Question 1. Write a Java code to find the sum of any number of integers entered as command line arguments.

File Name: Sum.java

```
class Sum{
    public static void main(String args[]){
        int sum = 0;
        int len = args.length;
        for(int i=0; i<len; i++){
            sum = sum + Integer.parseInt(args[i]);
        }
        System.out.println("The Sum of given numbers is: "+ sum);
    }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Sum.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java Sum 10 20
The Sum of given numbers is: 30
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Sum.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java Sum 30 -20
The Sum of given numbers is: 10
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Question 2. Write a Java code to calculate factorial of a number. Take input from keyboard using following classes-

i) DataInputStream
ii) BufferedReader
iii) Scanner.

2. i) Using DataInputStream

File Name: DataInputDemo.java

```
import java.io.*;
class DataInputDemo{
     public static void main(String args[])  throws IOException{
          DataInputStream input=new DataInputStream(System.in);
          int n, fact=1;
          System.out.println("\nEnter the no");
          n=Integer.parseInt(input.readLine());
          for(int i=n;i>=1;i--){
               fact=fact*i;
          }
          System.out.println("The factorial of the given integer is
" +(fact));
     }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac DataInputDemo.java
Note: DataInputDemo.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java DataInputDemo

Enter the no
9
The factorial of the given integer is 362880
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac DataInputDemo.java
Note: DataInputDemo.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java DataInputDemo

Enter the no
5
The factorial of the given integer is 120
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

2. ii) Using BufferedReader

File Name: BufferedDemo.java

```
import java.io.*;
class BufferedDemo{
     public static void main(String args[]) throws IOException{
          BufferedReader br=new BufferedReader(new
InputStreamReader(System.in));

          int fact=1;
          int n;
          System.out.println("Enter the no.");
          n=Integer.parseInt(br.readLine());

          for(int i=n;i>=1;i--){
               fact=fact*i;
          }
          System.out.println("Factorial of the given integer is"
+fact);
     }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac BufferedDemo.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java BufferedDemo
Enter the no.
5
Factorial of the given integer is120
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac BufferedDemo.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java BufferedDemo
Enter the no.
9
Factorial of the given integer is362880
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

2. iii) Using Scanner

File Name: ScannerDemo.java

```
import java.util.Scanner;
public class ScannerDemo{
    public static void main(String[] args) {
        Scanner OBJECT = new Scanner(System.in);
        System.out.print("Enter the number: ");
        int NUM = Integer.parseInt(OBJECT.nextLine());
        OBJECT.close();
        int RESULT = 1;
        while(NUM != 0){
            RESULT = RESULT * (NUM--);
        }
        System.out.println("The factorial of given number is: " +
RESULT);
    }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac ScannerDemo.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java ScannerDemo
Enter the number: 9
The factorial of given number is: 362880
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac ScannerDemo.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java ScannerDemo
Enter the number: 5
The factorial of given number is: 120
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Question 3. Write a java code to print all prime numbers within a given range.

File Name: Prime.java

```
import java.util.Scanner;
public class Prime {
    public static void main(String[] args) {
        Scanner SCANNER = new Scanner(System.in);
        System.out.print("Enter the lower range: ");
        int RANGE1 = Integer.parseInt(SCANNER.nextLine());
        System.out.print("Enter the upper range: ");
        int RANGE2 =Integer.parseInt(SCANNER.nextLine());
        SCANNER.close();
        for(int i=RANGE1; i<RANGE2; i++){
            if(i%2 != 0){
                System.out.println(" "+i);
            }
        }
    }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Prime.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java Prime
Enter the lower range: 10
Enter the upper range: 20
 11
 13
 15
 17
 19
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Prime.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java Prime
Enter the lower range: 0
Enter the upper range: 10
 1
 3
 5
 7
 9
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

4. Write a Java code to take ten numbers as input and sort them as ascending order.

File Name: Sort.java

```
import java.util.Scanner;
class Sort{
    public static void main(String[] args) {
        Scanner SCANNER = new Scanner(System.in);
        int ARRAY[] = new int[10];
        System.out.print("Enter 10 space separeted numbers to
sort: ");
        for(int i=0; i<10; i++){
            ARRAY[i]=Integer.parseInt(SCANNER.nextLine());
        }
        SCANNER.close();
        for(int i=0; i<10; i++){
            for(int j=i+1; j<10; j++){
                if(ARRAY[i]>ARRAY[j]){
                    int temp = ARRAY[i];
                    ARRAY[i] = ARRAY[j];
                    ARRAY[j] = temp;
                }
            }
        }
        System.out.print("The numbers after sort are: ");
        for(int i=0; i<10; i++){
            System.out.print(" "+ARRAY[i]);;
        }
        System.out.println();
    }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Sort.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java Sort
Enter 10 space separeted numbers to sort: 1 5 4 8 6 7 2 3 5 12
The numbers after sort are:  1 2 3 4 5 5 6 7 8 12
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Sort.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java Sort
Enter 10 space separeted numbers to sort: 45 78 12 56 52 41 23 52 48 96
The numbers after sort are:  12 23 41 45 48 52 52 56 78 96
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

5. Write a java code to take Account no, Name and Balance as input of ten customers and display the name and account no of those customers whose balance is less than one thousand.

