Software Engineering Project - Monopoly Deal Cards

Objective

You are required to design and implement the Monopoly Deal Cards game. The game's objective is all about collecting properties and stealing from your opponents, and being the **FIRST player** to collect **three full property** sets of different colours. Use Action cards to charge rent, swap cards, demand birthday money, and more. Make sure you put lots of money into your personal bank - and remember. Other players will steal from you too!

Game Components

Properties (28): 2 Blue, 2 Brown, 2 Utility, 3 Green, 3 Yellow, 3 Red, 3 Orange, 3 Pink, 3 Light Blue, 4 Railroad.

Property Wildcards (11): 1 Dark Blue/Green, 1 Green/Railroad, 1 Utility/Railroad,1 Light Blue/Railroad, 1 Light Blue/Brown,2 Pink/Orange, 2 Red/Yellow, 2 multi-colour Property Wildcards.

Action Cards (34): 2 Deal Breaker, 3 Just Say No, 3 Sly Deal, 4 Force Deal, 3 Debt Collector, 3 It's My Birthday, 10 Pass Go, 3 House, 3 Hotel, and 2 Double The Rent Cards

Rent Cards (13): 2 Dark Blue/Green, 2 Red/Yellow, 2 Pink/Orange, 2 Light Blue/Brown, 2 Railroad/Utility, 3 Wild Rent.

Money Cards (20): 6 cards of 1M, 5 cards of 2M, 3 cards of 3M, 3 cards of 4M, 2 cards of 5M' 1 card of 10M.

Bank: Any player should have a bank to put their own money.

Play Pile: The place where the players put their action cards.

Draw pile: shuffled cards to deal the cards to the players.

Players: (2-5) players whose ages are greater than 8.

Setup (See Figure 1)

1. Remove the 4 Quick Start cards from the pack and hand them out for reference.
2. Shuffle the rest of the cards together and deal 5 to each player, face down.
3. Look at your cards, but keep them secret!
4. Put the remaining cards face down in the centre to create the **draw pile.**
5. Decide who goes first (Youngest Player). The play continues clockwise.

Figure 1 Setup

On Your Turn:

1. TAKE 2 CARDS from the **draw pile** and add them to your hand. Later in the game, if you have no cards left, pick up 5 instead.
2. PLAY UP TO 3 CARDS from your hand onto the table in front of you. You don't have to play any cards if you don't want to. Play your 3 cards in any combination of the following: A, B, and/or C, in any order (see WHAT THE GAME LOOKS LIKE, below).

A: Put Money/Action Cards into your own bank

Players can charge each other for rent, birthdays etc. Build up a **'Bank' pile** in front of you, using Money cards and/or Action cards.

• If you put an action card into your bank, it becomes redundant as an Action card for the rest of the game. If you use it to pay another player, it must go straight into their bank and cannot be used for its Action.

AND/OR

B: Put Down Properties into your own Collection:

REMEMBER, 3 DIFFERENT-COLORED PROPERTY SETS WIN THE GAME!

- Lay Property cards down in front of you to build up your property sets.
- Each card shows how many properties there are to collect in that colour set.
- Collect as many properties as you want, but you need 3 full sets (of different colours) to win the game.
- You can only reorganize your property collection on your turn. If you realize you've won during someone else's turn, you must wait until it's your turn to say it!

AND/OR

C: Play Action Cards into the center:

There are a total of 34 action cards in the Monopoly Deal Deck, and including: 2 Deal Breaker, 3 Just Say No, 3 Sly Deal, 4 Force Deal, 3 Debt Collector, 3 It's My Birthday, 10 Pass Go, 3 House, 3 Hotel, and 2 Double The Rent Cards

- Action cards allow you to do things such as charge other players rent, steal their cards and demand money for your birthday!
- If you pick up an Action card on your turn, you can play it right away as one of your three cards or use it on a later turn.
- Action cards can also be put into your bank as money. The value is shown in the corner, in a red ring.

(See THE CARDS IN MORE DETAIL for more info).

3. END YOUR TURN
If you have more than 7 cards in your hand at the end of your turn (not including cards on the table) discard extras to the bottom of the draw pile so you only have 7. If you've run out of cards, take 5 at the start of your next turn.

How to pay other players:

- Cards can NEVER go back to a player's hand.
- Never pay with cards from your hand, only from the cards in front of you.
- You can pay with cards from your bank, properties, or a combination of both. You choose how to play - not the player you're paying!
- Change is not given! For example, if a player charges you 2M rent and you only have a 3M card in your bank, you don't get change. Too Bad!
- You can NEVER move your own properties to your bank to screw another player over.
- If you pay with property cards, they must go into the other player's property collection.
- If you have no cards in front of you, you don't pay at all!

How do you win at Monopoly Deal?

