CSCE 160 Prof. Kim

HW #5 – Simple Black Jack *Work in groups of up to three students*

This assignment involves creating a simple black jack game with one human player and a computer dealer. The rules for the game are as follows:

1. Start with a deck that consists of **two standard decks** (104 cards).
2. The user is able to place a bet before starting each round. Assure correct accounting (e.g., no negative betting, no betting more than the user has, etc.).
3. Point values for each card:
   - J, Q, K are worth 10 points each.
   - Numbered cards have point values that equal their number (2 to 10 points).
   - When a user has MORE than 21 points, it's called a "bust," and the user loses. The goal is to get as many points as possible, but not over 21. Hence, 21 is the highest score you can get.
   - Aces are tricky. An ace can either be 1 or 11. The computer must automatically adjust the value (1 or 11) to maximize the points to the advantage of the player holding the ace(s).
     - For example, if the user has: [A][9] → 20 points
     - If the user has: [A][9][3] → 13 points (because 11+9+3 would go over 21)
     - If the user has: [A][6][A][2] → what do you think it should be?
       - Your choices are: 10 points OR 20 points OR 30 points
4. There are no ties. If the computer and the user have the same score, the computer wins.
5. For each round of play:
   - The dealer then deals two cards to itself. Only one card is shown/visible to the user.
   - The dealer then deals two cards to the user. Both user cards are shown.
   - BLACKJACK:
     - If the player has a score of 21 with just the first two cards, the hand is called blackjack.
     - The only way to get a blackjack is if the player has an ACE and another card worth 10 points (10, J, Q or K).
     - Whoever has blackjack automatically wins and the round is over.
       - If computer/dealer has blackjack, show it to the user.
     - If BOTH players have blackjack, the computer wins.
     - If no one has blackjack, we continue with the user turn.
   - USER TURN: The user can now chose to "**hit**" (get another card) or "**stand**" (stop receiving cards). The user's turn continues and this choice is offered until one of the following happens:
     - The user gets to exactly 21 points. The user's turn is automatically over.
     - The user goes over 21 points. → automatic loss and the round is over
     - The user gets a total of five cards (2 original and 3 more from the "hits") without going over 21 points. → automatic win and the round is over
     - The user chooses to "stand" (which means the user wishes to end the turn) → we now go to the computer's turn.
   - DEALER TURN: After the user's turn is over, unless the user automatically won or lost, it is the dealer's turn:
     - The dealer reveals the hidden card it.
     - The dealer automatically has to "hit" (receive cards) until it has a score of at least 17.
     - If the dealer is at 17 or higher, but has a score lower than the player, the dealer should "hit."
     - If the dealer goes over 21, the round is over and the player wins.
   - Adjust the money accordingly.
6. Do not consider any other special rules.
7. **Used cards are NOT put back into play between each round.**
8. Start another round of play with the same deck. When there's less than 52 cards left in the deck, shuffle and reset the deck.

14 points total:

- Program design using classes and functions (and good organization) – 2 pts
- 2-Deck setup and correct deck handling (e.g., reset deck and reshuffle) – 1 pt
- Correct and effective display of the game status/progress – 2 pts
- Correct playing mechanism
    - Betting / accounting – 1 pt
    - User setup and play mechanism – 2 pts
    - Dealer setup and play mechanism – 1 pt
    - Scoring – 2 pts
- Commenting / Documentation – 2 pts

**You will receive a grade of 0 for non-compiling code.**