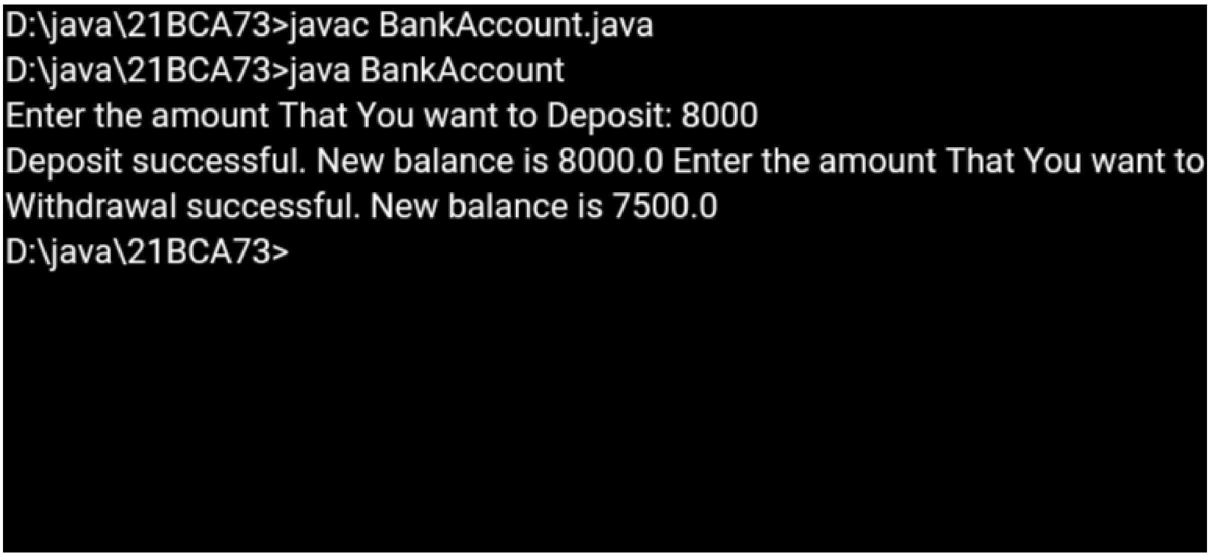
## *Program 1*

**Design a class to represent a bank account. Include the following members. (Using Multiple Constructor)Data members: Name of depositor, Account number, Type of account, Balance amount in the account.Methods: To assign initial values, To deposit an amount, To withdraw an amount after checking balance, To display the name and balance.**

**Code**:

```
import java.util.*;
public class BankAccount {
    private String depositorName;
    private int accountNumber;
    private String accountType;
    private double balance;


    public BankAccount() {
        this("", 0, "Savings", 0.0);
    }
    public BankAccount(String name, int accountNumber) {
        this(name, accountNumber, "Savings", 0.0);
    }

    public BankAccount(String name, int accountNumber, String accountType,
double balance) {
        this.depositorName = name;
        this.accountNumber = accountNumber;
        this.accountType = accountType;
        this.balance = balance;
    }

    public void setInitialValues(String name, int accountNumber, String
accountType, double balance) {
        this.depositorName = name;
        this.accountNumber = accountNumber;
        this.accountType = accountType;
        this.balance = balance;
    }

    public void deposit(double amount) {
        if(amount > 0) {
            balance += amount;
            System.out.println("Deposit successful. New balance is " + balance);
        } else {
            System.out.println("Invalid amount. Please enter a positive amount to
deposit.");
        }
    }

    public void withdraw(double amount) {
        if(amount <= 0) {
            System.out.println("Invalid amount. Please enter a positive amount to
withdraw.");
        } else if(amount > balance) {
            System.out.println("Insufficient balance. You can withdraw up to " +
balance);
        } else {
            balance -= amount;
            System.out.println("Withdrawal successful. New balance is " + balance);
        }
    }

    public void display() {
        System.out.println("Depositor name: \n" + depositorName);
        System.out.println("Account number: \n" + accountNumber);
        System.out.println("Account type: \n" + accountType);
        System.out.println("Current balance: \n" + balance);
    }
    public static void main(String args[]){
        Scanner s=new Scanner(System.in);

                    BankAccount account1 = new BankAccount();
                    account1.setInitialValues("John Smith", 12345, "Savings",0.0);
                              System.out.println("Enter the amount That You want to
Deposit:");
                    double depositAmount=s.nextDouble();
                    account1.deposit(depositAmount);
                    System.out.println("Enter the amount That You want to 
Withdrawr:");
                    double withdrawAmount=s.nextDouble();
                    account1.withdraw(withdrawAmount);

    }
}
```

**Output**:



```
D:\java\21BCA73>javac BankAccount.java
D:\java\21BCA73>java BankAccount
Enter the amount That You want to Deposit: 8000
Deposit successful. New balance is 8000.0 Enter the amount That You want to
Withdrawal successful. New balance is 7500.0
D:\java\21BCA73>
```

