Software Requirements Specification

for

Trade Game

Version 1.0 approved

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Table of Contents

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

This SRS describes the software functional and nonfunctional requirements for release 1.0 of the Trade Game. This document is intended to be used by the members of the project team that will implement and verify the correct functioning of the system. Unless otherwise noted, all requirements specified here are high priority and committed for release 1.0.

1.2 Document Conventions

This document follows MLA Format. Bold-faced text has been used to emphasize section and sub-section headings. Highlighting is to point out words in the glossary and italicized text is used to label and recognize diagrams.

1.3 Intended Audience and Reading Suggestions

This document is to be read by the development team, the project managers, marketing staff, testers and documentation writers. Our stakeholders, company manufacturing associated hardware, company providing embedded operating system and distributors who markets the finished product, may review the document to learn about the project and to understand the requirements. The SRS has been organized approximately in order of increasing specificity. The developers and project managers need to become intimately familiar with the SRS.

1.4 Product Scope

The goal of this project is to create a java version of Trade Game. This game provides several features we can see in the board game version. A way to demonstrate that an economy which rewards wealth creation is better than one in which monopolists work under few constraints and to promote the economic theories of Henry George and in particular his ideas about taxation.

1.5 References

https://en.wikipedia.org/wiki/Monopoly_(game)

2. Overall Description

2.1 Product Perspective

Trade Game (Monopoly) is a board game where players roll two six-sided dice to move around the game-board buying and trading properties, and develop them with houses and hotels. Players collect rent from their opponents by renting them their properties.

2.2 Product Functions

1)Enter Player Info
2)Roll Dice
3)Move
4)Pass GO cell
5)Go To Jail
6)Visit Jail
7)Go To Free Parking
8)Purchase Tradable cell
9)Buy House
10)Pay Rent
11)Draw Card
12)Get Out of Jail
13)Switch Turn
14)View Information
15)Trade

2.3 User classes and Characteristics

2.3.1 Players:

Individual who wants to play the game should have minimum knowledge of basic business rules to win the game.

2.3.2 Designer:

Designer should have well knowledge of business to make and feel the players practically or more realistically by designing the interface of game board which contains trading cells which has to be bought by players when playing the game. Since this game is implemented in **JAVA** developer should know to write code in Java.

2.4 Operating Environment

The game will operate with the following software components and applications:
The game being developed will be running under any operating system containing JRE(java Runtime Environment). The hardware that will be running these programs is being developed for thisspecific project, and will follow the specifications that appear in this document in section 3.

2.5 Design and Implementation Constraints

Number of players that can play the game is limited to 4.
Language used is English.

2.6 User Documentation

Object The object of the game is become the wealthiest player through buying, renting and selling property.

Equipment The equipment consists of a board, 2 dice, tokens, 32 houses and 12 hotels. There are 16 Chance and 16 Community Chest cards, a Title Deed card for each property (28 total) and play money (7 denominations, 30+ copies of each).

Preparation Place the board on a table and put the Chance and Community Chest cards shuffled & face down on their allotted spaces on the board. Each player chooses one token to represent him/her on his/her travels around the board. Each player is given $1,500 divided as follows: 2x $500's; 4x $100's; 1x $50; 1x $20; 2x $10's; 1x $5; and 5x $1's. All remaining money and other equipment go to the Bank.

Banker Select as Banker a player/volunteer who will also make a good Auctioneer. If the Banker plays in the game, he/she must keep his/her personal funds separate from those of the Bank.

The Bank Besides the Bank's money, the Bank holds the Title Deed cards and houses and hotels prior to purchase and use by the players. The Bank pays salaries ($200 for passing "GO") and bonuses. It sells and auctions properties and hands out their proper Title Deed cards; it sells houses and hotels to the players and lends money when required on mortgages. The Bank collects all taxes, fines, loans and interest, and the price of all properties, which it sells and auctions. The Bank never "goes broke." If the Bank runs out of money, it may issue as much more as may be needed by merely writing on any ordinary piece of paper.

The Play Starting with the Banker, each player in turn throws the dice. The player with the highest total starts the play. He/she places his/her token on the corner marked "GO," throws the 2 dice and moves his/her token in the direction of the arrow the number of spaces indicated by the dice. After he/she has completed his/her play, the turn to play passes to the left. The tokens remain on the spaces occupied and proceed from that point on the player's next turn. Two or more tokens may rest on the same space at the same time. According to the space, which his/her token reaches, a player may be entitled to buy real estate or other properties - or be obliged to pay rent, pay taxes, draw a Chance or Community Chest card, "Go to Jail," etc.

