26-7-24
Friday

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11. Write a Program for matrix addition?

```
Scanner input = new Scanner (System. in);
int mat1 [][] = { { 1, 2}, {5, 3}};
int mat2 [][] = { {2, 3}, {4, 1}};
int mat_sum [][] = new int [2][2];
for (int i = 0; i < len; i++)
{
    for (int j=0; j < len; j++)
    {
        mat_sum [i] [j] = mat1[i] [j] + mat2 [i] [j];
        System. out. Print (mat_sum[i] [j] + "\t");
    }
    System. out. Println();
}
```

12. Write a Program to Print rectangle symbol Pattern Get the symbol as input from user

```
impost 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.next().charAt(0);
        system.out.Print ("Enter width:");
        int width = input.nextInt();
        system.out.Print ("Enter height:");
        int height = input.nextInt();
        for (int i=0; i<height; i++) {
            for (int j=0; j<width; j++)
                system.out.Prints (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?

```
Scanner input = new Scanner (System.in);
String arr [] = {"Banana", "Apple", "Carrot", "Radish", "Jack"};
int len = arr.length;
Char order = input.next().charAt(0);
if (order == 'A') {
    for (int i =0; i<len; i++) {
        for (int j = i+1; j < arr.length; j++) {
            if (arr[i].compareTo(arr[j]) > 0) {
                String temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
System.out.Println(Arrays.toString(arr));
}
```

```
else if (order == 'D'){
    for (int i = 0; i < len; i++){
        for (int j = i + 1; j < arr.length; j++){
            if (arr[i].compareTo(arr[j]) > 0){
                String temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
```

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++){
                for(int k=0; k<2; k++){
                    result[i][j] += mat1[i][k] * mat2[k][j];
                }
            }
        }
```

```
system. out. Println (" Mat sum = ");
for (int i = 0; i < 2; i++){
    for (int j=0; j < 2; j++){
        System. out. Print (result [i] [j] + " ");
    }
    system . out. Println();
    }
}
}
```

Output: Mat sum = 10.5

22 18

---

15. Write a Program to Print the following Pattern

```
impost 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. nextIn ();
        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 ();
    }
}
```

input: Enter the number to be Printed: 1

max Number of times printed: 3

Output:

```
!
!!
!!!
!!
!
```

---

16. Write a Program to Print the special characters separately and Print number of special character 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 . next Line ();
```

```
int sp=0;
system. out. Print("special characters: ");
for (char ch: s. to char Array ()){
  if (! character. is letter or Digit (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 number between a and b?

```
import java. util. scanner;
Public class Composite Numbers{
  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?

```
impost java.util.scanner;
Public class Inverted Pyramid {
    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, Medain, 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().or
                                        Else(0);
        System.out.println("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 HasMap<>();
        int mode = a[0];
        for(int num:a){
            int count = countMap.merge(num, 1, integer::sum)
            if(count > countMap.getOrDefault(mode, 0)) mode = num;
```

```
        }
        System.out.println("Mode: " + mode);
    }
}
```

Output:

Mean : 20.0

Median : 19.0

Mode : 16

---

20. Find the factorial of n?

```
impost 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(n+ "Factorial = " +fact);
    }
}
```

Input: 4

Output: 4 Factorial = 24