1.

```java
//To Calculate Single and Succesive Discount
import java.util.Scanner;

public class Discount
{
    public void discount(int price)
    {
        double singleDiscount = discount(price, 10);
        double successiveDiscount = discount(price, 10, 8);
        System.out.println("Amount after single discount: " + singleDiscount);
        System.out.println("Amount after successive discount: " +
successiveDiscount);
    }

    public double discount(int price, int d)
    {
        double priceAfterDiscount = price - price * d / 100.0;
        return priceAfterDiscount;
    }

    public double discount(int price, int d1, int d2)
    {
        double priceAfterDiscount1 = price - price * d1 / 100.0;
        double priceAfterDiscount2 = priceAfterDiscount1 - priceAfterDiscount1 *
d2 / 100.0;
        return priceAfterDiscount2;
    }

    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter the price: ");
        int price = sc.nextInt();

        Discount obj = new Discount();

        obj.discount(price);
    }
}

/*
Output:
```

```
 Enter the price: 12000
Amount after single discount: 10800.0
Amount after successive discount: 9936.0

Enter the price: 10000
Amount after single discount: 9000.0
Amount after successive discount: 8280.0
 */
```

2.

```java
//To check whether the given number is Armstrong or not

import java.util.Scanner;

public class CheckArmstrong
{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number: ");
        int n = sc.nextInt();

        int result = Armstrong(n);
        if(result == 1)
        {
            System.out.println("It is an Armstrong Number");
        }
        else
        {
            System.out.println("It is not an Armstrong Number");
        }
    }
    public static int Armstrong(int n)
    {
        int temp = n, sum = 0, rem = 0;
        while(n > 0)
        {
            rem = n % 10;
            sum = sum + (rem*rem*rem);
            n = n / 10;
        }
        if(sum == temp)
        {
```

```
            return 1;
        }
        else
        {
            return 0;
        }
    }
}

/*
Output:
Enter the number:
153
It is an Armstrong Number

Enter the number:
152
It is not an Armstrong Number
*/
```

3.

```
//To check whether the given number is pronic or not
import java.util.Scanner;

public class CheckPronic
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Number: ");
        int n = sc.nextInt();

        int result = Pronic(n);
        if(result == 1)
        {
            System.out.println("The Number is Pronic Number");
        }
        else
        {
            System.out.println("The number is not Pronic Number");
        }
    }
```

```
    public static int Pronic(int n)
    {
        int flag = 0;
        for(int i = 1; i < n; i++)
        {
            if(i * (i + 1) == n)
            {
                flag = 1;
                break;
            }
        }
        if(flag == 1)
        {
            return 1;
        }
        else
        {
            return 0;
        }
    }
}

/*
Enter the Number:
12
The Number is Pronic Number

Enter the Number:
23
The number is not Pronic Number
 */
```

4.

```
//To Calculate first and second factor of the given number

import java.util.Scanner;

public class Factors
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
```

```
        System.out.println("Enter the Number: ");
        int n = sc.nextInt();

        fact(n);
    }
    public static void fact(int n)
    {
        int firstFactor = 0;
        for(int i=1; i<n; i++)
        {
            if(n % i == 0 && i != 1)
            {
                firstFactor = i;
                break;
            }
        }
        if(firstFactor != 0)
        {
            int secondFactor = n / firstFactor;
            System.out.println("The First factors of "+n+" is "+firstFactor+" and
second factor is "+secondFactor);
        }
        else
        {
            System.out.println("No relevant factors");
        }
    }
}

/*
Enter the Number:
21
The First factors of 21 is 3 and second factor is 7

Enter the Number:
30
The First factors of 30 is 2 and second factor is 15
 */
```

5.

```java
//To Calculate Surface Area and Volume of the Rectangle
import java.util.*;

public class Rectangle
{
    int length, breadth, height;
    public Rectangle(int length, int breadth, int height)
    {
        this.length = length;
        this.breadth = breadth;
        this.height = height;
    }
    public void surfaceArea()
    {
        int area = length * breadth;
        System.out.println("The Surface Area of Rectangle is = " + area);
    }
    public void Volume()
    {
        int vol = length * breadth * height;
        System.out.println("The Volume of Rectangle is = " + vol);
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Length: ");
        int length = sc.nextInt();
        System.out.println("Enter the Breadth: ");
        int breadth = sc.nextInt();
        System.out.println("Enter the Height: ");
        int height = sc.nextInt();
        Rectangle obj = new Rectangle(length, breadth, height);
        obj.surfaceArea();
        obj.Volume();
    }
}


/*Enter the Length:
12
Enter the Breadth:
14
Enter the Height:
```

```
5
The Surface Area of Rectangle is = 168
The Volume of Rectangle is = 840 */
```

