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Sub: CS70993-Programming
in Java for Application
Development

Date: 27/07/2024

1. Write a Program for matrix addition?

```
import java.util.Scanner;
public main
{
    public static void main (String[] args)
    {
        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];
        int len = mat1.length;
        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] + " ");
            }
            System.out.println();
        }
    }
}
```

2. Write a Program to Print Rectangle Symbol Pattern.

```
class GFG
{
    static void printRectangle (int h, int w)
    {
        for (int i=0; i<h; i++)
        {
            System.out.println();
            for (int j=0; j<w; j++)
            {
                if (i==0 || i==h-1 ||
```

```

    j == 0 || j == w-1)
        System.out.print("@");
    else
        System.out.print(" ");
    }
}

public static void main (String args[])
{
    int h=4, w=5;
    printRectangle (h,w);
}
}

```

3. Write a Program that would sort a list of names in alphabetical order Ascending or Descending, choice get from the user.

```

import java.util.Scanner;

public class Main {
    public static void main (String[] args) {
        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 Sorting (arr)");
}
else if (worden == 'n') {
    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 Sorting (arr)");
}
}

```

4. Write program for matrix multiplication?

```

import java.util.Scanner;
public class Main {
    public static void main (String[], args) {
        Scanner input = new Scanner (System.in);
        int r = input.nextInt();
        int c = input.nextInt();
        int mat1[][] = new int[r][c];
        int mat2[][] = new int[r][c];
        for (int i = 0; i < r; i++) {
            for (int j = 0; j < c; j++) {
                mat1[i][j] = input.nextInt();
            }
        }
        for (int i = 0; i < r; i++) {
            for (int j = 0; j < c; j++) {
                mat2[i][j] = input.nextInt();
            }
        }
    }
}

```

```

    {
        int j = input.nextInt();
    }
    {
        int sum[] = new int[j+1];
        for (int i=0; i<j; i++)
        {
            for (int j=0; j<i; j++)
            {
                sum[i][j] = 0;
            }
            for (int k=0; k<i; k++)
            {
                sum[i][j] = sum[i][j] + (int) Math.pow(2, k);
            }
            System.out.print (sum[i][j] + " ");
        }
        System.out.println();
    }
}

```

5. Write a program to print the following pattern.

```

import java.util.Scanner;

public class Main
{
    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 line printed:");
        int n = input.nextInt();
        for (int i=1; i<=n; i++)
        {
            for (int j=1; j<=i; j++)
            {
                System.out.print (x);
            }
        }
    }
}

```



```

    System.out.println();
}
for (int p = n-1; p >= 1; p--)
{
    for (int q = 1; q <= p; q++)
    {
        System.out.print(x);
    }
    System.out.println();
}

```

6. Write a Program to Print the special characters separately and Print number of special characters in the line?

```

import java.util.Scanner;
public class
{
    public static void main (String[], args)
    {
        Scanner input = new Scanner(System.in);
        String s = input.nextLine();
        int len = s.length();
        char a[] = new char[len];
        int sp = 0;
        for (int p = 0; p < len; p++)
        {
            a[p] = s.charAt(p);
            if (a[p] >= 65 && a[p] <= 90 || a[p] >= 97 && a[p] <= 122
                || a[p] >= 48 && a[p] <= 57)
            {
            }
            else
            {
                sp++;
                System.out.print(a[p]);
            }
        }
        System.out.println("\n" + sp);
    }
}

```

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

```
import java.util.Scanner;
```

```
public main
```

```
{
```

```
    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++)
```

```
    {
```

```
        int c = 0;
```

```
        for (int j = 1; j <= i; j++)
```

```
        {
```

```
            if (i % j == 0)
```

```
                c++;
```

```
        }
```

```
        if (c > 2)
```

```
            System.out.print (i + " ");
```

```
    }
```

8. Write a program to print the Inverted full Pyramid Pattern?

```
import java.util.Scanner;
```

```
public main
```

```
{
```

```
    public static void main (String[] args)
```

```
    Scanner input = new Scanner (System.in);
```

```
    int n = input.nextInt();
```

```
    for (int i = n; i >= 1; i--)
```

```
    {
```

```
        for (int i = 0; i < n; i++)
```

```
        for (int j = 0; j < n-i; j++)
```

```
        {
```

```
            System.out.print (" ");
```

```
        }
```



```

for (int k=1; k<=p; k++)
{
    System.out.println(" ");
}
System.out.println();

```

9 Find the Mean, Median, Mode of the array of numbers.

```

import java.util.Scanner;
public class main
{
    public static void main (String [] args)
    {
        Scanner input = new Scanner (System.in);
        int a[] = {16, 18, 12, 16, 23, 21, 19};
        int len = a.length;
        int sum = 0;
        for (int p=0; p<len; p++)
        {
            sum = sum + a[p];
        }
        int mean = sum / len;
        System.out.println("mean: " + mean);
        for (int i=0; i<len; i++)
        {
            for (int j=i+1; j<len; j++)
            {
                if (a[i] > a[j])
                {
                    int temp = a[i];
                    a[i] = a[j];
                    a[j] = temp;
                }
            }
        }
        for (int p=0; p<len; p++)
        {
            if (len % 2 == 0)
            {
                int mid = len / 2;
                System.out.println("median: " + a[mid-1]);
                break;
            }
            else

```

```

    int mid = (len+1)/2;
    System.out.println(mid);
    System.out.println("median" + a[mid-1]);
    break;
}
}
for (int i=0; i<len; i++)
{
    for (int j=i+1; j<len; j++)
    {
        if (a[i] == a[j])
        {
            System.out.println("mode:" + a[i]);
            break;
        }
    }
}
}

```

10 find the factorial of n)

```

import java.util.Scanner;
public class main
{
    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; i++)
        {
            fact = fact * i;
        }
        System.out.println(fact);
    }
}

```