Swinburne University of Technology

COS20007 Object Oriented Programming

6.3D - D Level Custom Program Initial Plan

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Design Overview for Simple Card Game

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Summary of Program

The program is a simple card game that allows players to compete against each other. At the start of the game, a deck of cards is shuffled and dealt to the players. The players take turns playing cards, and the player with the highest card wins the round. The game continues until all the cards have been played, and the player with the most points at the end of the game is declared the winner.

The game can be extended to include different types of card games, such as Blackjack or Poker, by inheriting from the Game class and adding additional properties and methods specific to each game type.

Include a sketch of sample output to illustrate your idea.

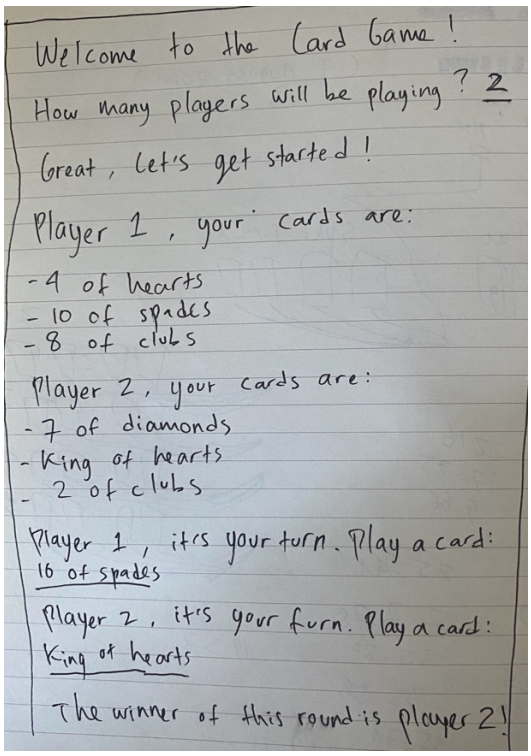


Figure 1: FirstPart

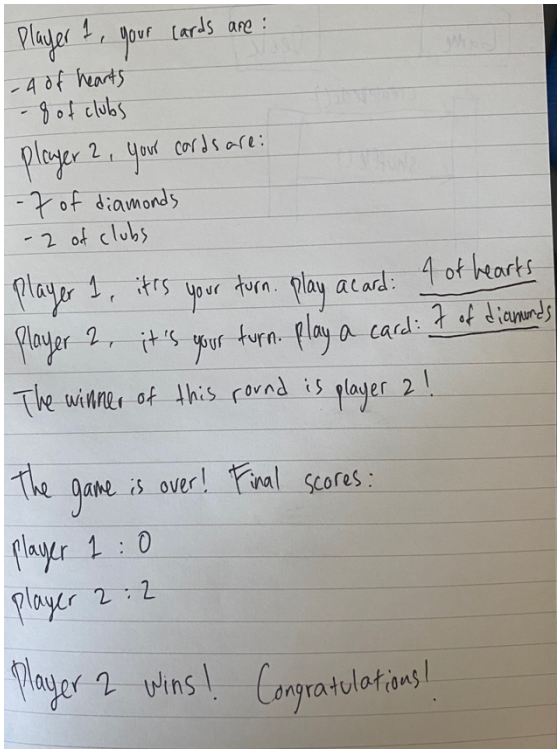


Figure 2: SecondPart

Required Roles

Describe each of the classes, interfaces, and any enumerations you will create. Use a different table to describe each role you will have, using the following table templates.

Table 1: Player Details

Responsibility	Type Details	Notes
Hold cards	Field, “List<Card>”	A list of “Card” objects representing the player’s hand
Play a card	Method, “PlayCard(Card card)”	Takes a “Card” object as a parameter and removes it from the player’s hand
Score	Field, “int”	The player’s current score
Name	Field, “string”	The player’s name

Table 2: Deck Details

Responsibility	Type Details	Notes
Hold cards	Field, “List<Card>”	A list of “Card” objects representing the deck of cards
Shuffle	Method, “void”	Shuffles the deck of cards
Deal	Method, “List<Card>”	Deals a specified number of cards from the top of the deck

Table 3: Card Details

Responsibility	Type Details	Notes
Value	Field, “int”	The value of the card (2-10, Jack, Queen, King, Ace)
Suit	Field, “string”	The suit of the card (Hearts, Diamonds, Clubs, Spades)
ToString	Method, “string”	Returns a string representation of the card (“10 of hearts”, “Ace of spades” etc.)

