**Requirement Analysis**

**Vision**

The purpose of this program is creating a simulated monopoly game using java programming language. This simulation is the same with the normal board game version in many aspects.

**Scope**

The game has following these steps:

We receive some information from the user which contains number of players (it has to be between 2 and 8), price of luxury tax, price of payment tax, starting point money and initial balance of players.

 Game starts after taking this information and use these as a parameters. Then the system creates the board with 40 squares, assign pieces to the players.

Then one by one players roll dice and pieces move on the board at a distance of sum of the dice.

Players may go to jail, pay a tax in the process, get a property, sell a property, build a house or hotel on a property, pay rent for a property if the property already bought, receive some rent money and can be bankrupt. Also if at a time, there is two players and one of them is bankrupt remaining one is winner of the game.

In jail case, player can escape from the jail in 1 round or 3 rounds depend on the dice which players rolled. After three rounds in jail, player must pay the jail penalty price and escapes from jail.

In case of getting property, situation comes true if %75 of balance greater than or equal to price of the property. Renting price of a property is depending on property price which is equal to %10 of property price. If the player has all the 3 squares of one of the property colors, player can build a house on the corresponding color square and also can build a hotel if player has 4 houses on the square. Every other player must pay the rent price of these buildings when they arrived there.

Every round program prints the current situation of every player. If a player has a balance that below or equal to 0 then that player has bankrupted and this time game checks properties of the player. If player has one or more property, player sells the properties in order to not to go bankrupt and play on.

Chance cards include many situations. These are, player may go directly jail without passing from starting point. While passing player receives no starting payment. The second type of card is getting money from all the available players. Also one of the card is force the player who take this card to give some money to all available players. The fourth type of card is that player get money from computer directly and this card says “You rent a house and get 150 bucks”. The fifth type of card in the game is force the player to move 3 squares back to the current place of the player. There is another type of card which moves player for instance “Go to the nearest lot square” and whatever which lot square is player moved, the corresponding action of this lot square is done. Also a similar type card is “Go to nearest forward rail road square and pay double rent”, it is simply act like go nearest forward railroad square and current player pay double rent to the owner if it has a owner. The last card is the directly moved the player to specific square like KADIKOY.

 The game has unlimited number of rounds since number of players is equal to one. At that point the game ends with showing the winner and his/her last situation.

**System Constraints**

We used nothing except the CDM environment.

**Stakeholders**

Murat Can GANİZ (Customer)

Osman Mantıcı (Project Manager, Analyst/Programmer)

**Glossary of Terms**

Board- The place where the game simulated and where squares, pieces and dice located.

Dice- An object that has 6 integer values from zero to six on its faces.

Piece- An object that player owns to represent the player.

Player- A simulated person who plays game which is created by the system.

Square- Main part of the board, which has 40 of them. It extends the Tax, PropertySquare, Jail, StartingPoint, RegularSquare, ChanceSquare.

Starting Point- A place that players start game here and every time gain money for pasing.

Jail- 10th square of the board, players restricted in there when player’s own turn.

Tax- 4th,38th squares of the board and there is two kind of tax.

Luxury Tax- 38th square of the board.

Payroll Tax- 4thsquare of the board.

Chance Square- 2nd, 7th, 17th, 22th, 33 and 36th squares of the board.

Regular Square- Default square which has not any feature

Property- Abstract class of Square class that extends RailRoad, City and Lottery classes.

City- An object that player owns with paying its price.

Lot- 12th and 28th squares of the board. A place that players can purchase there or must pay rent when player arrive there.

Rail Road- 5th,15th,25th,35th squares of the board. A place that players can purchase there or must pay rent when player arrive there.

**Use Cases**

1: System asks to user how many players will play the game.

2: User enters a number.

3: System asks to user to initialize luxury tax price.

4: User enters a number.

5 System asks to user to initialize payment tax price.

6: User enters a number.

7: System asks to user to initialize starting point money

8: User enters a number.

9: System creates the board which has 40 squares, the number of players on the board, pieces for each player and 2 dice.

10: System assign pieces for each players individually.

11: System locates all the players on the square to 0 which is named as ‘Starting Point’

12: System gives turn and round numbers to each player.

13: System move player pieces on the board according to their current locations and face values of their rolled dice.

14: System prints all information of every player at the end of every cycle.

15: If the player comes to Go To Jail Square or rolls even numbers three times in a row or pick Go To Jail without Passing Starting Point card, player directly moved the 10th square of board which is Jail. Player restricted until either rolling double dice or wait 3 turns and pays penalty to get out.

16: If the player arrives Payroll Tax or Luxury Tax Square, player must pay the tax amount.

17: If the player arrives Lot Squares and if there is no owner of this square, player may purchase the square. On the other hand if there is an owner, player must pay money to its owner.

18: If the player comes to one of the Railroad Squares and if there is no owner of the square, player may purchase the square. If there is an owner, player must pay money to its owner.

19: If the players come to one of the Chance Squares, players picks a chance card and does whatever the card says. This is the cards available in the game:

19a: ”Move back three squares.

19b: "Go to Jail without passing start point".

19c: "Go to nearest Lot Square".

19d: "Go to nearest forward RailRoad square and pay double rent".

19e: "Get 50$ from each player".

19f: "Give 100$ to each player".

19g: "Go to Kadikoy".

19i: "You rent a house, so get 120 bucks".

20: If a player has all properties of same color, player may build a house and may get rent payment depending on the game situation. Also when player has 4 houses on same color he/she can build a hotel which has a more value for renting.

21: When number of players is equal or less than 1 the game ends with printing the last information of winner.

Alternatives:

 User enters the value for number of players which is smaller than 2 or greater than 8.

1. System says ‘Please enter number of player between 2 and 8’

2. Program ends.