ASSIGNMENT-2

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course code : CSA0993
course name : programming
in JAVA Application development

① write a program for matrix addition?

```
public class MatrixAddition {
    public static void main (string[] args) {
        int[] [] mat1 = {{1,2}, {5,3}};
        int[][] mat2 = {{2,3}, {4,1}};
        int[][] mat_sum = new int [2][2];
        for (int j=0; j <2 ; j++) {
            for (int j=0; j < 2; j++) {
                mat_sum[i][j] = mat1[i][j] + mat2[i][j];
                System.out. print (mat_sum [i][j] + " ");
            }
            system.out.print ln();
        }
    }
}
```

OUTPUT:

```
3 5
9 4
```

② Write a program to print rectangle symbol pattern. Get the symbol as input from user.

```
import java. util. scanner;
public class Rectangle pattern {
    public Static void main (string [] args) {
        Scanner input =new
    Scanner (system.in);
        System.out.print (" Enter the symbol : ");
        char symbol = input.new () . charAt (0);
        system. out. print (" Enter the symbol : ");
        int width =input. next Int ();
        system . out. print (" Enter height : ");
        int height = in put. next Int ();
        for (int i = 0 ; i < height; i++) {
            for (int j=0; j<width; j++)
                System. out. print (symbol + " ");

          system. out. print (n l);
        }
        input. close ();
    }
}
```

OUTPUT:

```
Enter the symbol : *
Enter width : 5
Enter height : 3
*  *  *  *  *
*  *  *  *  *
```

(B) write a program that would sort a list of names in alphabetical order Ascending or desconting, choice get from the user?

```
import java.util.Arrays;
import java.util.scanner;
public class sort names{
      public static void main(String[] args){
            Scanner input = new
   scanner(system.in);
            String[] arr = {"Banana", "Apple", "carrot",
   "Radish", "jack"};
            system.out.print("order (A|D): ");
            char order = input.next(). charAt(0);
            Arrays. sort(arr, (a,b) -> order == 'A'?
        a. compareTo(b): b. compareTo(a));

   Arrays. stream(arr). forEach(system.out :: println);
            input.close();
      }
  }
```

OUTPUT:

```
   order (A|D): A
   Apple
   Banana
   Carrot
   Jack
   Radish.
```

(14) write a program to print the following pattern:

```
import java. util. scanner
public class patternPrinter {
    public static void main (String[] args) {
        scanner input = new
  scanner (system. in);
        system.out. print ("Enter the number ~~to~~ be
    printed:");
         int x = input. nextInt ();
         system. out. print (" Max Number of times
    printed :");
          int n = input. nextInt ();
          for (int i=1 ; i <=2 * n-1 ; i++ ) {
              int count = i <= n? i ; 2* n-i ;
  System. out. println (string .value of (x). repeat (count);
        }
        input. close();
     }
  }
```

OUTPUT:

```
Enter the number to be printed: 1
Max Number of times printed :3
1
11
111
11
1
```

(5) write a program for matrix multiplication?

```
import java.util. scanner;
public class matrix multiplication {
    public static void main (string[] args) {
        scanner input = new scanner (system.in);
        int r1 = Input meaning(), c1 = input.nextInt(), r2 =
input.nextInt(), c2 = input.nextInt();
      if (c1 != r2) {
        system.out.println(" invald dimensions for
 matrix multiplication");
      return;
     }
     int[][] m1 = new int [r1](c1];
     for (int i = 0; i < r1; i++)
        m1[i][j] = input.nextInt();
     int[][] m2 = new int [r2][c2];
    for (int i=0; i< r2; i++)
       for (int j = 0; j< c2; j++)
         m2 [i][j] = input.nextInt();
     int[][] m2 [i][j] = input.nextInt();
       for (int i = 0; i<r1; i++)
       for (int j = 0; j <c2; j++)
         result [i][j] + = m [i][k] * m2 [k] [j];
for ( int [] row : result) {
    for (int val : row)
       system.out.print (val + " ");
```

```
  system.out. print ln();
 }
  input. close ();
  }
}
```