## *Program 2*

**Write a program to print Floyd’s triangle where n is command line input.**

**1**

**2 3**

**4 5 6**

**7 8 9 10**

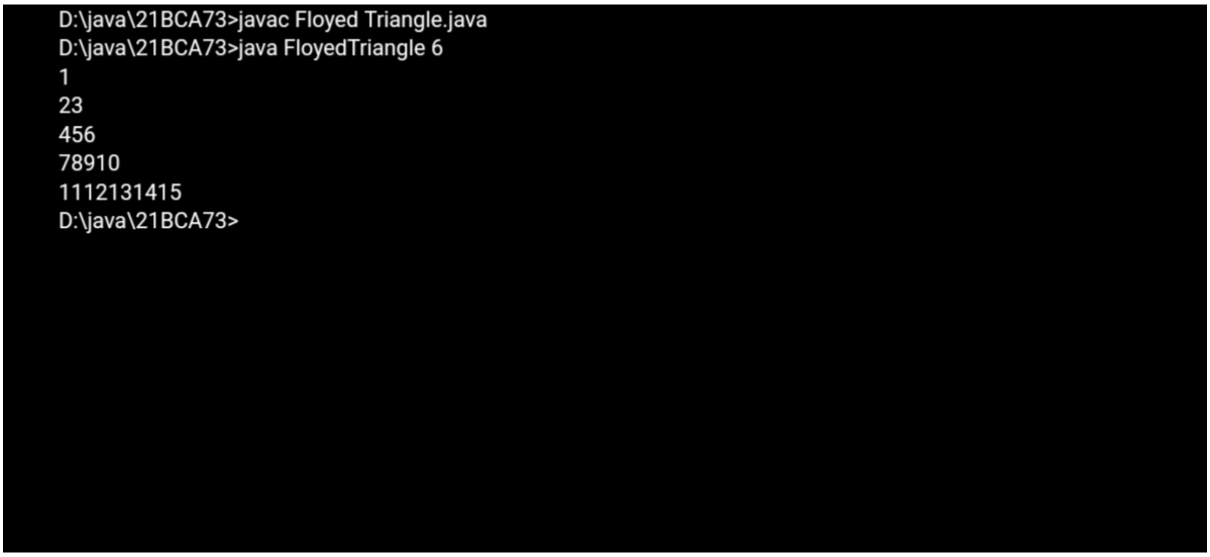
**.....**

**N**

**Code**:

```
class FloyedTriangle{
    public static void main (String args[]){
        int no,k=1;

        no=Integer.parseInt(args[0]);
        for(int i=0;i<no;i++){
            for(int j=0;j<i;j++,k++){
            System.out.print(k);
            }
            System.out.println();
        }

    }
}
```

**Output**:



```
D:\java\21BCA73>javac Floyed Triangle.java
D:\java\21BCA73>java FloyedTriangle 6
1
23
456
78910
1112131415
D:\java\21BCA73>
```

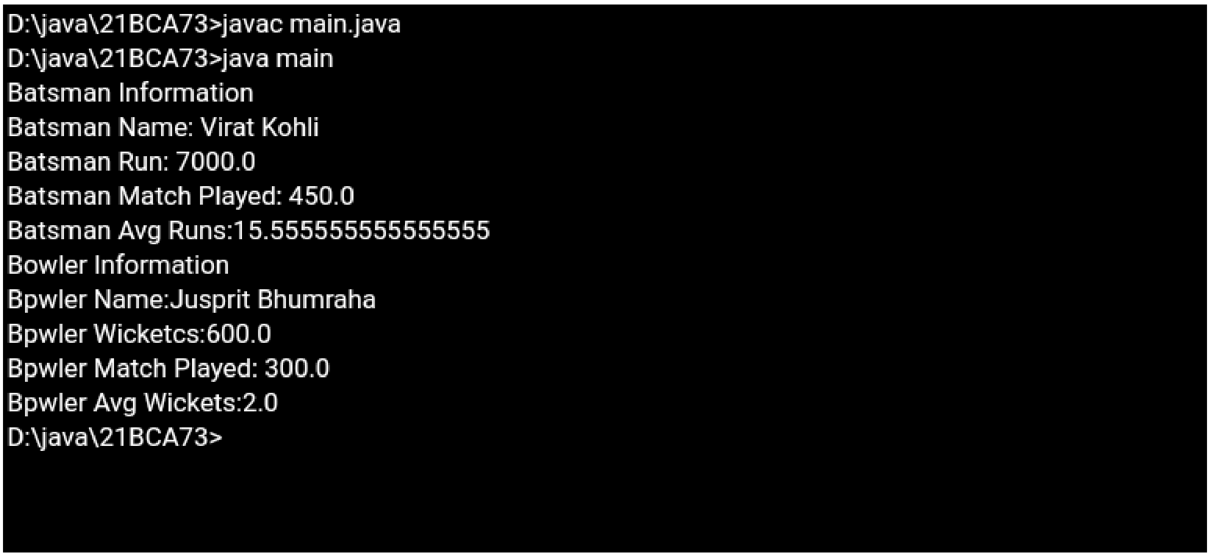
## *Program 3*

**Design a class Cricketer having data member name and a number of matches and appropriate member function to set the values. Derived two classes Batsman and Bowler from cricketer class with data member total number of runs and wickets respectively. Batsman class is having method to calculate average wicket. Write a program to create two objects and display information of one batsman and bowler along with average run and wicket.**

