SIT771 Object-Oriented Development

Pass Task 5.1: Arrays

Focus

Make the most of your task by focusing on the following:

- Syntax:

  Focus on mastering the correct usage of loops in C# syntax, adhering to established conventions and best practices.

- Concept:

  Focus on exploring how loops shape program structure, and understanding their conceptual foundations in repetitive tasks, particularly in array manipulation.

- Process:

  Focus on experimenting with various loop types (e.g., for, while) to refine your problem-solving process, considering the impact on program efficiency, readability, and maintainability.

Overview

In this task, you will create a simple program that will create an array with a user-specified size. This array will then be populated with values, printed out to the console, and finally, we'll calculate the sum of the values entered.

Submission Details

Submit the following files to OnTrack.

- The Program code (*Program.cs*)
- A screenshot of the running program

You want to focus on arrays, loops, and the different techniques we have to manipulate arrays.

Instructions

We're going to create a program which will ask the user how many values they'd like to store in memory, then, for each value they'd like to store, we'll ask them for the value.

The first think we'll need are some `public static` methods in the Program class which can read integers and doubles for us. We've provided the ReadInteger method here:

```csharp
using System;

public class Program
{
  public static int ReadInteger(string prompt)
  {
    Console.Write(prompt);
    while (true)
    {
      try
      {
        return Int32.Parse(Console.ReadLine());
      }
      catch
      {
        Console.WriteLine("Please enter a valid integer");
      }
    }
  }

  public static void Main()
  {
  }
}
```

1. Add a `public static ReadDouble(string prompt)` method yourself.

Here's the pseudocode for Main:

- Create an `int` variable called `numberOfValues` which will store the number of values the user would like to enter.
- Create an array of `double`, with a size of `numberOfValues`:

  ```csharp
  double[] values = new double[numberOfValues];
  ```

- Loop over each element in `values`, and populate the array:

  ```csharp
  for (int i = 0; i < numberOfValues; i++)
  {
    values[i] = ReadDouble($"Enter the {i + 1}st value: ");
  }
  ```

- Using a for loop, iterate over each element in `values`, and write out each element to the console.

- Next, let's sum all of the values and write that out to the console. You will need to use a `double sum` variable to sum up each element in the array, before printing it out.

Take a screenshot of your program after it has run with a few values, and upload to OnTrack!