6.

```
//To Calculate HCF and LCM of two numbers

import java.util.Scanner;

public class Hcflcm
{
    int a,b;
    public Hcflcm(int x, int y)
    {
        a = x;
        b = y;
    }

    public void calculate()
    {
        int tempA = a, tempB = b, hcf = 0;
        while(tempB > 0)
        {
            hcf = tempB;
            tempB = tempA % tempB;
            tempA = hcf;
        }
        System.out.println("The HCF of "+a+" and "+b+" is "+hcf);
        int lcm = (a*b)/hcf;
        System.out.println("The LCM of "+a+" and "+b+" is "+lcm);
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter two numbers: ");
        int x = sc.nextInt();
        int y = sc.nextInt();

        Hcflcm obj = new Hcflcm(x, y);
        obj.calculate();
    }
}
```

```
/*
Enter two numbers:
10
35
The HCF of 10 and 35 is 5
The LCM of 10 and 35 is 70

Enter two numbers:
25
50
The HCF of 25 and 50 is 25
The LCM of 25 and 50 is 50

 */
```

7.

```
import java.util.Scanner;

public class Arrange
{
    String str, i;
    char ch;
    int p;
    public Arrange(String str, String i, char ch, int p)
    {
        this.str = str;
        this.i = i;
        this.ch = ch;
        this.p = p;
    }

    public void accept()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the word: ");
        str = sc.nextLine();
    }

    public void sortAlphabets()
    {
         p = str.length();
```

```
         for(int a = 97; a <= 122; a++)
         {
            for(int j = 0; j < p; j++)
            {
                ch = str.charAt(j);
                if(a == Character.toLowerCase(ch))
                {
                    i = i + ch;
                }
            }
        }
    }

    public void display()
    {
        System.out.println("The Word after rearrangement: ");
        System.out.println(i);
    }

    public static void main(String[] args)
    {
        Arrange obj = new Arrange("", "", ' ', 0);
        obj.accept();
        obj.sortAlphabets();
        obj.display();
    }
}

/*Enter the word:
Student
The Word after rearrangement:
denSttu

Enter the word:
prime
The Word after rearrangement:
eimpr
*/
```

8.

```java
//To Convert 20 Temperature from Fahrenheit to Celsius

import java.util.Scanner;

public class Temperature
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        int arr[] = new int[20];

        System.out.println("Enter the Temperature (in F): ");
        for(int i = 0; i < 20; i++)
        {
            arr[i] = sc.nextInt();
        }

        System.out.println("The Temperature in Celsius (C): ");
        for(int i = 0; i < 20; i++)
        {
            double cel = 0.556 * (arr[i] - 32);
            System.out.println(cel);
        }
    }
}

/*Enter the Temperature (in F):
12
13
14
15
16
17
18
1
9
22
34
43
54
45
67
76
```

```
33
22
65
54
The Temperature in Celsius (C):
-11.120000000000001
-10.564
-10.008000000000001
-9.452000000000002
-8.896
-8.34
-7.784000000000001
-17.236
-12.788
-5.5600000000000005
1.112
6.1160000000000005
12.232000000000001
7.228000000000001
19.46
24.464000000000002
0.556
-5.5600000000000005
18.348000000000003
12.232000000000001 */
```

9.

```java
//To pick prime numbers from the given array
import java.util.Scanner;

public class Prime
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        int arr[] = new int[20];

        System.out.println("Enter the numbers: ");
        for (int i = 0; i < 20; i++)
        {
            arr[i] = sc.nextInt();
        }
```

```
        System.out.print("\nThe Prime numbers are: ");
        for (int i = 0; i < 20; i++)
        {
            int storePrime = isPrime(arr[i]);
            if(storePrime == 1)
            {
                System.out.print(arr[i] + " ");
            }
        }
    }
    public static int isPrime(int n)
    {
        int count = 0;
        for(int i = 1; i <= n; i++)
        {
            if(n % i == 0)
            {
                count++;
            }
        }
        if(count == 2)
        {
            return 1;
        }
        else
        {
            return 0 ;
        }
    }
}


/*Enter the numbers:
21
31
41
51
61

99
33
22
67
34
43
```

```
91
76
2
5
46
47
54
55
90

The Prime numbers are: 31 41 61 67 43 2 5 47 */
```

10.

```
//To Calculate average marks and deviation
import java.util.Scanner;

public class Average {
    public static void main(String[] args)
    {
        int avg, sum = 0;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of Students: ");
        int N = sc.nextInt();

        String name[] = new String[N];
        int totalMarks[] = new int[N];

        System.out.println("Enter the name of the Students: ");
        for (int i = 0; i < N; i++)
        {
            name[i] = sc.next();
        }

        System.out.println("Enter the Marks of the Students: ");
        for (int i = 0; i < N; i++)
        {
            totalMarks[i] = sc.nextInt();
        }

        for (int i = 0; i < N; i++)
        {
            sum = sum + totalMarks[i];
```

```java
        }

        avg = sum / N;
        System.out.println("The Average of Marks: " + avg);

        System.out.println("\nThe Deviation of the Marks: ");
        for (int i = 0; i < N; i++)
        {
            int dev = totalMarks[i] - avg;
            System.out.print(name[i] +"\t"+ dev);
            System.out.println();
        }
    }
}

/*Enter the number of Students:
5
Enter the name of the Students:
Xyz
abc
pqr
Uyz
Jhk
Enter the Marks of the Students:
55
78
54
98
87
The Average of Marks: 74

The Deviation of the Marks:
Xyz     -19
abc     4
pqr     -20
Uyz     24
Jhk     13 */
```