**Code**:

```
class Crickter{
    public String name;
    public double matchPlayed;
    public void setValues(String name,double matchPlayed){
        this.name=name;
        this.matchPlayed=matchPlayed;
    }
}
class Batsman extends Crickter{
    public double totalruns;
    public double avarageRuns(double totalruns){
        this.totalruns=totalruns;
        return this.totalruns/matchPlayed;
    }


}
class Bowler extends Crickter{
    public double wickets;
    public double avarageWickets(double wickets){
        this.wickets=wickets;
        return this.wickets/matchPlayed;
    }
}
class main {
    public static void main(String args[]){
        Batsman bm=new Batsman();
        bm.setValues("Virat Kohli",450);
        double avgRuns=bm.avarageRuns(7000);
        System.out.println("Batsman Information\n");
        System.out.println("Batsman Name:"+bm.name);
        System.out.println("Batsman Run:"+bm.totalruns);
        System.out.println("Batsman Match Played:"+bm.matchPlayed);
        System.out.println("Batsman Avg Runs:"+avgRuns);
        Bowler br=new Bowler();
        br.setValues("Jusprit Bhumraha",300);
        double avgWickets=br.avarageWickets(600);
        System.out.println("\nBowler Information\n");
        System.out.println("Bpwler Name:"+br.name);
        System.out.println("Bpwler Wicketcs:"+br.wickets);
        System.out.println("Bpwler Match Played:"+br.matchPlayed);
        System.out.println("Bpwler Avg Wickets:"+avgWickets);
    }
}
```

**Output**:



```
D:\java\21BCA73>javac main.java
D:\java\21BCA73>java main
Batsman Information
Batsman Name: Virat Kohli
Batsman Run: 7000.0
Batsman Match Played: 450.0
Batsman Avg Runs:15.555555555555555
Bowler Information
Bpwler Name:Jusprit Bhumraha
Bpwler Wicketcs:600.0
Bpwler Match Played: 300.0
Bpwler Avg Wickets:2.0
D:\java\21BCA73>
```

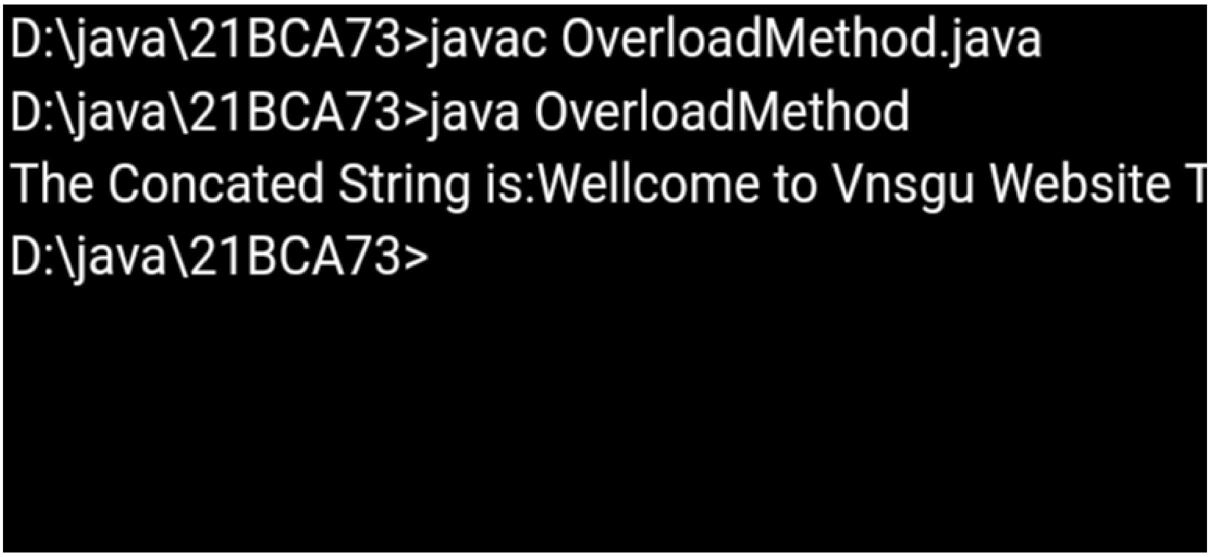
## *Program 4*

**Write a program that will accept two strings or two numbers from command line and create overloaded method that add these two numbers or concate two strings.**

