

**Sample Program 1 - Display Result:**

**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 1 Practice Programs**

**1. Write a program to find the age of Harry if the birth year is 2000. Assume the Current Year is 2024**  
**I/P => NONE**  
**O/P => Harry's age in 2024 is \_\_\_**

| **using System;  class Program {  // Function to calculate the maximum number of handshakes  static int CalculateHandshakes(int numberOfStudents)  {  // Use the combination formula to calculate the maximum number of handshakes  return (numberOfStudents \* (numberOfStudents - 1)) / 2;  }   static void Main(string[] args)  {  // Take user input for the number of students  Console.Write("Enter the number of students: ");  int numberOfStudents = Convert.ToInt32(Console.ReadLine());   // Call the function to calculate the maximum number of handshakes  int handshakes = CalculateHandshakes(numberOfStudents);   // Display the result  Console.WriteLine("The maximum number of possible handshakes among " + numberOfStudents + " students is " + handshakes);  } }** |
| --- |

**2. Sam’s mark in Maths is 94, Physics is 95, and Chemistry is 96 out of 100. Find the average percent mark in PCM**  
**I/P => NONE**  
**O/P => Sam’s average mark in PCM is \_\_\_**

**using System;**

**class Average**

**{**

**static double calculateAverage(int maths, int physics, int chemistry)**

**{**

**return (maths + physics + chemistry) / 3.0;**

**}**

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

**{**

**int maths = 95;**

**int physics = 96;**

**int chemistry = 100;**

**double res = calculateAverage(maths, physics, chemistry);**

**Console.WriteLine("Sam’s average mark in PCM is " + res);**

**}**

**}**

**3. Create a program to convert the distance of 10.8 kilometers to miles.**  
**Hint:** 1 km = 1.6 miles  
**I/P => NONE**  
**O/P => The distance \_\_\_ km in miles is \_\_\_**

**using System;**

**class ConvertDistance{**

**static double kmToMiles(double km){**

**return km \* 1.6;**

**}**

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

**double km = 10;**

**double res = kmToMiles(km);**

**Console.WriteLine("The distance " +km + "km in miles is " + res);**

**}**

**}**

**4. Create a program to calculate the profit and loss in number and percentage based on the cost price of INR 129 and the selling price of INR 191.**  
**Hint:**  
Use a single print statement to display multiline text and variables.  
Profit = selling price - cost price  
Profit Percentage = profit / cost price \* 100  
**I/P => NONE**  
**O/P =>**  
The Cost Price is INR \_\_\_ and Selling Price is INR \_\_\_  
The Profit is INR \_\_\_ and the Profit Percentage is \_\_\_

using System;

class Program{

static void calculateProfit(int costPrice, int sellPrice){

double profit = (sellPrice - costPrice);

double profitper = (profit/costPrice)\*100;

Console.WriteLine("The Cost Price is INR" + costPrice + "and Selling Price is INR" + sellPrice + "\n The Profit is INR" + profit+ "and the Profit Percentage is " + profitper);

}

static void Main(string[] args){

//int costPrice = 129;

//int sellPrice = 191;

//double res =

Program.calculateProfit(129,191);

}

}

**5. Suppose you have to divide 14 pens among 3 students equally. Write a program to find how many pens each student will get if the pens must be divided equally. Also, find the remaining non-distributed pens.**  
**Hint:**  
Use Modulus Operator (%) to find the reminder.  
Use Division Operator to find the Quantity of pens  
**I/P => NONE**  
**O/P => The Pen Per Student is \_\_\_ and the remaining pen not distributed is \_\_\_**

**using System;**

**class Pen{**

**int totalPen = 14;**

**int totalStudent= 3;**

**//function to calculate pen per student**

**public void calPenPerStudent(){**

**int penPerStudent = totalPen / totalStudent;**

**int remainingPen = totalPen % totalStudent;**

**Console.WriteLine(string.Format("The Pen Per Student is {0} and the remaining pen not distributed is {1}",penPerStudent,remainingPen));**

