**Object Oriented Programming – Revision Exercise**

1. Develop an application that allows the user to play a BlackJack game. The rules of BlackJack are as follows:
   1. Two cards are dealt to the player
   2. Two cards are dealt to the dealer
   3. The player can ask for more cards until he decides to stop or he gets over 21 (goes bust).
   4. If the player didn’t go bust, the dealer then takes more cards based on these rules:
      1. If the dealer’s hand adds up to less than 17, he must take another card
      2. If the dealer’s hand is 17 or over, he must stop
   5. The winner is the hand closest to 21, assuming neither hand went bust. The dealer wins in the case of a draw.

You should develop your app incrementally as follows:

1. Do the player functionality first. The app should display the initial hand of two random numbers between 1 & 11 (ignore picture cards) and offer the user the opportunity of taking another card (or not). The app should display the current hand each time it asks the user if he wants a new card. The app can be assumed to only need 5 cards per hand and these values can stored as individual values. The hand can be displayed by constructing a String of these ints, showing zero for cards not dealt. The app should use an instantiable class to create and store the hand. The random number can generated as follows:

import java.util.Random;

…

Random randomGenerator = new Random();

…

int testInt = randomGenerator.nextInt(11)+1;

1. Add further functionality to check if the user has either hit 21 or has gone bust, with an appropriate message in both cases.
2. Without altering the instantiable class, add functionality to show the dealers initial hand and to show each extra card the dealer takes. The app should check if the dealer goes bust or hits 21 and message appropriately. When the dealer is finished taking cards (i.e. he is at 17 or above), the app should display both the user’s and the dealer’s hand and say who won.
3. Finally, modify the instantiable class to use an int array of size ten to store the hand. The app should also now use a StringBuffer to build up the hand to be displayed, only showing cards dealt.