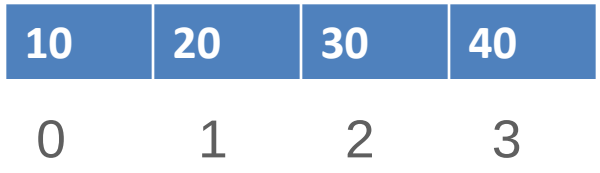
Arrays

- Array is a collection of similar type of data.
- Array stores multiple values of same type.
- Arrays are reference types.
- They are automatically of a predefined type **System.Array**
- **Syntax:**
- **Datatype [] Array_name=new Data type[size];**
- **Data type-** specifies what type of data storing into the array. Array type can be value type or reference type.
- **Array_name**-Indicates name of the array
- **new**-It allocates memory to the array at runtime
- **Size**-Indicates how many elements storing into the array
- ex: int []a=new int[5];
- string []names=new string[3];

Arrays

- Assigning values to array
- 1.Int []a=new int[4]
- a[0]=10
- a[1]=20
- a[2]=30
- a[3]=40



- 2. Int []a=new int[4]{10,20,30,40}
- 3.Int []a={10,20,30,40} //Dynamic allocation
- Accessing elements

```
a[0];
```

- In arrays index starts from 0
- If there is a mismatch between the declared size and the number of initializes , a compile time error is generated.

Arrays

- members of System. Array
- **sort()** -It sorts array elements in ascending order
- **System.Array.Sort(array name)**
- **reverse()-**It arrange array elements in reverse order
- **System.Array.Reverse(array name)**
- **copy() –**It copies one Array elements into to another array
- **System.Array.Copy(source array name, destination array name, count)**
- **Length-** It returns size of the array
- **Rank-**It returns dimension of the array

Multidimensional array

- A multidimensional array stores values in multiple rows and columns.
- An array can have a maximum of 32 dimensions.
- Two types of multidimensional array
  - Rectangular array
  - Jagged array

Rectangular Array

- A multidimensional array where length of each row is fixed through out the array.
- Syntax: Data type[,] array_name=
- new Data type[row_size, col_size]
- Creation:

```
int[,] matrix = new int[5,5];
```

- Accessing array elements:

```
matrix[0,1]=9;
```

- Initializing
  - `int[,] matrix = new int[,] { {0, 1}, {2, 3}, {4, 5} };`

Jagged Arrays

- A jagged array is an array of arrays.
- The element with in the jagged array it self is an array.
- The arrays may be of different sizes.
- Definition requires specification of size for only the topmost array.
- **Datytype [ ][ ] Array_name = new Datatpe[size][ ] ;**
- Size indicates no of arrays storing into jagged array
- Creation:

```
int[][] myarr=new int[3][];
```

- Creating arrays in the jagged array,

```
myarr[1]= new int[3]{0,1,2};
```

- Accessing elements

```
myarr[0][1]=8;
```

- Accessing the length of row 0→ `myarr[0].Length`
- Initializing
  - `int[][] myarr= new int[][] { new int[] {0,1}, new int[] {3,4,5} };`

  Or simply `int[][] myarr = { new int[] { 0, 1 }, new int[] { 3, 4, 5 } };`