*Prime*

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*February 29, 2016*

Blackjack, also known as twenty-one, is the most widely played casino banking game in the world.


Figure 1: Play card games.

## PYTHON CODE

```
 \\This needs to import the info to see the methods.
import java.util.*;
import java.util.Scanner;

public class Cards{

  static int count=52;

  \\It randomly returns one of the number that you set.
  public static int rand(int high){
      return (int) (high*Math.random()+1);
    }

  \\This is a shuffle method to shuffle the cards.
  public static void shuffle(String[] the_deck, int
  switches){
    String temp;
    int a; int b;
    for(int i=0; i<switches; i++){
      a = rand(52);
      b = rand(52);
      temp = the_deck[a-1];
      the_deck[a-1] = the_deck[b-1];
      the_deck[b-1] = temp;
    }
  }

  \\This will give a card to player.
  public static String deal(String[] the_deck){
    count=count-1;
    return the_deck[count];}

  \\This is a shuffle method to see the input is ace
```

```
 public static int aces(String the_card){
  if(the_card.charAt(0)=='A'){
      return 1;}
    else{
      return 0;}
  }

 \\This method is to overload the "aces" method
 and it returns an array of numbers of aces.
 public static int aces(String[] the_hand){
  int sum=0;
  for(int i=0; i<the_hand.length;i++){
    sum = sum + aces(the_hand[i]);
  }
  return sum;
}

 \\This method is to overload the "aces" method
 and it returns an arraylist of numbers of aces.
 public static int aces(ArrayList the_hand){
  int sum=0;
  for(int i=0; i<the_hand.size();i++){
    sum = sum + aces(the_hand.get(i).toString());
  }
  return sum;
}

\\This method counts the more than one unite's value's cards.
public static int value(String the_card){
  char first = the_card.charAt(0);
  if (first=='1'|first=='J'|first=='Q'|first=='K'){
    return 10;
  }
    else if(first=='A'){
      return 11;}
    else{
      return Character.getNumericValue(first);
    }
  }

\\This method overload the "value" method
 and get the sum of the cards in an array.
public static int value(String[] the_hand){
  int sum=0;
  for(int i=0; i<the_hand.length;i++){
    sum = sum + value(the_hand[i]);
  }
  return sum;
}
```

```
\\This method overload the "value" method
and get the sum of the cards in an arraylist.
public static int value(ArrayList the_hand){
  int sum=0;
  int num_aces=aces(the_hand);
  for(int i=0; i<the_hand.size();i++){
    sum = sum + value(the_hand.get(i).toString());
  }
  while(num_aces>0 && sum>21){
    sum=sum-10;
    num_aces=num_aces-1;
  }
  return sum;
}



 \\This is the main method.
 public static void main(String[] args){

   Scanner scan = new Scanner(System.in);

   \\This is making the deck of the cards.
   String[] deck = new String[52];
   String[] suit = new String[4];
   int[] card = new int[13];

   for (int i=0; i<card.length; i++){
     card[i]=i+1;}
   String cardName;
   suit[0] = "Clubs";
   suit[1] = "Diamonds";
   suit[2] = "Hearts" ;
   suit[3] = "Spades";


   \\This is naming the card in the loop.
   for(int i=0; i<4; i++){
     for(int j=0; j<13; j++){
       if(j==0){cardName="Ace";}
       else if(j==10){cardName="Jack";}
       else if(j==11){cardName="Queen";}
       else if(j==12){cardName="King";}
       else {cardName=Integer.toString(card[j]);}
       deck[ 13*i+j ]= cardName + "_" +suit[i];
     }
   }

  \\Shuffling the deck 1000 times.
```

```
   shuffle(deck, 1000);

    String say;
  boolean state=true;

    \\Dealing cards to players and dealers
    ArrayList hand = new ArrayList();
    ArrayList dealer_hand = new ArrayList();
    dealer_hand.add( deal(deck) );
    dealer_hand.add( deal(deck) );
    hand.add( deal(deck) );

    while(state){

    hand.add( deal(deck) );

    System.out.println("Dealer showing: " +
    dealer_hand.get(1));
    System.out.println("Contents of hand: " + hand);
    System.out.println("Your score is: " + value(hand));

    if(value(hand)>21){
      System.out.println("BUST!!!!");
      break;
    }

    System.out.println( "hit[H] or stand[S]?");
         say=scan.nextLine();
         if(say.equals("H")){state=true;}
         else{state=false;}
    }

    while( value(dealer_hand)<17 ){
      dealer_hand.add( deal(deck) );
    }


    System.out.println("Dealer has: " + dealer_hand);
    System.out.println("Dealer score is: " + value(dealer_hand));

    \\This is the rule of the game.
    if( (value(hand)>value(dealer_hand) && value(hand)<22)
     | (value(dealer_hand) > 21) ){
      System.out.println( "YOU WIN !!!!");
    }
    else{System.out.println( "YOU LOSE. BOO !!!!");}
  }
}
```

```
Dealer showing: 2_Spades
Contents of hand: [4_Hearts, 5_Spades]
Your score is: 9
hit[H] or stand[S]?
 [DrJava Input Box]
Dealer showing: 2_Spades
Contents of hand: [4_Hearts, 5_Spades, Queen_Clubs]
Your score is: 19
hit[H] or stand[S]?
 [DrJava Input Box]
Dealer has: [6_Diamonds, 2_Spades, 7_Spades, 7_Hearts]
Dealer score is: 22
YOU WIN !!!!
>
```

This indicates the output of this program.