# **Prompt for Copilot:**

Can you generate a Variable desciption in a tablular format with the following columns "Variable Name", "Variable Datatype" and "Variable Description" using the Java Code Below:

# **Program-1**

## **Program Name:** Sum\_and\_Product

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the sum and product of the entered 2 numbers

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Sum\_and\_Product

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 2 numbers");

int a = ob.nextInt();

int b = ob.nextInt();

int sum = a + b;

int prod = a \* b;

System.out.println("Output:");

System.out.println("The sum of the 2 numbers is "+sum);

System.out.println("The product of the 2 numbers is "+prod);

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object to read user input from the console. |
| **a** | int | First integer input provided by the user. |
| **b** | int | Second integer input provided by the user. |
| **sum** | int | Stores the sum of the two integers a and b. |
| **prod** | int | Stores the product of the two integers a and b. |

### Output:

# **Program-2**

## **Program Name:** Area\_of\_Circle

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the area of a circle with the entered radius

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Area\_of\_Circle

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

float pi = 3.14f;

float radius = 0.0f,area = 0.0f;

System.out.println("Enter the radius");

radius = ob.nextFloat();

area = pi \* radius \* radius;

System.out.println("Output:");

System.out.println("The area of the circle with radius "+radius+" is : "+area);

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object for reading user input from the console. |
| **pi** | float | Represents the constant value of pi (3.14). |
| **radius** | float | Stores the user-entered radius of the circle. |
| **area** | float | Stores the calculated area of the circle. |

### Output:

# **Program-3**

## **Program Name:** Sum\_of\_First\_and\_Last\_Digit

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the sum of the first and last digit of the entered 3 digit number

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Sum\_of\_First\_and\_Last\_Digit

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the 3 digit number");

int num = ob.nextInt();

int first = num / 100,last = num % 10,sum = first + last;

System.out.println("Output:");

System.out.println("The first digit is : "+first);

System.out.println("The last digit is : "+last);

System.out.println("The sum of the first and last digit is : "+sum);

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| ob | Scanner | Object for reading user input from the console. |
| num | int | Stores the 3-digit number input provided by the user. |
| first | int | Extracts and stores the first digit of the number num. |
| last | int | Extracts and stores the last digit of the number num. |
| sum | int | Stores the sum of the first and last digits of num. |

### Output:

# **Program-4**

## **Program Name:** Square\_and\_Cube

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the sqaure and cube of the entered number

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Square\_and\_Cube

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the number");

int num = ob.nextInt();

int square = num \* num,cube = num \* num \* num;

System.out.println("Output:");

System.out.println("The Square of "+num+" is : "+square);

System.out.println("The cube of "+num+" is : "+cube);

}

}

### Variables Used:

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Variable Datatype** | | **Variable Description** |
| **ob** | Scanner | Object to read user input from the console. | |
| **num** | int | Stores the number input by the user. | |
| **square** | int | Stores the square of the user-entered number num. | |
| **cube** | int | Stores the cube of the user-entered number num. | |

### Output:

# **Program-5**

## **Program Name:** Time

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the time in hours, minutes and seconds, when the time is entered in seconds

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Time

{

public static void main(String args[])

{

/\*

\* 1 min=60sec

1 hr=60\*60sec=3600secs

18005secs=18005/3600=hrs

18065secs=18065/3600=5hrs

18065secs=(18065%3600)/60=1min

18065secs=(18065%3600)%60=5secs

\*/

Scanner ob = new Scanner(System.in);

System.out.println("Enter the time in seconds");

int sec = ob.nextInt();

int hours = sec / 3600;

int minutes = (sec % 3600) / 60;

int seconds = (sec % 3600) % 60;

System.out.println("Output:");

System.out.println(sec+" seconds is "+hours+" hours "+minutes+" minutes and "+seconds+" seconds" );

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object for reading user input from the console. |
| **sec** | int | Stores the total number of seconds input by the user. |
| **hours** | int | Stores the calculated hours extracted from sec. |
| **minutes** | int | Stores the calculated minutes extracted from sec. |
| **seconds** | int | Stores the remaining seconds after hours and minutes are calculated. |

### Output:

# **Program-6**

## **Program Name:** Even\_or\_Odd

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays if the entered number is an even or odd number

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Even\_or\_Odd

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the number");

int num = ob.nextInt();

System.out.println("Output:");

if(num % 2 == 0)

System.out.println(num+" is an Even Number");

else

System.out.println(num+" is an Odd Number");

}

}

### Variables Used:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | **Variable Name** | **Variable Datatype** | **Variable Description** | | **ob** | Scanner | Object to read user input from the console. | | **num** | int | Stores the number input provided by the user. | |

### Output:

# **Program-7**

## **Program Name:** Positive\_or\_Negative

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays if the entered number is a Positive or Negative Number.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Positive\_or\_Negative

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter a number");

int num = ob.nextInt();

System.out.println("Output:");

if(num > 0)

System.out.println(num+" is a Positive Number");

else if(num < 0)

System.out.println(num+" is a Negative Number");

else

System.out.println(num+" is zero");

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object to read user input from the console. |
| **num** | int | Stores the number input provided by the user. |

### Output:

# **Program-8**

## **Program Name:** Leap\_Year

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays if the entered year is a Leap Year.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Leap\_Year

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the year");

int year = ob.nextInt();

System.out.println("Output:");

if(year % 4 == 0 && year % 100 != 0) // Leap Year is divisible by 4 and not by 100(not a century year).

System.out.println(year+" is a Leap Year");

else if(year % 100 == 0 && year % 400 == 0) // Leap year is divisible by both 100 and 400.