Doubles If a player throws doubles, he/she moves his/her token as usual, the sum of the two dice,and is subject to any privileges or penalties pertaining to the space on which he/she lands. Retaining the dice, he/she throws again and moves his/her token as before. If a player throws doubles three times in succession, he/she moves his/her token immediately to the space marked "In Jail" (see JAIL).

GO Each time a player's token lands on or passes over GO, whether by throw of the dice or by drawing a card, the Banker pays the player a $200 salary. The $200 is paid only once each time around the board. However, if a player passing GO on the throw of a dice lands 2 spaces beyond it on Community Chest, or 7 spaces beyond it on Chance, and draws the "Advance to GO" card,

he/she collects $200 for passing GO the first time and another $200 for reaching it the second time by instructions on the card.

Buying Property Whenever a player lands on an unowned property, the player may buy that property from the Bank at its printed price. The player receives the Title Deed card showing ownership and places it face up in front of him/her. If he/she does not wish to buy the property, it is immediately sold at auction by the Banker to the highest bidder. The buyer pays to the Bank the amount of the bid in cash and receives the Title Deed card for that property. Any player, including the one who declined the option of buying it at the printed price, may bid. Bidding may start at any price.

Paying Rent When a player lands on a property owned by another player, the owner collects rent from the player in accordance with the list printed on the Title Deed card applying to it. If the
property is mortgaged, no rent can be collected. When a property is mortgaged, its Title Deed card is placed face down in front of the owner. It is an advantage to hold all the Title Deed cards in a color-group (i.e. Boardwalk and Park Place, or Connecticut, Vermont and Oriental Avenues) because the owner may then charge double rent for unimproved properties in that color-group. This rule applies to unmortgaged properties even if another property in that color-group is mortgaged. It is even more of an advantage to have houses and hotels on properties because rents are much higher than for unimproved properties. The owner may not collect his/her rent if he/she fails to ask for it before the second player following throws the dice.

Income Tax When a player lands on "Income Tax" he/she must pay the $200 tax to the Bank.

Jail A player lands in jail when...(1) his/her token lands on the space marked "Go to Jail"; (2) he/she draws a card marked "Go to Jail"; (3) he/she throws doubles three times in succession. When a player is sent to Jail he/she cannot collect $200 salary in that move since, regardless of where his/her token is on the board, he/she must move it directly into Jail. A player's turn ends when he/she is sent to Jail. If a player is not "sent to Jail" but in the ordinary course of play lands on that space, he/she is "Just Visiting," incurs no penalty, and moves ahead in the usual manner on his/her next roll. A player gets out of Jail by (1) throwing doubles on any of his/her next three turns, if he/she succeeds in doing this he/she immediately moves forward the number of spaces shown by his/her doubles throw, even though he/she had thrown doubles, he/she does not take another turn; (2)using the "Get Out of Jail Free" card if he/she has it; (3) purchasing the "Get Out of Jail Free" card from another player and playing it; (4) paying a fine of $50 before he/she rolls the dice on either of his/her next two turns. If the player does not throw doubles by his/her third turn, he/she must pay the $50 fine. He/she then gets out of Jail and immediately moves forward the number of spaces shown by his/her throw. Even though he/she is in Jail, a player may still buy, sell, or mortgage property, buy or sell houses and hotels, make trades, and collect rents.

Free Parking A player landing on this space does not receive any money, property or reward of any kind. This is just a "free" resting place.

Houses When a player owns all the properties in a color-group, he/she may buy houses from the Bank and erect them on those properties. If he/she buys one house, he/she may put it on any one

of those properties. The next house the player buys must be erected on one of the unimproved properties of this or any other complete color-group he/she may own. The price the player mustpay the Bank for each house is shown on his/her Title Deed card for the property on which he/she erects the house. The owner can still collect double rent from an opponent who lands on the unimproved properties of his/her color-group.

Following the above rules, a player may buy and erect (at any time during his/her turn or in between any turns) as many houses as his/her judgment and financial standing will allow. But the player must build evenly, i.e. he/she cannot erect more than one house on any one property of any color-group until he/she has built one house on every property of that group. He/she may then begin on the second row of houses, and so on, up to a limit of four houses to a property.

