**PROBLEM SOLVING TECHNIQUES**

1. **Find whether the given number is odd or even ?**

import java.util.Scanner;

public class OddOrEven {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int num = sc.nextInt();

if (num % 2 == 0) {

System.out.println("It is an Even number.");

} else {

System.out.println("It is an Odd number.");

}

}

}

1. **Find whether the given number is positive or negative ?**

import java.util.Scanner;

public class PositiveOrNegative {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int num = sc.nextInt();

if (num > 0) {

System.out.println("It is a Positive number.");

} else if (num < 0) {

System.out.println("It is a Negative number.");

} else {

System.out.println("Number is Zero.");

}

}

}

1. **Sum of n natural numbers ?**

import java.util.Scanner;

public class SumOfNaturalNumbers {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter n:");

int n = sc.nextInt();

int sum = 0;

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

sum += i;

}

System.out.println("Sum of natural numbers is: " + sum);

}

}

1. **Sum the two numbers ?**

import java.util.Scanner;

public class SumOfTwoNumbers {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int a = sc.nextInt();

int b = sc.nextInt();

int sum = a + b;

System.out.println("Sum is: " + sum);

}

}

1. **Swap two numbers using temporary variable ?**

import java.util.Scanner;

public class SwapWithTemp {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int num1 = sc.nextInt();

int num2 = sc.nextInt();

int temp = num1;

num1 = num2;

num2 = temp;

System.out.println("Swapped values: num1 = " + num1 + ", num2 = " + num2);

}

}

1. **Swap two numbers without using third variable ?**

import java.util.Scanner;

public class SwapWithoutTemp {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int num1 = sc.nextInt();

int num2 = sc.nextInt();

num1 = num1 + num2;

num2 = num1 - num2;

num1 = num1 - num2;

System.out.println("Swapped values: num1 = " + num1 + ", num2 = " + num2);

}

}

1. **Find the factorial using recursion ?**

import java.util.Scanner;

public class Factorial {

public static int factorial(int n) {

if (n <= 1) return 1;

return n \* factorial(n - 1);

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int n = sc.nextInt();

System.out.println("Factorial of " + n + " is " + factorial(n));

}

}

1. **Fibonacci series problem ?**

import java.util.Scanner;

public class Fibonacci {

public static int fibonacci(int n) {

if (n == 0) return 0;

if (n == 1) return 1;

return fibonacci(n - 1) + fibonacci(n - 2);

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter n:");

int n = sc.nextInt();

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

System.out.print(fibonacci(i) + " ");

}

}

}

1. **Palindrome program ?**

import java.util.Scanner;

public class Palindrome {

public static boolean isPalindrome(String str) {

String reversed = new StringBuilder(str).reverse().toString();

return str.equals(reversed);

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

String str = sc.nextLine();

if (isPalindrome(str)) {

System.out.println("Palindrome");

} else {

System.out.println("Not Palindrome");

}

}

}

1. **Find the prime numbers ?**

import java.util.Scanner;

public class PrimeCheck {

public static boolean isPrime(int n) {

if (n <= 1) return false;

for (int i = 2; i <= Math.sqrt(n); i++) {

if (n % i == 0) return false;

}

return true;

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

int n = sc.nextInt();

if (isPrime(n)) {

System.out.println("Prime number");

} else {

System.out.println("Not a prime number");

}

}

}

1. **Maximum number in given array ?**

import java.util.Scanner;

public class MaxInArray {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter size of array:");

int n = sc.nextInt();

int[] arr = new int[n];

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

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

arr[i] = sc.nextInt();

}

int max = arr[0];

for (int i = 1; i < arr.length; i++) {

if (arr[i] > max) max = arr[i];

}

System.out.println("Maximum number is: " + max);

}

}

1. **Reverse a String ?**

import java.util.Scanner;

public class ReverseString {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

String str = sc.nextLine();

String reversed = new StringBuilder(str).reverse().toString();

System.out.println("Reversed string: " + reversed);

}

}

1. **Count the vowels in a string?**

import java.util.Scanner;

public class CountVowels {

public static int countVowels(String str) {

int count = 0;

for (char c : str.toLowerCase().toCharArray()) {

if ("aeiou".indexOf(c) != -1) count++;

}

return count;

}

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

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

String str = sc.nextLine();

System.out.println("Number of vowels: " + countVowels(str));

}

}

1. **Finding the sum of elements in array ?**

import java.util.Scanner;

public class SumOfArray {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter size of array:");

int n = sc.nextInt();

int[] arr = new int[n];

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

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

arr[i] = sc.nextInt();

}

int sum = 0;

for (int num : arr) {

sum += num;

}

System.out.println("Sum of elements: " + sum);

}

}