**Code**:

```
class OverloadMethod{
    public void display(String s1,String s2){
        System.out.println("The Concated String is:"+(s1+s2));
    }
    public void display(int a,int b){
        System.out.println("The Addition of "+a+" and "+b+" is:"+(a+b));
    }
    public static void main(String args[]){
        OverloadMethod o=new OverloadMethod();
        o.display("Wellcome to"," Vnsgu Website");
        o.display(5,10);

    }
}
```

**Output**:



```
D:\java\21BCA73>javac OverloadMethod.java
D:\java\21BCA73>java OverloadMethod
The Concated String is:Wellcome to Vnsgu Website T
D:\java\21BCA73>
```

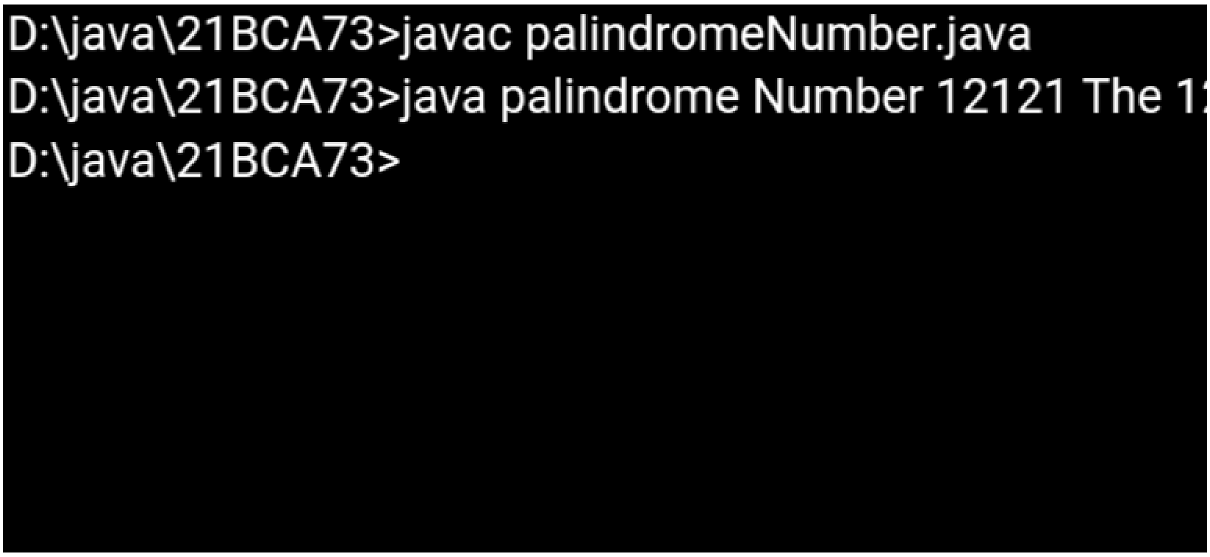
## *Program 5*

**Write a program that accept a number from command line and check whether it is palindrome or not.**

**Code**:

```
class palindromeNumber{
    public static void main(String args[]){
        int num=Integer.parseInt(args[0]);
        int sum=0,r,temp=num;
        for(int i=0;num!=0;i++){
            r=num%10;
            sum=(sum*10)+r;
            num=num/10;
        }
        if(sum==temp){
            System.out.println("The "+temp+" is Palindrome.");
        }
        else
            System.out.println("The "+temp+" is not Palindrome.");


    }
}
```

**Output**:



```
D:\java\21BCA73>javac palindromeNumber.java
D:\java\21BCA73>java palindrome Number 12121 The 1
D:\java\21BCA73>
```

