Monopoly Game
Requirement Analysis Document

Requirement Specification Vision

As a team, our main goal is to recreate the old monopoly game as a console based application. The game will be a simulation and played with the simulated players.
The user just starts the game by entering the number of the simulated players and the initial amount of money of the players then the game runs itself. The game shall run until one of the players' money vanished.

Problem Statement

Our team objective is to rebuild the old, familiar Monopoly Game from the rough, using Java.

Scope

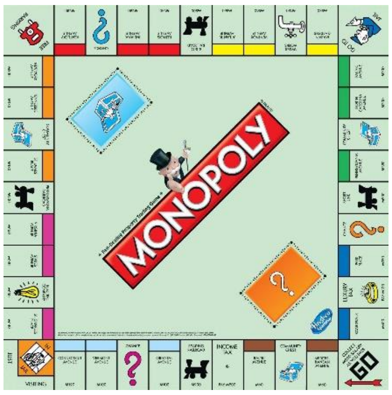

Figure 1: Sample Monopoly Game Gameboard

The Monopoly is a game which players take turns and make moves around a square-shaped gameboard by rolling two dices. This is the final design and implementation that we're trying to carry out. At first two iteration, there is a gameboard consists of 40 small squares with 2 different main types which first type is normal square and the other ones are some squares with special features. The game can be played with 2 to 8 players max. Each player starts the game from GoSquare, after each iteration, the actual state of game and players will be displayed to the screen.
At this final,third iteration there are some additions. First of all, there are two more square types that were added to the gameboard, which are "UtilitySquare" and "RailroadSquare". The squares can be owned by simulated players and they get paid rents from these possessions. In addition, the user decides the initial amount of money before starting of the game. There are 2 more .txt files were added to the system, one of them input, the other one is the output.

System Constraints

Will run as a console application, there is no need to additional software to be installed except the Java IDE.
You should have the “input.txt” file to read the features of the squares
Allow up to 8 players to play maximum, 2 players minimum.
Will provide the current state after each iteration, the finishing scores, winners and losers of the game.
Will provide a “output.txt” text file, in which the states of each step are shown.

Stakeholders

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Rules

- The game can be played with minimum 2 to maximum 8 players.
- Number of simulated players and initial amount of player money are taken as input from the user.
- If the cash of a player drops under $0, then that player goes bankruptcy and will be removed from the game.
- If the players went bankruptcy and there’s just one player left in the game, then that left player will be the winner.
- All the players are placed at “GoSquare” at the beginning of the game.
- On a player's turn, the player must roll the dice and move forward the number of spaces as rolled on the dice.
- If the player’s position exceeds 40, the the position will be normalized by calculating the modulo of that number
- If the player lands on an unowned property, the player can buy it by paying the price of that property
- If the player lands on a square which is owned by some other player, he must pay rent of that square to the owner.
- If one player;
  rolls doubles, he gains the chance of playing one more time
  rolls doubles three times in series, then he will be arrested and will be going to jail.
- The winner of the game is decided by looking at cashes of each player at the end.

Meanings Of Square Types(Utility and Railroad was added):

1) GO Square :

- If one player lands on “GoSquare” then the player collects $200 of cash.

2) Go To Jail Square :

- If one player lands on “GoToJailSquare” then the player is putting the “JailSquare” and the actions of Jail Square is implementing.

3) Jail Square :

- If one player lands, or is putting on “JailSquare” then the player must be waiting at the jail for the next 3 turns. BUT;
- The player can go out from the jail early “by paying $50 cash” or “rolling three doubles in one move.”

4) Income Tax Square :

- If one player lands on “IncomeTaxSquare”, then the player must pay 10% of his total cash unfortunately.

5) Luxury Tax Square :

- If one player lands on “LuxuryTaxSquare”, then the player must pay $75 from his cash.

6) Free Parking Square :

- When the player lands on “FreeParkingSquare”, then nothing happens to the player’s position or his cash literally. He can continue his moving next turn of him.

7) Utility Square :

- It is a square type that can be owned from players. There are two utility squares on the gameboard. The price of a utility square is $150 and the player who lands on utility square must pay 10*(roll of a dice) to the owner of that square.

8)Railroad Square :

- It is a square type that can be owned from players. There are four railroad squares on the gameboard. The price of a railroad square is $200 and the player who lands on railroad square, must pay 5*(roll of a dice)+25 to the owner of that square.

Glossary of Terms(Alphabetically Listed)

Bankruptcy: The statement that means a player’s money is under $0 so left the game.
Dice: The plastic cube with six faces which helps the movement of the players by rolling it.
GameBoard: The main board that contains 40 squares, players and the dices.
Initial Cash Value: The amount of money that each player has at starting of the game.
Iteration: The turns that every player take their chances and move.
Money: The numerical values that each player has, and the foremost feature of the gamet o decide who won/lose.
Owner: The player that bought the related square by paying the price of it.
Player: A simulated person who plays the game and take actions.
Position: The id of a square which specifies the location of the player on gameboard.
Price: The amount of money that must be paid to be the owner of related square.

Rent: The amount of money that must be paid from the player who landed on an owned square to the owner.
Square: The small rectangles are placed on the gameboard which the players land on.

Use Cases:

Name	StartNewGame
Actor	User, System
Description	User starts the program
Condition	1. Application is running 2. The game is not currently in progress
Flow of Events	1. The user starts the program 2. System asks the user the number of players 2a.User enters the number of players 3. System asks the user the value of initial money 3a.User enters the number of players

Name	NextTurn
Actor	System, Player
Description	The players take their turns respectively
Condition	1. Application is running 2. The game is in progress
Flow of Events	1. The system decides in which player should move on the next time and takes that player as currentPlayer 1a. If it is the starting of the game, then it is decided according to the Di DiceTournament 1b. If it is not the start, then it goes to the next player.

Name	TossDie
Actor	System, Player
Description	currentPlayer rolls two dices
Condition	1. Application is running 2. The game is in progress
Flow of Events	1. currentPlayer rolls dices 1a.The value that seen on the faces of dices are summed and it is equal to totalValue.

Name	MovePlayer
Actor	System, Player
Description	currentPlayer will be moved
Condition	1. Application is running 2. The game is in progress
Flow of Events	1. The player moves according to the totalValue of dices 2. New position is decided by summing currentPosition and totalValue. 2a. If new position exceeds 40, then the position is normalized by taking the modulo of that number

Name	DiceTournament
Actor	System
Description	The system decides the order of playing
Condition	1. Application is running 2. The game is in progress.
Flow of Events	1. Each player rolls the dices once 2. The system lines up the players according to the values of dices.

Name	DoAction
Actor	System, Player, Square
Description	The specific action of the square is applied
Condition	1. Application is running. 2. The game is in progress.
Flow of Events	1. After the player moves, the system decides the type of the square that player will be landed on. 2. According to the type of the square, the abstract method will be applied. 2a. If the player lands on “GoSquare” collects $200 2b. If the player lands on “GoToJailSquare”, moves to Jail. 2c. If the player lands on “JailSquare”, he must pay the fee or wait 3 turns. 2d. If the player lands on “IncomeTaxSquare”, he must pay 10% of his money. 2e. If the player lands on “LuxuryTaxSquare” he must pay $75. 2f. If the player lands on “FreeParkingSquare”, nothing happens. 2g. If the player lands on one of the unowned “Utility Squares”, “Railroad Squares” or “Normal Squares” he/she may buy it or not. 2h. If the player lands on one one of the owned squares, he will be paid fort he rent if he/she is not the owner of that house.