**Best Programming Practices**

1. Use variables for all values, including inputs, fixed values, and results.
2. Avoid hardcoding values.
3. Use meaningful variable names.
4. Properly name programs and classes.

* String name = "Eric";
* double height = Convert.ToDouble(Console.ReadLine());
* double totalDistance = distanceFromToVia + distanceViaToFinalCity;

1. Maintain proper indentation.

**Problem Statement:** Write a program to display Sam with Roll Number 1, Percent Marks 99.99, and the result ‘P’ indicating Pass (‘P’) or Fail (‘F’).

**Program Requirements:**

* Use variables for all values (name, roll number, percent marks, result).
* Avoid hardcoding values.
* Follow proper naming conventions.

**Code Format (C#)**:

// Creating a class with the name DisplayResult indicating the purpose is to display

// result. Notice that the class name is a Noun.

using System;

class DisplayResult {

public static void Main(string[] args) {

// Create a string variable 'name' and assign value "Sam"

string name = "Sam";

// Create an int variable 'rollNumber' and assign value 1

int rollNumber = 1;

// Create a double variable 'percentMarks' and assign value 99.99

double percentMarks = 99.99;

// Create a char variable 'result' and assign value 'P' for pass

char result = 'P';

// Display the result

Console.WriteLine($"Displaying Result:\n{name} with Roll Number {rollNumber} has Scored {percentMarks}% Marks and Result is {result}");

}

}

**Sample Program 2 - Eric Travels:**

**Problem Statement:** Eric travels from Chennai to Bangalore via Vellore. The distance from Chennai to Vellore is 156.6 km and the time taken is 4 hours 4 minutes. The distance from Vellore to Bangalore is 211.8 km and the time taken is 4 hours 25 minutes. Compute the total distance and total time from Chennai to Bangalore.

**Program Requirements:**

* Use variables to hold city names and travel data.
* Calculate and display the total distance and total time.
* Proper indentation and naming conventions.

**Code Format (C#)**:

using System;

class TravelComputation {

public static void Main(string[] args) {

// Create a variable 'name' to indicate the person traveling

string name = "Eric";

// Create variables 'fromCity', 'viaCity', and 'toCity' for the cities

string fromCity = "Chennai", viaCity = "Vellore", toCity = "Bangalore";

// Create variables for distances and times

double distanceFromToVia = 156.6;

int timeFromToVia = 4 \* 60 + 4; // Time in minutes

double distanceViaToFinalCity = 211.8;

int timeViaToFinalCity = 4 \* 60 + 25; // Time in minutes

// Compute the total distance and total time

double totalDistance = distanceFromToVia + distanceViaToFinalCity;

int totalTime = timeFromToVia + timeViaToFinalCity;

// Print the travel details

Console.WriteLine($"The Total Distance travelled by {name} from {fromCity} to {toCity} via {viaCity} is {totalDistance} km and the Total Time taken is {totalTime} minutes");

}

}

**Level 2 Practice Programs**

**1. Write a program to take 2 numbers and print their quotient and remainder**  
**Hint:** Use division operator (/) for quotient and modulus operator (%) for remainder  
**I/P => number1, number2**  
**O/P => The Quotient is \_\_\_ and Remainder is \_\_\_ of two numbers \_\_\_ and \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for number1 input  Console.Writeline("Enter the first number: ");  int number1 = Convert.ToInt32(Console.ReadLine());   // Prompt user for number2 input  Console.WriteLine("Enter the second number: ");  int number2 = Convert.ToInt32(Console.ReadLine());   // Calculating quotient and remainder  int quotient = number1 / number2;  int remainder = number1 % number2;   // printing results  Console.WriteLine("The Quotient is {0} and Remainder is {1} of two numbers {2} and {3}", quotient, remainder, number1, number2);  } }** |
| --- |

**2. Write an IntOperation program by taking a, b, and c as input values and print the following integer operations: a + b \* c, a \* b + c, c + a / b, and a % b + c. Please also understand the precedence of the operators.**  
**Hint:**  
Create variables a, b, and c of int data type.  
Take user input for a, b, and c.  
Compute the 3 integer operations and assign results to variables.  
Finally, print the results and understand operator precedence.  
**I/P => a, b, c**  
**O/P => The results of Int Operations are \_\_\_, \_\_\_, and \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for a, b, c input  Console.WriteLine("Enter value for a: ");  int a = Convert.ToInt32(Console.ReadLine());   Console.WriteLine("Enter value for b: ");  int b = Convert.ToInt32(Console.ReadLine());   Console.WriteLine("Enter value for c: ");  int c = Convert.ToInt32(Console.ReadLine());   // Performing integer operations  int result1 = a + b \* c;  int result2 = a \* b + c;  int result3 = c + a / b;  int result4 = a % b + c;   // Printing results  Console.WriteLine("The results of Int Operations are {0}, {1}, {2}, and {3}" , result1 , result2 , result3 , result4);  } }** |
| --- |

