totals above 21.
Response: The player automatically loses the hand and their bet.

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4. Data Requirements

4.1 Logical Data Model

Does not Apply

4.2 Data Dictionary

Does not apply

4.3 Reports

Does not apply

4.4 Data Acquisition, Integrity, Retention, and Disposal

Does not apply

4.5 User Interfaces

To be Determined

4.6 Software Interfaces

To be determined

4.7 Communications Interfaces

Does not apply

5. Quality Attributes

5.1 Usability

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5.2 Performance

Does not apply

5.3 Security

Does not apply

5.4 Safety

Does not apply

5.5 [Others as relevant]

Does not apply

6. Internationalization and Localization Requirements

Does not apply

7. Other Requirements

Does not apply

Appendix A: Glossary

To be determined

Appendix B: Analysis Models

To be determined

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