Hotels When a player has four houses on each property of a complete color-group, he/she may buy a hotel from the Bank and erect it on any property of the color-group. He/She returns the four houses from that property to the Bank and pays the price for the hotel as shown on the Title Deed card. Only one hotel may be erected on any one property.

Building Shortage When the Bank has no houses to sell, players wishing to build must wait for another player to turn back or sell his/her houses to the Bank before building. If there are a limited number of houses and hotels available, and two or more players wish to buy more than the Bank has, the houses or hotels must be sold one at a time at auction to the highest bidder. Each house/hotel auction begins at the price of the lowest priced house/hotel desired for purchase among the bidding players.

Selling/Trading Property Unimproved properties, railroads and utilities (but not buildings) may be sold or traded to any player as a private transaction for any amount that the owner can get. However, no property can be sold to another player if buildings are standing on any properties of that color-group.

Mortgages Unimproved properties can be mortgaged through the Bank at any time
Bankruptcy A player is bankrupt when he/she owes more than he/she can pay either to another player or to the Bank. If his/her debt is to another player, he/she must turn over to that player all that he/she has of value and retire from the game. In making this settlement, if he/she owns houses or hotels, he/she must return these to the Bank in exchange for money to the extent of one half the amount paid for them and this cash is given to the creditor. Should a player owe the Bank, instead of another player, more than he/she can pay (because of taxes or penalties) even by selling his/her buildings, mortgaging property, or selling/trading with
other players, then he/she must turn over all his/her assets to the Bank. In this case, the Bank immediately sells by auction all property so taken, except buildings. A bankrupt player must immediately retire from the game. The last player left in the game wins.

