The files needed for this lab should be available on the course web site in the projects section (Project 5 files). You need two files: Card.java and Hand.java.

1 Objectives

The main objective of this lab is to get you started with project 5. In project 5 you’ll have to implement functions to play a card game called “21”. The project has five classes: Card, Hand, Player, Dealer, and TwentyOne. In this lab, you’ll get familiar with the first two classes, Card and Hand, and you’ll write some functions belonging to these two classes.

2 The Card class

The Card class represents a card in the system. A card has a number and a suit. Cards come in four suits: CLUB, DIAMOND, HEART, SPADE. The skeleton for the Card class includes definitions for the constants that represent each of the suits. Cards are also provided for the face cards (JACK, QUEEN, KING, ACE). These constants can be referred to as Card.HEART or Card.JACK, for example. The Card class includes the following methods:

- **Card(int number, int suit)**
  - The constructor of the Card class. Use this to create a new card in the system. The suit must be one of the constants and not an arbitrary number.

- **getCardValue()**
  - Returns the number value for the card according to the following rules:
    - Cards 2 through 10 have a value equal to their face
    - Jacks, Queens, Kings have a value of 10
    - Ace cards have a value of 1

- **String toString()**
  - Returns a string indicating the number and suit of the card. For a card that is the 3 of clubs, this method could return “3C”.

Tasks: Begin by implementing the constructor (method Card()), then implement method getCardValue(). Write a small class CardTest, in which you create some cards (use the constructor of the class), then display their values (use method getCardValue()). Skip to the next section, then come back and write method toString(). Modify CardTest class so that it displays the string values of the cards instead of their numerical value (use method toString() instead of getCardValue()).

3 The Hand class

The Hand class represents a set of cards (it includes 5 Card variables) and it includes the following methods:

- **Hand()**
  - The constructor for the Hand class. This should clear all of the card variables to an initial value (HINT: use null for the initial value).

- **int getHandValue()**
  - Returns the value of the hand which is the sum of the values of each of the cards held.

Tasks: Implement methods Hand(), and getHandValue(), then go back to previous section and continue with implementing method toString().