## *Program 6*

**Write a program that will accept a string from command line and arrange all the characters in alphabetical order.**

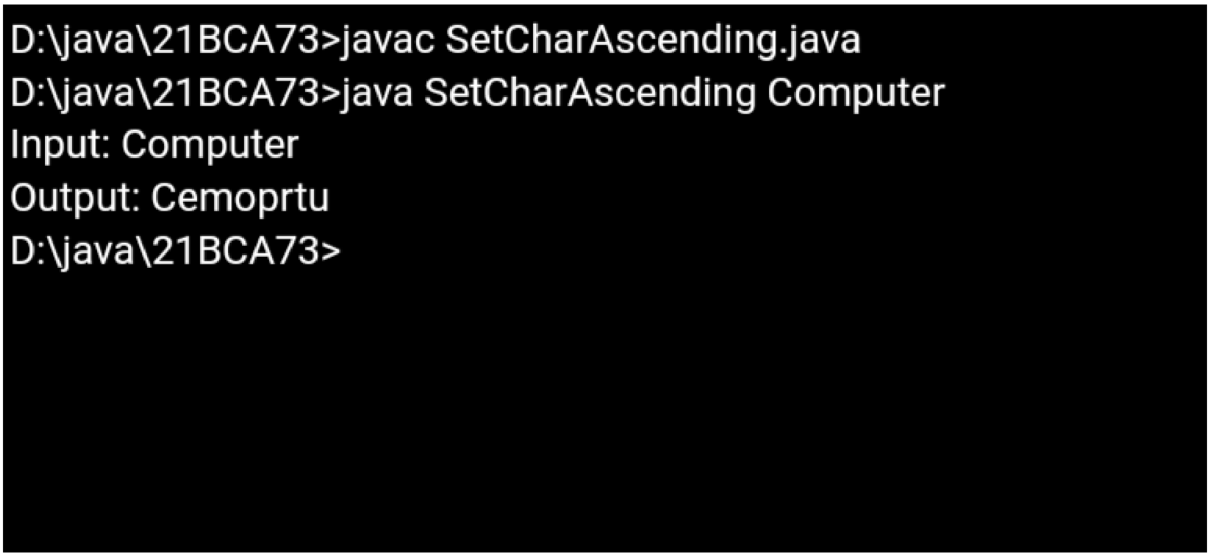
**E.g. input- computer**

**output-cemoprtu**

**Code:**

```
import java.util.Arrays;

public class SetCharAscending{
    public static void main(String[] args) {
        if (args.length == 0) {
            System.out.println("Please provide a string argument.");
            return;
        }

        String input = args[0];
        char[] charArray = input.toCharArray();
        Arrays.sort(charArray);
        String sorted = new String(charArray);

        System.out.println("Input: " + input);
        System.out.println("Output: " + sorted);
    }
}
```

**Output:**



```
D:\java\21BCA73>javac SetCharAscending.java
D:\java\21BCA73>java SetCharAscending Computer
Input: Computer
Output: Cemoprtu
D:\java\21BCA73>
```

## *Program 7*

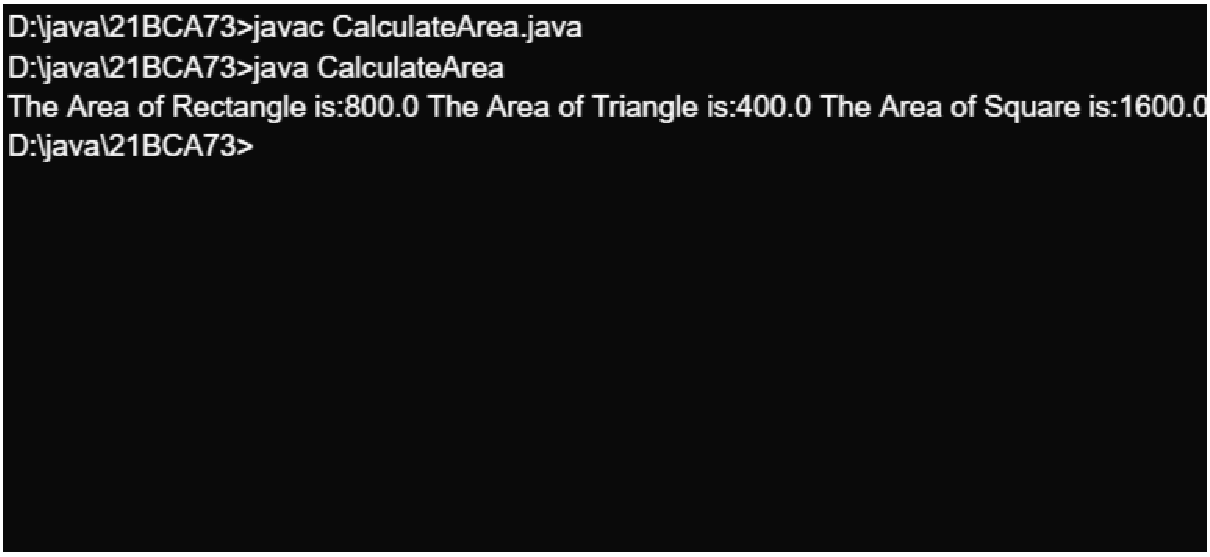
**Write a program to create interface Area. Create three classes called rectangle, triangle and square calculate areas respectively.**

**Code**:

```
interface Area{

    public void Calculatearea();

}
```

```
class rectangle implements Area{
   float x,y;
   public rectangle(float x,float y){
      this.x=x;
      this.y=y;
   }
   public void Calculatearea(){
      System.out.println("The Area of Rectangle is:"+(this.x*this.y));
   }
}
class triangle implements Area{
   float x,y;
   public triangle(float x,float y){
      this.x=x;
      this.y=y;
   }
   public void Calculatearea(){
      System.out.println("The Area of Triangle is:"+((this.x*this.y)/2));

   }
}
class square implements Area{
   float x;
   public square(float x){
      this.x=x;
   }
   public void Calculatearea(){
      System.out.println("The Area of Square is:"+(this.x*this.x));
   }
}
class CalculateArea{
   public static void main(String args[]){
      //hare hight=20 and width=40
      rectangle re=new rectangle(20,40);
      re.Calculatearea();
      //hare base=20 and hight=40
      triangle tr=new triangle(20,40);
      tr.Calculatearea();
      //hare hight=40
      square sq=new square(40);
      sq.Calculatearea();
   }
}
```