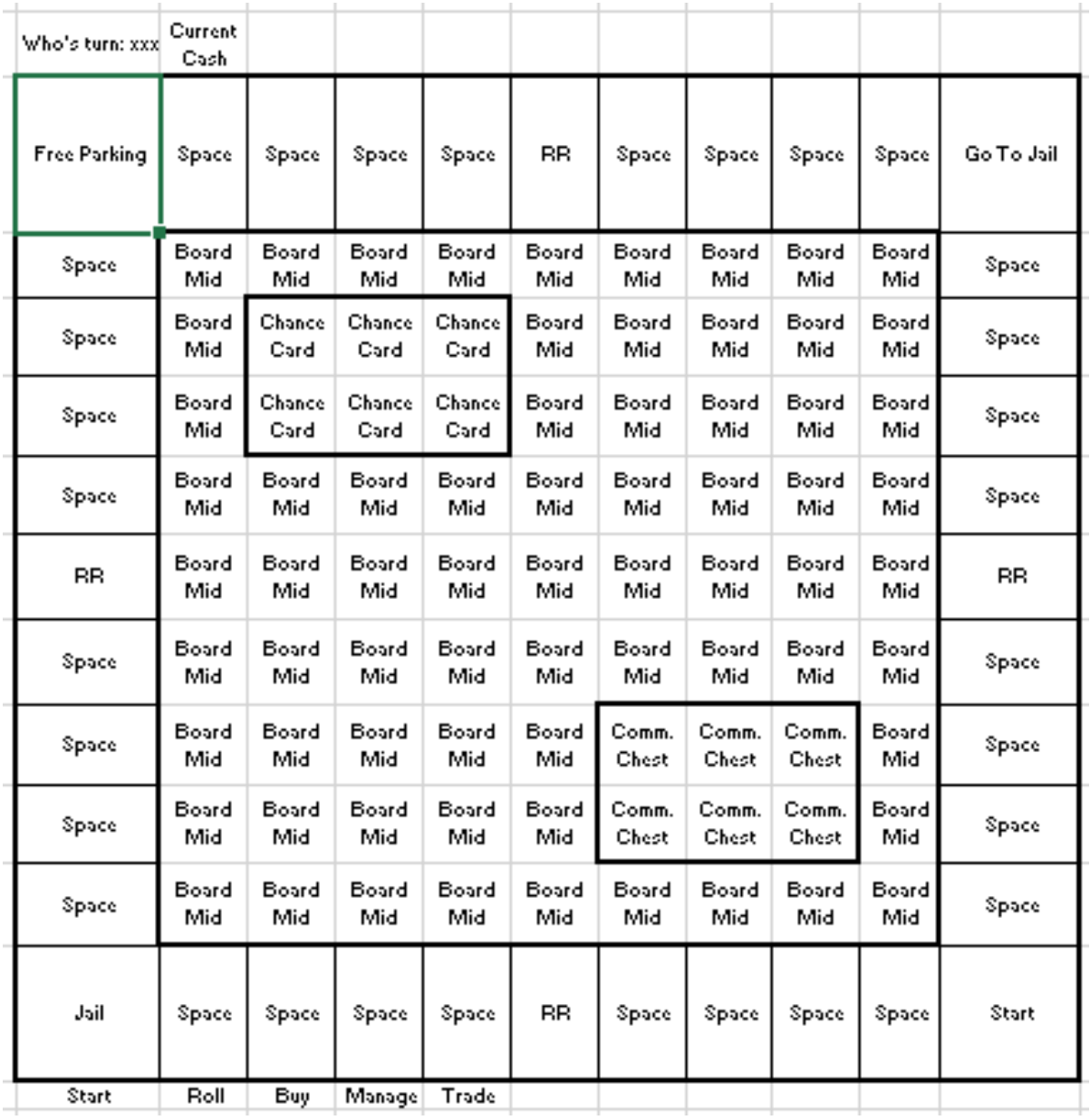
2.7 Assumptions and Dependencies

It is assumed that the game designed will work correctly without any errors and interruptions and follow the rules of the game.

3. External Interface Requirements

3.1 User Interfaces

This is the main graphical user interface of Trade game.



The current grid takes up the majority of the window and on the bottom we have the various buttons and functions. The above shown user interface will be implemented using Windows Builder Tool in Eclipse IDE.

3.2 Hardware Interfaces

This game can be run on system with basic requirements.
Windows 10 Operating System,
Intel i3 Processor,
Eclipse IDE.

3.3 Software Interfaces

The best way to run this game is to use an IDE such as Eclipse that con compile multiple class without referencing errors.

3.4 Communication Interfaces

The player can use mouse to roll the dice and to click the buttons having functions to buy a city, mortgage etc,..User should type number of players going to play at the start of game and player names using keyboard.

4. System Features

4.1 System Feature 1

System Functions

Use cases are the functions of the trade game system. We can represent use cases in the form of user stories because in the trade game we have so many use cases to explain and if we

Use cases	step	Tests Cases
Input:		
Player Info	0	player information
Turn:		
Move player	1	player1 move
Switch Turn	1	player2 move
Space Cards:		
Pass Go cell	2	passed Go
Free parking	2	free parking
Go To Jail	2	Jail1
Get out of Jail 2		Jail2
Card cell	2	C chest & Chance
Draw a Jail card	3	C chest1 or chance 1
Draw a lose Money card	3	C chest 2 or chance 2
Draw a gain Money card	3	C chest 3 or chance 3
Draw a move player card	3	C chest 4 or Chance 4

Tradable cells:

Purchase Property	4	property1
Pay Rent	4	propery2
Buy Railroad	4	railroad1
Pay rent to railroad	4	railroad2
Buy Utility	4	utility1
Pay rent to utility	4	utility2
Buy house	4	buyhouse1
Trading:		
Trade	5	Trade Accept and Decline
Bankruptcy:		
Bankrupt	6	give money and tradable cells
Current Status:		
View information	7	status of the game

Functional requirements of the listed system functions:

Title: **Enter the player Info**

Right after the game gets started, the player Information dialog will prompt the Banker to enter the details of the players.

Inputs:

Enter the number of players in the game [2<=p<=8];

Name of the each player [“string”];

Title: **Move Player**

The player rolls the dice by clicking on the Roll Dice button. The Roll Dice dialog pops up to indicate the value of the dice roll. In this game, there are two six-faced dice.A player moves based on the dice roll [1-6] [1-6]. When the user reaches the end of the board, he cycles around.

Inputs:

The value of the roll dice.

Title: **Switch Turn**

The player’s turn ends when he clicks on the END button. The other player moves in turn.

Title: **Pass GO cell**

When a player passes or lands on the GO cell, the bank gives the player $200.

Title: **Free Parking**

When a player lands on Free Parking, nothing happens

Title: **Go to Jail**

When a user lands on the "Go to Jail" cell, the player goes directly to jail, does not pass go, and does not collect $200.

