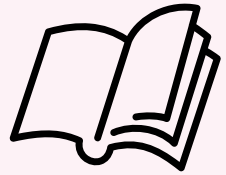

High School Programming

Lecture: 08

WELCOME TO

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Recap Previous Lecture

- Loop
- For Loops
- While Loops
- Do-While Loops

Agenda

- Arrays
- Logical Problem Solve

Array

-- The **array** is defined as a collection of similar data elements. If you have some sets of integers, and some sets of floats, you can group them under one name as an array. So, in simple words, we can define an array as a collection of similar types of values that are stored in a contiguous memory location under a single name.

There are two types of array:

- **Single dimensional array** - the data is arranged in the form of a row
- **Multi-dimensional array** - the data is arranged in the form of rows and columns

    1. **Jagged Array** - Whose rows and columns are not equal
    2. **Ractangle Array** - Whose rows and columns are equal

Array Syntax

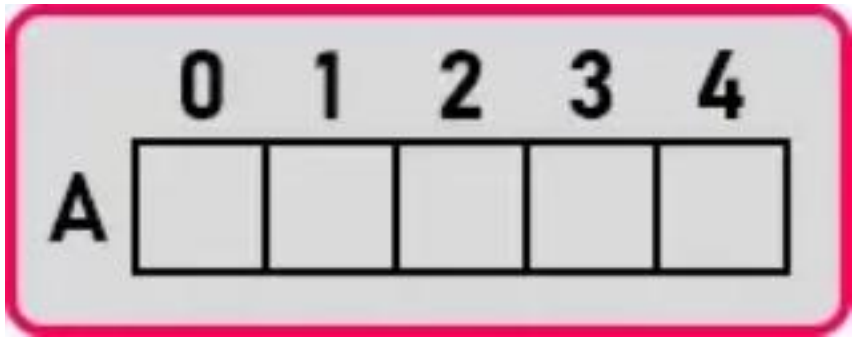
Syntax: <data type>[] arrayName= new <data type>[size of the array];

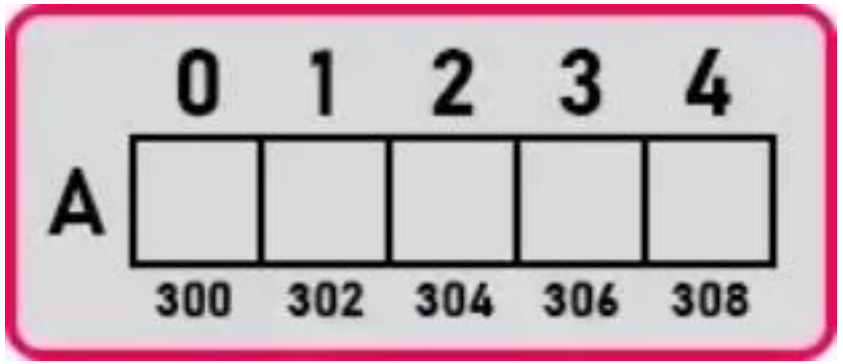
Example: int[] A = new int[5];

Example: float[] student_gpa = new float[100]

Syntax: <data type>[] arrayName = {value1,value2,value3,....}

Example: string fruits = {“mango”,”apple”,”orange”,”plam”,.....}





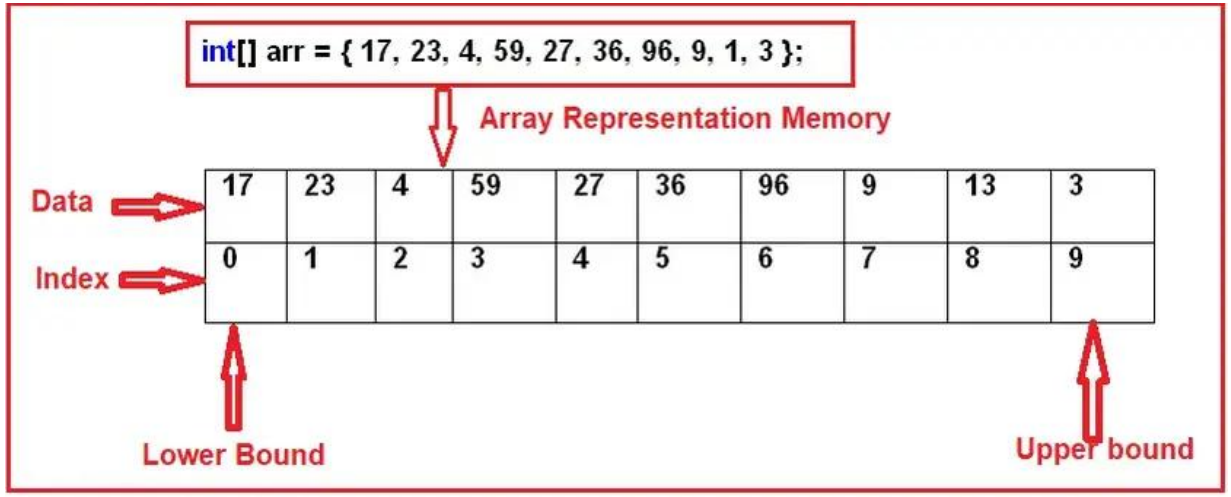
Array Element Accessing

-- The index of an array is basically a pointer that is used to indicate which element in the array will be used. The array is sequential starting at zero to n-1, you can easily access any element in an array with the index

Using Index:

Syntax: arrayName[index_number];

Example: fruits[0]; // access for first element
Example: fruits[1]; // access for second element
.....
.....



Array Element Assigning

-- You can also assign values into a array through index.

Using Index:

Syntax: arrayName[index_number] = value;

Example: fruits[0] = “Pineapple”;
Example: fruits[1] = “Guava”;
.....
.....

```
int[] n = new int[3]; //Declaring an Array

//Initializing the array elements
n[0] = 10;
n[1] = 20;
n[2] = 30;
```

Using Loops:

1. **For**
2. **While**

2D Array

--The arrays which store the elements in the form of rows and columns are called Two-Dimensional Array.

Syntax: datatype[,] arrayName = new [rowsize,column_size];

Example: int[,] numbers = new [5,5];

Syntax: datatype[,] arrayName = {value1,value2,value3,.....};

Example: int[,] numbers = {{1,2},{3,4},{5,6}}

2D Array Element Accessing

--The index of an array is basically a pointer that is used to indicate which element in the array will be used. The array is sequential starting at zero to n-1, you can easily access any element in an array with the index.

Using Index:

Syntax: arrayName[rowIndex,column_index];

Example: fruits[0,0]; // access for first element
Example: fruits[0,1]; // access for second element
.....
.....

Using Loops:

1. **Nested For**

2D Array Element Assigning

--You can also assign values into a array through index.

Using Index:

Syntax: arrayName[index_number] = value;

Example: fruits[0,0] = “Pineapple”;
Example: fruits[0,1] = “Guava”;
.....
.....

Using Loops:

1. **Nested For**

Example of Error

```
class Program
{
    static void Main(string[] args)
    {
        //Creating an array with size 3
        string[] Countries =new string[3];

        Countries[3] = "India";

        Console.ReadKey();
    }
}
```

Exception Unhandled

System.IndexOutOfRangeException: 'Index was outside the bounds of the array.'

View Details | Copy Details

Exception Settings

```
class Program
{
    static void Main(string[] args)
    {
        //Creating an Integer Array to store 3 integer numbers
        int[] numberArray = new int[3];

        //Storing Integer Number is fine
        numberArray[0] = 10;

        //Trying to store string value
        numberArray[1] = "ABC";

    }
}
```

class System.String

Represents text as a sequence of UTF-16 code units.

Cannot implicitly convert type 'string' to 'int'

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Thank You