System.out.println(year+" is a Leap Year");

else

System.out.println(year+" is not a Leap Year");

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| ob | Scanner | Object to read user input from the console. |
| year | int | Stores the year entered by the user to check if it's a |

### Output:

# **Program-9**

## **Program Name:** Largest\_of\_two\_Numbers

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program compares and displays which among the entered 2 numbers is greater

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Largest\_of\_two\_Numbers

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter any 2 numbers");

int a = ob.nextInt();

int b = ob.nextInt();

System.out.println("Output:");

if(a > b)

System.out.println(a+" is greater than "+b);

else if(b > a)

System.out.println(b+" is greater than "+a);

else

System.out.println(" Both the numbers are equal");

}

}

### **Variables Used:**

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object to read user input from the console. |
| **a** | int | Stores the first number input provided by the user. |
| **b** | int | Stores the second number input provided by the user. |

### Output:

# **Program-10**

## **Program Name:** Buzz\_Number

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays if the entered number is a Buzz Number

\*

\* NOTE:In a mathematical context, a "buzz number" is a number that either

\* ends in the digit 7 or is divisible by 7. A number that satisfies either

\* of these conditions is considered a buzz number.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Buzz\_Number

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter a number");

int num = ob.nextInt();

System.out.println("Output:");

if(num % 7 == 0 || num % 10 == 7)

System.out.println(num+" is a Buzz Number");

else

System.out.println(num+" is not a Buzz Number");

}

}

### Variables Used:

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object used to read user input from the console. |
| **num** | int | Stores the number input by the user to check if it's a Buzz Number. |

### Output:

# **Program-11**

## **Program Name:** Largest\_of\_three\_Numbers

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays the Greatest Number of the entered 3 numbers

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Largest\_of\_three\_Numbers

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter any 3 numbers");

int a = ob.nextInt();

int b = ob.nextInt();

int c = ob.nextInt();

System.out.println("Output:");

if(a > b && a > c)

System.out.println(a+" is Greatest");

else if(b > a && b > c)

System.out.println(b+" is Greatest");

else if(c > a && c > b)

System.out.println(c+" is Greatest");

else if(a == b && b == c)

System.out.println(" All 3 numbers are equal");

}

}

### **Variables Used:**

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object used to read user input from the console. |
| **a** | int | Stores the first number input by the user. |
| **b** | int | Stores the second number input by the user. |
| **c** | int | Stores the third number input by the user. |

### Output:

# **Program-12**

## **Program Name:** Triangles

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates if a triangle is possible from the entered dimension. In addition it classifies the type of triangle.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Triangles

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter dimensions of 3 sides of a triangle");

int a = ob.nextInt();

int b = ob.nextInt();

int c = ob.nextInt();

System.out.println("Output:");

if(a+b>c && b+c>a && a+c>b)

{

System.out.println("Triangle is Possible");

if(a == b && b == c)

System.out.println("It is an Equilateral Triangle");

else if(a == b || b == c || a == c)

System.out.println("It is an Isosceles Triangle");

else

System.out.println("It is a Scalene Triangle");

}

else

System.out.println("Triangle is not Possible");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **a** | int | Stores the length of the first side of the triangle. |
| **b** | int | Stores the length of the second side of the triangle. |
| **c** | int | Stores the length of the third side of the triangle. |

### Output:

# **Program-13**

## **Program Name:** Kilometres

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates the fare depending on the distance travelled based on the slab defined.

\* upto 5 km = Rs.50.

\* next 10 km = Rs.12/km.

\* next 20 km = Rs.13/km.

\* further distance=Rs.15/km

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Kilometres

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the distance travelled in kilometeres");

int dist = ob.nextInt();

int fare = 0;

if(dist <= 5)

fare = 50;

else if(dist > 5 && dist <= 15)

fare = 50 + 12 \* (dist-5);

else if(dist > 15 && dist <= 35)

fare = 50 + (12\*10) + 13 \* (dist-15);

else

fare = 50 + (12\*10) + (13\*20) + 15 \* (dist-35);

System.out.println("Output:");

System.out.println("The fare to be paid for "+dist+" kilometers travelled is: \u20B9"+fare);

}

}

### **Variables Used:**

|  |  |  |
| --- | --- | --- |
| **Variable Name** | **Variable Datatype** | **Variable Description** |
| **ob** | Scanner | Object used to read user input from the console. |
| **dist** | int | Stores the total distance travelled in kilometres entered by the user. |
| **fare** | int | Stores the calculated fare based on the distance slab logic. |

### Output:

# **Program-14**

## **Program Name:** Electricity

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the Electricity Bill amount based on the consumption.

\* Note: Units Consumed upto 100 is charged 1.25 Rs/Unit

\* Units consumed abouve 100 units but below 201 units is charged 1.5 Rs/Unit

\* Units above 200 are charged at 1.8 Rs/Unit

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Electricity

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter Consumer Name");

String name = ob.nextLine();

System.out.println("Enter Consumer Number");

int num = ob.nextInt();

System.out.println("Enter previous reading");

double pre\_read = ob.nextDouble();

System.out.println("Enter current reading");

double cur\_read = ob.nextInt();

double units\_consumed = cur\_read - pre\_read;

double bill = 0.0d;

if(units\_consumed <= 100.0)

{

bill = 1.25 \* units\_consumed;

}

else if(units\_consumed > 100.0 && units\_consumed <= 200)

bill=(1.25\*100.0) + 1.50 \* (units\_consumed-100);

else

bill=(1.25\*100.0) + (1.50\*100.0) + 1.80 \* (units\_consumed-200);

System.out.println("Output:");

System.out.println("##########################################################################################");

System.out.println("################################### BILL RECIEPT ########################################");

System.out.println("##########################################################################################");

System.out.println("Consumer Name\tConsumer Number\tUnits Consumed\tBill Amount");

System.out.println(name+"\t"+num+"\t"+units\_consumed+"\t"+bill);

System.out.println("##########################################################################################");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **name** | String | Stores the name of the consumer entered by the user. |
| **num** | int | Stores the consumer number entered by the user. |
| **pre\_read** | double | Stores the previous electricity meter reading entered by the user. |
| **cur\_read** | double | Stores the current electricity meter reading entered by the user. |
| **units\_consumed** | double | Stores the calculated units consumed by subtracting pre\_read from cur\_read. |
| **bill** | double | Stores the calculated electricity bill amount based on the consumption slabs. |

### Output:

# **Program-15**

## **Program Name:** Salary

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the PF deducted and amount recieved as HRA and EDU.

