**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 Numbers {  //method for calculate the quotient and remainder  public static void findqueandRem()  {  Console.Write("Enter the first number: ");  int n1 = int.Parse(Console.ReadLine());   Console.Write("Enter the second number: ");  int n2 = int.Parse(Console.ReadLine());   // Calculate quotient and remainder  int quotient = n1 / n2;   int remainder = n1 % n2;    Console.WriteLine("The Quotient is " + n1 + "and Remainder is " + n2 + "of two numbers " + quotient + "and " + remainder);   }  static void Main(string[] args)  {  Numbers.findqueandRem();  } }** |
| --- |

**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 Operation {  static void Main(string[] args)  {  // Take user input for a, b, and c  Console.Write("Enter the value of a: ");  int a = Convert.ToInt32(Console.ReadLine());   Console.Write("Enter the value of b: ");  int b = Convert.ToInt32(Console.ReadLine());   Console.Write("Enter the value of c: ");  int c = Convert.ToInt32(Console.ReadLine());   // Perform the integer operations based on the precedence of operators  int result1 = a + b \* c;**  **int result2 = a \* b + c;**  **int result3 = c + a / b;**  **int result4 = a % b + c;   // Display  Console.WriteLine("The results of Int Operations are " + result1 + ", " + result2 + ", " + result3 + ", and " + 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 DoubleOp {  static void Main(string[] args)  {  // Declare variables a, b, and c as double  double a, b, c;   // Take user input for a, b, and c  Console.Write("Enter the value of a: ");  a = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the value of b: ");  b = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the value of c: ");  c = Convert.ToDouble(Console.ReadLine());   // Perform the double operations considering operator precedence  double result1 = a + b \* c;**  **double result2 = a \* b + c;**  **double result3 = c + a / b;**  **double result4 = a % b + c;**  **// Display  Console.WriteLine("The results of Double Operations are: ");  Console.WriteLine("a + b \* c = " + result1);  Console.WriteLine("a \* b + c = " + result2);  Console.WriteLine("c + a / b = " + result3);  Console.WriteLine("a % b + c = " + 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 Temprature**

**{**

**//method for temprature conversion**

**public static void tempConverstion()**

**{**

**double celsius;**

**Console.Write("Enter the temperature in Celsius: ");**

**celsius = double.Parse(Console.ReadLine());**

**// Perform the conversion to Fahrenheit**

**double fahrenheitResult = (celsius \* 9 / 5) + 32;**

**Console.WriteLine("The" + celsius + " celsius is " + fahrenheitResult + " Fahrenheit");**

**}**

**static void Main(string[] args)**

**{**

**Temprature.tempConverstion();**

**}**

**}**

**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 Temp**

**{**

**//method for temprature conversion from fahrenheit to celsius**

**public static void tempConv()**

**{**

**double fahrenheit;**

**Console.Write("Enter the temperature in Fahrenheit: ");**

**fahrenheit = double.Parse(Console.ReadLine());**

**// Perform the conversion to Celsius**

**double celsius = (fahrenheit - 32) \* 5 / 9;**

**Console.WriteLine("The " + fahrenheit + "Fahrenheit is " + celsius + "celsius" );**

**}**

**static void Main(string[] args)**

**{**

**Temp.tempConv();**

**}**

**}**

**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 Salary {  //method for calculate the total salary  public static void totalSalary()  {  double salary, bonus;   Console.Write("Enter your salary: ");  salary = double.Parse(Console.ReadLine());   Console.Write("Enter your bonus: ");  bonus = double.Parse(Console.ReadLine());   // Calculate total income  double totalIncome = salary + bonus;   Console.WriteLine("The salary is INR " + salary+ "and bonus is INR " + bonus + "Hence Total Income is INR " + totalIncome);   }  static void Main(string[] args)  {  Salary.totalSalary();  } }** |
| --- |

**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 Swap {  //method to swap two numbers  public static void swapTwo()  {  int n1,n2,temp;    Console.Write("Enter the first number: ");  n1 = int.Parse(Console.ReadLine());   Console.Write("Enter the second number: ");  n2 = int.Parse(Console.ReadLine());   // Swap the numbers using a temporary variable  temp = n1;  n1 = n2;  n2 = temp;    Console.WriteLine("The Swapped Num are " + n1 + "and " + n2);  }  static void Main(string[] args)  {  Swap.swapTwo();  } }** |
| --- |

