

1. Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, display the grade obtained by the student. If the student scores an aggregate greater than 75%, then the grade is Distinction. If aggregate is  $60 \geq$  and  $< 75$ , then the grade is First Division. If aggregate is  $50 \geq$  and  $< 60$ , then the grade is Second Division. If aggregate is  $40 \geq$  and  $< 50$ , then the grade is Third Division. Else the grade is Fail.

### **PROGRAM CODE:**

```
import java.util.Scanner;

public class pav{

    public static void main(String[] args){

        Scanner obj=new Scanner(System.in);

        System.out.print("Enter Python marks: ");

        float a=obj.nextFloat();

        System.out.print("Enter C Programming marks: ");

        float b=obj.nextFloat();

        System.out.print("Enter Mathematics marks: ");

        float c=obj.nextFloat();

        System.out.print("Enter Physics marks: ");

        float d=obj.nextFloat();

        float total=a+b+c+d;

        float aggregate=total/4;

        System.out.println("Total: "+total);

        System.out.println("Aggregate: "+aggregate);

        if (aggregate>=75 & aggregate <=100){

            System.out.print("DISTINCTION");

        }

        else if(aggregate>=60 & aggregate<75){

            System.out.print("First Division");

        }

        else if(aggregate>=50 & aggregate<60){

            System.out.print("Second Division");

        }

    }

}
```

```

else if(aggregate>=40 & aggregate<50){

    System.out.println("Third Division");

}

else if(aggregate>=0 & aggregate<40){

    System.out.println("Fail");

}

}

}

```

The screenshot displays the Programiz Online Java Compiler interface. The left sidebar contains icons for various programming languages: Java, Python, JavaScript, PHP, C++, C, and Ruby. The main editor area shows a Java file named 'Main.java' with the following code:

```

1: import java.util.Scanner;
2: public class pav{
3:     public static void main(String[] args){
4:         Scanner obj=new Scanner(System.in);
5:         System.out.print("Enter Python marks: ");
6:         float a=obj.nextFloat();
7:         System.out.print("Enter C Programming marks: ");
8:         float b=obj.nextFloat();
9:         System.out.print("Enter Mathematics marks: ");
10:        float c=obj.nextFloat();
11:        System.out.print("Enter Physics marks: ");
12:        float d=obj.nextFloat();
13:        float total=a+b+c+d;
14:        float aggregate=total/4;
15:        System.out.println("Total: "+total);
16:        System.out.println("Aggregate: "+aggregate);
17:        if (aggregate>=75 & aggregate <=100){
18:            System.out.print("DISTINCTION");
19:        }
20:        else if(aggregate>=60 & aggregate<75){
21:            System.out.print("First Division");
22:        }
23:        else if(aggregate>=50 & aggregate<60){
24:            System.out.print("Second Division");
25:        }
26:        else if(aggregate>=40 & aggregate<50){
27:            System.out.println("Third Division");
28:        }
29:        else if(aggregate>=0 & aggregate<40){
30:            System.out.println("Fail");
31:        }
32:    }
}

```

The right sidebar shows the 'Output' window with the following text:

```

java -cp /tmp/a1CMT5c1G/pav
Enter Python marks: 90
Enter C Programming marks: 91
Enter Mathematics marks: 92
Enter Physics marks: 93
Total: 366.0
Aggregate: 91.5
DISTINCTION
=== Code Execution Successful ===

```

2. Write a program to calculate tax given the following conditions:

- a. If income is less than or equal to 1,50,000 then no tax
- b. If taxable income is 1,50,001 – 3,00,000 the charge 10% tax
- c. If taxable income is 3,00,001 – 5,00,000 the charge 20% tax
- d. If taxable income is above 5,00,001 then charge 30% tax

**PROGRAM CODE:**

```
import java.util.Scanner;

public class pav{

    public static void main(String[] args){

        Scanner obj=new Scanner(System.in);

        System.out.print("Enter Income: ");

        float temp=obj.nextFloat();

        double b=0;

        if (temp>=0 & temp<=150000){

            System.out.print("NO TAX");

        }

        else if(temp>150001 & temp<=300000){

            b=temp*0.1;

            System.out.print("Tax = "+b);

        }

        else if(temp>300001 & temp<=500000){

            b=temp*0.2;

            System.out.print("Tax = "+b);

        }

        else if(temp>500001){

            b=temp*0.3;

            System.out.print("Tax = "+b);

        }

    }

}
```

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Main.java

1- import java.util.Scanner;  
2- public class pav{  
3- public static void main(String[] args){  
4- Scanner obj=new Scanner(System.in);  
5- System.out.print("Enter Income: ");  
6- float temp=obj.nextFloat();  
7- double b=0;  
8- if (temp>=0 & temp<=150000){  
9- System.out.print("NO TAX");  
10- }  
11- else if(temp>150001 & temp<=300000){  
12- b=temp\*0.1;  
13- System.out.print("Tax = "+b);  
14- }  
15- else if(temp>300001 & temp<=500000){  
16- b=temp\*0.2;  
17- System.out.print("Tax = "+b);  
18- }  
19- else if(temp>500001){  
20- b=temp\*0.3;  
21- System.out.print("Tax = "+b);  
22- }  
23- }  
24- }  
25- |  
26-

Run

Output

Clear

java -cp ./tmp/VWUZKza/jp/pav  
Enter Income: 200000  
Tax = 20000.0  
=== Code Execution Successful ===

3. Write a program to print the first n perfect numbers. (Hint Perfect number means a positive integer that is equal to the sum of its proper divisors)

Sample Input:

N = 3

**PROGRAM CODE:**

```
public class PerfectNumbers {  
  
    public static void main(String[] args) {  
  
        int n = 3;  
  
        System.out.println("The first " + n + " perfect numbers are:");  
  
  
        int count = 0;  
  
        int num = 2;  
  
  
        while (count < n) {  
  
            int sum = 0;  
  
            for (int i = 1; i <= num / 2; i++) {  
  
                if (num % i == 0) {  
  
                    sum += i;  
  
                }  
  
            }  
  
            if (sum == num) {  
  
                System.out.println(num);  
  
                count++;  
  
            }  
  
  
            num++;  
  
        }  
  
    }  
}
```

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Main.java

1- public class PerfectNumbers {  
2- public static void main(String[] args) {  
3- int n = 3;  
4- System.out.println("The first " + n + " perfect numbers are:");  
5-  
6- int count = 0;  
7- int num = 2;  
8-  
9- while (count < n) {  
10- int sum = 0;  
11- for (int i = 1; i <= num / 2; i++) {  
12- if (num % i == 0) {  
13- sum += i;  
14- }  
15- }  
16- if (sum == num) {  
17- System.out.println(num);  
18- count++;  
19- }  
20- }  
21- num++;  
22- }  
23- }  
24- }  
25-  
26-

Run

Output

Clear

java -cp /tmp/OAX1nFvxGo/PerfectNumbers  
The first 3 perfect numbers are:  
6  
28  
496  
=== Code Execution Successful ===

4. Write a Program to Find the Nth Largest Number in a array.

Sample Input:

List : {14, 67, 48, 23, 5, 62}

N = 4

Sample Output:

4th Largest number: 23

### **PROGRAM CODE:**

```
import java.util.Scanner;

public class max {

    public static void main(String[] args) {

        Scanner obj=new Scanner(System.in);

        System.out.print("Enter the number of elements: ");

        int n=obj.nextInt();

        int a[]=new int[n];

        int temp,i,j;

        System.out.println("Enter array elements");

        for(i=0;i<n;i++){

            a[i]=obj.nextInt();

        }

        System.out.print("Which nth largest term you want: ");

        int k=obj.nextInt();

        for(i=0;i<n;i++){

            for(j=i+1;j<n;j++){

                if(a[i]<a[j]){

                    temp=a[i];

                    a[i]=a[j];

                    a[j]=temp;

                }

            }

        }

    }

}
```

```

    }

    System.out.println("The nth largest term in an array is "+a[k-1]);

}

}

```

The screenshot shows the Programiz Online Java Compiler interface. The main editor displays a Java program that takes an array of integers and finds the nth largest element. The program uses a selection sort algorithm to sort the array in descending order and then prints the element at index k-1.

**Main.java**

```

1- import java.util.Scanner;
2- public class max {
3-     public static void main(String[] args) {
4-         Scanner obj=new Scanner(System.in);
5-         System.out.print("Enter the number of elements: ");
6-         int n=obj.nextInt();
7-         int a[]=new int[n];
8-         int temp,i,j;
9-         System.out.println("Enter array elements");
10-        for(i=0;i<n;i++){
11-            a[i]=obj.nextInt();
12-        }
13-        System.out.print("Which nth largest term you want: ");
14-        int k=obj.nextInt();
15-        for(i=0;i<n;i++){
16-            for(j=i+1;j<n;j++){
17-                if(a[i]<a[j]){
18-                    temp=a[i];
19-                    a[i]=a[j];
20-                    a[j]=temp;
21-                }
22-            }
23-        }
24-        System.out.println("The nth largest term in an array is "+a[k-1]);
25-    }
26- }
27-
28-

```

**Output**

```

java -cp /tmp/Lea0JCaZCS/max
Enter the number of elements: 6
Enter array elements
14
67
48
23
5
62
Which nth largest term you want: 4
The nth largest term in an array is 23
=== Code Execution Successful ===

```



5. Write a program to find the number of special characters in the given statement

Sample Input:

Given statement: Modi Birthday @ September 17, #&\$% is the wishes code for him.

### **PROGRAM CODE:**

```
import java.util.Scanner;

public class max {

    public static void main(String[] args) {

        Scanner obj=new Scanner(System.in);

        System.out.print("ENTER STRING: ");

        String s=obj.nextLine();

        char ch;

        int i;

        int count=0;

        for (i=0;i<s.length();i++){

            ch=s.charAt(i);

            int a=ch;

            if (a>=48 & a<=57 | a>=65 & a<=90 | a>=97 & a <=122){

                continue;

            }

            else if (ch==' '){

                continue;

            }

            else{

                count++;

            }

        }

        System.out.print(count);

    }

}
```

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Main.java

1- import java.util.Scanner;  
2- public class max {  
3- public static void main(String[] args) {  
4- Scanner obj=new Scanner(System.in);  
5- System.out.print("ENTER STRING: ");  
6- String s=obj.nextLine();  
7- char ch;  
8- int i;  
9- int count=0;  
10- for (i=0;i<s.length();i++){  
11- ch=s.charAt(i);  
12- int a=ch;  
13- if (a>=48 & a<=57 | a>=65 & a<=90 | a>=97 & a <=122){  
14- continue;  
15- }  
16- else if (ch==' '){  
17- continue;  
18- }  
19- else{  
20- count++;  
21- }  
22- }  
23- System.out.print(count);  
24- }  
25- }  
26- }  
27- }

Run

Output

Clear

java -cp /tmp/KefUmbp6%max  
ENTER STRING: Modi Birthday @ September 17, #&% is the wishes code for him.  
7  
=== Code Execution Successful ===