C# Learning Journey

Day 4 using C#

- Array
  Is a data structure that allows you to store multiple values of the same data type. It is a reference type .Stored in stuck and heap.

  - Declaration and Initialization:
    Declaration is when you tell the program that you're going to use a variable of a certain type, like int, string, etc. You do this like so: 'int myNumber;.
  - Initialization is when you first assign a value to that variable, like this: 'myNumber = 10;
    <datatype> [ ] <arrayname> = new <datatype> [size];
    Int [ ] ages = new int [2];
    ages [0] = 3;
    ages [1] = 1;
    ages [2] = 2;

  - Deceleration and Initialization in one line:
    int [ ]ages = {3,4,5};
    int [ ]ages = new int [3]{3,4,5};

- Multi-Dimensional Array:
  - It is an array that can store values in multiple dimensions, like a grid or a table.
    int [,] myArray = new int[3,4];
    3-number of row
    4-number of columns

    ages[0,0] = 1;
    ages[0,1] = 2;
    ages[1,0]= 3;
    ages[1,1]= 4;

- Jagged Array:
  - Is an array of arrays
  - It allows you to have arrays with different lengths within the main array.
  - Each element of the main array can be an array itself.
  - Jagged Array gives more flexibility when dealing with uneven or dynamic data.
    Int[][] jaggedArray = new int[3][];
    jaggedArray[0] = new int[]{ 1,2,3};
    jaggedArray[1] = new int[]{ 4,5};
    jaggedArray[2] = new int[]{6,7,8,9};

- Array Slicing:
  - Allows you to extract a portion of an array based on a specified range.
  - You can use the ‘ Array.Copy’ method or the ‘ArraySegement’ structure to perform array slicing.
    int[] numbers = {1, 2, 3, 4, 5};
    int[] slicedNumbers = new int[3];

- Reversing Slicing:
  - It refers to the process of extracting a portion of an array and then reversing the order of the elements within that slice.
  - Allows you to take a subset of an array and rearrange the elements in reverse order.
  - Using reverse slicing that tell compiler to start from the last of array and skip the beginning.
  - When compiler see ‘ ^ ’ this operation will start from last. [From..^to].