**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 TravelComputation {  public static void Main(string[] args)  {  // Create variables for user input  Console.Write("Enter your name: ");  string name = Console.ReadLine();   Console.Write("Enter your from city: ");  string fromCity = Console.ReadLine();   Console.Write("Enter your via city: ");  string viaCity = Console.ReadLine();   Console.Write("Enter your destination city: ");  string toCity = Console.ReadLine();   // Create variables for distances (in miles) and time taken (in minutes)  Console.Write("Enter the distance from {0} to {1} in miles: ", fromCity, viaCity);  double distanceFromToVia = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the distance from {0} to {1} in miles: ", viaCity, toCity);  double distanceViaToFinalCity = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the time taken for the journey from {0} to {1} in minutes: ", fromCity, viaCity);  int timeFromToVia = Convert.ToInt32(Console.ReadLine());   Console.Write("Enter the time taken for the journey from {0} to {1} in minutes: ", viaCity, toCity);  int timeViaToFinalCity = Convert.ToInt32(Console.ReadLine());   // Compute the total distance and total time  double totalDistance = distanceFromToVia + distanceViaToFinalCity;  int totalTime = timeFromToVia + timeViaToFinalCity;   // Print the results  Console.WriteLine($"The results of the trip are: ");  Console.WriteLine($"Total distance traveled by {name} from {fromCity} to {toCity} via {viaCity} is {totalDistance} miles.");  Console.WriteLine($"Total time taken for the trip is {totalTime} minutes.");  } }** |
| --- |

**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 Athelete {  //method for calculate the total rounds for complete 5km  public static void runAthelete()  {  Console.Write("Enter the length of the first side of the triangular park in meters: ");  double side1 = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the length of the second side of the triangular park in meters: ");  double side2 = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the length of the third side of the triangular park in meters: ");  double side3 = Convert.ToDouble(Console.ReadLine());   // Calculate the perimeter of the triangular park  double perimeter = side1 + side2 + side3;   //5 km = 5000 meters  double totalDistance = 5000;   // Calculate the number of rounds needed  double rounds = totalDistance / perimeter;    Console.WriteLine("The total number of rounds the athlete will run is " + rounds + " to complete 5 km");  }**  **// main function  static void Main(string[] args)  {**  **//display  Athelete.runAthelete();  } }** |
| --- |

**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 Chocolates {  //method to distribute the chocolates  public static void divideChoc()  {  Console.Write("Enter the total number of chocolates: ");  int numberOfChocolates = Convert.ToInt32(Console.ReadLine());   Console.Write("Enter the total number of children: ");  int numberOfChildren = Convert.ToInt32(Console.ReadLine());     if (numberOfChildren == 0)  {  Console.WriteLine("Number of children cannot be zero.");  }  else  {  // Calculate chocolates each child gets and the remaining chocolates  int chocolatesPerChild = numberOfChocolates / numberOfChildren;  int remainingChocolates = numberOfChocolates % numberOfChildren;    Console.WriteLine("The number of chocolates each child gets is " + chocolatesPerChild + "and the number of remaining chocolates is " + remainingChocolates);  }  }  static void Main(string[] args)  {  Chocolates.divideChoc();  } }** |
| --- |

**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 SimpleInterest {  //method for calculate simple interest  public static void simpInterest()  {  Console.Write("Enter the Principal amount: ");  double principal = Convert.ToDouble(Console.ReadLine());    Console.Write("Enter the Rate of interest in %: ");  double rate = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the Time period in years: ");  double time = Convert.ToDouble(Console.ReadLine());   // Calculate Simple Interest  double simpleInterest = (principal \* rate \* time) / 100;    Console.WriteLine("The Simple Interest is " + simpleInterest + "for Principal " + principal + ", Rate of Interest " + rate + " and Time " + time);  }  static void Main(string[] args)  {  SimpleInterest.simpleInterest();  } }** |
| --- |

**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 \_\_\_**

| **class Pounds {  // Function to convert pounds to kilograms  public static double ConvertToKg(double pounds)  {  return pounds \* 2.2;  }   public static void Main(string[] args)  {  // user input for weight in pounds  Console.Write("Enter the weight in pounds: ");  double weightInPounds = Convert.ToDouble(Console.ReadLine());   // Call the function   double weightInKg = ConvertToKg(weightInPounds);   // display  Console.WriteLine(string.Format("The weight of the person in pounds is {0} and in kilograms is {1}.",weightInPounds, weightInKg));  } }** |
| --- |