File Name: AccountDemo.java

```
import java.util.Scanner;
class AccountDemo{
     int acc_number[] = new int[10];
     String name[] = new String[10];
     int acc_balance[] = new int[10];

     void take_input(){
          Scanner SCA = new Scanner(System.in);
          for(int i=0; i<10; i++){
               System.out.print("Name: ");
               name[i] = SCA.nextLine();
               System.out.print("Account Number: ");
               acc_number[i] = Integer.parseInt(SCA.nextLine());
               System.out.print("Account balance: ");
               acc_balance[i] = Integer.parseInt(SCA.nextLine());
          }
          SCA.close();
     }
     void display(){
          for(int i=0; i<10; i++){
               if(acc_balance[i]<1000){
                    System.out.print("\nName: "+name[i]);
                    System.out.print("\tAccount Number:
"+acc_number[i]);
               }
          }
     }
}
class mainMethod{
     public static void main(String[] args){
          AccountDemo obj = new AccountDemo();
          obj.take_input();
          obj.display();
     }
}
```

Output:

```
papai@papai-H81M-S:~/Documents/java_assignment/Account$ javac AccountDemo.java
papai@papai-H81M-S:~/Documents/java_assignment/Account$ java mainMethod
Name: suvasish
Account Number: 1234
Account balance: 500
Name: tirtho
Account Number: 2345
Account balance: 6000
Name: papai
Account Number: 3456
Account balance: 700
Name: sudo
Account Number: 4567
Account balance: 400
Name: joe
Account Number: 5678
Account balance: 550
Name: alen
Account Number: 6789
Account balance: 800
Name: alex
Account Number: 7890
Account balance: 5000
Name: zero
Account Number: 8901
Account balance: 100
Name: kiara
Account Number: 9012
Account balance: 8000
Name: bishal
Account Number: 1542
Account balance: 800

Name: suvasish  Account Number: 1234
Name: papai     Account Number: 3456
Name: sudo      Account Number: 4567
Name: joe       Account Number: 5678
Name: alen      Account Number: 6789
Name: zero      Account Number: 8901
Name: bishal    Account Number: 1542papai@papai-H81M-S:~/Documents/java_assignment/Account$
```

6. Create a class named Figure. Make Circle, square and triangle as object of the class Figure and calculate their surface area by concept of constructor overloading.

File Name: Figure.java

```
class Figure{
	final double pi = 3.14;
	public double squ_area = 0.0;
	public double cir_area = 0.0;
	public double tri_area = 0.0;
	//a is an extra variable to identify the constractors
	Figure(int s){
		squ_area = s*s;
	}
	Figure(int r, int a){
		cir_area = pi*r*r;
	}
	Figure(int h, int b, int a){
		tri_area = (b/2)*h;
	}
}
class mainMethod{
	public static void main(String[] args){
		Figure circle = new Figure(10,0);
		Figure squere = new Figure(20);
		Figure triangle = new Figure(30,15,0);

		System.out.println("Area of squere is: "+squere.squ_area);
		System.out.println("Surface area of circle is:
"+circle.cir_area);
		System.out.println("Area of triangle is: "+triangle.tri_area);
	}
}
```

Output:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Figure.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java mainMethod
Area of squere is: 400.0
Surface area of circle is: 314.0
Area of triangle is: 210.0
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

7. Create a class named Figure. Make Circle, square and triangle as object of the class Figure and calculate their surface area by concept of method overloading.

File Name: Figure.java

```
class Figure{
     final double pi = 3.14;

     Figure(){ }
     double surface(int a){
          //for squere
          return (a*a);
     }
     double surface(int a, int b){
          //for circle
          return (pi*a*a);
     }
     double surface(int b, int h, int a){
          //for triangle
          return ((b/2)*h);
     }
}
class mainMethod{
     public static void main(String[] args){
          Figure circle = new Figure();
          Figure squere = new Figure();
          Figure triangle = new Figure();

          System.out.println("Area of squere is:
"+squere.surface(10));
          System.out.println("Surface area of circle is:
"+circle.surface(20,0));
          System.out.println("Area of triangle is:
"+triangle.surface(30,15,0));
     }
}
```

Output:

```
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ javac Figure.java
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$ java mainMethod
Area of squere is: 100.0
Surface area of circle is: 1256.0
Area of triangle is: 225.0
papai@papai-H81M-S:~/Documents/java_assignment/java-assignment-2020$
```

8. Create a class Parent with one variable and one method. Create a class Child which inherits members from parent. Use the members of parent from child class and from third party environment.