\* Based on basic salary of the Employee

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Salary

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter Employee's Name");

String name = ob.nextLine();

System.out.println("Enter Employee's Basic Salary");

double basic\_pay = ob.nextDouble();

double pf = (12.0/100.0) \* basic\_pay;

double edu = (20.0/100.0) \* basic\_pay;

double hra = (10.0/100.0) \* basic\_pay;

System.out.println("Output:");

System.out.println("The amount deducted as Provident Fund : "+pf);

System.out.println("The amount recieved for Education : "+edu);

System.out.println("The amount recieved for House Rent Allowance : "+hra);

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **name** | String | Stores the name of the employee entered by the user. |
| **basic\_pay** | double | Stores the basic salary of the employee entered by the user. |
| **pf** | double | Stores the calculated amount deducted as Provident Fund. |
| **edu** | double | Stores the calculated amount received for Education Allowance. |
| **hra** | double | Stores the calculated amount received for House Rent Allowance. |

### Output:

# **Program-16**

## **Program Name:** Basic\_Pay

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the Dearness Allowance,House Rent Allowance,Gross Salary,Provident Fund deducted and Net Salary.

\* Based on the Basic Salary of the Employee

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Basic\_Pay

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter Employee's Name");

String name = ob.nextLine();

System.out.println("Enter Employee's Basic Salary");

double basic\_pay = ob.nextDouble();

double pf = (12.5/100.0) \* basic\_pay;

double da = (30.0/100.0) \* basic\_pay;

double hra = (15.0/100.0) \* basic\_pay;

double gross=basic\_pay+da+hra;

double net=gross-pf;

System.out.println("Output:");

System.out.println("Employee's Name : "+name);

System.out.println("Basic Salary : "+basic\_pay);

System.out.println("Dearness Allowance : "+da);

System.out.println("House Rent Allowance : "+hra);

System.out.println("Gross Salary : "+gross);

System.out.println("Provident Fund deducted : "+pf);

System.out.println("Net Salary : "+net);

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **name** | String | Stores the name of the employee entered by the user. |
| **basic\_pay** | double | Stores the basic salary of the employee entered by the user. |
| **pf** | double | Stores the calculated amount deducted as Provident Fund. |
| **da** | double | Stores the calculated Dearness Allowance. |
| **hra** | double | Stores the calculated House Rent Allowance. |
| **gross** | double | Stores the calculated Gross Salary by summing basic pay, DA, and HRA. |
| **net** | double |  |

### Output:

# **Program-17**

## **Program Name:** DAYS

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the number of years,months and days based on the number of days entered.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class DAYS

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the number of days");

int days = ob.nextInt();

int year = days/365;

int months = (days%365) / 30;

int D = (days%365) % 30;

System.out.println("Output:");

System.out.println("The number of years are : "+year);

System.out.println("The number of months are : "+months);

System.out.println("The number of days are : "+D);

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **days** | int | Stores the total number of days entered by the user. |
| **year** | int | Stores the calculated number of years derived from days. |
| **months** | int | Stores the calculated number of months derived from days. |
| **D** | int | Stores the remaining number of days after years and months are calculated. |

### Output:

# **Program-18**

## **Program Name:** Interest

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the Simple Interest,Compound Interest and the Difference between the two.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Interest

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the principal");

double P = ob.nextDouble();

System.out.println("Enter the rate of interest");

double R = ob.nextDouble();

System.out.println("Enter the duration in years");

double D = ob.nextDouble();

double SI = (P\*R\*D) / 100.0;

double A = P \* Math.pow((1+R / 100.0), D);

double CI = A - P;

double DIFF = CI - SI;

System.out.println("Output:");

System.out.println("The Simple Interest is : "+SI);

System.out.println("The Compound Interest is : "+CI);

System.out.println("The Difference between Simple and Compound Interest is : "+DIFF);

}

}

### **Variables Used:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | **Variable Name** | **Variable Datatype** | **Variable Description** | | --- | --- | --- | | **ob** | Scanner | Object used to read user input from the console. | | **P** | double | Stores the principal amount entered by the user. | | **R** | double | Stores the rate of interest entered by the user. | | **D** | double | Stores the duration in years entered by the user. | | **SI** | double | Stores the calculated Simple Interest using the formula (P⋅R⋅D)/100(P \cdot R \cdot D) / 100. | | **A** | double | Stores the accumulated amount using the formula P⋅(1+R/100)DP \cdot (1 + R / 100)^D. | | **CI** | double | Stores the calculated Compound Interest as the difference between A and P. | | **DIFF** | double | Stores the difference between Compound Interest (CI) and Simple Interest (SI). | |

### Output:

# **Program-19**

## **Program Name:** Grades

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the grade and average percentage recieved by student in PCB

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Grades

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter Student's Name");

String name = ob.nextLine();

System.out.println("Enter Student's marks in Physics, Chemistry and Biology");

double p = ob.nextDouble();

double c = ob.nextDouble();

double b = ob.nextDouble();

double avg = (p+c+b) / 3;

System.out.println("Output:");

System.out.println("Student's Name : "+name);

if(avg >= 80)

System.out.println("Grade : You have recieved DISTINCTION");

else if(avg >= 60 && avg < 80)

System.out.println("Grade : You have recieved FIRST DIVISION");

else if(avg >= 45 && avg < 60)

System.out.println("Grade : You have recieved SECOND DIVISION");

else if(avg >= 40 && avg < 45)

System.out.println("Grade : You have PASSED");

else

System.out.println("Grade : PROMOTION NOT GRANTED");

System.out.println("Average Percentage : "+avg+"%");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **name** | String | Stores the name of the student entered by the user. |
| **p** | double | Stores the marks obtained by the student in Physics. |
| **c** | double | Stores the marks obtained by the student in Chemistry. |
| **b** | double | Stores the marks obtained by the student in Biology. |
| **avg** | double | Stores the calculated average percentage of marks across Physics, Chemistry, and Biology. |

### Output:

# **Program-20**

## **Program Name:** Electronics\_World

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays the Recipt Slip for Purchase of Electronics Goods (Air-Conditioner / LCD Tv).

\* The Net Cost for the product depends on the Discount obtained based on the Purchase Price and Tax.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Electronics\_World

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter Consumer Name");

String name = ob.nextLine();

System.out.println("The Choices are Air-Conditioner and LCD Tv.\nEnter:\n1. for Air-Conditioner\n2. for LCD Tv");

int choice = ob.nextInt();

double purchase = 0.0d;

double discount = 0.0d;

double retail\_price = 0.0d;

double tax = 0.0d;

double payable\_amt = 0.0d;

if(choice == 1)

{

System.out.println("Enter amount of Air-Conditioner");

purchase = ob.nextDouble();

if(purchase <= 20000)

discount = purchase\*5.0/100.0;

else if(purchase > 20000 && purchase <= 40000)

discount = purchase \* (7.5/100.0);

else if(purchase > 40000 && purchase <= 60000)

discount = purchase \* (10.0/100.0);

else

discount = purchase \* (12.0/100.0);

retail\_price = purchase-discount;

tax = retail\_price \* (12.5/100.0);

payable\_amt = retail\_price + tax;

System.out.println("#########################################################################");

System.out.println("######################### Reciept Slip ##################################");

System.out.println("#########################################################################");

System.out.println("Consumer's name : "+name);

System.out.println("Price of Air-Conditioner : "+purchase);

System.out.println("The Discount : "+discount);

System.out.println("The tax : "+tax);

System.out.println("The amount to be paid : "+payable\_amt);

System.out.println("#########################################################################");

}

else if (choice == 2)

{

System.out.println("Enter amount of LCD Tv");

purchase = ob.nextDouble();

if(purchase <= 20000)

discount = purchase \* (2.5/100.0);

else if(purchase > 20000 && purchase <= 40000)

discount = purchase \* (5.0/100.0);

else if(purchase > 40000 && purchase <= 60000)

discount = purchase \* (7.0/100.0);

else

discount = purchase \* (8.5/100.0);

retail\_price = purchase - discount;

tax = retail\_price \* (12.5/100.0);

payable\_amt = retail\_price + tax;

System.out.println("#########################################################################");

System.out.println("######################### Reciept Slip ##################################");

System.out.println("#########################################################################");

System.out.println("Consumer's name : "+name);

System.out.println("Price of LCD Tv : "+purchase);

System.out.println("The Discount : "+discount);

System.out.println("The tax : "+tax);

System.out.println("The amount to be paid : "+payable\_amt);

System.out.println("#########################################################################");

}

else

System.out.println("Invalid Choice");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **name** | String | Stores the name of the consumer entered by the user. |
| **choice** | int | Stores the choice input by the user to select between Air-Conditioner and LCD Tv. |
| **purchase** | double | Stores the purchase amount of the selected product. |
| **discount** | double | Stores the calculated discount based on the purchase amount and product type. |
| **retail\_price** | double | Stores the price of the product after applying the discount. |
| **tax** | double | Stores the calculated tax on the discounted price. |
| **payable\_amt** | double | Stores the total amount to be paid including tax after discount. |

### Output:

# **Program-21**

## **Program Name:** Switch\_Case\_1

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays various tasks based on the user's choice.

\* The 3 options are:

\* 1.square root of a number

\* 2.largest of any 2 numbers

\* 3.area of a circle

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Switch\_Case\_1

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 1 to find the square root of a number");

System.out.println("Enter 2 to find the largest of any 2 numbers");

System.out.println("Enter 3 to find the area of a circle");

int choice = ob.nextInt();

switch(choice)

{

case 1:System.out.println("Enter a number");

int a = ob.nextInt();

System.out.println("Output:");

System.out.println("The Square Root of "+a+" is : "+Math.sqrt(a));

break;

case 2:System.out.println("Enter any 2 numbers");

int b = ob.nextInt();

int c = ob.nextInt();

System.out.println("Output:");

if(b > c)

System.out.println(b+" is greater than "+c);

else

System.out.println(c+" is greater than "+b);

break;

case 3:System.out.println("Enter the radius");

double radius = ob.nextDouble();

double pi = 3.14d;

double area = pi \* radius \* radius;

System.out.println("Output:");

System.out.println("The area of circle with radius "+radius+" is : "+area);

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **choice** | int | Stores the user’s choice of task (square root, largest number, or circle area). |
| **a** | int | Stores the number input for calculating the square root. |
| **b** | int | Stores the first number input for comparing two numbers. |
| **c** | int | Stores the second number input for comparing two numbers. |
| **radius** | double | Stores the radius of the circle input by the user. |
| **pi** | double | Stores the constant value of π (3.14) used for calculating the area of the circle. |
| **area** | double | Stores the calculated area of the circle using the formula π⋅radius2π \cdot \text{radius}^2. |

### Output:

# **Program-22**

## **Program Name:** Switch\_Case\_2

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\*This program calculates and displays various tasks based on the user's choice.

\* The 6 options are:

\* 1.print numbers from 1-10

\* 2.print numbers from 10-1

\* 3.flip/reverse a number

\* 4.count and display the number of digits in a number

\* 5.find and display the sum of the digits of a number

\* 6.find and display the factorial of a number

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Switch\_Case\_2

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 1 to print numbers from 1-10");

System.out.println("Enter 2 to print numbers from 10-1");

System.out.println("Enter 3 to flip/reverse a number");

System.out.println("Enter 4 to count and display the number of digits in a number");

System.out.println("Enter 5 to find and display the sum of the digits of a number");

System.out.println("Enter 6 to find and display the factorial of a number");

int choice = ob.nextInt();

switch(choice)

{

case 1: int a = 1;

System.out.println("Output:");

while(a <= 10)

{

System.out.println(a);

a++;

}

break;

case 2: int b = 10;

System.out.println("Output:");

while(b >= 1)

{

System.out.println(b);

b--;

}

break;

case 3: System.out.println("Enter a number");

int num = ob.nextInt();

System.out.println("Output:");

System.out.println("The reversed number of "+num+" is : ");

while(num != 0)

{

int c = num % 10;

System.out.print(c);

num /= 10;

}

break;

case 4: System.out.println("Enter a number");

int number = ob.nextInt();

int temp = number;

int count = 0;

System.out.println("Output:");

while(number != 0)

{

count++;

number /= 10;

}

System.out.println("The number of digits in "+temp+" is : "+count);

break;

case 5: System.out.println("Enter a number");

int n = ob.nextInt();

int j = n;

int sum = 0;

while(n != 0)

{

sum += n % 10;

n /= 10;

}

System.out.println("Output:");

System.out.println("The sum of the digits in "+j +" is : "+sum);

break;

case 6: System.out.println("Enter a number");

int d = ob.nextInt();

long factorial = 1;

int i = 1;

while(i <= d)

{

factorial \*= i;

i++;

