

605.201 Mini-Project 2:  
Blackjack Game Simulator

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## Design And Analysis

### 1. General Program Design

This java project involved writing a Java program to simulate a blackjack card game in Object Oriented Programming approach. While designing the skeleton of the application, firstly I listed up what essential elements(classes) are required to establish a simulation of the game: Card, Deck, Dealer, and Game Player. Then I realize the dealer and the gameplayer elements have a couple attributes shared for each, such as name, the hand of cards (which is a list of cards), so that an abstract class, Player, would help to generate a preset for each class.

After deciding what classes and attributes are needed for the program, I chose some actions that each class would take. For example, Deck needs to be initialized with 4 suits x 13 ranks of cards, and has to be shuffled before the game. Or each player can draw one card from a deck to add it to her/his hand.

Finally, with a blueprint of the program like UML class diagram, I coded each class and its methods, and built a main method in BlackjackGameSimulator.java file that prompts the user's action regarding names of players, betting amount, and "HIT" or "STAY".

### 2. Alternative Approaches

While designing specific behaviors that follow rules of blackjack, I realized that the rule: an Ace(1) card is counted as 1 or 11, needs to be handled specially while calculating the total point of the player's hand. However if this behavior is implemented for this method, the return type values would be an integer list, and adds more complexity to other methods using the hand's point. So as the first version of the program, the program counts an A card as 1 for simplicity, which can be a later improvement for this program.

### 3. Learning From This Project

From this project, I have learned how to achieve complex program's behaviors by using multiple object classes that have relationships (inheritance or containment) and interact with each other. And I realized while developing such a program or project, designing phase is crucial since this process creates a blueprint of the program that can be utilized during development and collaboration.