Lillian Nicholas
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Professor Raunak
Assignment 1 Design Description

My UML diagram contains the following classes: Card, Hand, Stack, Player, Game, and Game Activity. The class Card has three instance variables, value, suit and points. Value and suit are Strings and represents the face of the card and the suit of the card respectively. Points is an int and represent how many points the card is worth in the game. The functions for this class are Card(String, String, int), getValue(), getSuit(), getPoints(), and setPoints(). The class Hand has two instance variables and they are cards, which is an ArrayList of Cards and represents the cards in a hand, and points, which is an int that represents the number of points in the hand. The functions for this class are Hand(), addCard(Card), getNumCards(), getHandPoints(), setHandPoints(), and getCards(). The class Stack contains two instance variables and they are cards and numDecks. Cards is an ArrayList of Cards which represents the stack of cards from where cards are drawn and numDecks is an int which represents the number of card decks in the stack. The functions for this class are Stack(), createStack(), removeCard(), and shuffle().The Game class has four instance variable and they are player, dealer, gameDeck, turn, and numHits. Player and dealer are of type Hand and gameDeck is of type Stack. Turn is a String and numHits is an int. The functions for this class are Game(), dealCards(), hit(), stand(), checkBust(Hand), checkWin(Hand), scoreGame(), getPlayer(), and getDealer. Lastly the GameActivity class has one instance variable and three functions. The instance variable is game which is of type game. The functions for this class are onCreate(Bundle), dealersTurn(Hand), and findCardImg(Card). The GameActivity class is the controller of the game.

OnCreate() starts the game by calling the game constructor and the dealCards() function, which calls removeCard() and addCard() to get cards from the stack and add cards to the player's and dealer's hands. Using the findCardImg() function, the pictures of the cards that were dealt are displayed on the screen. Also the player's and dealer's points are added to the screen and the onCreate function checks if either the player or dealer has won or if there is a tie, and if so, a message is displayed on the screen. When the player clicks the hit button, the hit() function is called and this calls removeCard() and addCard() again to add a card to the hand of the person who's turn it is and decrements numHits. When the player clicks the stand button, the stand() function is called and sets turn to "dealer" and numHits back to three and returns turn. If turn equals "dealer" then dealersTurn(Hand) is called. This function decides if the dealer should hit or not, and he does, his new cards are displayed on the screen. Once the number of points in the dealer's hand is high enough, the dealer stands and scoreGame() is called which displays the outcome of the game.

When a game is created, createDeck() adds all of the cards to the stack and shuffle randomizes the order of the cards in the stack. After each card is added to a hand, setHandPoints() is called and determines the number of points in the hand. GetNumCards() determines the number of cards in a hand and getCards() returns the ArrayList of cards, cards.

GetPlayer() and getDealer() returns the Hands player and dealer respectively. SetPoints() is used to set the point value of an ace when it is added to a hand depending on the current number of points the hand has.