OUTPUT:

```
 2
 2
 2
 2
 1 2
 5 3
 2 3
 4 1
 10 5
 22 18.
```

⑥ write a program to print the special characters separately and print number of speial characters in line ?

```
import. java. util. scanner;
public class special character Counter{
  public static void main (string[] args) {
    scanner  static = new scanner (system.in);
    system.out. print ("Enter a line of text:");
    string line = input. next line ();
    int special char count = 0;
    string Builder specieschars = new string Builders ();
    for (int i=0; i < line length (); i++){
      char ch = line charAt (i);
if (! character.is letter or digit (ch) && ! character.
is whitespace (ch)) {
    special chars. append (ch). append;
    special char count ++;
  }
 }
  system. out. println (" special characters: "+
special chars . to string () ;
    system .out. print (" Number of special characters: "
  + special char count );
    input closed.
   }
  }
```

OUTPUT:

```
Enter a line of text: got 2% $ ## you
special characters: % $ ##
Number of special characters: 4
```

7. Write a program to print all the composite numbers between a and b?

```
    import. java. util. scanner;
    public class composite Numbers {
        public static void main (string[]args) {
            scanner input = new scanners (system.in);
            System.out. print ("Enter the start of the range
(a): ") ;
```

```
        int b= input.next int();
        System.out.println(" composite numbers between
"+a+" and "+b+" are:");
        for (int i=a ; i <=b ; i++) {
        if (is composite(i)) {
            System. out. print(i +" ");
        }
      }
        input. close ();
    }
    public static boolean is composite (int num){
        if (num <=1) return false;
        for (int i = 2; i <= math: sqrt(num); i ++)
          if (num %. i == 0) {
            return true;
          }
      }
        return false;
    }
}
```

OUTPUT:

```
Enter the start of range (a) : 12
Enter the end of range (b): 19
composite numbers between 12 and 19 are:
              12 14 15 16 18.
```

⑱ write a program to print the inverted full pyramid pattern?

```
import .java. util. scanner:
public class Inverted Pyramid {
    public static void main (sting []args) {
        scanner input = new scanner (system.in);
        system. out. print ("Enter the height of the
    pyramid: ");
        int height = input. nextInt ();
        for (int i = height ; i >= 1 ; i--) {
        for (int j = 0 ; j < height - i ; j++) {
            system. out. print (" ");
         }
         for (int j = 0 ; j < (2*i-1); j++) {
            system.out.print ("*");
         }
         system.out.println();
         }
         input.close();
      }
   }
```

OUTPUT:

```
Enter the height of the pyramid : 5
*********
*******
*****
***
 *
```

9 Find the mean, median, mode of the array of numbers?

```
import . java. util.* ;
public class mean median Mode {
   public static void main (String []args){
      Scanner input = new scanner (system.in);
      intn = input .next Int();
      int [] nums =new int [n];
      for (int i=0; i<n; i++) nums [i] = input . nextInt ();
      input . close ();
      double mean =
  Arrays . Stream (nums). average (). or Else (0);
      system.out. print ("median : %.2f n", median);
      map < Integer , In tegur > freq =new Hash map<> ());
      int max Freq =0;
      for (int num: nums) max Freq = math Max (max Freq.
freq. merge (num , 1, Integer :: sum));
      system. out . print ("mode:");
     if (entey . getValue () == max freq)
   system . out. print (entry · get. key () +"");
    }
     system . out. println();
  }
}
```

OUTPUT:

```
 7
16  18  27  16  23  21  19

mean: 20.00
median : 19.00
mode : 16.
```

(20) Find the factorial of n?

```
import.java. util. scanner;
public class Factorial {
    public static void main (String []args){
        scanner input = new scanner (system. in);
        int n= input.nextInt();
        input .close();
        long fact =1;
         for (int i =1; i <=n ; i++){
             fact* =i ;
         }
         System.out. println(" Factorial : "+fact);
    }
}
```

OUTPUT:

```
4
Factorial :24
```