The winner of the game is the first player to complete 3 full property sets and have them down on the table. Each property card tells you how many cards you need of that colour to complete the set (for example, see Figure 2).
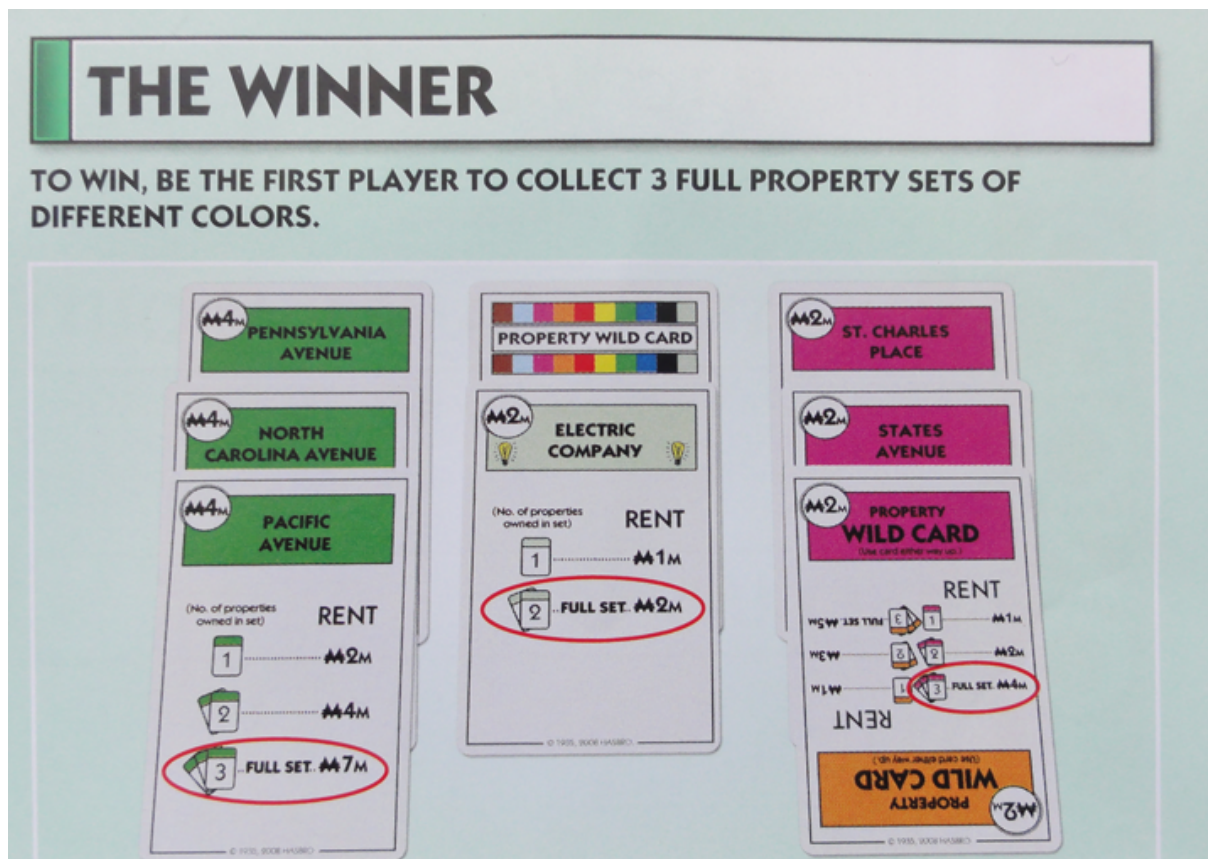

Figure 2 The winer

Evaluation Criteria

The project will be evaluated along the following criteria:

- **Clean design (30%)**

    ○   Game components are implemented appropriately, i.e. separate classes are defined to create different game components.

    ○   Is the project well structured in classes and modules? Each class should perform a small set of related functionalities (No big classes, long methods)

○ Are interfaces defined and used appropriately?(Interfaces must be created for classes showing similar behaviour but not extending the same superclass)

○ Design patterns (e.g., Singleton, Facade) must be used when necessary

○ It would be useful to show that you have created use case diagrams, sequence diagrams and class diagrams of your project (Those count 10 points in the total grade).

○ Use the correct data structures: (e.g., card decks should be implemented as stacks).

○ Adopt inheritance wisely (e.g., to distinguish between different types of players).

○ In this assignment, it may be necessary to use the following design patterns: Singleton, Facade, Observer, and Model-View-Controller.

● **Functionality (50%)**

○ The functional requirements of the game are implemented correctly

● **Teamwork (10%)**

○ The distribution of load between teammates is appropriate

○ Distributed version repository (Git) is used appropriately

○ Try to avoid situations where one team member did all the work and another just went for the ride. <u>These things can be understood very easily during the correction of your project</u>.

○ Make sure that your commit messages are self-explanatory and describe the type of modification that was performed in the project.

○ Commits should be performed by both team members frequently.

● **Testing (10%)**

○ Several meaningful test cases are implemented to test the main project functionalities.

○ Ensure that the main methods of each class are tested: no need to test getters and setters; make sure that essential methods (e.g., those that you decided to show in the sequence diagram are tested).

Project Registration (by Week 2):

- One group project (4 people)
- You can choose who to work with
- Each team member will receive the same evaluation (although there may be exceptions.)
- If you did not choose your group member, then I will create new groups and sign you into these groups randomly!

https://docs.google.com/spreadsheets/d/1IaKS-r299Vqkfr065xxqvHolnWxGf5O_1WT5x-rcWaM/edit?usp=sharing