**Output**:



```
D:\java\21BCA73>javac CalculateArea.java
D:\java\21BCA73>java CalculateArea
The Area of Rectangle is:800.0 The Area of Triangle is:400.0 The Area of Square is:1600.0
D:\java\21BCA73>
```

## *Program 8*

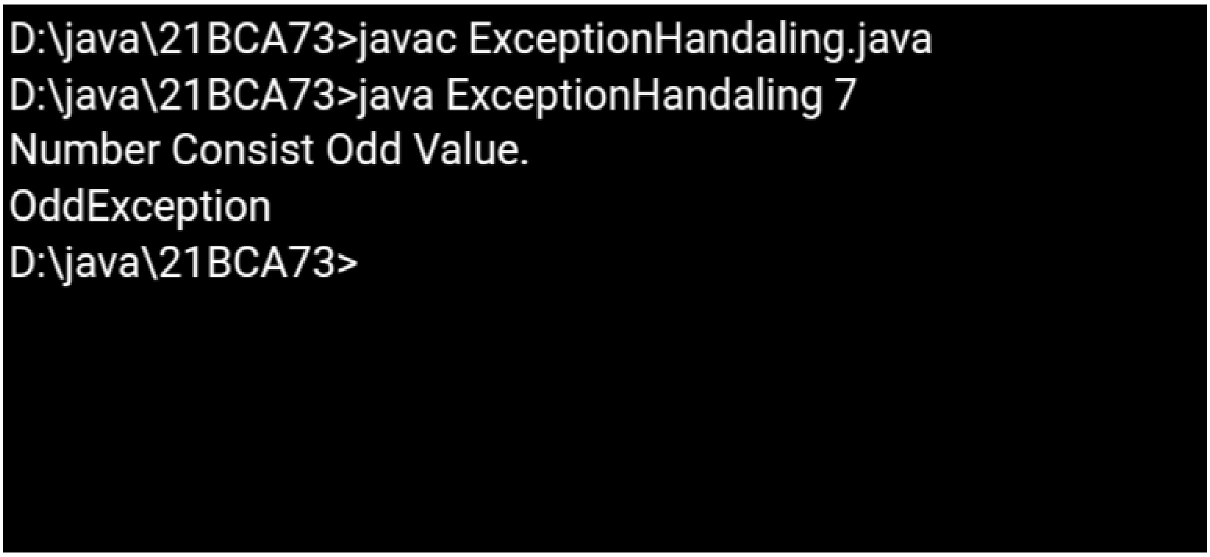
**Write a program that will accept a number from command line and raise a user defined**

**exception if the number consists of odd number of digits.**

**Code**:

```
class OddException extends Exception{
    OddException(String str){
        System.out.println(str);
    }
}
class ExceptionHandaling{
    public static void main(String args[]){
        int a=Integer.parseInt(args[0]);
        try{
            if(a%2==0){
                System.out.println("The "+a+" is Even.");
            }
            else{
                throw new OddException("Number Consist Odd Value.");
            }

        }
        catch(OddException e){
            System.out.println(e);;
        }

    }
}
```

**Output**:



```
D:\java\21BCA73>javac ExceptionHandaling.java
D:\java\21BCA73>java ExceptionHandaling 7
Number Consist Odd Value.
OddException
D:\java\21BCA73>
```