File Name: Child.java

```
package Inheritence;
class Parent{
    public int parent_variable = 1010;
    public void parent_method(){
        System.out.println("Hello java!");
    }
}
public class Child extends Parent{
    // class without body
}
```

File Name: MainMethod.java

```
import Inheritence.Child;
class MainMethod{
    public static void main(String[] args) {
        Child obj = new Child();
        System.out.println("The value of parent variable is :
"+obj.parent_variable);
        obj.parent_method();

    }
}
```

Package Tree:

|-- Inheritence
| `-- Child.java
`-- MainMethod.java

Output:

```
papai@papai-H81M-S:~/Documents/java_assignment/Inheritence/Inheritence$ javac Child.java
papai@papai-H81M-S:~/Documents/java_assignment/Inheritence/Inheritence$ cd ..
papai@papai-H81M-S:~/Documents/java_assignment/Inheritence$ javac MainMethod.java
papai@papai-H81M-S:~/Documents/java_assignment/Inheritence$ java MainMethod
The value of parent variable is : 1010
Hello java!
papai@papai-H81M-S:~/Documents/java_assignment/Inheritence$
```

9. Write a java code to check whether a given string is palindrome or not?

File Name: Palindrome.java

```
import java.util.Scanner;
class Palindrome{
    public static void main(String args[]){
        String original, reverse = "";
        Scanner in = new Scanner(System.in);
        System.out.print("\nEnter a string to check if it is a
palindrome: ");
        original = in.nextLine();
        int length = original.length();
        for (int i = length-1; i>=0; i--)
            reverse = reverse + original.charAt(i);
        if(original.equals(reverse))
            System.out.println("The string is palindrome.");
        else
            System.out.println("The string is not palindrome.");
    }
}
```

Output:

Case1:

```
papai@papai-H81M-S:~/Documents/java_assignment/palindrome$ javac Palindrome.java
papai@papai-H81M-S:~/Documents/java_assignment/palindrome$ java Palindrome

Enter a string to check if it is a palindrome: suvasish
The string is not palindrome.
papai@papai-H81M-S:~/Documents/java_assignment/palindrome$
```

Case2:

```
papai@papai-H81M-S:~/Documents/java_assignment/palindrome$ javac Palindrome.java
papai@papai-H81M-S:~/Documents/java_assignment/palindrome$ java Palindrome

Enter a string to check if it is a palindrome: saabbaas
The string is palindrome.
papai@papai-H81M-S:~/Documents/java_assignment/palindrome$
```

14. Write a Java code to create Interface. Implement this Interface in another Java Program.

File Name: TestInterface.java

```
interface Shape{
     int x=5;
     public void area();
     public void volume();
}
public class TestInterface implements Shape{

     public void area(){
          System.out.println(x*x);
     }
     public void volume(){
          System.out.println(x*x*x);
     }
     public static void main(String args[]){
          TestInterface ti = new TestInterface();
          ti.area();
          ti.volume();
     }
}
```

Output:

```
papai@papai-H81M-S:~/Documents/java_assignment/Interface$ javac TestInterface.java
papai@papai-H81M-S:~/Documents/java_assignment/Interface$ java TestInterface
25
125
papai@papai-H81M-S:~/Documents/java_assignment/Interface$
```

15. Write a Java code to implement Multi-Threading concept.

File Name: MyThread.java

```
class X extends Thread{
      public void run(){
            try{
                        for(int i=1; i<=3; i++){
                           System.out.println("Thread X: Value of i= "+i);
                        }
            }
            catch (Exception e){ }
       System.out.println("End of Thread X");
      }
}

class Y extends Thread{
      public void run(){
      try{
                  for(int j=1; j<=3; j++){
                        System.out.println("Thread Y: Value of j= "+j);
                  }
         }
         catch (Exception e){ }
      System.out.println("End of Thread Y");
      }
}

public class MyThread{
      public static void main (String s[]){
            X  x = new X();
            Y  y = new Y();
            x.start();
            y.start();
            try{
                  for(int k=1;k<=3;k++){
                        System.out.println("Thread main: Value of k= "+k);
                  }
            }
      catch (Exception e) {}
      System.out.println("End of Thread main");
      }
}
```

Output:

```
papai@papai-H81M-S:~/Documents/java_assignment/thread$ javac MyThread.java
papai@papai-H81M-S:~/Documents/java_assignment/thread$ java MyThread
Thread main: Value of k= 1
Thread main: Value of k= 2
Thread main: Value of k= 3
End of Thread main
Thread Y: Value of j= 1
Thread Y: Value of j= 2
Thread Y: Value of j= 3
End of Thread Y
Thread X: Value of i= 1
Thread X: Value of i= 2
Thread X: Value of i= 3
End of Thread X
papai@papai-H81M-S:~/Documents/java_assignment/thread$
```

17. Write an Applet code to implement passing parameters in Applet using "PARAM" tag.

File Name: TestParam.java

```
import java.applet.*;
import java.awt.*;

public class TestParam extends Applet
{
  String sizeParam = "";
  String colorParam = "";

  public void init()
  {
     sizeParam = getParameter("size");
     colorParam = getParameter("color");
     }

  public void paint(Graphics g)
  {
     g.drawString("The Size is " + sizeParam, 50, 50);
      g.drawString("The Color is " + colorParam, 50, 70);
  }
}
```

Output: