1. **Write a program to check if a number is divisible by 5**

**I/P => number**

**O/P => Is the number \_\_\_ divisible by 5? \_\_\_**

Sol :-

import java.util.Scanner;

public class DivisibilityCheck {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

System.out.println("Enter a number to check divisibility by 5: ");

number = myobj.nextInt();

myobj.close();

if (number % 5 == 0) {

System.out.println("Is the number " + number + " divisible by 5? Yes");

} else {

System.out.println("Is the number " + number + " divisible by 5? No");

}

}

}

1. **Write a program to check if the first is the smallest of the 3 numbers.**

**I/P => number1, number2, number3**

**O/P => Is the first number the smallest? \_\_\_\_**

import java.util.Scanner;

public class SmallestNumberCheck {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number1, number2, number3;

System.out.println("Enter three numbers: ");

number1 = myobj.nextInt();

number2 = myobj.nextInt();

number3 = myobj.nextInt();

myobj.close();

if (number1 < number2 && number1 < number3) {

System.out.println("Is the first number the smallest? Yes");

} else {

System.out.println("Is the first number the smallest? No");

}

}

}

1. **Write a program to check if the first, second, or third number is the largest of the three.**

**I/P => number1, number2, number3**

**O/P =>**

**Is the first number the largest? \_\_\_\_**

**Is the second number the largest? \_\_\_**

**Is the third number the largest? \_\_\_**

import java.util.Scanner;

public class LargestNumberCheck {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number1, number2, number3;

System.out.println("Enter three numbers: ");

number1 = myobj.nextInt();

number2 = myobj.nextInt();

number3 = myobj.nextInt();

myobj.close();

boolean isFirstLargest = (number1 > number2 && number1 > number3);

boolean isSecondLargest = (number2 > number1 && number2 > number3);

boolean isThirdLargest = (number3 > number1 && number3 > number2);

System.out.println("Is the first number the largest? " + (isFirstLargest ? "Yes" : "No"));

System.out.println("Is the second number the largest? " + (isSecondLargest ? "Yes" : "No"));

System.out.println("Is the third number the largest? " + (isThirdLargest ? "Yes" : "No"));

}

}

1. **Write a program to check for the natural number and write the sum of n natural numbers**

**Hint =>**

1. **A Natural Number is a positive integer (1,2,3, etc) sometimes with the inclusion of 0**
2. **A sum of n natural numbers is n \* (n+1) / 2**

**I/P => number**

**O/P => If the number is a positive integer then the output is**

**The sum of \_\_\_ natural numbers is \_\_\_**

**Otherwise**

**The number \_\_\_ is not a natural number**

import java.util.Scanner;

public class NaturalNumberSum {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

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

number = myobj.nextInt();

myobj.close();

if (number >= 0) {

int sum = number \* (number + 1) / 2;

System.out.println("The sum of " + number + " natural numbers is " + sum);

} else {

System.out.println("The number " + number + " is not a natural number");

}

}

}

1. **Write a program to check whether a person can vote, depending on whether his/her age is greater than or equal to 18.**

**Hint =>**

1. **Get integer input from the user and store it in the age variable.**
2. **If the person is 18 or older, print "The person can vote." Otherwise, print "The person cannot vote."**

**I/P => age**

**O/P => If the person's age is greater or equal to 18 then the output is**

**The person's age is \_\_\_ and can vote.**

**Otherwise**

**The person's age is \_\_\_ and cannot vote.**

import java.util.Scanner;

public class VotingEligibility {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int age;

System.out.println("Enter the person's age: ");

age = myobj.nextInt();

myobj.close();

if (age >= 18) {

System.out.println("The person's age is " + age + " and can vote.");

} else {

System.out.println("The person's age is " + age + " and cannot vote.");

}

}

}

1. **Write a program to check whether a number is positive, negative, or zero.**

**Hint =>**

1. **Get integer input from the user and store it in the number variable.**
2. **If the number is positive, print positive.**
3. **If the number is negative, print negative.**
4. **If the number is zero, print zero.**

import java.util.Scanner;

public class NumberCheck {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

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

number = myobj.nextInt();

myobj.close();

if (number > 0) {

System.out.println("The number is positive.");

} else if (number < 0) {

System.out.println("The number is negative.");