## *Program 9*

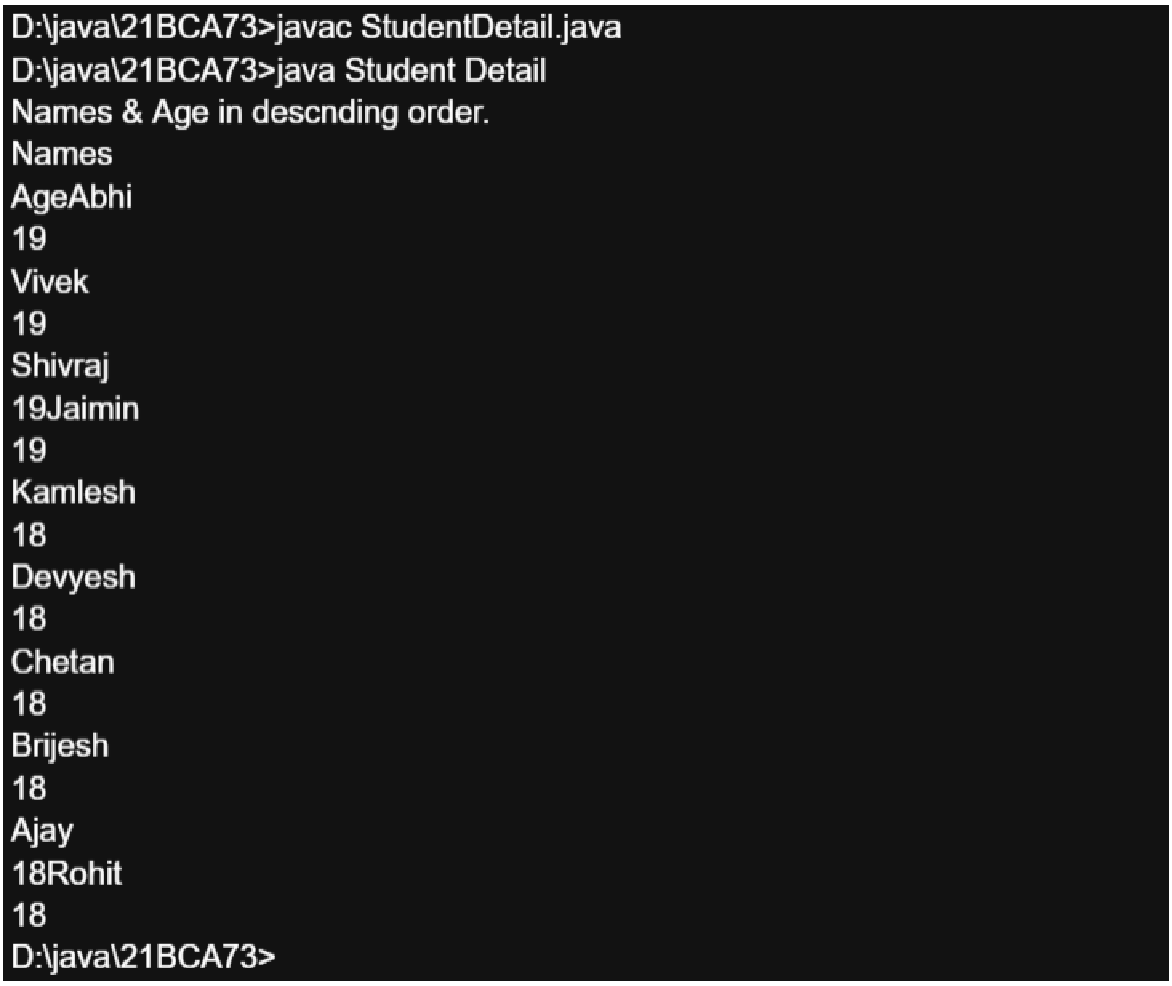
**Write a java application which accepts 10 names of student and their age. Sort names and age in descending order. (Using Array)**

**Code**:

```
import java.util.*;
class StudentDetail{
    public static void main(String args[]){
        // String[] StdName=new String[10];
        // int[] age=new int[10];
        String StdName[]={"Yash","Divyang","Kaushik","Ajay","Kamlesh","Shivraj","Abhay","Chetan","Vivek","Brijesh"};
        int age[]={18,18,18,18,19,19,19,19,18,18};
        int n=9;
        String temp;
        for (int i=0; i<=n;i++) {
            for (int j=i+1;j<=n;j++){
                // to compare one string with other strings
                if (StdName[i].compareTo(StdName[j]) > 0) {
                    // swapping
                    temp = StdName[i];
                    StdName[i] = StdName[j];
                    StdName[j] = temp;
                }
            }
        }
        for(int i=0;i<=n;i++){
            for(int j=i+1;j<=n;j++){
                //to set the age in descnding order
                int temp1;
                if(age[i]>age[j]){
                    temp1=age[i];
                    age[i]=age[j];
                    age[j]=temp1;
                }
            }
        }
        System.out.println("Names & Age in descnding order.");
        System.out.println("Names\t\t\tAge");
        System.out.println("====================
\t====================");
        for (int i = n; i >=0; i--) {
            System.out.println(StdName[i]+"\t\t\t"+age[i]);
        }
```

```
    }
}
```

**Output**:



```
D:\java\21BCA73>javac StudentDetail.java
D:\java\21BCA73>java Student Detail
Names & Age in descnding order.
Names
AgeAbhi
19
Vivek
19
Shivraj
19Jaimin
19
Kamlesh
18
Devyesh
18
Chetan
18
Brijesh
18
Ajay
18Rohit
18
D:\java\21BCA73>
```