}

System.out.println("Output:");

System.out.println("The factorial of "+d+" is : "+factorial);

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **choice** | int | Stores the user’s choice of task (1–6 options). |
| **a** | int | Stores the current number in the range 1–10 for printing. |
| **b** | int | Stores the current number in the range 10–1 for printing. |
| **num** | int | Stores the number input by the user for reversing. |
| **c** | int | Stores individual digits during the reversal of num. |
| **number** | int | Stores the number input by the user for digit counting. |
| **temp** | int | Stores the original value of number for display purposes. |
| **count** | int | Stores the count of digits in the input number. |
| **n** | int | Stores the number input by the user for summing its digits. |
| **j** | int | Stores the original value of n for display purposes. |
| **sum** | int | Stores the sum of the digits of the input number n. |
| **d** | int | Stores the number input by the user for factorial calculation. |
| **factorial** | long | Stores the calculated factorial of the input number d. |
| **i** | int | Loop counter variable for factorial calculation. |

### Output:

# **Program-23**

## **Program Name:** Switch\_Case\_3

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays various tasks based on the user's choice.

\* There are a total of 7 different choices

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Switch\_Case\_3

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 1 to check if a number is a Palindrome Number");

System.out.println("Enter 2 to check if a number is an Armstrong Number");

System.out.println("Enter 3 to check if a number is a Prime Number");

System.out.println("Enter 4 to check if a number is a Perfect Number");

System.out.println("Enter 5 to check if a number is a Harshad Number");

System.out.println("Enter 6 to check if a number is a Kaprekar Number");

System.out.println("Enter 7 to check if a number is an Automorphic Number");

int choice = ob.nextInt();

switch(choice)

{

case 1: System.out.println("Enter a number");

int num = ob.nextInt();

int temp = num;

int reverse = 0;

System.out.println("Output:");

while(temp != 0)

{

int r = temp % 10;

reverse = reverse \* 10 + r;

temp /= 10;

}

if(num == reverse)

System.out.println(num+" is a Palindrome Number");

else

System.out.println(num+" is not a Palindrome Number");

break;

case 2: System.out.println("Enter a number");

int number = ob.nextInt();

int tem = number;

int rem = 0;

int sum = 0;

System.out.println("Output:");

while(tem != 0)

{

rem = tem % 10;

sum += (int)Math.pow(rem,3);

tem /= 10;

}

if(sum == number)

System.out.println(number+" is an Armstrong Number");

else

System.out.println(number+" is not an Armstrong Number");

break;

case 3: System.out.println("Enter a number");

int n = ob.nextInt();

int i = 1;

int count = 0;

System.out.println("Output:");

while(i <= n)

{

if(n % i == 0)

count++;

i++;

}

if(count == 2)

System.out.println(n+" is a Prime Number");

else

System.out.println(n+" is not a Prime Number");

break;

case 4: System.out.println("Enter a number");

int a = ob.nextInt();

int s = 0;

int j = 1;

System.out.println("Output:");

while(j < a)

{

if(a % j == 0)

s+=j;

j++;

}

if(s == a)

System.out.println(a+" is a Perfect Number");

else

System.out.println(a+" is not a Perfect Number");

break;

case 5: System.out.println("Enter a number");

int b = ob.nextInt();

int t = b;

int remainder = 0;

int summation = 0;

System.out.println("Output:");

while(t != 0)

{

remainder = t % 10;

summation+=remainder;

t /= 10;

}

if(b % summation == 0)

System.out.println(b+" is a Harshad Number");

else

System.out.println(b+" is not a Harshad Number");

break;

case 6: System.out.println("Enter a number");

int c = ob.nextInt();

int tempor = c;

int add = 0; int first = 0; int second = 0; int tally = 0; int square = 0;

while(tempor != 0)

{

tally++;

tempor /= 10;

}

square = c \* c;

first = square / (int)Math.pow(10,tally);

second = square % (int)Math.pow(10,tally);

add = first + second;

System.out.println("Output:");

if(c == add)

System.out.println(c+" is a Kaprekar Number");

else

System.out.println(c+" is not a Kaprekar Number");

break;

case 7: System.out.println("Enter a number");

int d = ob.nextInt();

int sq = 0; int temporary = d; int reckon = 0; int last = 0;

while(temporary != 0)

{

reckon++;

temporary /= 10;

}

sq = d \* d;

System.out.println("The square value of "+d+" is : "+sq);

last = sq % (int)Math.pow(10,reckon);

System.out.println("Output:");

if(d == last)

System.out.println(d+" is an Automorphic Number");

else

System.out.println(d+" is not an Automorphic Number");

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **choice** | int | Stores the user’s choice to execute one of the seven tasks (e.g., Palindrome check, Armstrong number, etc.). |
| **num** | int | Stores the number input by the user for checking if it is a Palindrome. |
| **temp** | int | Temporarily holds the value of num during processing. |
| **reverse** | int | Stores the reversed version of the number for Palindrome check. |
| **r** | int | Stores the remainder during the reversal of a number. |
| **number** | int | Stores the number input by the user for Armstrong number check. |
| **tem** | int | Temporarily holds the value of number during processing for Armstrong number. |
| **rem** | int | Stores the remainder during the calculation of Armstrong number. |
| **sum** | int | Stores the sum of the digits raised to the power three for Armstrong number check. |
| **n** | int | Stores the number input by the user for Prime number check. |
| **i** | int | Loop counter for checking the factors of n in Prime number determination. |
| **count** | int | Counts the number of factors for Prime number determination. |
| **a** | int | Stores the number input by the user for Perfect number check. |
| **s** | int | Stores the sum of divisors of a for Perfect number determination. |
| **j** | int | Loop counter for summing up divisors of a. |
| **b** | int | Stores the number input by the user for Harshad number check. |
| **t** | int | Temporarily holds the value of b during processing for Harshad number check. |
| **remainder** | int | Stores the remainder during digit summation for Harshad number check. |
| **summation** | int | Stores the sum of the digits of b for Harshad number check. |
| **c** | int | Stores the number input by the user for Kaprekar number check. |
| **tempor** | int | Temporarily holds the value of c during processing for Kaprekar number check. |
| **add** | int | Stores the sum of the split parts of the squared number for Kaprekar number check. |
| **first** | int | Stores the first part of the squared number in Kaprekar number check. |
| **second** | int | Stores the second part of the squared number in Kaprekar number check. |
| **tally** | int | Counts the number of digits in the number c for Kaprekar number check. |
| **square** | int | Stores the square of the number c for Kaprekar number check. |
| **d** | int | Stores the number input by the user for Automorphic number check. |
| **sq** | int | Stores the square of d for Automorphic number check. |
| **temporary** | int | Temporarily holds the value of d during processing for Automorphic number check. |
| **reckon** | int | Counts the number of digits in the number d for Automorphic number check. |
| **last** | int | Stores the last part of the squared number to compare with d in Automorphic number check. |

### Output:

# **Program-24**

## **Program Name:** Switch\_Case\_4

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program calculates and displays various tasks based on the user's choice.

