

CSE 3063: Object-Oriented Software Design

Monopoly Board Game



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1. Introduction

The aim of the 2019-2020 OOP group is to create stand-alone Java based implementation of the board game, the classic MONOPOLY.

2. Requirement Analysis

The game should consist a board with 40 squares, 2 dices, more than 2 bot players, bank and some inputs. There are 10 type of squares which are go, property, tax, station, utility, jail, go to jail, free parking, community chest card and chance card squares.

Application requirements:

- *Java Runtime Environment*
- *Intellij IDE*
- *LucidChart*
- *Gitlab*

3. System Specification

1. *The software version of the game will run as a simulation*
2. *One person will start the game and indicate the number of simulated players*
3. *Thereafter the person will watch while the game runs to completion • The Monopoly Game*
System will present a trace of the activity during the simulated player turns.
4. *Text-based console of the Monopoly Game:*
2. The user input and system output must be via a text based console window.

USE CASE

Use Case Implementation: Play Monopoly Game

Actors: Observer and bots

Domain rules:

Requirements or policies that transcend one software project

1. *Bots are created as a player by program.*
2. *The game is run as computer simulation watched by one player (more accurately, observer)*
3. *The many possible (simulated) player actions are captured in the domain rules, rather than the extension section*
4. *Observer defines number of players, names of players, number of tax squares, amount of tax and go price.*
5. *Initial money amount of players are defined by program.*
6. *There is two dices and they have 6 faces, their values are between 1 and 6.*
7. *The order of players is defined as each players rolled dices before the game start. The first player is player which rolled the biggest value.*
8. *Board has 40 squares with 10 different types. These are go, property, tax, station, utility, jail, go to jail, free parking, community chest card and chance card squares.*
9. *The game starts from go square.*
10. *The amount of money that defined by observer is given to the player which passed from square. And bank amount is decremented as this amount.*
11. *Each tax squares have the same tax amount.*
12. *When the player came to the tax square, player pays to bank to defined tax amount.*
13. *Each property have same purchase and rent price.*
14. *When the player came to the property square it will decide to buy property according to rolled dice.*
15. *If rolled dice's face value is 8 or greater than 8 and if player have enough money, it will buy the property.*
16. *Each station square have the same purchase price, but rent prices are settled according to common owner number.*
17. *Player will decide to buy station as like property squares.*
18. *There are 2 utility type in game. When player came to that squares it will decide to buy it like property.*
19. *Utilities's rent prices are determined according to common owner number.*
20. *If player come to the square that has the owner and player has enough money it will pay rent price to the owner of that square.*
21. *When player come to the go to jail square program will send player to the jail square.*
22. *If player come to the jail square it won't move unless it rolls even. Or if player could not roll even at three times it will pay 50 to the bank and get away from jail.*
23. *If player rolls dice even at three times consecutively it will go to the jail square.*
24. *To build a house to property, player must have all property squares which has same id . And to build second house into property, there must be at least 1 house into property which has same id.*
25. *If there are four house into property square, player can build a hotel to there provided that to return houses and pay hotel cost to bank.*
26. *If there is a hotel into any property square, can not be built any hotel or house into this square.*
27. *If there is a hotel or house into square, rent prices will be affected by the number of houses, being hotel or not. After every new house building rent price will be multiplied with 2.5 and after every new hotel rent price will be multiplied with 1.2.*

28. If player has all property squares which has same id but not builded any house yet, rent price of these squares will be multiplied with 2.
29. There are two types of card for directing game. These are Chance and Community Card. When player came to related square with these types, will apply to rule that written into card.
30. If player who went to jail have "Get out of from jail" Card, can quit from jail directly with this card and put back.
31. Each card can reusable so after using will be added to queue.
32. Chance Card, Community Card, Go, Jail, Go To Jail, Tax and Free Parking squares are not buyable. Player can not have these squares.
33. If player come to the free parking square it will do nothing. Player whose money is overed or can not pay its debts to the bank or player; it will fail and take off from the game.
34. Game will continue as long as hile the remain number of players is at least two at the game and there is enough money in the bank.
35. The last player that remained in the game is winner of the game.