# Multiplayer Blackjack Game

Software Requirements Specification

Revision History

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| --- | --- | --- | --- |
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| 02/25/2025 | 1.0 | Worked on section 1 | Basim Shahzad |
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# Purpose

The purpose of this document is to outlines the software requirements for the Multiplayer Blackjack Game. The document details functional and non-functional requirements, system architecture, and constraints.

## Scope

The Multiplayer Blackjack Game is a Java-based application with a GUI that operates over TCP/IP. It will include the following core features:

* Multiplayer functionality (6 players max per game)
* Real players as dealer and players (no bots)
* Account management (fund deposits & withdrawals)
* Anti-cheating mechanisms (card counting detection, random shoe replacement)
* Game logic( betting, turns, win/lose conditions)
* Leaderboard for tracking player stats
* Lobby system for concurrent games

## Definitions, Acronyms, Abbreviations

* GUI: Graphical User Interface
* TCP/IP: Transmission Control Protocol/ Internet Protocol
* Shoe: A collection of multiple decks used in Blackjack to prevent card counting
* Dealer: The player responsible for dealing cards in the game
* Card Counting: A cheating strategy where players keep track of the cards already dealt from a deck, to determine their betting decisions.

## References

## Use Case Specification

UML Use Case Diagram(s)

Class Diagram(s)

Sequence Diagram(s)

## Overview

This document provides a detailed overview of the system architecture, constraints, functional and non-functional requirements for the Multiplayer Blackjack Game.

# Overall Description

## Product Perspective

## Product Architecture

The system will be organized into \_\_\_ major modules: the \_\_\_ module, the \_\_\_ module, and the \_\_\_\_\_ module.

Note: System architecture should follow standard OO design practices.

## Product Functionality/Features

* Multiplayer Gameplay: Players can join games and compete in Blackjack.
* Turn-Based System: Players take turns in sequential order, and players must make their move in a certain time limit.
* Funds Management: Players can deposit and withdraw money
* Game Logic: Betting, hitting, standing, and winning will be accurately implemented
* Anti-Cheating Logic: Card counting detection, and randomized shoe replacement.
* Leaderboard: Tracks player earnings and win/loss records

## Constraints

* No bots allowed; all participants must be real people
* Maximum of 6 players per game
* Only as many tables as there are available dealers
* No spectator mode
* No communication amongst players

## Assumptions and Dependencies

* Players will follow the rules outlined to them
* Players will have a stable internet connection

# Specific Requirements

## Functional Requirements

### Common Requirements:

3.1.1.1 Users should be able to log in as either players or dealers.

3.1.1.2 The game should be fully GUI driven.

3.1.1.3

### Multiplayer Module Requirements:

3.1.2.1 No bots are allowed to be playing. It should be played purely by humans.

3.1.2.2 There should be exactly 1 dealer and 6 players per table.

3.1.2.3 There should always be the same number of active tables as there are dealers.

3.1.2.4 The gameplay should follow a turn-based structure. One player must be active at a time with the dealer.

3.1.2.5

### Stats Tracker Module Requirements

3.1.3.1 Each player should have full history of all the games they’ve played.

3.1.3.2

Provide module specific requirements as appropriate. SR10

Example:

3.1.2.1 SR9 Users should be allowed to log in using their issued id and pin, both of which are alphanumeric strings between 6 and 20 characters in length.

### Cheating Mitigation Module Requirements:

3.1.4.1 Each player should have full history of all the games they’ve played.

3.1.4.2

Provide module specific requirements as appropriate. SR10

Example:

3.1.2.1 SR9 Users should be allowed to log in using their issued id and pin, both of which are alphanumeric strings between 6 and 20 characters in length.

## External Interface Requirements

Provide module specific requirements as appropriate. SR10

3.2.1 SR9 SR1 The system must provide an interface to the University billing system administered by the Bursar’s office so that students can be automatically billed for the courses in which they have enrolled. The interface is to be in a comma-separated text file containing the following fields: student id, course id, term id, action. Where “action” is whether the student has added or dropped the course. The file will be exported nightly and will contain new transactions only.

3.2.1 The user interface for the client application must display all relevant information and provide means for the user to log-in, log-out, choose their user type (player or dealer), join a table, play blackjack.

3.2.2 The interface for the server application must log the activities of the active blackjack games.

## Internal Interface Requirements

3.3.1 The server should be responsible for processing player actions and inform the other players of what each other are doing. This will keep the game in sync.

Provide module specific requirements as appropriate. SR10

Example:

3.3.1 SR17 The system must process a data-feed from the grading system such that student grades are stored along with the historical student course enrolments. Data feed will be in the form of a comma-separated interface file that is exported from the grading system nightly.

3.3.2 SR24 The system must process a data-feed from the University billing system that contains new student records. The feed will be in the form of a comma-separated text file and will be exported from the billing system nightly with new student records. The fields included in the file are student name, student id, and student pin number.

# Non-Functional Requirements

## Security and Privacy Requirements

4.1.1 The SR8 system must validate user credentials before allowing logins for players or dealers

4.1.2 The player should not be able to modify their own or any other player’s game stats

4.1.3 Players should not be able to join during a game in progress, but players already in

a game should be able to leave.

## Environmental Requirements

4.2.1 The system must be a cross-platform application.

4.2.2 Main server will be hosted on one of the group member’s computers. SR25

4.2.3 SR26 System must be deployed on existing Linux-based server infrastructure.

## Performance Requirements

4.3.1 SR27 System must render all UI pages in no more than 9 seconds for dynamic pages. Static pages (HTML-only) must be rendered in less than 3 seconds.