**}**

**// main function**

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

**//creating object to call the instance**

**Pen penobj = new Pen();**

**penobj.calPenPerStudent();**

**}**

**}**

**6. The University is charging the student a fee of INR 125000 for the course. The University is willing to offer a discount of 10%. Write a program to find the discounted amount and discounted price the student will pay for the course.**  
**Hint:**  
Create a variable named fee and assign 125000 to it.  
Create another variable discountPercent and assign 10 to it.  
Compute discount and assign it to the discount variable.  
Compute and print the fee you have to pay by subtracting the discount from the fee.  
**I/P => NONE**  
**O/P => The discount amount is INR \_\_\_ and final discounted fee is INR \_\_\_**

**using System;**

**class University**

**{**

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

**{**

**// Initialize variables**

**double fee = 125000;**

**double discountPercent = 10;**

**// Calculate the discount amount**

**double discount = (discountPercent / 100) \* fee;**

**// Calculate the final fee after the discount**

**double finalFee = fee - discount;**

**// Display**

**Console.WriteLine(string.Format("The discount amount is INR {0} and the final discounted fee is INR {1}.",discount,finalFee));**

**}**

**}**

**7. Write a Program to compute the volume of Earth in km^3 and miles^3**  
**Hint:** Volume of a Sphere is (4/3) \* pi \* r^3 and radius of earth is 6378 km  
**O/P => The volume of earth in cubic kilometers is \_\_\_\_ and cubic miles is \_\_\_\_**

**using System;**

**class VolumeEarth**

**{**

**static void Main()**

**{**

**// radius of the Earth in kilometers**

**double radiusKm = 6378;**

**// volume in cubic kilometers**

**double volumeKm3 = (4.0 / 3.0) \* Math.PI \* Math.Pow(radiusKm, 3);**

**// convert volume to cubic miles**

**double volumeMiles3 = volumeKm3 \* 0.239913;**

**// display**

**Console.WriteLine(string.Format("The volume of Earth in cubic kilometers is {0} and cubic miles is {1}",volumeKm3,volumeMiles3));**

**}**

**}**

**8. Create a program to convert distance in kilometers to miles.**  
**Hint:**  
Create a variable km and assign type as double as in double km;  
Create Scanner Object to take user input from Standard Input that is the Keyboard as in Scanner input = new Scanner(System.in);  
Use Scanner Object to take user input for km as in km = input.nextInt();  
Use 1 mile = 1.6 km formulae to calculate miles and show the output  
**I/P => km**  
**O/P => The total miles is \_\_\_ mile for the given \_\_\_ km**

**using System;**

**class Program**

**{**

**// Function to convert kilometers to miles**

**static double ConvertKmToMiles(double kilometers)**

**{**

**const double kmToMiles = 1.6; // 1 mile = 1.6 kilometers**

**return kilometers / kmToMiles;**

**}**

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

**{**

**// taking input**

**Console.Write("Enter the distance in kilometers: ");**

**double kilometers = Convert.ToDouble(Console.ReadLine());**

**// function call**

**double miles = ConvertKmToMiles(kilometers);**

**// display**

**Console.WriteLine(string.Format("The total miles is {0} miles for the given {1} kilometers.",miles,kilometers));**

**}**

**}**

**9. Write a new program similar to the program # 6 but take user input for Student Fee and University Discount**  
**Hint:**  
Create a variable named fee and take user input for fee.  
Create another variable discountPercent and take user input.  
Compute the discount and assign it to the discount variable.  
Compute and print the fee you have to pay by subtracting the discount from the fee.  
**I/P => fee, discountPrecent**  
**O/P => The discount amount is INR \_\_\_ and final discounted fee is INR \_\_\_**

**using System;**

**class Program**

**{**

**// Function to calculate the discount and final fee**

**static void CalculateDiscount(double fee, double discountPercent)**

**{**

**double discount = (discountPercent / 100) \* fee;**

**double finalFee = fee - discount;**

**// display**

**Console.WriteLine(string.Format("The discount amount is INR {0} and the final discounted fee is INR {1}.", discount, finalFee));**

**}**

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

**{**

**// Take user input for fee**

**Console.Write("Enter the total fee (INR): ");**

**double fee = Convert.ToDouble(Console.ReadLine());**

**// Take user input for discount percentage**

**Console.Write("Enter the discount percentage: ");**

**double discountPercent = Convert.ToDouble(Console.ReadLine());**

**// Call the function**

**CalculateDiscount(fee, discountPercent);**

**}**

**}**

**10. Write a program that takes your height in centimeters and converts it into feet and inches**  
**Hint:** 1 foot = 12 inches and 1 inch = 2.54 cm  
**I/P => height**  
**O/P => Your Height in cm is \_\_\_ while in feet is \_\_\_ and inches is \_\_\_**