\* There are a total of 6 choices.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Switch\_Case\_4

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 1 to print the factors of a number");

System.out.println("Enter 2 to print the sum of the factors of a number");

System.out.println("Enter 3 to print the fibonacci series till a limit ");

System.out.println("Enter 4 to print the odd numbers till a limit");

System.out.println("Enter 5 to print the odd numbers in the reverse order from 30-15");

System.out.println("Enter 6 to find the sum of the digits in odd positions of a number");

int choice = ob.nextInt();

switch(choice)

{

case 1: System.out.println("Enter a number");

int num = ob.nextInt();

int i = 1;

System.out.println("Output:");

while(i <= num)

{

if(num % i == 0)

System.out.println(i);

i++;

}

break;

case 2: System.out.println("Enter a number");

int number = ob.nextInt();

int j = 1; int sum = 0;

while(j <= number)

{

if(number % j == 0)

sum+=j;

j++;

}

System.out.println("Output:");

System.out.println("The sum of the factors of "+number+" is : "+sum);

break;

case 3: System.out.println("Enter a limit");

int limit=ob.nextInt();

int a = 0; int b = 1; int c = 3;

System.out.println("Output:");

System.out.print(a+","+b);

while(c <= limit)

{

int d = a + b;

System.out.print(","+d);

a = b;

b = d;

c++;

}

break;

case 4: System.out.println("Enter a limit");

int lim = ob.nextInt();

int k = 1;

System.out.println("Output:");

while(k <= lim)

{

if(k % 2 != 0)

System.out.println(k);

k++;

}

break;

case 5: int l = 30;

int m = 15;

System.out.println("Output:");

while(l >= m)

{

if(l % 2 != 0)

System.out.print (l+",");

l--;

}

break;

case 6: System.out.println("Enter a number");

int e = ob.nextInt();

int rem = 0;

int count = 0;

int temp = e;

int t = temp;

int summation = 0;

while(temp != 0)

{

count++;

temp /= 10;

}

while(e != 0)

{

rem = e % 10;

if(count % 2 != 0)

summation+=rem;

e /= 10;

count--;

}

System.out.println("Output:");

System.out.println("The sum of the digits in odd positions of "+t+" is : "+summation );

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **choice** | int | Stores the user’s choice for executing one of the six tasks. |
| **num** | int | Stores the number input by the user for printing its factors. |
| **i** | int | Loop counter for finding and printing factors of num. |
| **number** | int | Stores the number input by the user for summing its factors. |
| **j** | int | Loop counter for finding factors and summing them for number. |
| **sum** | int | Stores the calculated sum of the factors of number. |
| **limit** | int | Stores the upper limit for generating the Fibonacci series. |
| **a** | int | Stores the first Fibonacci number during series generation. |
| **b** | int | Stores the second Fibonacci number during series generation. |
| **c** | int | Loop counter for generating numbers in the Fibonacci series. |
| **d** | int | Temporarily stores the sum of a and b during Fibonacci generation. |
| **lim** | int | Stores the upper limit for generating odd numbers. |
| **k** | int | Loop counter for printing odd numbers up to lim. |
| **l** | int | Stores the starting value for printing odd numbers in reverse. |
| **m** | int | Stores the ending value for printing odd numbers in reverse. |
| **e** | int | Stores the number input by the user for summing its odd-positioned digits. |
| **rem** | int | Stores the remainder during digit extraction from e. |
| **count** | int | Counts the total digits in e to determine their positions. |
| **temp** | int | Temporarily holds the value of e during digit position count. |
| **t** | int | Stores the original value of e for displaying output. |
| **summation** | int | Stores the sum of digits in odd positions of e. |

### Output:

# **Program-25**

## **Program Name:** Alphabets

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program displays, either all the upper case(A-Z) or lower case(a-z) alphabets depending on the user's choice.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Alphabets

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 1 to print all the upper case alphabets from A-Z");

System.out.println("Enter 2 to print all the lower case alphabets from a-z");

int choice = ob.nextInt();

switch(choice)

{

case 1: int a = 65;

System.out.println("Output:");

while(a <= 90)

{

System.out.println((char)(a));

a++;

}

break;

case 2: int b = 97;

System.out.println("Output:");

while(b <= 122)

{

System.out.println((char)(b));

b++;

}

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **choice** | int | Stores the user's choice to print either uppercase or lowercase alphabets. |
| **a** | int | Stores the ASCII value for uppercase alphabets, iterates from 'A' (65) to 'Z' (90). |
| **b** | int | Stores the ASCII value for lowercase alphabets, iterates from 'a' (97) to 'z' (122). |

### Output:

# **Program-26**

## **Program Name:** Ushwa\_Number

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays if the entered 4 digit number is an Ushwa Number

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Ushwa\_Number

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter a 4 digit number");

int num = ob.nextInt();

int number = num;

int sum = 0;

while(num != 0)

{

sum += num % 10;

num /= 10;

}

int summation = number % 10 + number / 1000;

System.out.println("Output:");

if(2 \* summation == sum)

{

System.out.println(number+" is an Ushwa Number");

}

else

System.out.println(number+" is not an Ushwa Number");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **num** | int | Stores the 4-digit number entered by the user. |
| **number** | int | Temporarily holds the original value of num for further calculations and output. |
| **sum** | int | Stores the sum of all the digits in the 4-digit number num. |
| **summation** | int | Stores the sum of the first and last digits of the number number. |

### Output:

# **Program-27**

## **Program Name:** Days\_Months

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program is to display the number of days in a month depending on the user's input.