**3. Similarly, write the DoubleOpt program by taking double values and doing the same operations.**  
**I/P => a, b, c**  
**O/P => The results of Double Operations are \_\_\_, \_\_\_, and \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for a, b, c input  Console.WriteLine("Enter value for a: ");  double a = Convert.ToDouble(Console.ReadLine());   Console.WriteLine("Enter value for b: ");  double b = Convert.ToDouble(Console.ReadLine());   Console.WriteLine("Enter value for c: ");  double c = Convert.ToDouble(Console.ReadLine());   // Performing double operations  double result1 = a + b \* c;  double result2 = a \* b + c;  double result3 = c + a / b;  double result4 = a % b + c;   // printing results  Console.WriteLine("The results of Double Operations are {0}, {1}, {2}, and {3}" , result1 , result2 , result3 , result4);  } }** |
| --- |

**4. Write a TemperatureConversion program, given the temperature in Celsius as input that outputs the temperature in Fahrenheit**  
**Hint:**  
Create a celsius variable and take the temperature as user input.  
Use the formula: Celsius to Fahrenheit: (°C × 9/5) + 32 = °F  
Assign the result to fahrenheitResult and print the result.  
**I/P => celsius**  
**O/P => The \_\_\_ Celsius is \_\_\_ Fahrenheit**

| **using System;  class Solution {  public static void Main() {  // Prompt user for Celsius input  Console.WriteLine("Enter the temperature in Celsius: ");  double celsius = Convert.ToDouble(Console.ReadLine());   // Calculating Fahrenheit  double fahrenheit = (celsius \* 9 / 5) + 32;   // printing result  Console.WriteLine("The {0} Celsius is {1} Fahrenheit", celsius, fahrenheit);  } }** |
| --- |

**5. Write a TemperatureConversion program, given the temperature in Fahrenheit as input that outputs the temperature in Celsius**  
**Hint:**  
Create a fahrenheit variable and take the user's input.  
Use the formula: Fahrenheit to Celsius: (°F − 32) x 5/9 = °C  
Assign the result to celsiusResult and print the result.  
**I/P => fahrenheit**  
**O/P => The \_\_\_ Fahrenheit is \_\_\_ Celsius**

| **using System;  class Solution {  public static void Main() {  // Prompt user for fahrenheit input  Console.WriteLine("Enter the temperature in Fahrenheit: ");  double fahrenheit = Convert.ToDouble(Console.ReadLine());   // Calculating Celsius  double celsius = (fahrenheit - 32) \* 5 / 9;   // printing result  Console.WriteLine("{0} Fahrenheit is {1} Celsius", fahrenheit, celsius);  } }** |
| --- |

**6. Create a program to find the total income of a person by taking salary and bonus from the user**  
**Hint:**  
Create a variable named salary and take user input.  
Create another variable bonus and take user input.  
Compute income by adding salary and bonus and print the result.  
**I/P => salary, bonus**  
**O/P => The salary is INR \_\_\_ and bonus is INR \_\_\_. Hence Total Income is INR \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for salary input  Console.WriteLine("Enter your salary: ");  double salary = Convert.ToDouble(Console.ReadLine());    // Prompt user for bonus input  Console.WriteLine("Enter your bonus: ");  double bonus = Convert.ToDouble(Console.ReadLine());   // Calculating income  double Income = salary + bonus;   // printing result  Console.WriteLine("The salary is INR {0} and bonus is INR {1}. Hence Total Income is INR {2}" , salary , bonus , Income);  } }** |
| --- |

**7. Create a program to swap two numbers**  
**Hint:**  
Create a variable number1 and take user input.  
Create a variable number2 and take user input.  
Swap number1 and number2 and print the swapped output.  
**I/P => number1, number2**  
**O/P => The swapped numbers are \_\_\_ and \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for first number input  Console.Write("Enter the first number: ");  int number1 = Convert.ToInt32(Console.ReadLine());   // Prompt user for second number input  Console.Write("Enter the second number: ");  int number2 = Convert.ToInt32(Console.ReadLine());   // Swapping the numbers  int temp = number1;  number1 = number2;  number2 = temp;   // printing result  Console.WriteLine("The swapped numbers are {0} and {1}", number1, number2);  } }** |
| --- |