**using System;**

**class Program**

**{**

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

**{**

**// input height in centimeters**

**Console.Write("Enter your height in centimeters: ");**

**double heightCm = Convert.ToDouble(Console.ReadLine());**

**// Conversion factors**

**const double cmPerInch = 2.54;**

**const int inchesPerFoot = 12;**

**// Convert height to inches**

**double totalInches = heightCm / cmPerInch;**

**// Convert to feet and remaining inches**

**int feet = (int)(totalInches / inchesPerFoot);**

**double inches = totalInches % inchesPerFoot;**

**// Display the result**

**Console.WriteLine(string.Format("Your height in cm is {0}, while in feet is {1} and inches is {2}.",heightCm,feet,inches));**

**}**

**}**

**11. Write a program to create a basic calculator that can perform addition, subtraction, multiplication, and division. The program should ask for two numbers (floating point) and perform all the operations**  
**Hint:**  
Create a variable number1 and number 2 and take user inputs.  
Perform Arithmetic Operations of addition, subtraction, multiplication, and division and assign the result to a variable and finally print the result  
**I/P => number1, number2**  
**O/P => The addition, subtraction, multiplication and division value of 2 numbers \_\_\_ and \_\_\_ is \_\_\_, \_\_\_\_, \_\_\_\_, and \_\_\_**

| **using System;  class Calculator {  // addition function  static double Add(double number1, double number2)  {  return number1 + number2;  }   // subtraction function  static double Subtract(double number1, double number2)  {  return number1 - number2;  }   // multiplication function  static double Multiply(double number1, double number2)  {  return number1 \* number2;  }   // division function  static double Divide(double number1, double number2)  {  if (number2 != 0)  {  return number1 / number2;  }  else  {  Console.WriteLine("Division by zero is not allowed.");  return double.NaN; // Return "Not a Number" for invalid division  }  }   static void Main(string[] args)  {  // user input for the two numbers  Console.Write("Enter the first number: ");  double number1 = Convert.ToDouble(Console.ReadLine());   Console.Write("Enter the second number: ");  double number2 = Convert.ToDouble(Console.ReadLine());   // Perform arithmetic operations using functions  double addition = Add(number1, number2);  double subtraction = Subtract(number1, number2);  double multiplication = Multiply(number1, number2);  double division = Divide(number1, number2);   // Display the results   Console.WriteLine("Addition: " + number1 + " + " + number2 + " = " + addition);  Console.WriteLine("Subtraction: " + number1 + " - " + number2 + " = " + subtraction);  Console.WriteLine("Multiplication: " + number1 + " \* " + number2 + " = " + multiplication);   if (!double.IsNaN(division))  {  Console.WriteLine("Division: " + number1 + " / " + number2 + " = " + division);  }  } }** |
| --- |

|  |
| --- |

**12. Write a program that takes the base and height to find the area of a triangle in square inches and square centimeters**  
**Hint:** Area of a Triangle is ½ \* base \* height  
**I/P => base, height**  
**O/P => Your Height in cm is \_\_\_ while in feet is \_\_\_ and inches is \_\_\_**

**using System;**

**class Area**

**{**

**// Function to calculate the area of the triangle in square inches**

**static double CalculateAreaInInches(double baseLength, double height)**

**{**

**return 0.5 \* baseLength \* height;**

**}**

**// Function to convert square inches to square centimeters**

**static double ConvertToSquareCentimeters(double areaInInches)**

**{**

**return areaInInches \* 6.4516; // 1 square inch = 6.4516 square centimeters**

**}**

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

**{**

**// Take user input for the base and height of the triangle**

**Console.Write("Enter the base of the triangle (in inches): ");**

**double baseLength = Convert.ToDouble(Console.ReadLine());**

**Console.Write("Enter the height of the triangle (in inches): ");**

**double height = Convert.ToDouble(Console.ReadLine());**

**// Calculate the area in square inches**

**double areaInInches = CalculateAreaInInches(baseLength, height);**

**// Convert the area to square centimeters**

**double areaInCentimeters = ConvertToSquareCentimeters(areaInInches);**

**// Display the result**

**Console.WriteLine("The area of the triangle is " + areaInInches + " square inches.");**

**Console.WriteLine("The area of the triangle is " + areaInCentimeters + " square centimeters.");**

**}**

**}**

**13. Write a program to find the side of the square whose perimeter you read from user**  
**Hint:** Perimeter of Square is 4 times side