## *Program 10*

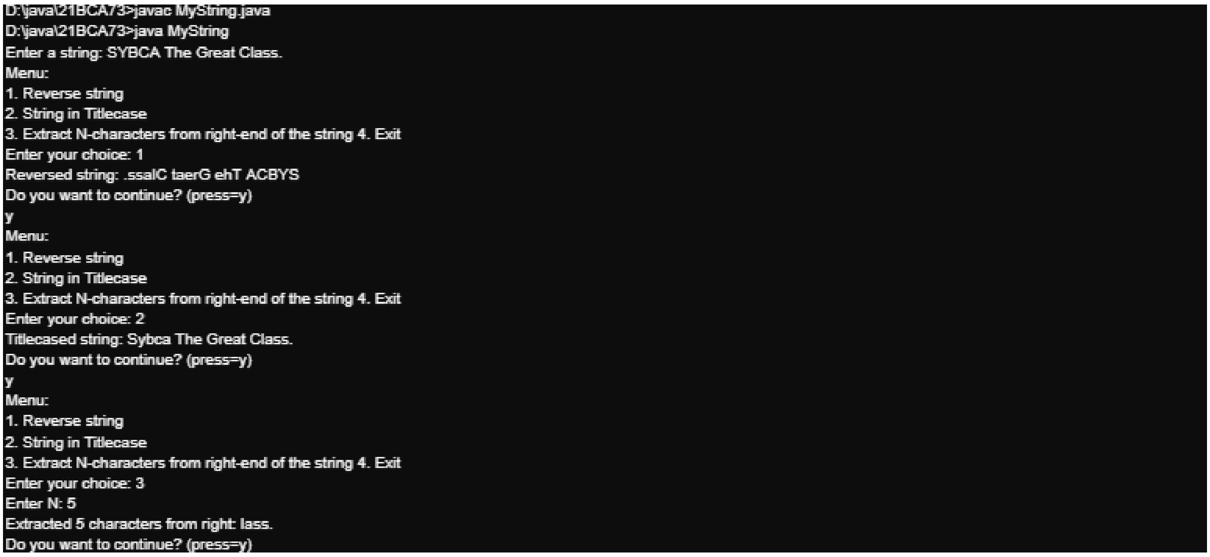
**Design a class MyString having a data member of type String and add member functions to achieve following task. (i) Reverse string (ii) String in Titlecase. (iii) Extract N-characters from**

**right-end of the string Write a menu driven program to call these methods of MyString class. The program should not terminate abruptly.**

**Code:**

```
import java.util.*;


public class MyString {
    private String str;


    public MyString(String str) {
        this.str = str;
    }


    public String reverse() {
        return new StringBuilder(str).reverse().toString();
    }


    public String toTitleCase() {
        StringBuilder result = new StringBuilder(str.length());
        String[] words = str.split("\\s");


        for (String word : words) {
            if (!word.isEmpty()) {
                result.append(Character.toUpperCase(word.charAt(0)));
                result.append(word.substring(1).toLowerCase());
            }

            result.append(" ");
        }

        return result.toString().trim();
    }

    public String extractNFromRight(int n) {
        if (n >= str.length()) {
            return str;
        }

        return str.substring(str.length() - n);
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a string: ");
        String str = scanner.nextLine();
        MyString myString = new MyString(str);
        char ch;
        do {
            System.out.println();
            System.out.println("Menu:");
            System.out.println("1. Reverse string");
            System.out.println("2. String in Titlecase");
            System.out.println("3. Extract N-characters from right-end of the string");
            System.out.println("4. Exit");
            System.out.print("Enter your choice: ");

            int choice = scanner.nextInt();
            scanner.nextLine();

            switch (choice) {
                case 1:
                    System.out.println("Reversed string: " + myString.reverse());
                    break;
                case 2:
                    System.out.println("Titlecased string: " + myString.toTitleCase());
                    break;
                case 3:
                    System.out.print("Enter N: ");
                    int n = scanner.nextInt();
                    scanner.nextLine();
                    System.out.println("Extracted " + n + " characters from right: " + myString.extractNFromRight(n));
                    break;
                case 4:
                    System.out.println("Exiting...");
                    System.exit(0);
                    break;
                default:
                    System.out.println("Invalid choice. Try again.");
            }
            System.out.println("Do you want to continue?(press=y)");
            ch=scanner.next().charAt(0);
        }while(ch=='y');
    }
}
```

**Output:**



```
D:\java\21BCA73>javac MyString.java
D:\java\21BCA73>java MyString
Enter a string: SYBCA The Great Class.
Menu:
1. Reverse string
2. String in Titlecase
3. Extract N-characters from right-end of the string 4. Exit
Enter your choice: 1
Reversed string: .ssalC taerG ehT ACBYS
Do you want to continue? (press=y)
y
Menu:
1. Reverse string
2. String in Titlecase
3. Extract N-characters from right-end of the string 4. Exit
Enter your choice: 2
Titlecased string: Sybca The Great Class.
Do you want to continue? (press=y)
y
Menu:
1. Reverse string
2. String in Titlecase
3. Extract N-characters from right-end of the string 4. Exit
Enter your choice: 3
Enter N: 5
Extracted 5 characters from right: lass.
Do you want to continue? (press=y)
```