Table 4: CardValue enumeration details

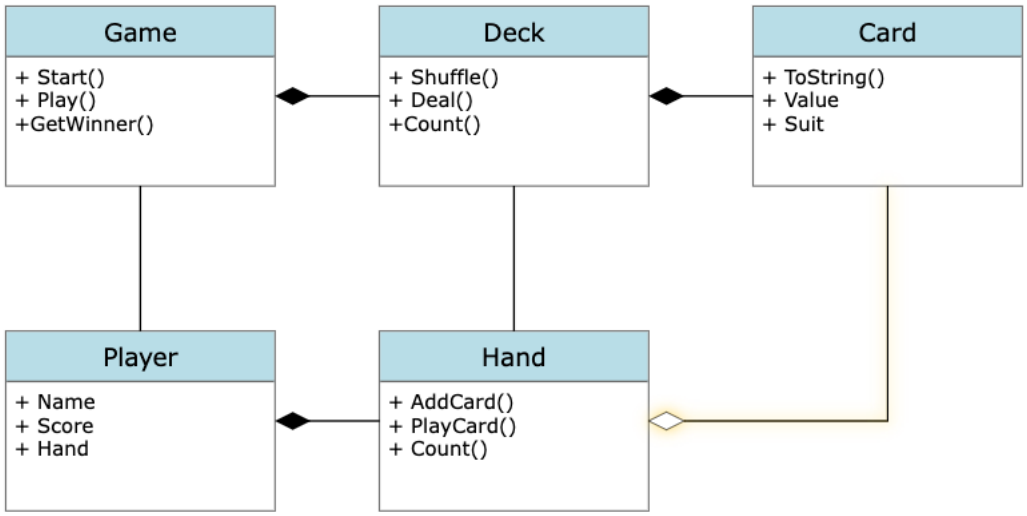
Value	Notes
2-10	The numerical value of the card
Jack	The face card with a value of 11
Queen	The face card with a value of 12
King	The face card with a value of 13
Ace	The face card with a value of 14

Table 5: CardSuit enumeration details

Value	Notes
Hearts	The suit of hearts
Diamonds	The suit of diamonds
Clubs	The suit of clubs
Spades	The suit of spades

Class Diagram

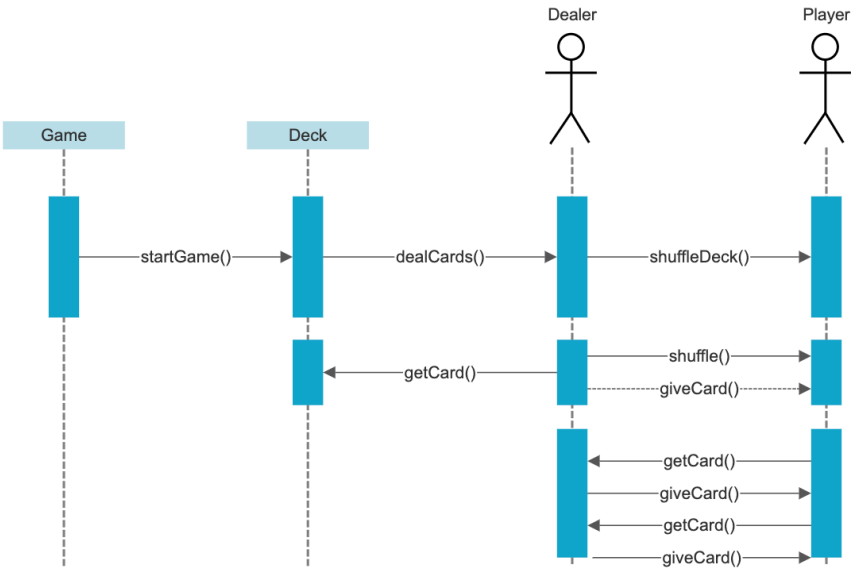
Provide an initial design for your program in the form of a class diagram.



There are four classes in this illustration: Game, Deck, Card, and Player. The Game class is a representation of the entire game and includes functions for the game's beginning, play, and conclusion. A deck of cards is represented by the Deck class, which also provides dealing and shuffling methods. The Card class, which represents a single playing card, includes a ToString() method for displaying the card as a string as well as methods for determining the value and suit of the card. The Player class, which represents a player in the game and

provides methods for adding cards to hands, playing cards from hands, and determining the number of hands a player has, is the last class mentioned.

Sequence Diagram



Since the main functionality of the game is to deal cards to the players, shuffle the deck when necessary, and determine the winner of the game, I created a sequence diagram that shows the process of dealing cards to the player. This involves the 'Game' class and the 'Deck' class, as well as the 'Player' and 'Hand' classes.