**I/P => perimeter**  
**O/P => The length of the side is \_\_\_ whose perimeter is \_\_\_\_**

using System;

class Parimeter

{

// Function to calculate the side of the square from the perimeter

static double CalculateSide(double perimeter)

{

return perimeter / 4;

}

static void Main(string[] args)

{

// user input for the perimeter

Console.Write("Enter the perimeter of the square: ");

double perimeter = Convert.ToDouble(Console.ReadLine());

// Call the function

double side = CalculateSide(perimeter);

// Display

Console.WriteLine("The length of the side is " + side + " whose perimeter is " + perimeter);

}

}

**14. Write a program to find the distance in yards and miles for the distance provided by the user in feet**  
**Hint:** 1 mile = 1760 yards and 1 yard is 3 feet  
**I/P => distanceInFeet**  
**O/P => Your Height in cm is \_\_\_ while in feet is \_\_\_ and inches is \_\_\_**

| **using System;  class FeetToYard {  // Function to convert feet to yards and miles  static void ConvertDistance(double distanceInFeet)  {  // Conversion factors  const double feetPerYard = 3; // 1 yard = 3 feet  const double yardsPerMile = 1760; // 1 mile = 1760 yards   // Convert feet to yards  double distanceInYards = distanceInFeet / feetPerYard;   // Convert yards to miles  double distanceInMiles = distanceInYards / yardsPerMile;   // Display the results  Console.WriteLine("The distance in yards is: " + distanceInYards);  Console.WriteLine("The distance in miles is: " + distanceInMiles);  }   static void Main(string[] args)  {  // Take user input for the distance in feet  Console.Write("Enter the distance in feet: ");  double distanceInFeet = Convert.ToDouble(Console.ReadLine());   // Call the function to convert the distance and display the result  ConvertDistance(distanceInFeet);  } }** |
| --- |

**15. Write a program to input the unit price of an item and the quantity to be bought. Then, calculate the total price.**  
**Hint:** NA  
**I/P => unitPrice, quantity**  
**O/P => The total purchase price is INR \_\_\_ if the quantity \_\_\_ and unit price is INR \_\_\_**

**using System;**

**class Unit**

**{**

**// Function to calculate the total price**

**static double CalculateTotalPrice(double unitPrice, int quantity)**

**{**

**return unitPrice \* quantity;**

**}**

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

**{**

**// Take user input for the unit price and quantity**

**Console.Write("Enter the unit price of the item: ");**

**double unitPrice = Convert.ToDouble(Console.ReadLine());**

**Console.Write("Enter the quantity to be bought: ");**

**int quantity = Convert.ToInt32(Console.ReadLine());**

**// Call the function to calculate the total price**

**double totalPrice = CalculateTotalPrice(unitPrice, quantity);**

**// Display the result**

**Console.WriteLine("The total purchase price is INR " + totalPrice + " if the quantity is " + quantity + " and unit price is INR " + unitPrice);**

**}**

**}**

**16. Create a program to find the maximum number of handshakes among N number of students.**  
**Hint:**  
Get integer input for numberOfStudents variable.  
Use the combination = (n \* (n - 1)) / 2 formula to calculate the maximum number of possible handshakes.  
Display the number of possible handshakes.

using System;

class Handshake

{

// Function to calculate the maximum number of handshakes

static int CalculateHandshakes(int numberOfStudents)

{

// Use the combination formula to calculate the maximum number of handshakes

return (numberOfStudents \* (numberOfStudents - 1)) / 2;

}

static void Main(string[] args)

{

// user input for the number of students

Console.Write("Enter the number of students: ");

int numberOfStudents = Convert.ToInt32(Console.ReadLine());

// Call the function to calculate the maximum number of handshakes

int handshakes = CalculateHandshakes(numberOfStudents);

// Display

Console.WriteLine("The maximum number of possible handshakes among " + numberOfStudents + " students is " + handshakes);

}

}