**WEEK-1 LEVEL-1**

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

import java.util.Scanner;

class Divisiblefive{

public static void main(String arg[]){

Scanner input = new Scanner(System.in);

int number = input.nextInt();

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");

}

input.close();

}

}

o/p:

Enter a number: 25

is the number 25 is divisible by 5? YES

2)Write a program to check if the first is the smallest of the 3 numbers.

import java.util.Scanner;

public class SmallestNumberCheck {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int num1 = scanner.nextInt();

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

int num2 = scanner.nextInt();

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

int num3 = scanner.nextInt();

if (num1 < num2 && num1 < num3) {

System.out.println("The first number " + num1 + " is the smallest.");

} else {

System.out.println("The first number " + num1 + " is not the smallest.");

}

scanner.close();

}

}

o/p:

Enter the first number: 5

Enter the second number: 10

Enter the third number: 8

The first number 5 is the smallest.

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

import java.util.Scanner;

public class LargestNumberCheck {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int num1 = scanner.nextInt();

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

int num2 = scanner.nextInt();

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

int num3 = scanner.nextInt();

if (num1 >= num2 && num1 >= num3) {

System.out.println("The first number " + num1 + " is the largest.");

} else if (num2 >= num1 && num2 >= num3) {

System.out.println("The second number " + num2 + " is the largest.");

} else {

System.out.println("The third number " + num3 + " is the largest.");

}

scanner.close();

}

}

o/p:

Enter the first number: 20

Enter the second number: 15

Enter the third number: 10

The first number 20 is the largest.

4)Write a program to check for the natural number and write the sum of n natural numbers

import java.util.Scanner;

public class NaturalNumberSum {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int n = scanner.nextInt();

if (n >= 1) {

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

System.out.println("The sum of the first " + n + " natural numbers is: " + sum);

} else {

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

}

scanner.close();

}

}

o/p:

Enter a number: 5

The sum of the first 5 natural numbers is: 15

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

import java.util.Scanner;

public class VotingEligibility {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter your age: ");

int age = scanner.nextInt();

if (age >= 18) {

System.out.println("You are eligible to vote.");

} else {

System.out.println("You are not eligible to vote.");

}

scanner.close();

}

}

o/p:

Enter your age: 20

You are eligible to vote.

6)Write a program to check whether a number is positive, negative, or zero.

import java.util.Scanner;

public class NumberCheck {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int number = scanner.nextInt();

if (number > 0) {

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

} else if (number < 0) {

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

} else {

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

}

scanner.close();

}

}

o/p:

Enter a number: 15

The number 15 is positive.

7) 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”.

public class SpringSeason {

public static void main(String[] args) {

if (args.length != 2) {

System.out.println("Please provide month and day as command line arguments.");

return;

}

int month = Integer.parseInt(args[0]);

int day = Integer.parseInt(args[1]);

if ((month == 3 && day >= 20) || (month == 4) || (month == 5) || (month == 6 && day <= 20)) {

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

} else {

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

}

}

}

o/p:

java SpringSeason 3 21

It's a Spring Season.

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

import java.util.Scanner;

public class RocketLaunchCountdown {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int countdownStart = scanner.nextInt();

while (countdownStart > 0) {

System.out.println("T-minus " + countdownStart + " seconds.");

countdownStart--; // Decrease the countdown number by 1

}

System.out.println("Liftoff! The rocket has launched.");

scanner.close();

}

}

o/p:

Enter the countdown start number: 5

T-minus 5 seconds.

T-minus 4 seconds.

T-minus 3 seconds.

T-minus 2 seconds.

T-minus 1 second.

Liftoff! The rocket has launched.

9) Rewrite program 8 to do the countdown using the ***for-***loop

import java.util.Scanner;

public class RocketLaunchCountdown {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int countdownStart = scanner.nextInt();

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

System.out.println("T-minus " + i + " seconds.");

}

System.out.println("Liftoff! The rocket has launched.");

scanner.close();

}

}

o/p:

Enter the countdown start number: 5

T-minus 5 seconds.

T-minus 4 seconds.

T-minus 3 seconds.

T-minus 2 seconds.

T-minus 1 second.

Liftoff! The rocket has launched.

10) import java.util.Scanner;

public class SumUntilZero {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int sum = 0;

int number;

do {

System.out.print("Enter a number (0 to stop): ");

number = scanner.nextInt();

if (number != 0) {

sum += number;

}

} while (number != 0); // The loop stops when the user enters 0

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

scanner.close();

}

}

o/p:

Enter a number (0 to stop): 10

Enter a number (0 to stop): 5

Enter a number (0 to stop): 20

Enter a number (0 to stop): 0

The total sum of the numbers is: 35

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

import java.util.Scanner;

public class SumUntilNegativeOrZero {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int sum = 0;

int number;

while (true) {

System.out.print("Enter a number (0 or negative to stop): ");

number = scanner.nextInt();

if (number <= 0) {

break;

}

sum += number;

}

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

scanner.close();

}

}

o/p:

Enter a number (0 or negative to stop): 10

Enter a number (0 or negative to stop): 5

Enter a number (0 or negative to stop): 20

Enter a number (0 or negative to stop): 0

The total sum of the numbers is: 35

12)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.

import java.util.Scanner;

public class SumOfNaturalNumbers {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number n: ");

int n = scanner.nextInt();

int sumUsingLoop = 0;

int i = 1;

while (i <= n) {

sumUsingLoop += i;

i++;

}

int sumUsingFormula = n \* (n + 1) / 2;

System.out.println("Sum of first " + n + " natural numbers using while loop: " + sumUsingLoop);

System.out.println("Sum of first " + n + " natural numbers using formula: " + sumUsingFormula);

if (sumUsingLoop == sumUsingFormula) {

System.out.println("Both methods are correct. The results match.");

} else {

System.out.println("The results do not match.");

}

scanner.close();

}

}

o/p:

Enter a number n: 5

Sum of first 5 natural numbers using while loop: 15

Sum of first 5 natural numbers using formula: 15

Both methods are correct. The results match.

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

import java.util.Scanner;

public class SumOfNaturalNumbers {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number n: ");

int n = scanner.nextInt();

int sumUsingLoop = 0;

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

sumUsingLoop += i;

}

int sumUsingFormula = n \* (n + 1) / 2;

System.out.println("Sum of first " + n + " natural numbers using for loop: " + sumUsingLoop);

System.out.println("Sum of first " + n + " natural numbers using formula: " + sumUsingFormula);

if (sumUsingLoop == sumUsingFormula) {

System.out.println("Both methods are correct. The results match.");

} else {

System.out.println("The results do not match.");

}

scanner.close();

}

}

o/p:

Enter a number n: 1

Sum of first 1 natural numbers using for loop: 1

Sum of first 1 natural numbers using formula: 1

Both methods are correct. The results match.

14) Write a Program to find the factorial of an integer entered by the user.

import java.util.Scanner;

public class FactorialCalculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number to find its factorial: ");

int number = scanner.nextInt();

long factorial = 1;

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);

}

scanner.close();

}

}

o/p:

Enter a number to find its factorial: 5

The factorial of 5 is: 120

15)Rewrite program 14 using for loop

import java.util.Scanner;

public class FactorialCalculator {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number to find its factorial: ");

int number = scanner.nextInt();

long factorial = 1;

if (number < 0) {

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

} else {

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

factorial \*= i; // Multiply factorial by i at each iteration

}

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

}

scanner.close();

}

}

o/p:

Enter a number to find its factorial: 5

The factorial of 5 is: 120