} else {

System.out.println("The number is zero.");

}

}

}

1. **Write a program SpringSeason that takes two int values month and day from the command line and prints “Its a Spring Season” otherwise prints “Not a Spring Season”.**

**Hint =>**

1. **Spring Season is from March 20 to June 20**

import java.util.Scanner;

public class SpringSeason {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int month, day;

System.out.println("Enter the month (1-12): ");

month = myobj.nextInt();

System.out.println("Enter the day (1-31): ");

day = myobj.nextInt();

myobj.close();

boolean isSpring = (month == 3 && day >= 20) ||

(month == 4) ||

(month == 5) ||

(month == 6 && day <= 20);

if (isSpring) {

System.out.println("It's a Spring Season.");

} else {

System.out.println("Not a Spring Season.");

}

}

}

1. **Write a program to count down the number from the user input value to 1 using a *while* loop for a rocket launch**

**Hint =>**

1. **Create a variable counter to take user inputted value for the countdown.**
2. **Use the *while* loop to check if the counter is 1**

**Inside a *while* loop, print the value of the counter and decrement the counter**

import java.util.Scanner;

public class RocketLaunch {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int counter;

System.out.println("Enter the countdown start number: ");

counter = myobj.nextInt();

myobj.close();

while (counter > 0) {

System.out.println(counter);

counter--;

}

System.out.println("🚀 Liftoff!");

}

}

1. **Rewrite program 8 to do the countdown using the *for-*loop**

import java.util.Scanner;

public class RocketLaunch {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int counter;

System.out.println("Enter the countdown start number: ");

counter = myobj.nextInt();

myobj.close();

for (int i = counter; i > 0; i--) {

System.out.println(i);

}

System.out.println("🚀 Liftoff!");

}

}

1. **Write a program to find the sum of numbers until the user enters 0**

**Hint =>**

1. **Create a variable total of type double initialize to 0.0. Also, create a variable to store the double value the user enters**
2. **Use the *while* loop to check if the user entered is 0**
3. **If the user entered value is not 0 then inside the while block add user entered value to the total and ask the user to input again**
4. **The loop will continue till the user enters zero and outside the loop display the total value**

import java.util.Scanner;

public class SumUntilZero {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

double total = 0.0;

double number;

System.out.println("Enter numbers to sum (enter 0 to stop): ");

while (true) {

number = myobj.nextDouble();

if (number == 0) {

break; // Exit loop when 0 is entered

}

total += number;

}

myobj.close();

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

}

}

1. **Rewrite the program 10 to find the sum until the user enters 0 or a negative number using *while* loop and break statement**

**Hint =>**

1. **Use infinite while loop as in while (true)**
2. **Take the user entry and check if the user entered 0 or a negative number to break the loop using break;**

import java.util.Scanner;

public class SumUntilZeroOrNegative {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

double total = 0.0;

double number;

System.out.println("Enter numbers to sum (enter 0 or a negative number to stop): ");

while (true) {

number = myobj.nextDouble();

if (number <= 0) {

break;

}

total += number;

}

myobj.close();

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

}

}

1. **Write a program to find the sum of n natural numbers using *while* loop compare the result with the formulae n\*(n+1)/2 and show the result from both computations was correct.**

**Hint =>**

1. **Take the user input number and check whether it's a Natural number**
2. **If it's a natural number Compute using formulae as well as compute using *while* loop**
3. **Compare the two results and print the result**

import java.util.Scanner;

public class SumOfNaturalNumbers {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

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

number = myobj.nextInt();

if (number < 0) {

System.out.println("The number " + number + " is not a natural number.");

} else {

int sumFormula = number \* (number + 1) / 2;

int sumLoop = 0, i = 1;

while (i <= number) {

sumLoop += i;

i++;

}

System.out.println("Sum using formula: " + sumFormula);

System.out.println("Sum using while loop: " + sumLoop);

if (sumFormula == sumLoop) {

System.out.println("Both computations are correct!");

} else {

System.out.println("There is a mismatch in computations.");

}

}

myobj.close();

}

}

1. **Rewrite the program number 12 with the *for* loop instead of a while loop to find the sum of n Natural Numbers.**

**Hint =>**

1. **Take the user input number and check whether it's a Natural number**
2. **If it's a natural number Compute using formulae as well as compute using *for* loop**
3. **Compare the two results and print the result**

import java.util.Scanner;

public class SumOfNaturalNumbers {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

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

number = myobj.nextInt();

if (number < 0) {

System.out.println("The number " + number + " is not a natural number.");

} else {

int sumFormula = number \* (number + 1) / 2;

int sumLoop = 0;

for (int i = 1; i <= number; i++) {

sumLoop += i;

}

System.out.println("Sum using formula: " + sumFormula);

System.out.println("Sum using for loop: " + sumLoop);

if (sumFormula == sumLoop) {

System.out.println("Both computations are correct!");

} else {

System.out.println("There is a mismatch in computations.");

}

}

myobj.close();

}

}

1. **Write a Program to find the factorial of an integer entered by the user.**

**Hint =>**

1. **For example, the factorial of 4 is 1 \* 2 \* 3 \* 4 which is 24.**
2. **Take an integer input from the user and assign it to the variable. Check the user has entered a positive integer.**
3. **Using a *while* loop, compute the factorial.**
4. **Print the factorial at the end.**

import java.util.Scanner;

public class FactorialWhileLoop {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

long factorial = 1;

System.out.println("Enter a positive integer: ");

number = myobj.nextInt();

if (number < 0) {

System.out.println("Factorial is not defined for negative numbers.");

} else {

int i = number;

while (i > 0) {

factorial \*= i;

i--;

}

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

}

myobj.close();

}

}

1. **Rewrite program 14 using for loop**

**Hint =>**

1. **Take the integer input, check for natural number and determine the factorial using for loop and finally print the result**.

import java.util.Scanner;

public class FactorialForLoop {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

long factorial = 1;

System.out.println("Enter a positive integer: ");

number = myobj.nextInt();

if (number < 0) {

System.out.println("Factorial is not defined for negative numbers.");

} else {

for (int i = 1; i <= number; i++) {

factorial \*= i;

}

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

}

myobj.close();

}

}

1. **Create a program to print odd and even numbers between 1 to the number entered by the user.**

**Hint =>**

1. **Get an integer input from the user, assign to a variable number and check for Natural Number**
2. **Using a for loop, iterate from 1 to the number**
3. **In each iteration of the loop, print the number is odd or even number**

import java.util.Scanner;

public class OddEvenNumbers {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

System.out.println("Enter a positive integer: ");

number = myobj.nextInt();

if (number < 1) {

System.out.println("Please enter a natural number (1 or greater).");

} else {

for (int i = 1; i <= number; i++) {

if (i % 2 == 0) {

System.out.println(i + " is an even number.");

} else {

System.out.println(i + " is an odd number.");

}

}

}

myobj.close();

}

}

1. **Create a program to find the bonus of employees based on their years of service.**

**Hint =>**

1. **Zara decided to give a bonus of 5% to employees whose year of service is more than 5 years.**
2. **Take salary and year of service in the year as input.**
3. **Print the bonus amount.**

import java.util.Scanner;

public class EmployeeBonus {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

double salary, bonus = 0.0;

int yearsOfService;

System.out.println("Enter your salary: ");

salary = myobj.nextDouble();

System.out.println("Enter your years of service: ");

yearsOfService = myobj.nextInt();

if (yearsOfService > 5) {

bonus = 0.05 \* salary;

System.out.println("You are eligible for a bonus!");

System.out.println("Your bonus amount is: " + bonus);

} else {

System.out.println("You are not eligible for a bonus.");

}

myobj.close();

}

}

1. **Create a program to find the multiplication table of a number entered by the user from 6 to 9.**

**Hint =>**

1. **Take integer input and store it in the variable number**
2. **Using a for loop, find the multiplication table of number from 6 to 9 and print it in the format number \* i = \_\_\_**

import java.util.Scanner;

public class MultiplicationTable {

public static void main(String[] args) {

Scanner myobj = new Scanner(System.in);

int number;

System.out.println("Enter a number to find its multiplication table: ");

number = myobj.nextInt();

System.out.println("Multiplication table of " + number + " from 6 to 9:");

for (int i = 6; i <= 9; i++) {

System.out.println(number + " \* " + i + " = " + (number \* i));

}

myobj.close();

}

}