**8. Rewrite the Sample Program 2 with user inputs**  
**Hint:**  
Create variables and take user inputs for name, fromCity, viaCity, toCity.  
Create variables and take user inputs for distances: fromToVia and viaToFinalCity in miles.  
Create variables and take the time taken for the journey.  
Finally, print the results and try to understand operator precedence.  
**I/P => name, fromCity, viaCity, toCity, fromToVia, viaToFinalCity, timeTaken**  
**O/P => The results of the trip are: \_\_\_, \_\_\_, and \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for name input  Console.WriteLine("Enter your name: ");  string name = Console.ReadLine();   // Prompt user for starting city input  Console.WriteLine("Enter the starting city: ");  string fromCity = Console.ReadLine();   // Prompt user for via city input  Console.WriteLine("Enter the via city: ");  string viaCity = Console.ReadLine();   // Prompt user for destination city input  Console.WriteLine("Enter the destination city: ");  string toCity = Console.ReadLine();   // Prompt user for distance from fromCity to viaCity input  Console.WriteLine("Enter the distance from {0} to {1} (in miles): ", fromCity, viaCity);  double fromToVia = Convert.ToDouble(Console.ReadLine());   // Prompt user for time taken from fromCity to viaCity input  Console.Write("Enter the total time taken from {0} to {1} (in hours): ", fromCity, viaCity);  double timeFromToVia= Convert.ToDouble(Console.ReadLine());    // Prompt user for distance from viaCity to toCity input  Console.Write("Enter the distance from {0} to {1} (in miles): ", viaCity, toCity);  double viaToFinalCity = Convert.ToDouble(Console.ReadLine());    // Prompt user for the time taken from viaCity to toCity input  Console.WriteLine("Enter the time taken from {0} to {1} (in hours): ", viaCity, toCity);  double timeViaToFinalCity = Convert.ToDouble(Console.ReadLine());   // Calculating total distance and total time  double totalDistance = fromToVia + viaToFinalCity;  double totalTime = timeFromToVia + timeViaToFinalCity;    // printing the results  Console.WriteLine("The Total Distance travelled by {0} from {1} to {2} via {3} is {4} km and the Total Time taken is {5} hours" , name , fromCity , toCity , viaCity , totalDistance , totalTime);  } }** |
| --- |

**9. An athlete runs in a triangular park with sides provided as input by the user in meters. If the athlete wants to complete a 5 km run, then how many rounds must the athlete complete?**  
**Hint:**  
The perimeter of a triangle is the addition of all sides.  
Rounds = distance / perimeter  
**I/P => side1, side2, side3**  
**O/P => The total number of rounds the athlete will run is \_\_\_ to complete 5 km**

| **using System;  class Solution {  public static void Main() {  // Prompt user for first side input  Console.Write("Enter the first side of the triangle (in m): ");  double side1 = Convert.ToDouble(Console.ReadLine());   // Prompt user for first side input  Console.Write("Enter the second side of the triangle (in m): ");  double side2 = Convert.ToDouble(Console.ReadLine());   // Prompt user for first side input  Console.Write("Enter the third side of the triangle (in m): ");  double side3 = Convert.ToDouble(Console.ReadLine());   // Calculating perimeter and rounds  double perimeter = side1 + side2 + side3;  double rounds = 5000 / perimeter;    // printing result  Console.WriteLine("The total number of rounds the athlete will run is {0} to complete 5 km" , Math.Ceiling(rounds));  } }** |
| --- |

**10. Create a program to divide N number of chocolates among M children.**  
**Hint:**  
Get an integer value from the user for numberOfChocolates and numberOfChildren.  
Find the number of chocolates each child gets and the number of remaining chocolates.  
Display the results.  
**I/P => numberOfChocolates, numberOfChildren**  
**O/P => The number of chocolates each child gets is \_\_\_ and the number of remaining chocolates is \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for number of chocolates input  Console.Write("Enter the number of chocolates: ");  int numberOfChocolates = Convert.ToInt32(Console.ReadLine());   // Prompt user for number of children input  Console.Write("Enter the number of children: ");  int numberOfChildren = Convert.ToInt32(Console.ReadLine());   // Calculating chocolates per child and remaining chocolates  int chocolatesPerChild = numberOfChocolates / numberOfChildren;  int remainingChocolates = numberOfChocolates % numberOfChildren;   // printing result  Console.WriteLine("The number of chocolates each child gets is {0} and the number of remaining chocolates is {1}" , chocolatesPerChild , remainingChocolates);  } }** |
| --- |

**11. Write a program to input the Principal, Rate, and Time values and calculate Simple Interest.**  
**Hint:**  
Simple Interest = (Principal \* Rate \* Time) / 100  
**I/P => principal, rate, time**  
**O/P => The Simple Interest is \_\_\_ for Principal \_\_\_, Rate of Interest \_\_\_ and Time \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for principal amount input  Console.Write("Enter the principal amount: ");  double principal = Convert.ToDouble(Console.ReadLine());   // Prompt user for rate of interest input  Console.Write("Enter the rate of interest: ");  double rate = Convert.ToDouble(Console.ReadLine());   // Prompt user for time period input  Console.Write("Enter the time period: ");  double time = Convert.ToDouble(Console.ReadLine());   // Calculating simple interest  double simpleInterest = (principal \* rate \* time) / 100;   // printing result  Console.WriteLine("The Simple Interest is {0} for Principal {1}, Rate of Interest {2}, and Time {3}" , simpleInterest , principal , rate , time);  } }** |
| --- |

**12. Create a program to convert weight in pounds to kilograms.**  
**Hint:**  
1 pound = 2.2 kg  
**I/P => weight (in pounds)**  
**O/P => The weight of the person in pounds is \_\_\_ and in kg is \_\_\_**

| **using System;  class Solution {  public static void Main() {  // Prompt user for weight (in pounds) input  Console.Write("Enter the weight in pounds: ");  double pounds = Convert.ToDouble(Console.ReadLine());   // Converting to kilograms  double kilograms = pounds \* 2.2;   // printing result  Console.WriteLine("The weight of the person in pounds is {0} and in kg is {1}" , pounds , kilograms);  } }** |
| --- |