\* It does it through the Fall Through Condition.

\*

\* NOTE: Fall through condition : This condition occurs in the switch control statement

\* when there is no break keyword mention for the particular case in the switch statement

\* and cause execution of the cases till no break statement occurs or exit from the switch

\* statement. This condition has its own advantage and disadvantage and it totally depends

\* upon the type of operation we want in our program.

\*

\* @author (Allen Thomas.M)

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\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Days\_Months

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter any months number(1-12)");

int month = ob.nextInt();

System.out.println("Enter the year");

int year = ob.nextInt();

switch(month)

{

case 1:

case 3:

case 5:

case 7:

case 8:

case 10:

case 12:System.out.println("There are 31 days in this month");

break;

case 4:

case 6:

case 9:

case 11:System.out.println("There are 30 days in this month");

break;

case 2: if(year % 400 == 0 && year % 100 == 0)

System.out.println("There are 29 days in this month");

else if(year % 4 == 0 && year % 100 != 0)

System.out.println("There are 29 days in this month");

else

System.out.println("There are 28 days in this month");

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **month** | int | Stores the month number input by the user (1–12). |
| **year** | int | Stores the year input by the user to check for leap year conditions. |

### Output:

# **Program-28**

## **Program Name:** Series1

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program displays a series or the sum of a series depending on the user's choice,using for loops.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Series1

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter 1 to display series 1");

System.out.println("Enter 2 to print the sum of series 2");

System.out.println("Enter 3 to print the sum of series 3");

System.out.println("Enter 4 to print the sum of series 4");

System.out.println("Enter 5 to display series 5");

System.out.println("Enter 6 to display series 6");

int choice = ob.nextInt();

switch(choice)

{

case 1: System.out.println("Enter a limit");

int limit = ob.nextInt(); int s = 0;

System.out.println("Output:");

System.out.println("The series is : ");

for(int i = 0;i < limit;i++)

{

s += (int)Math.pow(10,i);

System.out.print(s+" ");

}

break;

case 2: System.out.println("Enter a value for variable 'a' ");

int a = ob.nextInt();int sum = 0;

for(int j = 1;j <= a;j++)

{

sum += (int)Math.pow(a,j);

}

System.out.println("Output:");

System.out.println("The sum of the series is : "+sum);

break;

case 3: System.out.println("Enter a value for variable 'a' ");

int c = ob.nextInt();double total=0.0d;

for(int l = 1;l <= 20;l++)

{

total += (c \* l);

}

System.out.println("Output:");

System.out.println("The sum of the series is : "+total);

break;

case 4: int tally = 0;

for(int m = 1;m <= 19;m++)

{

tally += (m \* (m + 1) );

}

System.out.println("Output:");

System.out.println("The sum of the series is : "+tally);

break;

case 5: System.out.println("Enter a limit");

int e = ob.nextInt();

System.out.println("Output:");

System.out.println("The series is : ");

for(int o = 1;o <= e;o++)

{

System.out.print((int)Math.pow(o,3) - 1+",");

}

break;

case 6: System.out.println("Enter a limit");

double f = ob.nextDouble();

System.out.println("Output:");

System.out.println("The series is : ");

for(double p = 1.50;p <= f;p += 1.50)

{

System.out.print(p+",");

}

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **choice** | int | Stores the user's choice for one of six series-related tasks. |
| **limit** | int | Stores the upper limit for generating series 1. |
| **s** | int | Accumulates the sum of powers of 10 for series 1. |
| **i** | int | Loop counter for iterating through powers in series 1. |
| **a** | int | Stores the input value for variable a in series 2. |
| **sum** | int | Stores the sum of powers of a for series 2. |
| **j** | int | Loop counter for calculating the sum in series 2. |
| **c** | int | Stores the input value for variable a in series 3. |
| **total** | double | Stores the calculated sum of the series in series 3. |
| **l** | int | Loop counter for calculating the sum in series 3. |
| **tally** | int | Stores the calculated sum of products in series 4. |
| **m** | int | Loop counter for calculating products in series 4. |
| **e** | int | Stores the upper limit for generating series 5. |
| **o** | int | Loop counter for generating series 5. |
| **f** | double | Stores the upper limit for generating series 6. |
| **p** | double | Loop counter for generating values in steps of 1.50 for series 6. |

### Output:

# **Program-29**

## **Program Name:** Magic\_Number

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* The program calls an entered number as a magic number if the repeated sum of its digits equals to 1

\* Example: 253 -> 2 + 5 + 3 = 10 -> 1 + 0 = 1 (Hence 253 is a Magic Number)

\* Example: 254 -> 2 + 5 + 4 = 11 -> 1 + 1 = 2 (254 is not a Magic Number since repeated sum of its digits not 1)

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Magic\_Number

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter a number");

int num = ob.nextInt();

int n = num; int a = 0;

while(num > 9)

{

int sum = 0;

while(num != 0)

{

a = num % 10;

sum += a;

num /= 10;

}

num = sum;

}

System.out.println("Output:");

System.out.println("The repeated sum of digits is : "+num);

if(num == 1)

System.out.println(n+" is a Magic Number");

else

System.out.println(n+" is not a Magic Number");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **num** | int | Stores the number entered by the user for magic number evaluation. |
| **n** | int | Stores the original value of the input number num for output purposes. |
| **a** | int | Stores the remainder during digit extraction from num. |
| **sum** | int | Stores the intermediate sum of the digits of num during calculations. |

### Output:

# **Program-30**

## **Program Name:** Fibonacci

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

public class Fibonacci

{

public static void main(String args[])

{

Scanner ob=new Scanner(System.in);

System.out.println("Enter the limit");

int lim=ob.nextInt();

int a=0,b=1;

System.out.print(a+","+b);

for(int c=3;c<=lim;c++)

{

int d=a+b;

System.out.print(","+d);

a=b;

b=d;

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **lim** | int | Stores the upper limit for generating the Fibonacci series. |
| **a** | int | Stores the first number in the Fibonacci sequence (initially set to 0). |
| **b** | int | Stores the second number in the Fibonacci sequence (initially set to 1). |
| **c** | int | Loop counter for generating subsequent numbers in the Fibonacci sequence. |
| **d** | int | Temporarily stores the sum of the previous two numbers in the Fibonacci sequence. |

