ASSIGNMENT-2

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JAVA

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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 i=0;i<2;i++){
 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.println();
}
}
```

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.out.println("Enter the symbol:");
 char symbol=input.next Int();
 system.out.print("Enter width:");
 int width=input.next Int();
 system.out.print("Enter height:");
 int height=input.next Int();
  for(int i=0;i< height;i++){
   for(int j=0;< width;j++)
    system.out.print(symbol+" ");
 } System.out.println();
 } input.close();
```

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

13) Write a program that would sort a list of names in alphabetical order Ascending or Descending. 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();
}
}
```

```
Input:
order(A/D):A
output
Apple
Banana
carrot
jack
Radish.
```

14) write a program for matrix multiplication

```
class matrixmultiplication{
  Public static void main(String[]args)
{
int[][] mat1 ={{1,2},{5,3}};
int[][] mat2 ={{2,3},{4,1}};
int[][] result = new int[2][2];
for(int i=0;i<2;i++)
{
for(int j=0;j<2;j++)
{
result[i][j]+= mat1[i][k] * mat2[k][j];
for(int
}
}
}
System.out.println("mat sum= ");
for(int i=0;i<2;i++){
for(int j=0;j<2;j++)
System.out.println();
}
}
```

output:
mat sum= 10 5
22 18

---

15) write a program to print the following pattern.

```
import java.util.scanner;
Public class pattern printer
{
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.valueof(x).repeat(count));
}
input close();
}
```

Input:
Enter the number to be printed: 5
max number of times printed: 3
output:
5
55
555
55
5

16) write a program to print the special characters in the line?

```
import java.util.scanner;
Public class special character Counter
{
Public static void main(String[]args)
{
scanner input = new scanner(system.in);
system.out.println("Enter a Line of text:")
String s = input.nextline();
int sp=0
system.out.println("special characters:");
for(char ch:s.toCharArray())
{
if(!character.isLetterOrDigit(ch))
{
sp++;
system.out.print(ch);
}
}
system.out.println("\n Number of special
characters:"+sp);
}
}
```

Output:

```
Enter a Line of text: #*hello
special characters: #*
Number of special characters: 2
```

---

17) Write a program to print all the composite numbers between a and b?

```
import java.util.scanner;
Public class compositeNumbers
{
Public static void main(String[]args)
{
scanner input = new scanner(system.in);
int a = input.nextInt();
int b = input.nextInt();
for(int i=a+1; i<b; i++)
{
if(isComposite(i))
{
System.out.print(i+" ");
}
}
}
```

```
Public static boolean isComposite(int num){
if(num<4) return false;
for(int i=2; i<=Math.sqrt(num); i++){
  if(num%i==0) return true;
}
return false;
}
}
```

Input:- 12 19

output:- 14, 15, 16, 18

18) Write a program to print the inverted Full pyramid pattern?

```
import java.util.Scanner;
Public class InvertedPyramid{
Public static void main(String[]args){
int n=new Scanner(System.in).nextInt();
for(int i=n;i>=1;i--){
System.out.print(" ".repeat(n-i));
System.out.println("*".repeat(i));
}
}
```

Input:-5

output:-

```
* * * * *
 * * * *
  * * *
   * *
    *
```

19) Find the mean, median, mode of the array of Numbers

```
import java.util.*;
Public class statistics{
  Public static void main(String[]args){
    int[]a={16,18,27,16,23,21,19};
    Arrays.sort(a);
    double mean=Arrays.stream(a).average().orElse(0);
    System.out.print("Mean :"+mean);
    double median=(a.length%2==0)?(a[a.length/2-1]+a[a.length/2])/2.0:
                  a[a.length/2];
```

```
System.out.println("median = "+median);
Map<Integer, Integer> countMap = new HashMap
int mode = a[0];
for(int num=a)
    int count = countMap.merge(num, 1, Integer.
                                        ::sum);
    if(count > countMapget or Default(mode,0)),
                                    mode=num;
}
System.out.println("mode: "+mode);
}
}
```

Output
mean: 20.0
median: 19.0
mode: 16

---

2) 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();
  int fact = 1;
  for(int i=1; i<=n; fact *= i++);
  System.out.println("Factorial = "+fact);
  }
}
```

Input: 4

output: 4! = Factorial = 24