Title: **Get Out of Jail**

When a player is in Jail, he must pay 50 dollars to get out of jail in the next turn. If he does not have enough money, he is out of the game, and the cells he owns become available without any houses.

Title: Card cell

When the player lands on the card cell. he clicks on the Draw card button depending on the type of cell (C chest or Chance). . A card is drawn from the top of the Community Chest cards pile or Chance Cards pile, depending on the type of cell the player lands on. The player performs the actions described on the card [S1-S4]. After that, the card is put back to the bottom of the card pile, and the status of the player is updated and displayed.

Title: Draw Jail Card

When a player lands on a Community Chest or Chance cell, the player draws a card from the Community Chest or Chance. If the card is a Jail card, the player goes to Jail without getting paid when passing the Go cell.

Title: Draw Lose Money Card

When a player lands on a Community Chest or Chance cell, the player draws a card from the Community Chest or Chance. If the card is a lose money card, the player pays the money to the bank. If he does not have enough money, he is out of the game, and the cells he owns become available without any houses.

Title: Draw Gain Money Card

When a player lands on a Community Chest or Chance cell, the player draws a card from the Community Chest or Chance. If the card is a gain money card, the player gets the money from the bank.

Title: Draw Move Player Card

When a player lands on a Community Chest or Chance cell, the player draws a card from the Community Chest or Chance. If the card is a move player card, the player goes to the specified cell. If the player passes go, he or she is paid $200 from the bank.

Title: Purchase Property

When a player lands on a property cell, and it is available, the player may purchase it. The price is the land value of that property.

Title: Pay Rent

When a player (A) lands on a property owned by another player (B), A must pay rent to B. The level of rent paid is a base level of rent, unless the owner has a monopoly of a color group and houses/hotel. If this happens rent almost doubles the base level.

Title: Buy Railroad

The land value of the railroads is the same [$200].

Title: Pay Rent to Railroad

When player A lands on player B's railroad, A pays rent to B based on the number of railroads B owns. If the base rent of a railroad is R, and the number of the railroads B owns is N, the amount of rent A needs to pay B is

- Rent = R * 2 N-1.

Title: Buy Utility

The land value of the utilities is the same.

Title: Pay Rent to Utility

When player A lands on player B's utility, A pays rent to B based a dice

- If player B owns 1 utility, A pays 4 times the dice roll. Rent = 4* dice
- If player B owns 2 utilities, A pays 10 times the dice roll. There can only be two utilities on a game board.

Title: Buy House

A player has monopoly when he purchases all the properties of a color group. When a player has a monopoly of a color group, he can buy houses for those properties at the beginning of his turn. Player cannot purchase more than 5 houses on any given monopoly. When the Buy house button clicked, the Buy house dialog shows up. Input:

- The player selects the monopoly color group and
- The number of houses he wants [MAX =5].
- After clicking on OK in the dialog box, the player pays the money and the houses are built.

Title: Trade

If the player wants to trade with another player, he clicks on the "Trade" button. The Trade property dialog pops up

Input:

- player enters the player (seller) he wishes to trade with,
- The cell he wishes to buy, and
- The amount of money he wish to pay.

Then another dialog shows up to ask the seller if the seller agrees with the deal. Player can decide to accept or decline the offer.

Input:

- Yes (cell is sold to the player for that amount of money).
- No

Title: Bankruptcy

If player 2 wishes to purchase a property from player 1, player 2 will name an amount of money to pay player 1 for the property they wish to own. Player 1 can decide to accept or decline the offer.

Title: View information

The players can see their status, including theirs names, money, and properties on the game board. The attributes of the cells, including the names, the owners, the number of houses, and the price, is displayed on the game board, too.

5. Non Functional Requirements

5.1 Performance

The system shall wait for all user inputs, and execute only the necessary functions given by the user as input to the system. All the functions shall be completed quickly.

5.1.1 User response

The system shall respond to any user input within short time (order of milliseconds).

5.1.2 Update User data

The system shall update user data within short time.

5.2 Usability

A user shall be able to determine quickly what player options he has to perform.

5.2.1 Player Options

A user shall only have access to functionality that is allowed to him at a given time.

5.2.2 User Interface

The system shall allow a user to interface with it through mouse by clicking on the buttons and keyboard events on textfields. The amount of user keyboard input shall be minimized by the system to include only entering the number of players, player names, and a trade price.

5.2.3 User Errors

The system shall catch improper input from all text fields in the system.