

## **Writing Simple Programs in C#**

### **Step 1: Creating a Simple Calculator**

Create a simple calculator program that performs basic arithmetic operations such as addition. This exercise involves defining a class and writing a method to add two numbers.

#### **Instructions:**

1. Define a class called Calculator.
2. Inside the class, declare two integer variables to hold the numbers.
3. Write a method called Add that adds two numbers and returns the result.

### **Step 2: Executing the Calculator Program**

Write a Main method to execute the calculator program. This method will assign values to the numbers and call the Add method.

#### **Instructions:**

1. Write the Main method inside the Calculator class.
2. Assign values to number1 and number2.
3. Call the Add method and print the result using Console.WriteLine.
4. To check your answer use the Visual Studio Code console application you created at the start of the course. Paste your code into the Program.cs file in that application (be sure to delete any existing code first). If you receive an error when you run the code, go to the reading on the next page to compare your code to the correct answer.

### **Step 3: Creating a Loop to Display Numbers**

Write a program that uses a loop to display numbers from 1 to 10. Loops allow you to repeat actions multiple times.

#### **Instructions:**

1. Define a class called NumberDisplay.
2. Write a method called DisplayNumbers that uses a for loop to print numbers from 1 to 10.
3. Call the DisplayNumbers method inside the Main method.

4. To check your answer use the Visual Studio Code console application you created at the start of the course. Paste your code into the Program.cs file in that application (be sure to delete any existing code first). If you receive an error when you run the code, go to the reading on the next page to compare your code to the correct answer.

#### Step 4: Handling User Input

Write a program that interacts with the user. This program will prompt the user for their name and greet them.

##### Instructions:

1. Define a class called UserInput.
2. Write a method called GreetUser that prompts the user to enter their name and stores the input in a variable.
3. Print a greeting message that includes the user's name.
4. To check your answer use the Visual Studio Code console application you created at the start of the course. Paste your code into the Program.cs file in that application (be sure to delete any existing code first). If you receive an error when you run the code, go to the reading on the next page to compare your code to the correct answer.

##### Code:

```
namespace SimplePrograms
{
    class Calculator
    {
        public static int Add(int a, int b)
        {
            return a + b;
        }
    }

    class InputHelper
    {
        public static bool TryReadInteger(string prompt, out int number)
        {
            Console.Write(prompt);
            string? input = Console.ReadLine();
            return int.TryParse(input, out number);
        }

        public static void WaitForKey()
        {
            Console.WriteLine("Press Enter to continue...");
            Console.ReadLine();
        }
    }
}
```

```

    }

    class NumberDisplay
    {
        public static void DisplayNumbers()
        {
            Console.WriteLine("Numbers from 1 to 10:");
            for (int i = 1; i <= 10; i++)
            {
                Console.WriteLine(i);
            }
        }
    }

    class UserInput
    {
        public static void GreetUser()
        {
            Console.Write("Enter your name: ");
            string? name = Console.ReadLine();

            Console.WriteLine("Hello, " + name + "!");
        }
    }

    class SimplePrograms
    {
        static void Main()
        {
            Console.WriteLine("--- Welcome to Simple Programs ---");
            UserInput.GreetUser();

            while (true)
            {
                Console.WriteLine("\n--- Main Menu ---");
                Console.WriteLine("1. Add two numbers");
                Console.WriteLine("2. Display numbers from 1 to 10");
                Console.WriteLine("3. Exit");
                Console.Write("Choose an option: ");
                string? choice = Console.ReadLine();

                if (choice == "1")
                {
                    if (!InputHelper.TryReadInteger("Enter the first
number: ", out int number1))
                    {
                        Console.WriteLine("Invalid input.");
                        continue;
                    }

                    if (!InputHelper.TryReadInteger("Enter the second
number: ", out int number2))
                    {
                        Console.WriteLine("Invalid input.");
                        continue;
                    }

                    int result = Calculator.Add(number1, number2);
                    Console.WriteLine("The sum is: " + result);
                }
            }
        }
    }
}

```

```
        InputHelper.WaitForKey();
    }
    else if (choice == "2")
    {
        NumberDisplay.DisplayNumbers();
        InputHelper.WaitForKey();
    }
    else if (choice == "3")
    {
        Console.WriteLine("Goodbye!");
        break;
    }
    else
    {
        Console.WriteLine("Invalid option. Please choose 1,
2 or 3.");
    }
}
}
```