### Output:

# **Program-31**

## **Program Name:** Tribonacci

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program displays the tribonacci series till a given limit.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Tribonacci

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the limit");

int lim = ob.nextInt();

int a = 0,b = 1; int sum = 1;

System.out.println("Output:");

System.out.print(a+","+b+","+sum);

for(int c = 4;c <= lim;c++)

{

int d = a + b + sum;

System.out.print(","+d);

a = b;

b = sum;

sum = d;

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Object used to read user input from the console. |
| **lim** | int | Stores the upper limit for generating the Tribonacci series. |
| **a** | int | Stores the first number in the Tribonacci sequence (initially 0). |
| **b** | int | Stores the second number in the Tribonacci sequence (initially 1). |
| **sum** | int | Stores the third number in the Tribonacci sequence (initially 1). |
| **c** | int | Loop counter for generating subsequent numbers in the Tribonacci series. |
| **d** | int | Temporarily stores the sum of the previous three numbers in the Tribonacci sequence. |

### Output:

# **Program-32**

## **Program Name:** Sunny\_Number

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program checks and displays if the entered number is a Sunny Number.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class Sunny\_Number

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter the number");

int n = ob.nextInt();

int next\_N = n + 1;

System.out.println("Output:");

if(Math.sqrt(n + 1) % 1 == 0)

System.out.println(n+" is a Sunny Number");

else

System.out.println(n+" is not a Sunny Number");

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Represents the Scanner object for input. |
| **n** | int | Holds the integer input from the user. |
| **next\_N** | int | Stores the next number after n. |

### Output:

# **Program-33**

## **Program Name:** series

## **Problem Statement:**

### **Java Code:**

import java.util.Scanner;

/\*\*

\* This program displays certain patterns based on the user's choice.

\*

\* @author (Allen Thomas.M)

\* @author email (allenthomasmuttikal@gmail.com)

\* @author git(https://github.com/allenthomasmuttikal/Java\_Project)

\* @version (v1.0)

\*/

public class series

{

public static void main(String args[])

{

Scanner ob = new Scanner(System.in);

System.out.println("Enter numbers from 1-10 to display respective patterns");

int choice = ob.nextInt();

switch(choice)

{

case 1:System.out.println("Output:");

for(int n = 1;n <= 5;n++)

{

for(int j = 1;j <= n;j++)

System.out.print(n);

System.out.println("");

}

break;

case 2:System.out.println("Output:");

for(int a = 6;a >= 1;a--)

{

for(int b = 1;b <= a;b++)

System.out.print(a);

System.out.println("");

}

break;

case 3: System.out.println("Output:");

for(int c = 9;c >= 1;c -= 2 )

{

for(int d = 5;d >= 1;d--)

System.out.print(c);

System.out.println("");

}

break;

case 4: System.out.println("Output:");

for(int e = 9;e >= 1;e -= 2)

{

for(int f = e;f <= 9;f += 2)

System.out.print(f);

System.out.println("");

}

break;

case 5: System.out.println("Output:");

for(int g = 9;g >= 1;g -= 2)

{

for(int h = 9;h >= g;h -= 2)

System.out.print(h);

System.out.println("");

}

break;

case 6: System.out.println("Output:");

for(int i =9;i >= 1;i -= 2)

{

for(int k = i;k >= 1;k -= 2)

System.out.print(k);

System.out.println("");

}

break;

case 7:System.out.println("Output:");

for(int o = 5;o >= 1;o--)

{

for(int p = o;p >= 1;p--)

System.out.print(p);

System.out.println("");

}

break;

case 8: System.out.println("Output:");

for(int q = 1;q <= 9;q += 2)

{

for(int r = 9;r >= q;r -= 2)

{

System.out.print(r);

}

System.out.println("");

}

break;

case 9:int count = 1;

System.out.println("Output:");

for(int t = 1;t <= 10;t++)

{

for(int s = 1;s <= t;s++)

{

System.out.print(count+" ");

count++;

}

System.out.println("");

if(count > 10)

break;

}

break;

case 10:System.out.println("Output:");

for(int l = 1;l <= 5;l++)

{

for(int m = 1;m <= l;m++)

{

if(m % 2 == 0)

System.out.print("#");

else

System.out.print("\*");

}

System.out.println("");

}

break;

default:System.out.println("Invalid Input");

}

}

}

### **Variables Used:**

| **Variable Name** | **Variable Datatype** | **Variable Description** |
| --- | --- | --- |
| **ob** | Scanner | Represents the Scanner object used for taking input from the user. |
| **choice** | int | Stores the user's choice (1-10) to display respective patterns. |
| **n** | int | Loop variable used for iterating and generating patterns. |
| **j** | int | Inner loop variable used for generating repeated values in patterns (Case 1). |
| **a** | int | Loop variable for iterating patterns in reverse order (Case 2). |
| **b** | int | Inner loop variable for pattern generation in reverse order (Case 2). |
| **c** | int | Loop variable for decrementing pattern values (Case 3). |
| **D** | int | Inner loop variable used for repetitive pattern generation (Case 3). |
| **e** | int | Loop variable used for incrementing pattern values (Case 4). |
| **f** | int | Inner loop variable used for generating ascending values (Case 4). |
| **g** | int | Loop variable for generating descending values in patterns (Case 5). |
| **h** | int | Inner loop variable used for generating values less than the loop variable (Case 5). |
| **i** | int | Loop variable used for decrementing odd numbers in patterns (Case 6). |
| **k** | int | Inner loop variable for decrementing values in patterns (Case 6). |
| **o** | int | Loop variable used for generating reverse number sequences (Case 7). |
| **p** | int | Inner loop variable used for printing reverse sequences (Case 7). |
| **q** | int | Loop variable for incrementing odd numbers (Case 8). |
| **r** | int | Inner loop variable for decrementing values in patterns (Case 8). |
| **count** | int | Counter used for printing sequential numbers (Case 9). |
| **t** | int | Loop variable used for iterating rows in Case 9. |
| **s** | int | Inner loop variable for generating sequential numbers (Case 9). |
| **l** | int | Loop variable used for iterating rows with symbol patterns (Case 10). |
| **m** | int | Inner loop variable for alternating between symbols (Case 10). |

### Output: