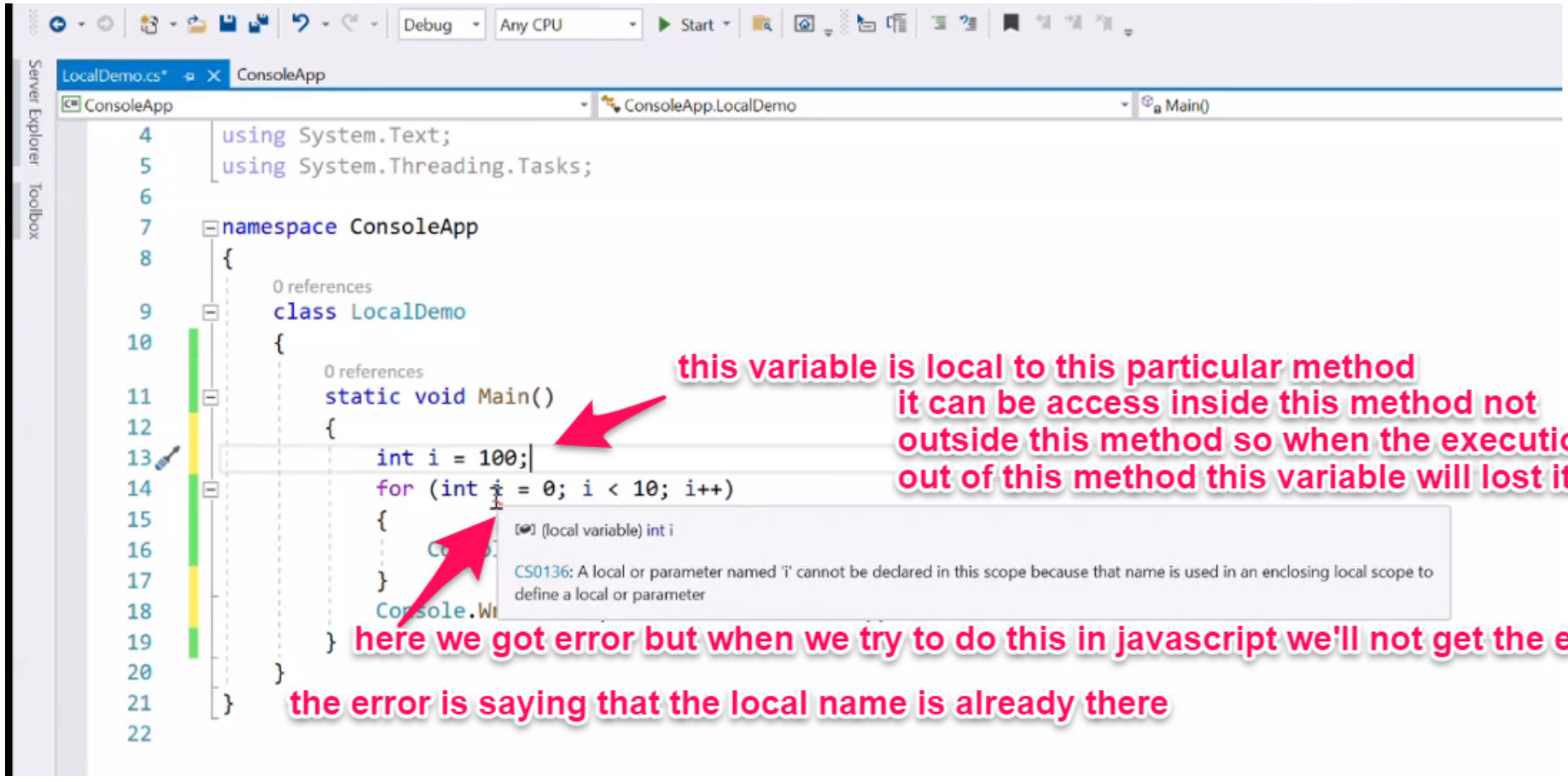
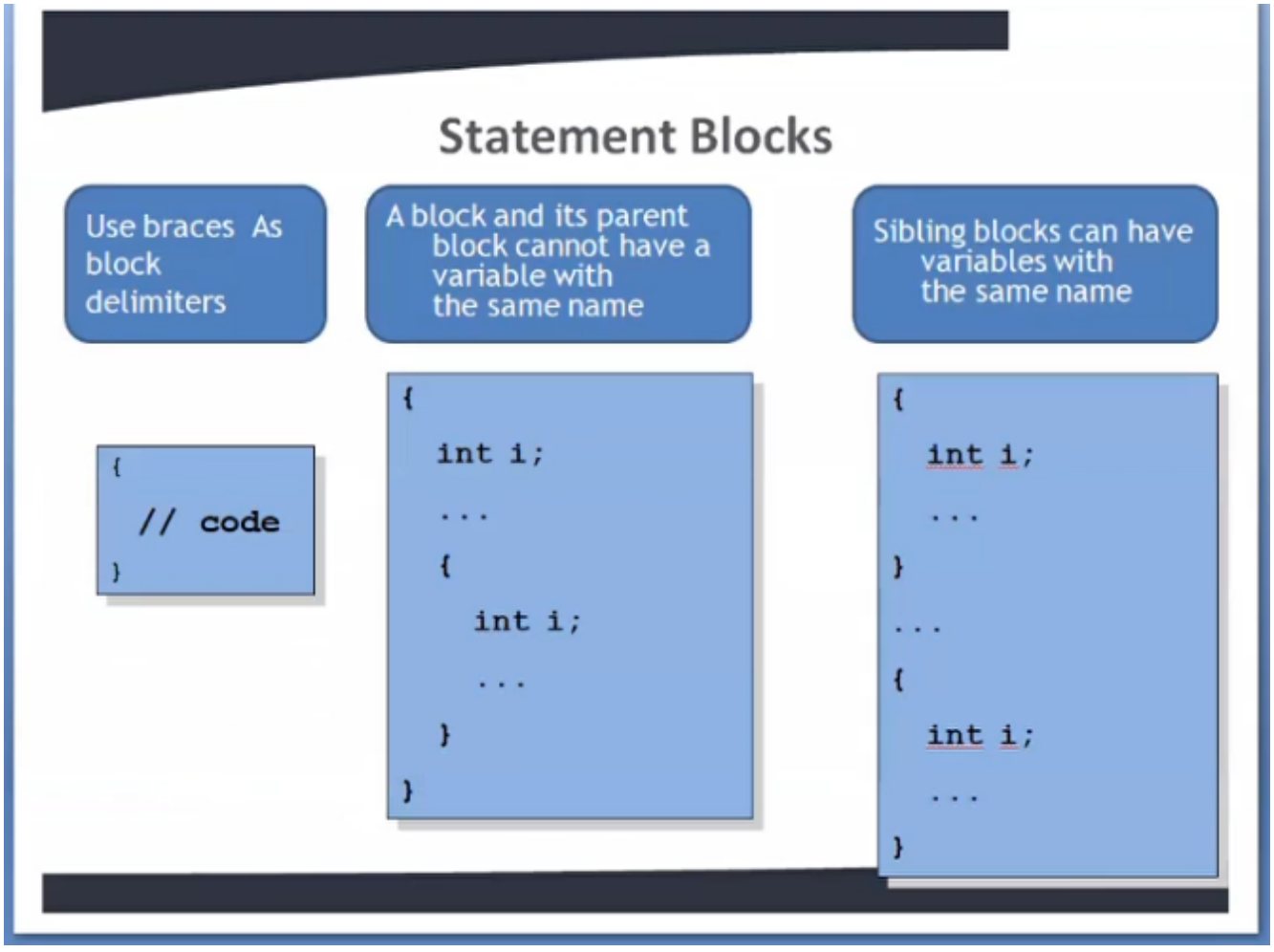
C#-4


Debug
Any CPU
Start
LocalDemo.cs*
ConsoleApp
ConsoleApp
ConsoleApp.LocalDemo
Main()
Server Explorer
Toolbox
using System.Text;
using System.Threading.Tasks;
namespace ConsoleApp
{
0 references
class LocalDemo
{
0 references
static void Main()
{
int i = 100;
for (int i = 0; i < 10; i++)
{
}
}
}
}
(local variable) int i
CS0136: A local or parameter named 'i' cannot be declared in this scope because that name is used in an enclosing local scope to define a local or parameter
this variable is local to this particular method
it can be access inside this method not
outside this method so when the execution comes
out of this method this variable will lost its value
here we got error but when we try to do this in javascript we'll not get the error
the error is saying that the local name is already there


Statement Blocks
Use braces As block delimiters
A block and its parent block cannot have a variable with the same name
Sibling blocks can have variables with the same name
{
// code
}
{
int i;
...
{
int i;
...
}
}
{
int i;
...
}
...
{
int i;
...
}

Scope of the Variable

- A field of a class is in scope as long as its containing class is in scope
- A local variable is in scope until a closing brace indicates the end of block statement in which its declared.
- A local variable that is declared in *for, while* or similar statement is in scope in the body of that loop.

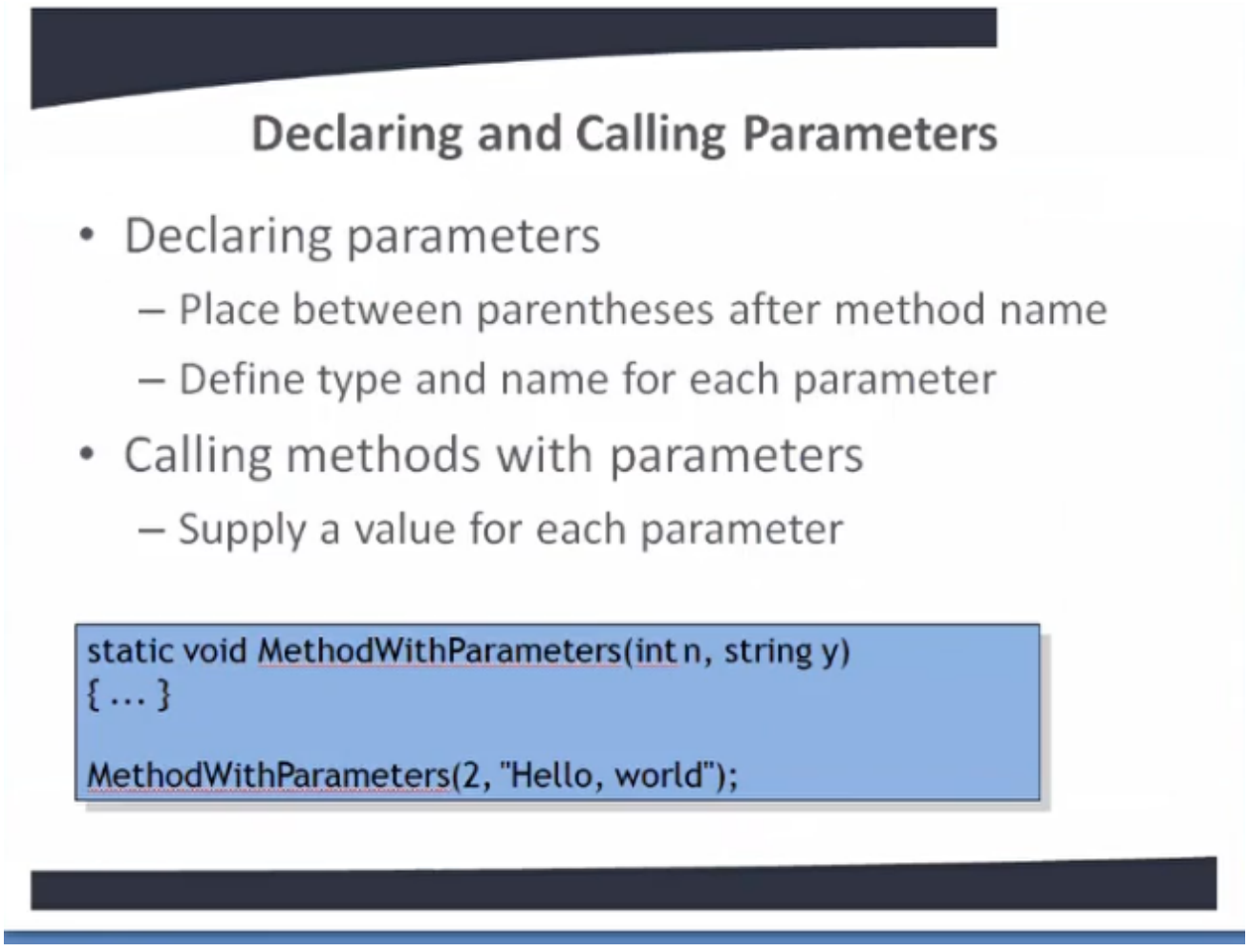
```
public static void Main()
{
    int x; // known to all code within Main()

    x = 10;
    if (x == 10)
    { // start new scope
        int y = 20; // known only to this block

        // x and y both known here.
        Console.WriteLine("x and y: " + x + " " + y);
        x = y * 2;
    }
    // y = 100; // Error! y not known here

    // x is still known here.
    Console.WriteLine("x is " + x);
}
```

Returning Values from Methods

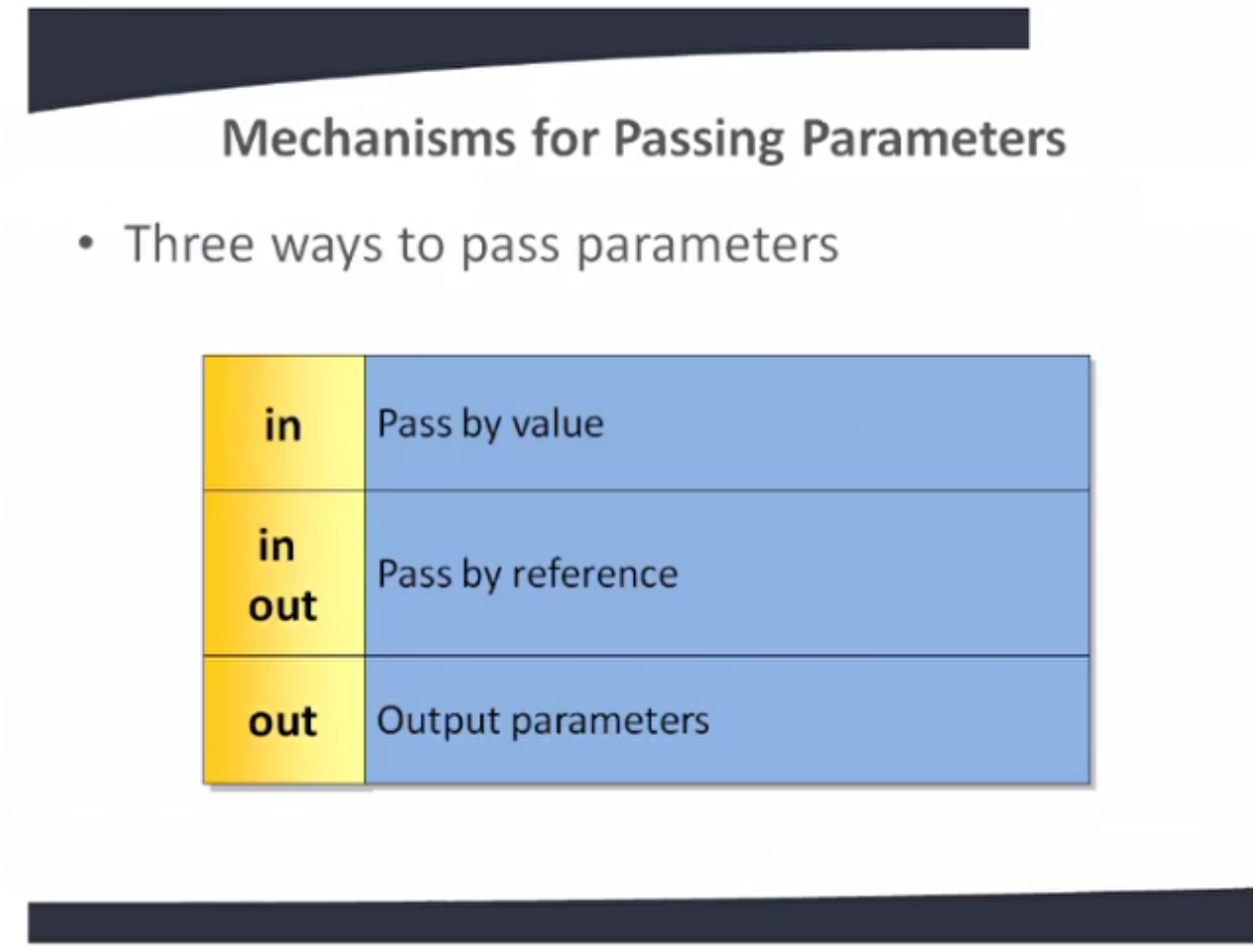
- Declare the method with non-void type
- Add a return statement with an expression
  - Sets the return value
  - Returns to caller
- Non-void methods must return a value

```
static int TwoPlusTwo( ) {
    int a,b;
    a = 2;
    b = 2;
    return a + b;
}
```

```
int x;
x = TwoPlusTwo( );
Console.WriteLine(x);
```



When you are declaring and calling a particular parameter you can use **in parameter** and **out parameter**



That is called pass by value and pass by reference

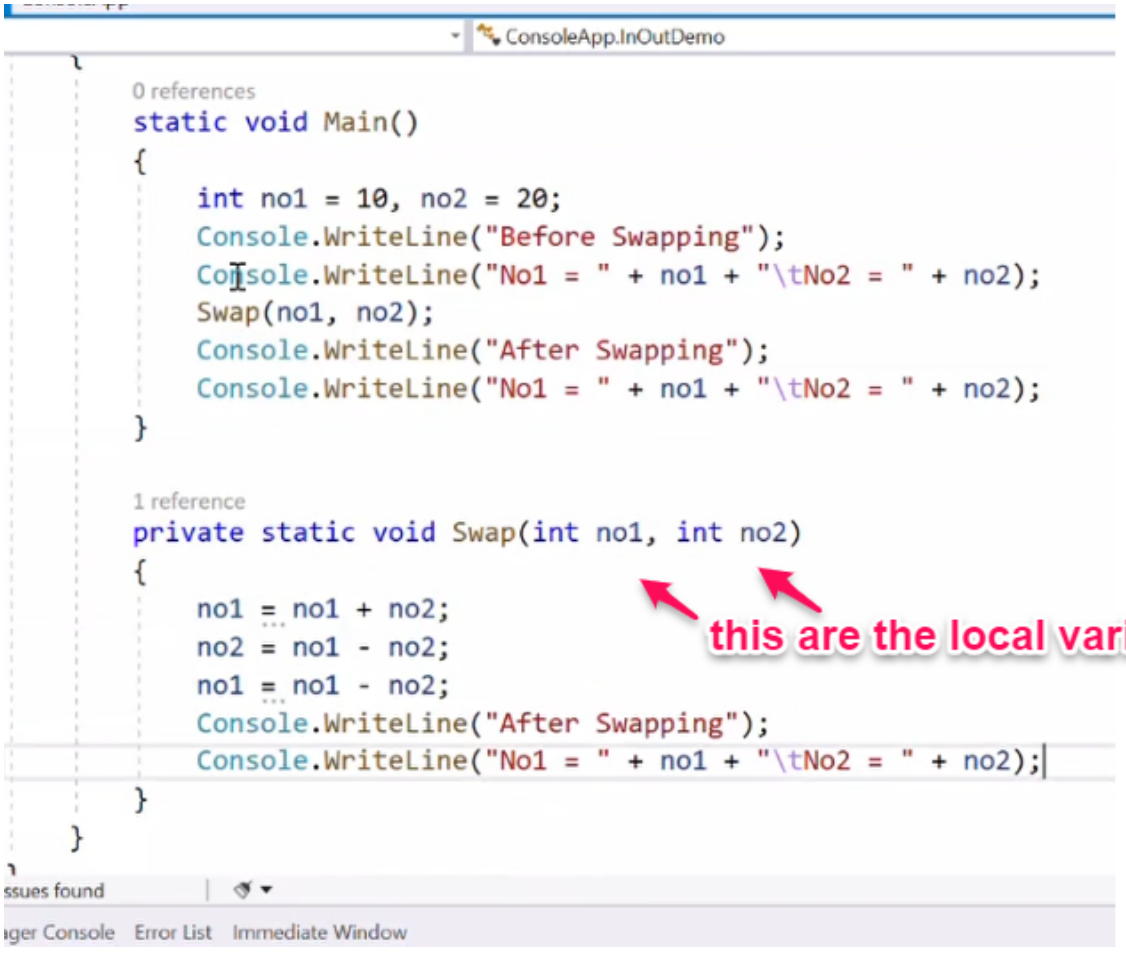
Pass by Value

- Default mechanism for passing parameters:
  - Parameter value is copied
  - Variable can be changed inside the method
  - Has no effect on value outside the method
  - Parameter must be of the same type or compatible type

```
static void AddOne(int x)
{
        x++; // Increment x
}
static void Main( )
{
        int k = 6;
        AddOne(k);
        Console.WriteLine(k); // Display the value 6, not 7
}
```

Pass by Reference

- What are reference parameters?
  - A reference to memory location
- Using reference parameters
  - Use the **ref** keyword in method declaration and call
  - Match types and variable values
  - Changes made in the method affect the caller
  - Assign parameter value before calling the method



this are the local variables and can be accessed only in this this method

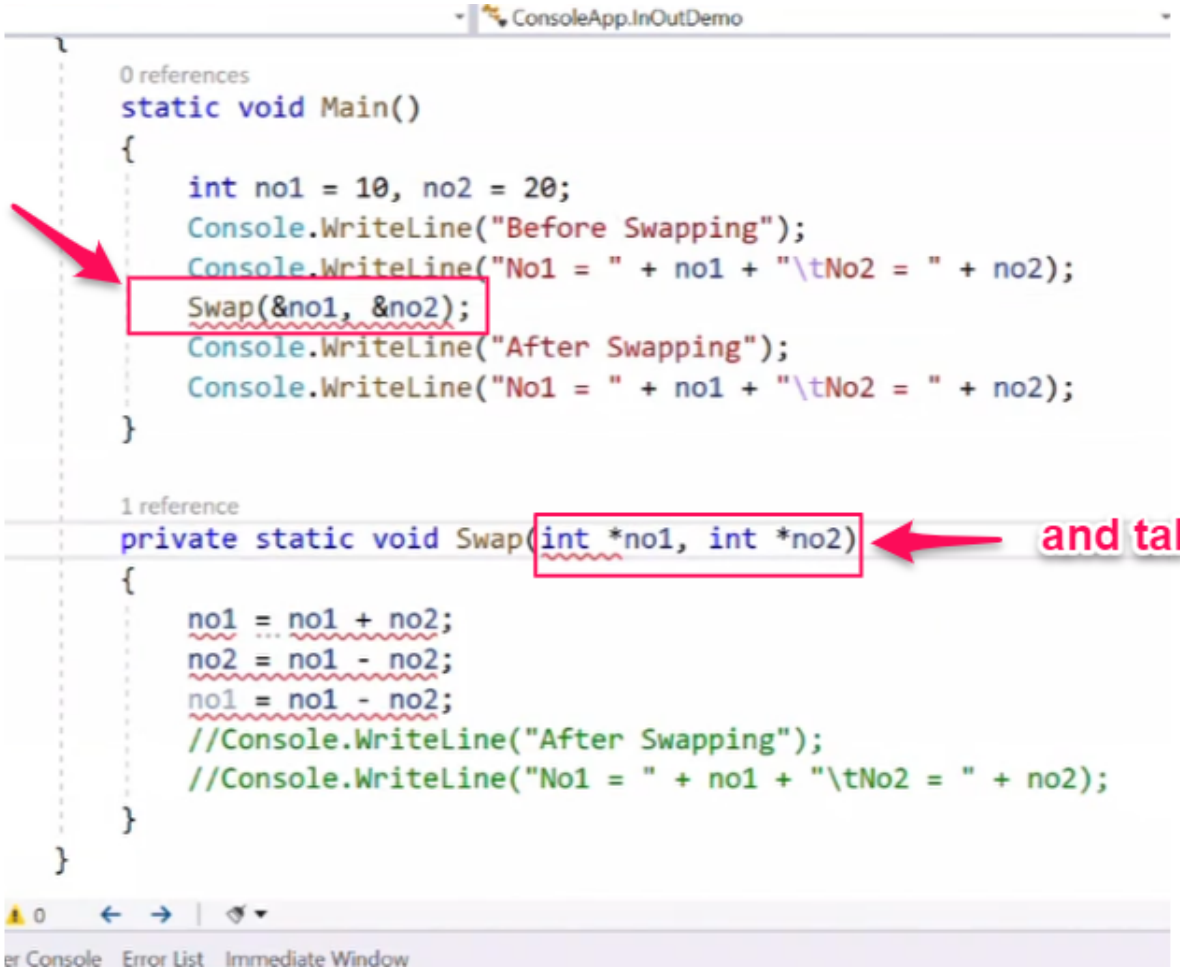
so now after i want to pass the swapped data to main

so **in C How will you do this** ----------**return** ----------**no**--------return

can return only one value we cannot return more than one value

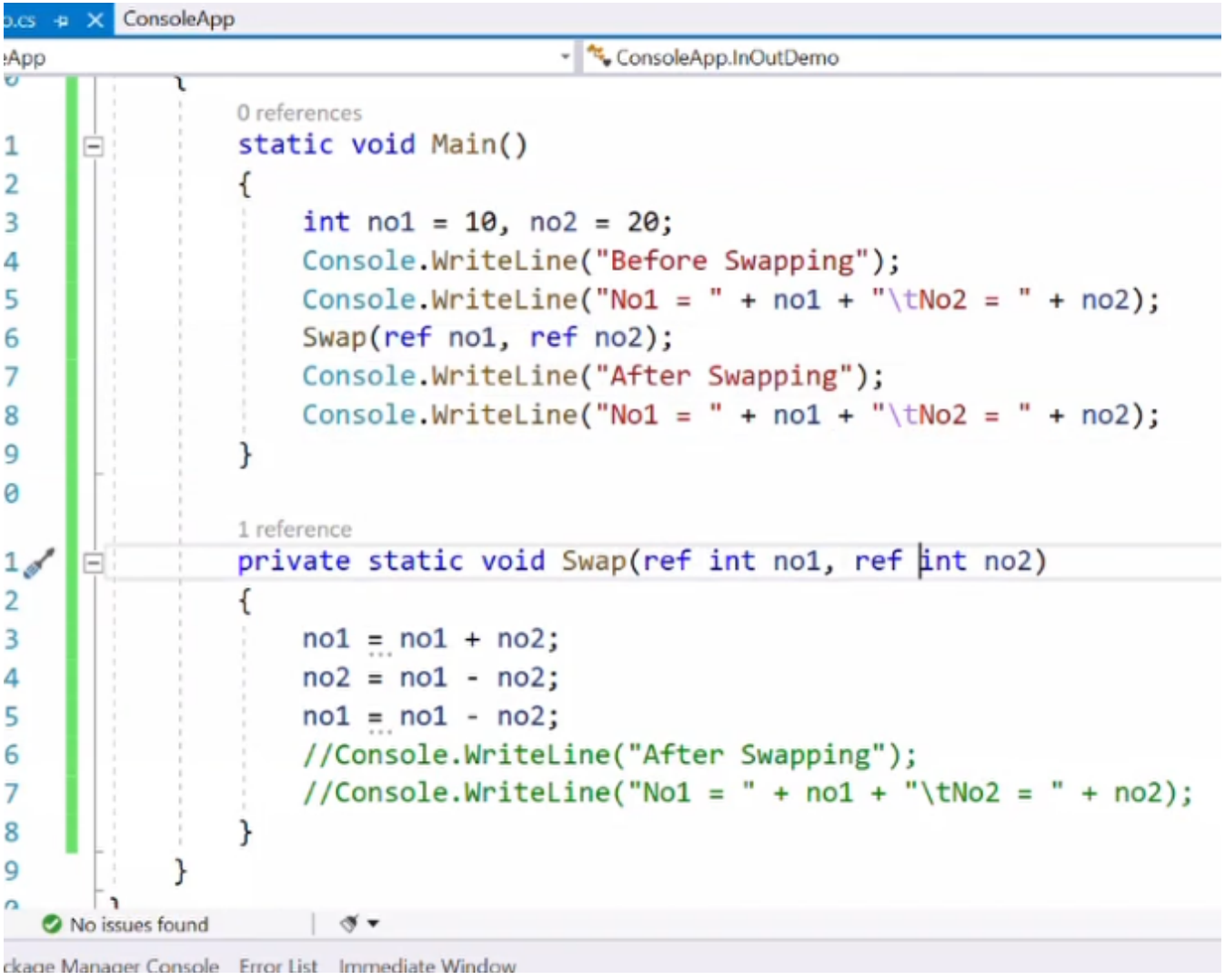
In C using pointer we can do this

In C we pass the Address here

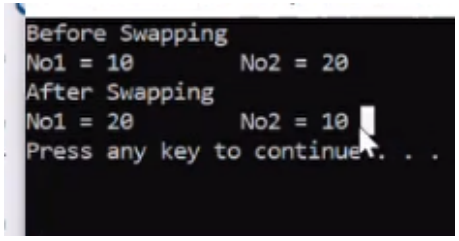


But here we don't have a option of pointer So we have a other option here

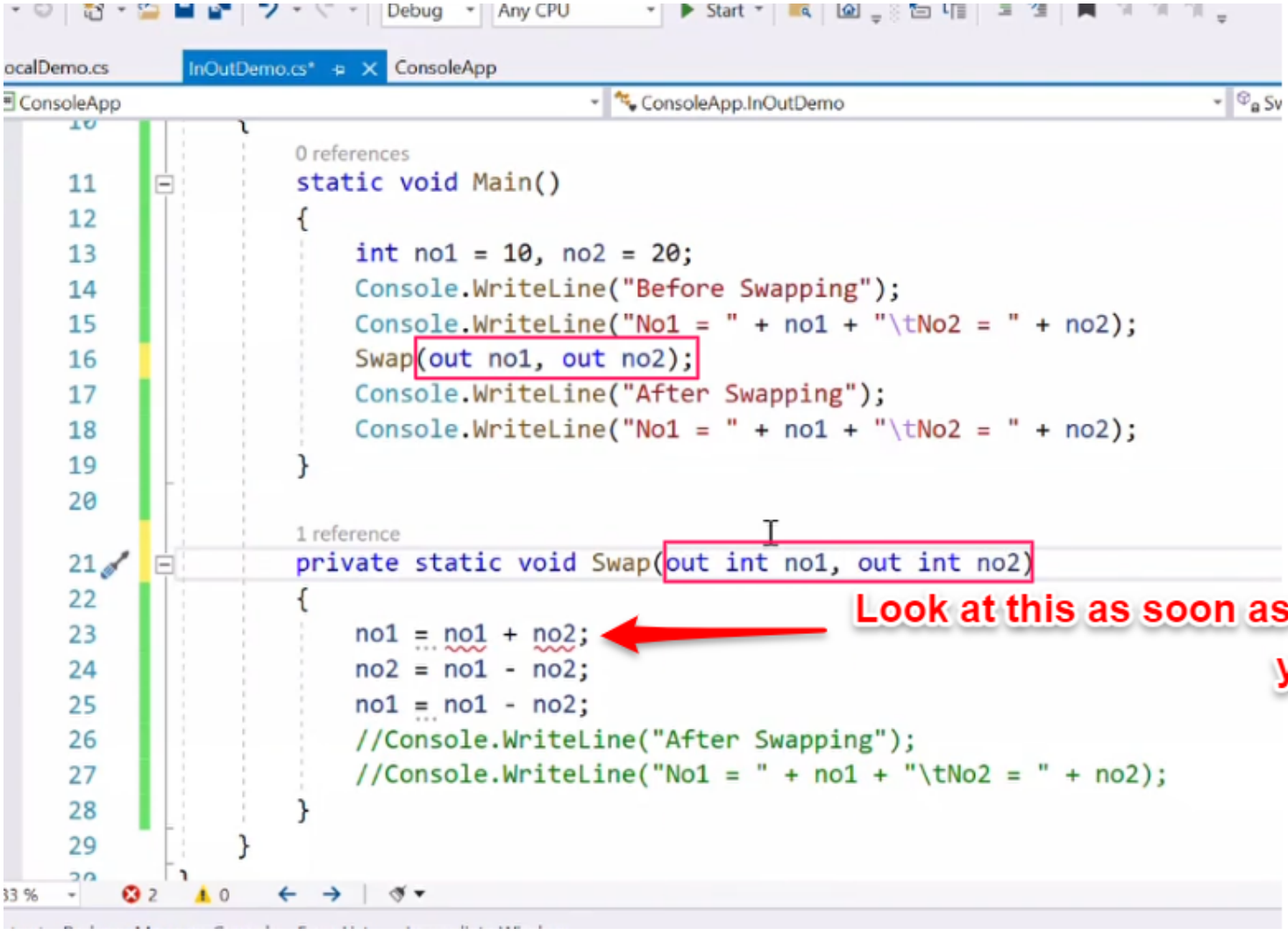
we can always say **ref**



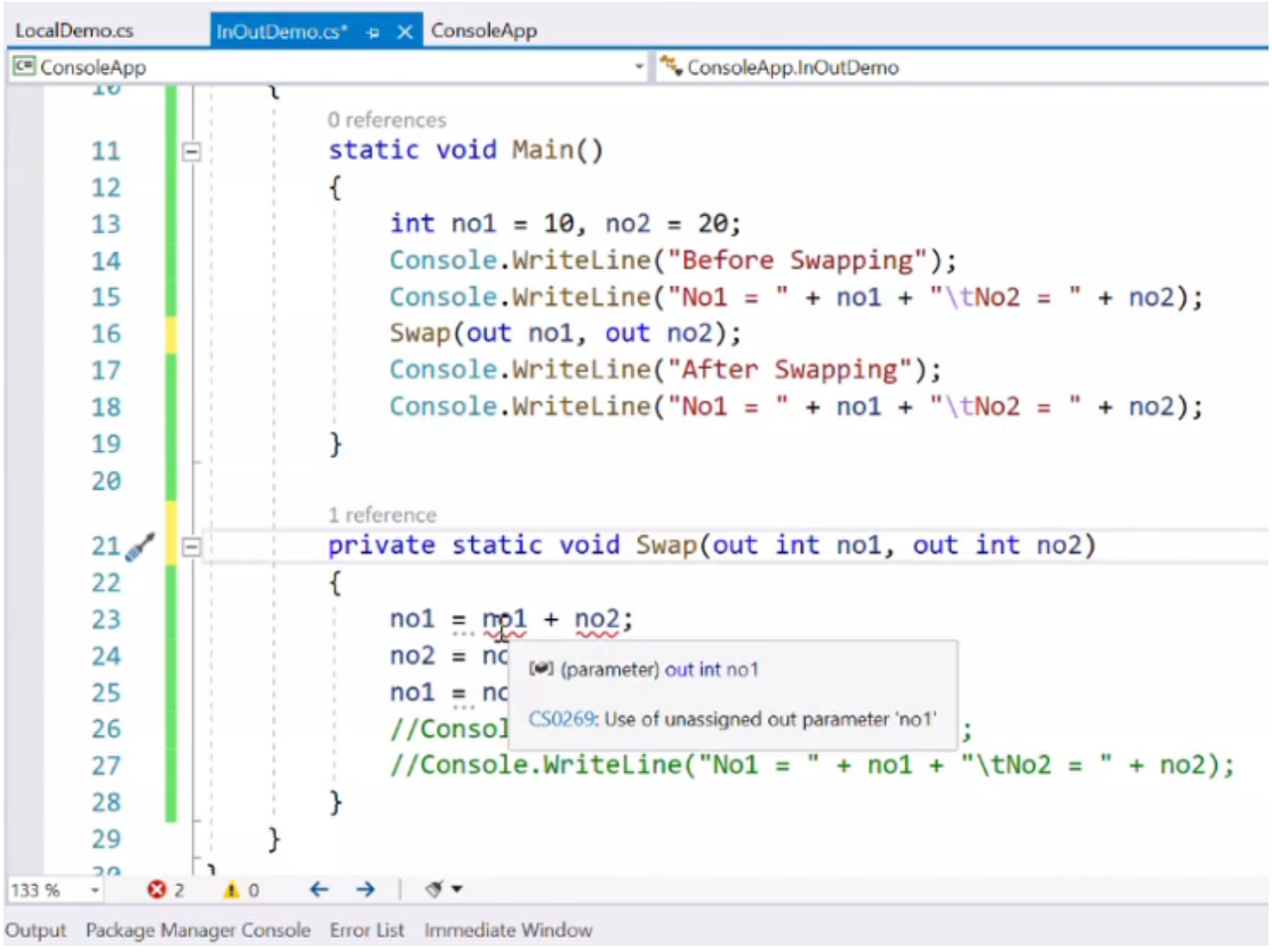
I am saying that i am passing that reference here, Remember when you pass the reference here so we'll take the same value or name, and that number is manupulated



I can Achieve the same thing using out also but there is lot of difference between out and ref



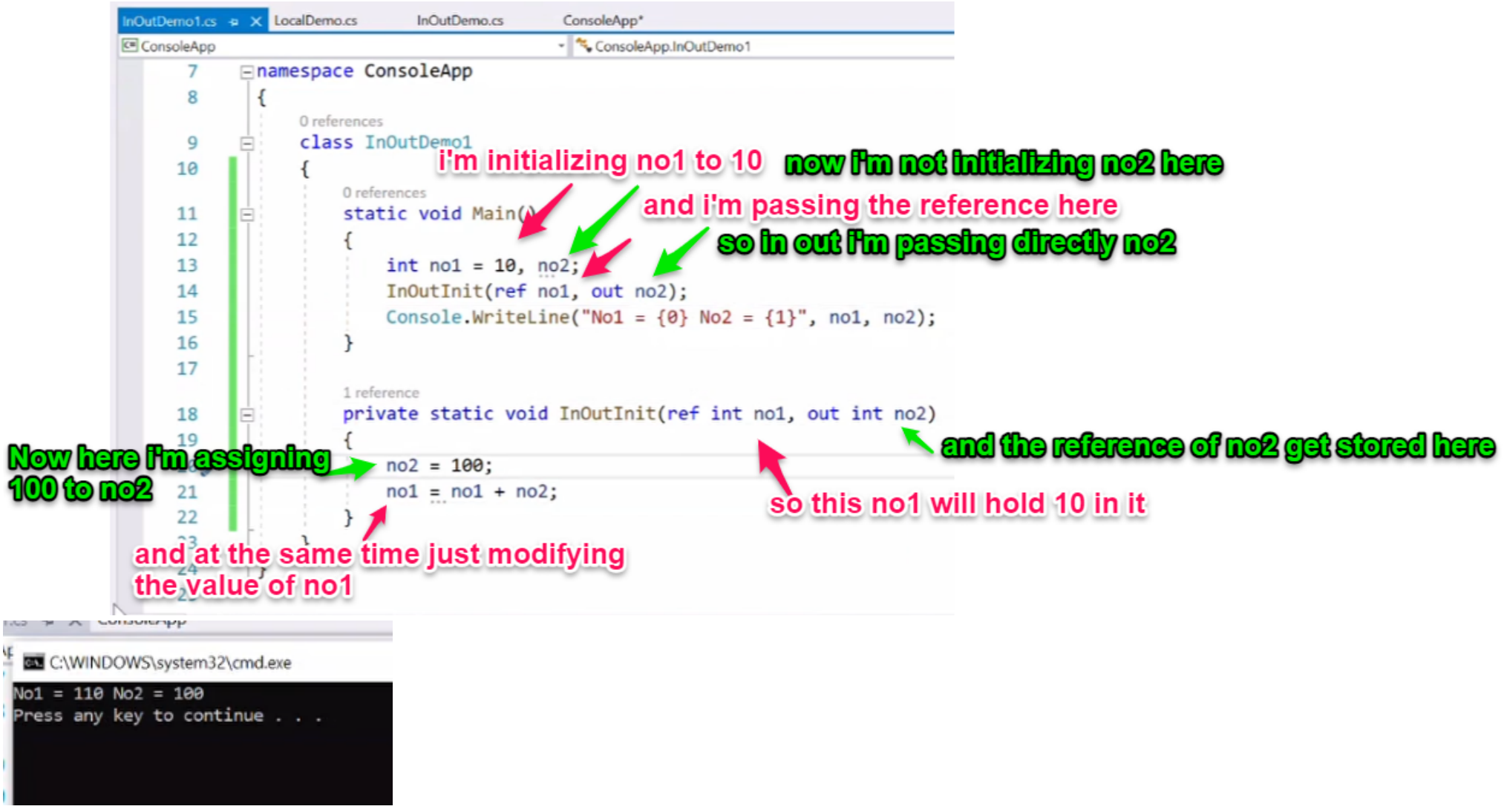
Look at this as soon as i say out it says boss you need to initialize this they are unassigned



Now this makes a difference

In REF i am having a particular value and by saying ref i am passing that particular reference to that particular variable

In Out also i am doing the same thing



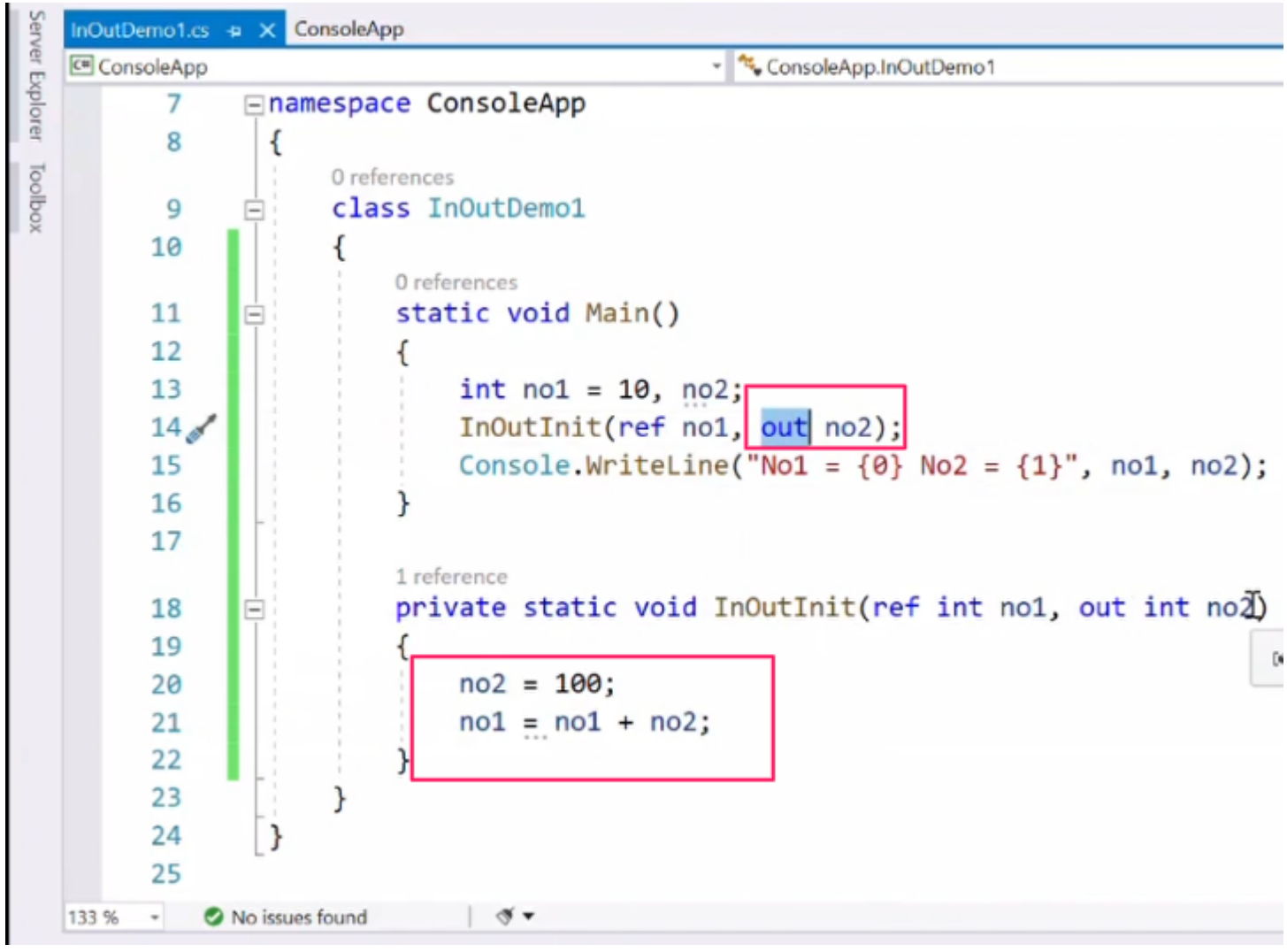
Now look at this ,this is the main difference between ref and out

In both of these cases we will always get the updated value

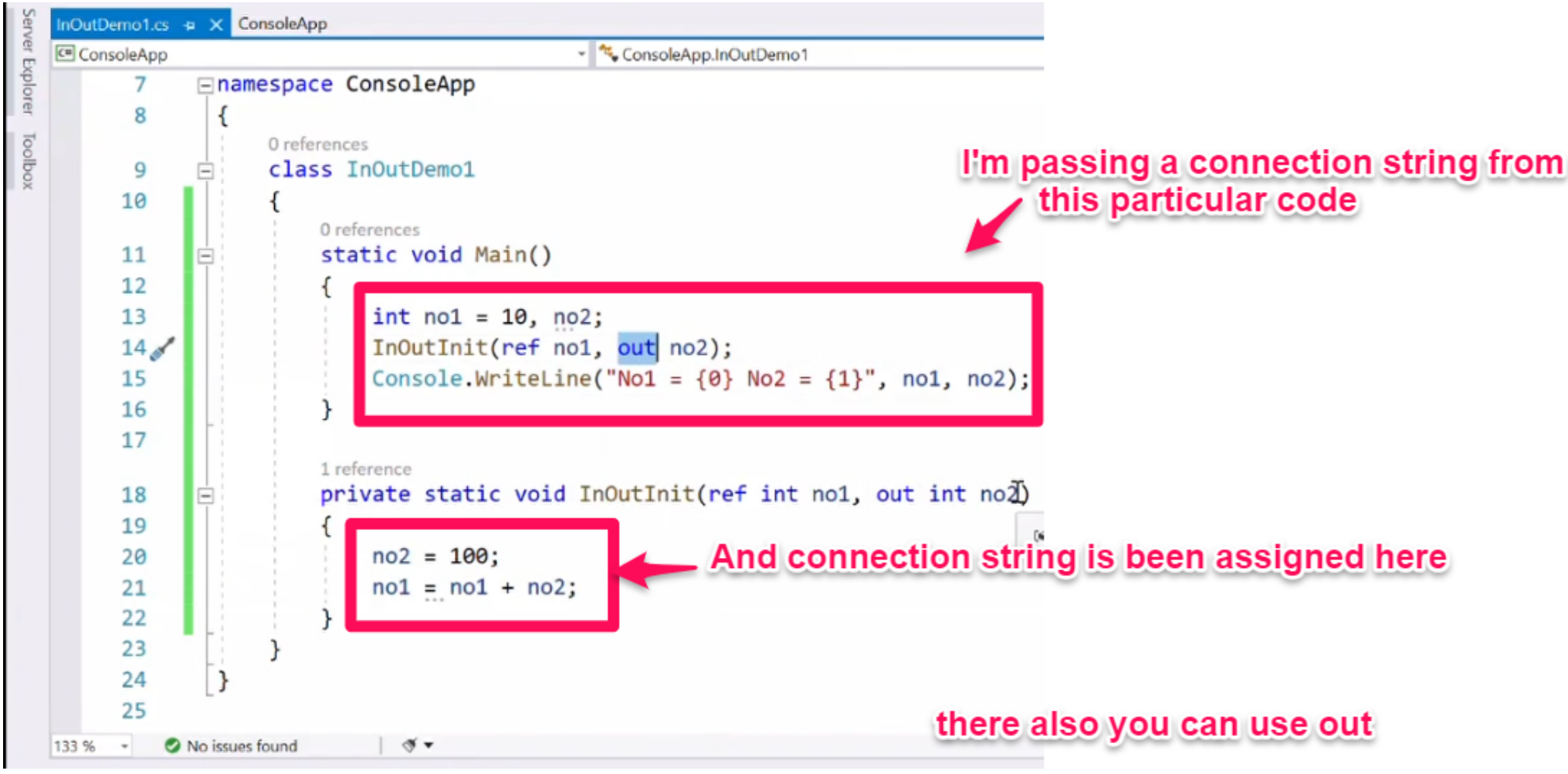
But In Ref 1st we have to initialize and then pass it, and you can manupulate

but when you talk about out, you have to initialize here in the method where it is passed and then you can play with it

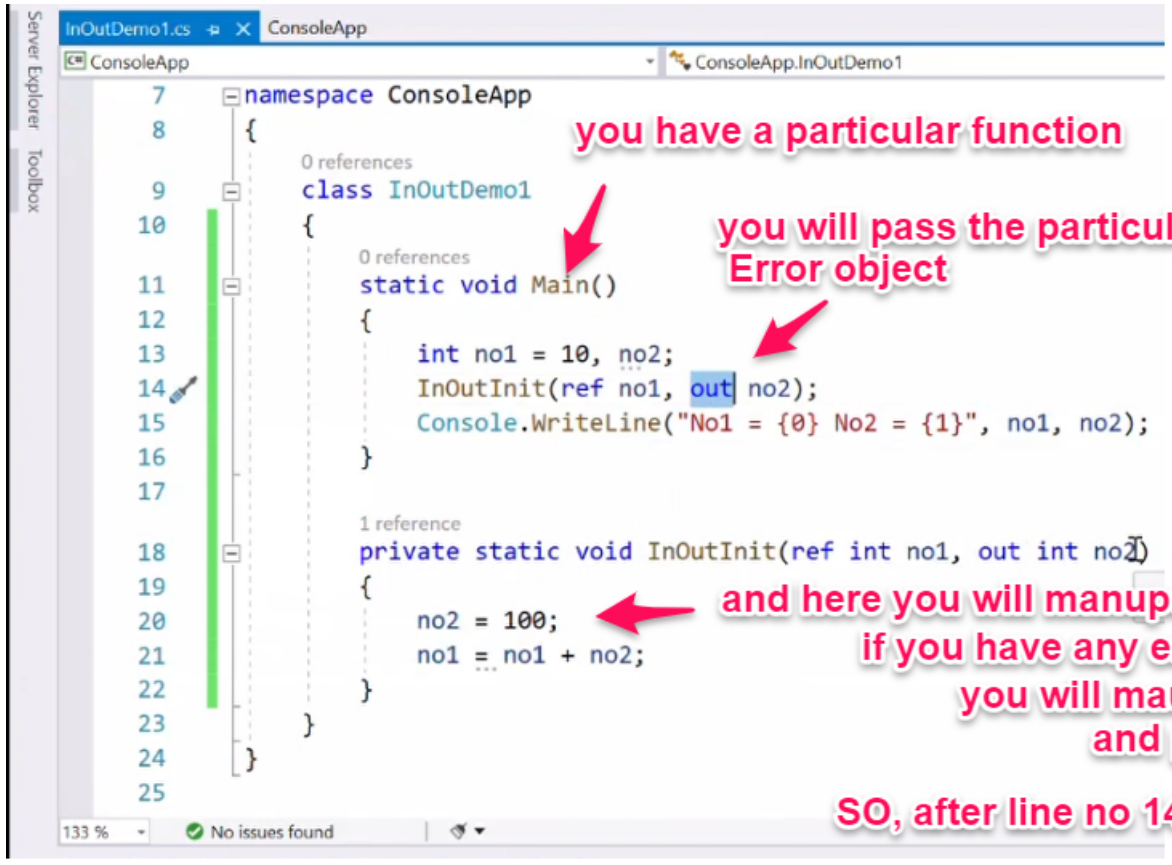
Now where can we use something like this



imagine there is a situation where i don't know the address of a employee so i'll pass a particular address object here and there i am trying to manupulate that address object
address will be initialized in this particular method, so this method will never bothered about address ,he will just store the employees information or customer information
there are lot of such places where you can use out ,may be like i'm creating a connection string



This can again be used in error handeling



you have a particular function

you will pass the particular Error object

and here you will manupulate Error

if you have any error in this particular function you will maupulate that error and put it to this out parameter

SO, after line no 14 you will check if you have any error you will put a message saying Boss " You have a particular error " otherwise you will continue

Output Parameters

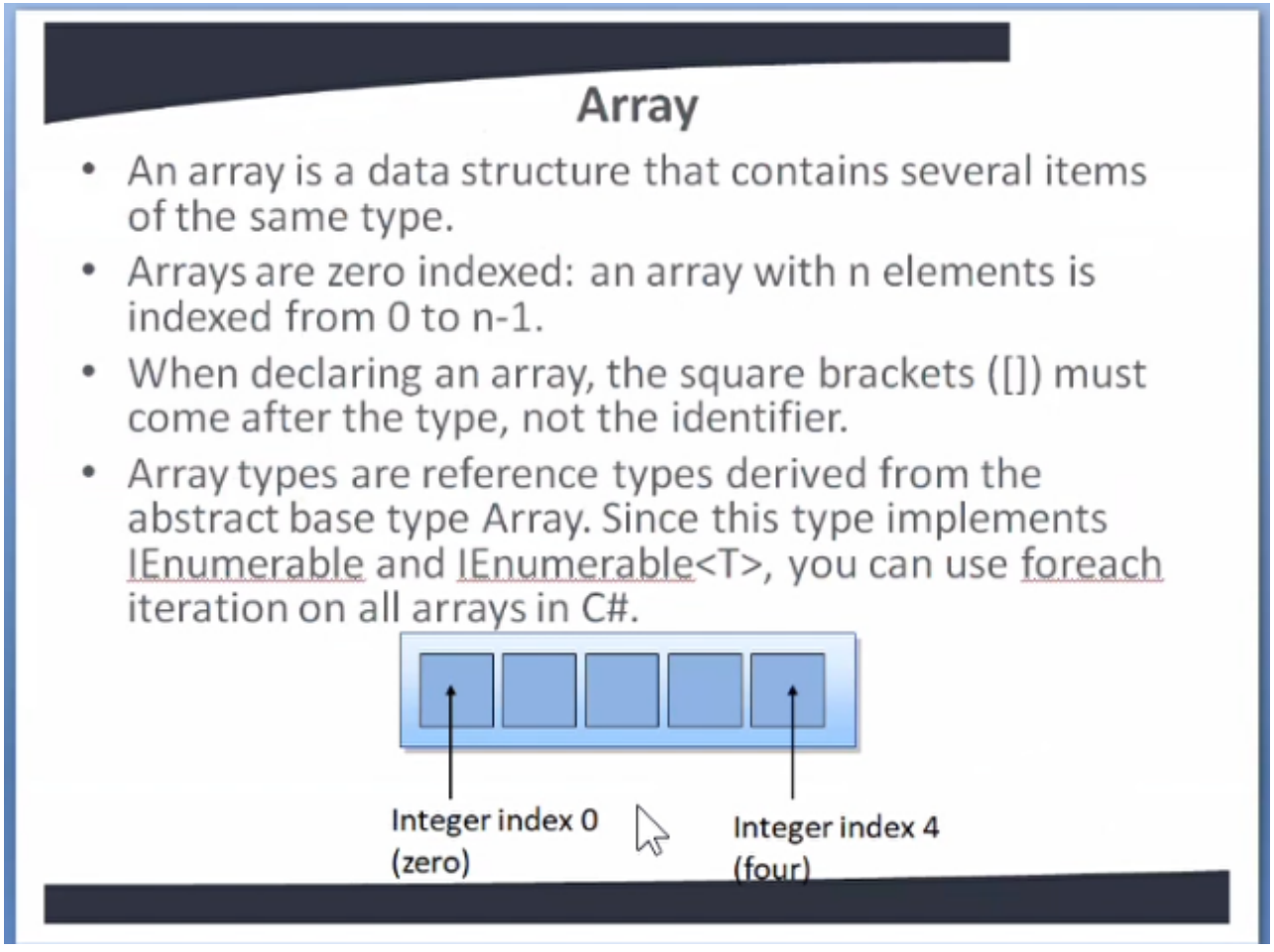
- What are output parameters?
  - Values are passed out but not in
- Using output parameters
  - Like **ref**, but values are not passed into the method
  - Use **out** keyword in method declaration and call

```
static void OutDemo(out int p)
{
        // ...
}
int n;
OutDemo(out n);
```

Guidelines for Passing Parameters

- Mechanisms
  - Pass by value is most common
  - Method return value is useful for single values
  - Use **ref** and/or **out** for multiple return values
  - Only use **ref** if data is transferred both ways
- Efficiency
  - Pass by value is generally the most efficient

Day9 (21-10-2021)



Array is the collection of Similar (Homogenous)Datatype ,Which will share the same name but differs with index number ,Which will starts with 0 and ends with n-1 (Where n will be the number of elements)

```
int arr[] = {1,'a',2,'b',3};
```

All of them will be called by the same name arr arr arr arr.....

But how will you differenciate between 1 and a that's why we go with the **Index Number** which starts with **0** and ends with **n-1 (**Where n will be the number of elements**)**

in our case we have 5 elements so index will go from 0 to 4

So,internally what happened we see example but memory will not be in the same way

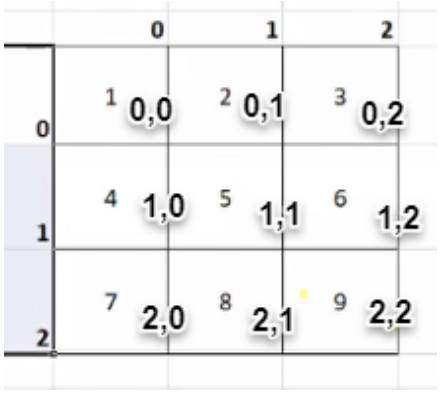
```
int arr[] = {1,'a',2,'b',3};
```

So when i write this internally its is treated as row with 5 colons in it

In Array we Have one Dimention and Multi Dimention Array

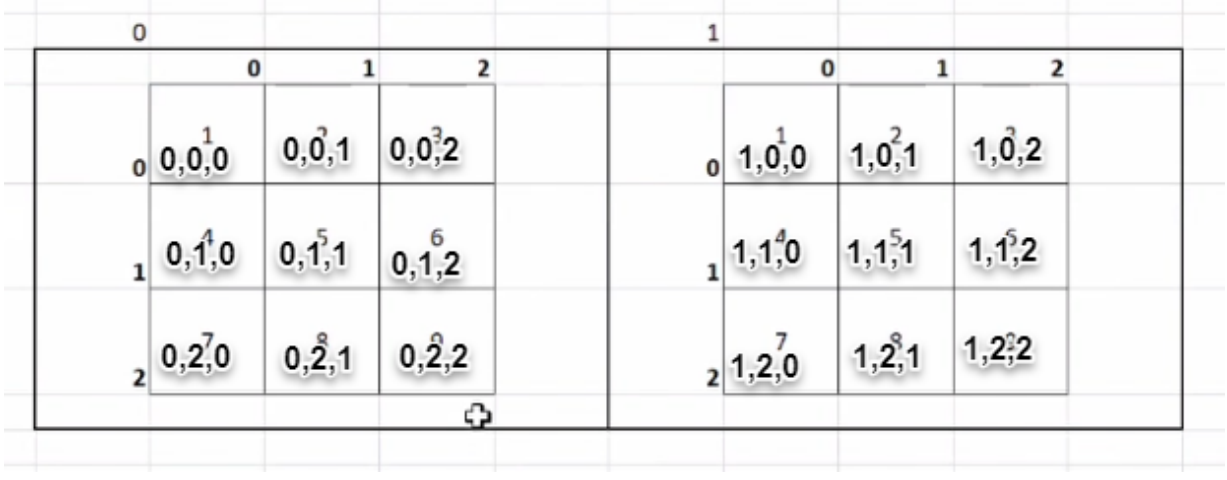
We don't have 2 dimention ,3 dimention ,4 dimention .....

int arr [3] [3]; ----------array with 3 Rows and 3 colons in it

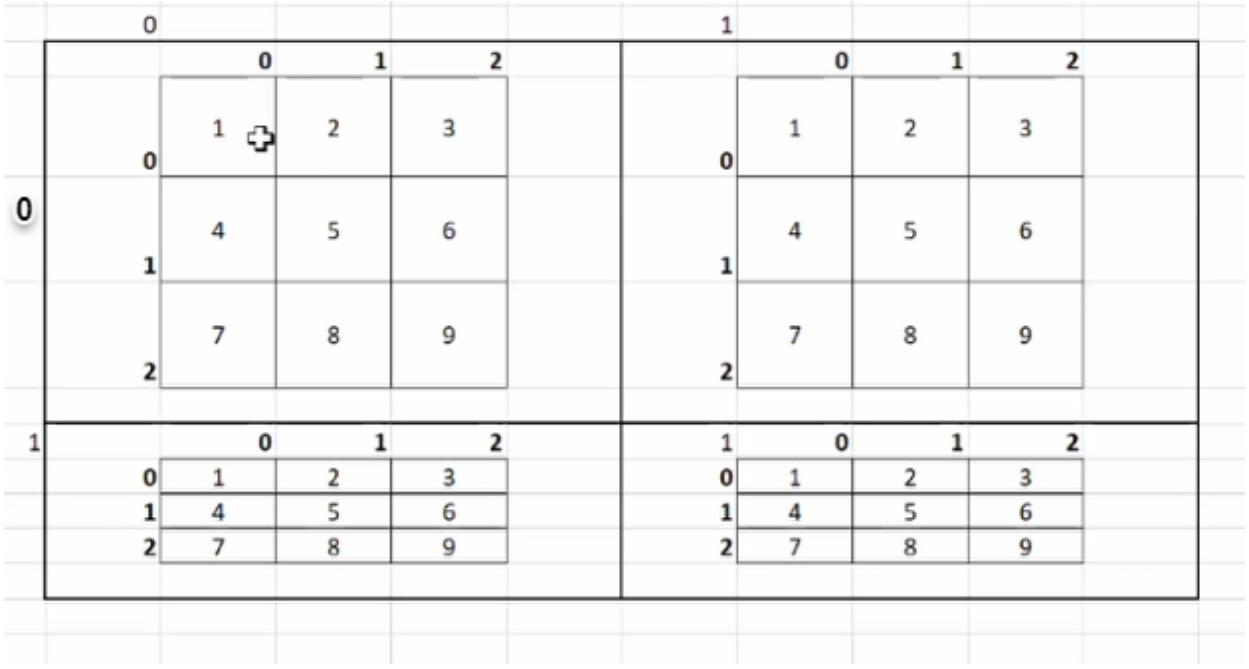


int arr [2] [3] [3]; ----------2 colons which have 3*3 boxes in it

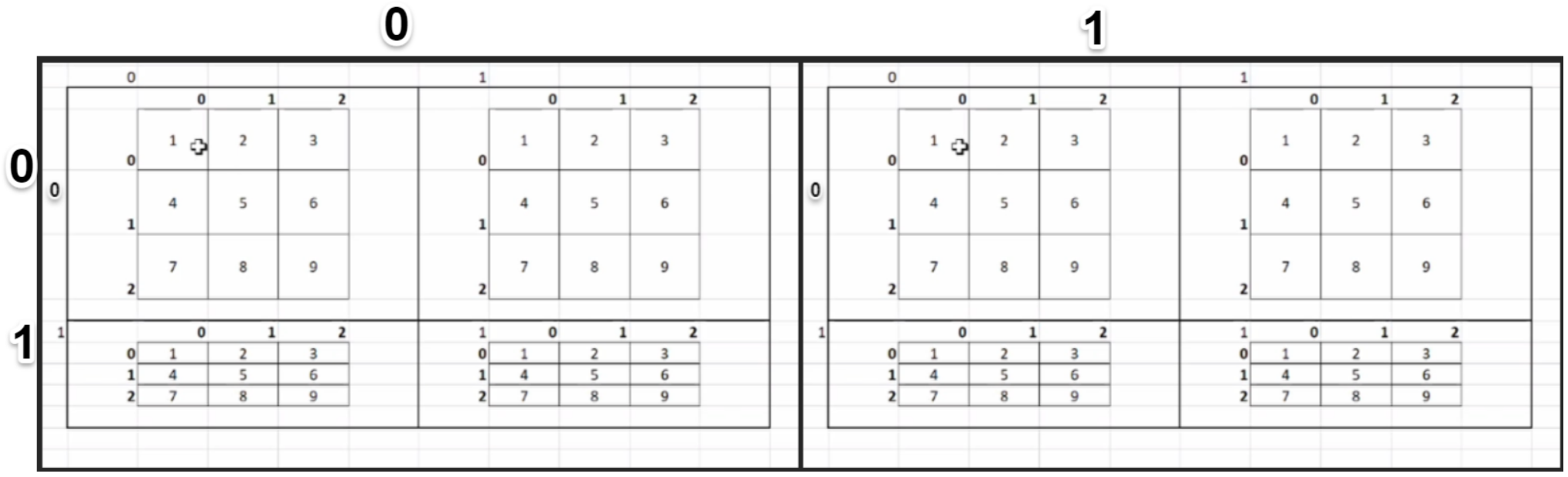
it is like a single dimentional array but each boxes will have 3*3 boxes in it



int arr [2] [2] [3] [3]; ----------2 rows and 2colons each have 3*3 boxes in it



int arr [2] [2] [2] [3] [3];



Now to Implement each box we use **LOOP**

Why LOOP ?

now whenever you want to fetch the data ,anyway we know that our info is stored in row and colon wise

```
int arr[5] ;
arr[0] = 10;
arr[1] = 23;
arr[2] = 23;
arr[3] = 12;
arr[4] = 34;
```

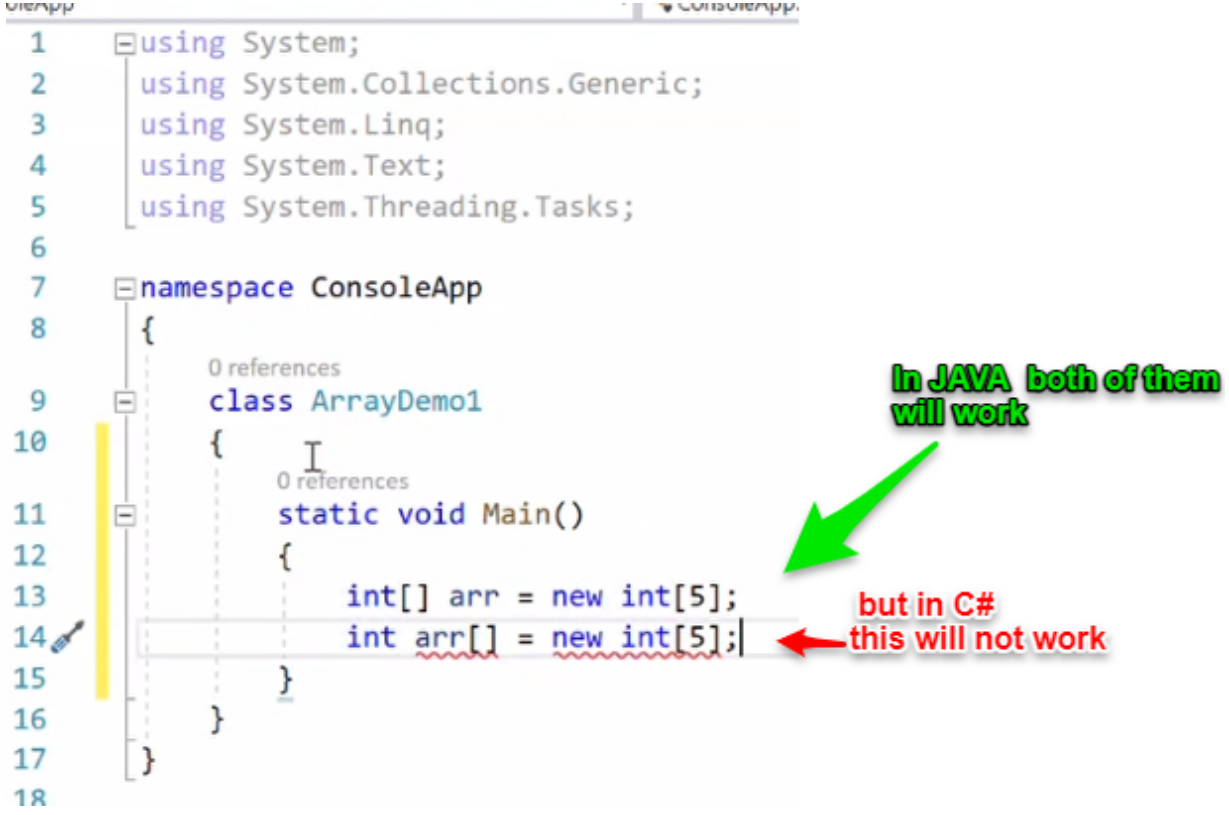
now take a example so see we are getting arr[n] which is a continuous number

HOW do you get this continuous number printed ?

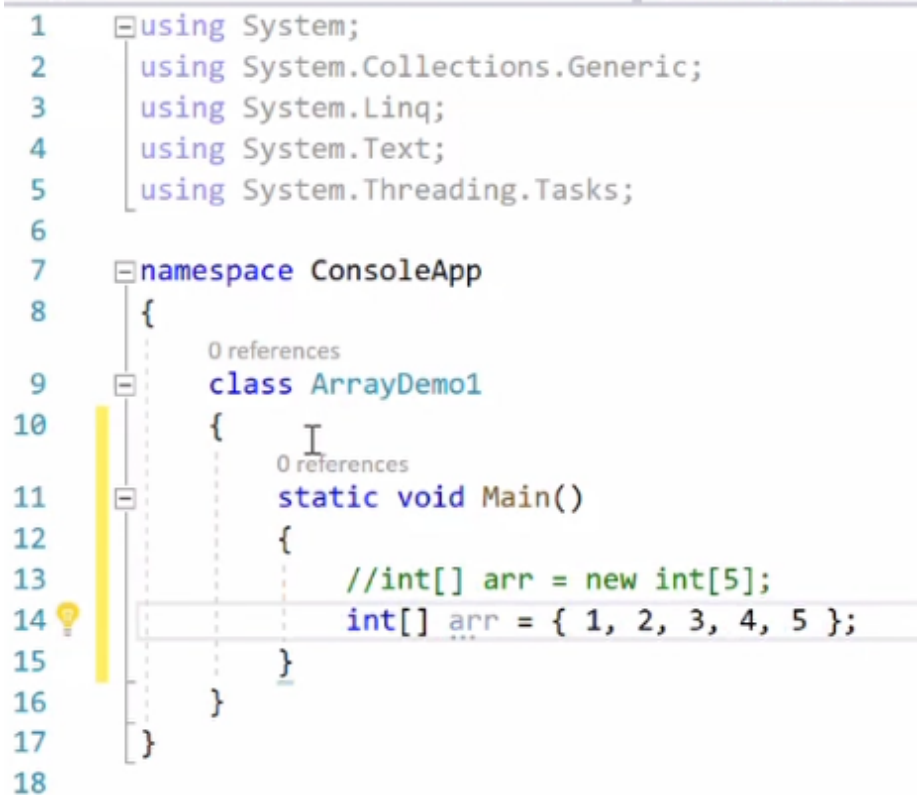
With the help of LOOP (that's a reason we use loops)

Array Initialization

for this in java we have 2 syntax but where as in c# we have only one



Declaration with initialization

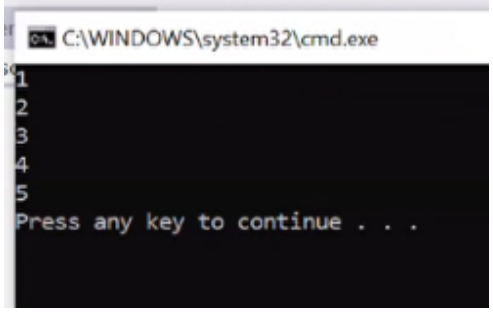


```
1   using System;
2   using System.Collections.Generic;
3   using System.Linq;
4   using System.Text;
5   using System.Threading.Tasks;
6
7   namespace ConsoleApp
8   {
        0 references
9       class ArrayDemo1
10      {
            0 references
11          static void Main()
12          {
13              //int[] arr = new int[5];
14              int[] arr = { 1, 2, 3, 4, 5 };
15          }
16      }
17  }
18
```

Fetch the value from array

```
1   using System;
2   using System.Collections.Generic;
3   using System.Linq;
4   using System.Text;
5   using System.Threading.Tasks;
6
7   namespace ConsoleApp
8   {
        0 references
9       class ArrayDemo1
10      {
            0 references
11          static void Main()
12          {
13              //int[] arr = new int[5];
14              int[] arr = { 1, 2, 3, 4, 5 };
15              for (int i = 0; i < 5; i++)
16              {
17                  Console.WriteLine(arr[i]);
18              }
19          }
20      }
```

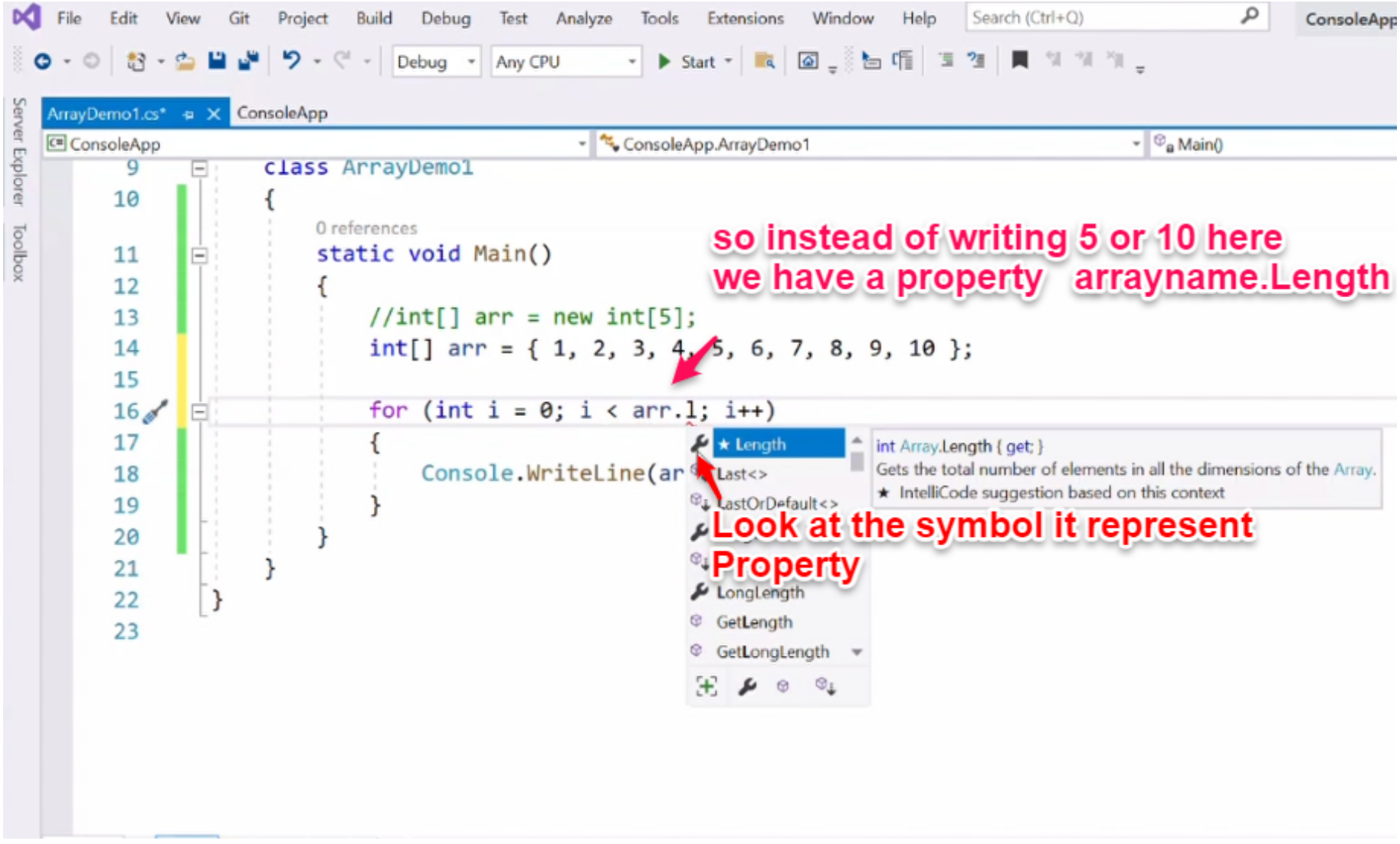
No issues found

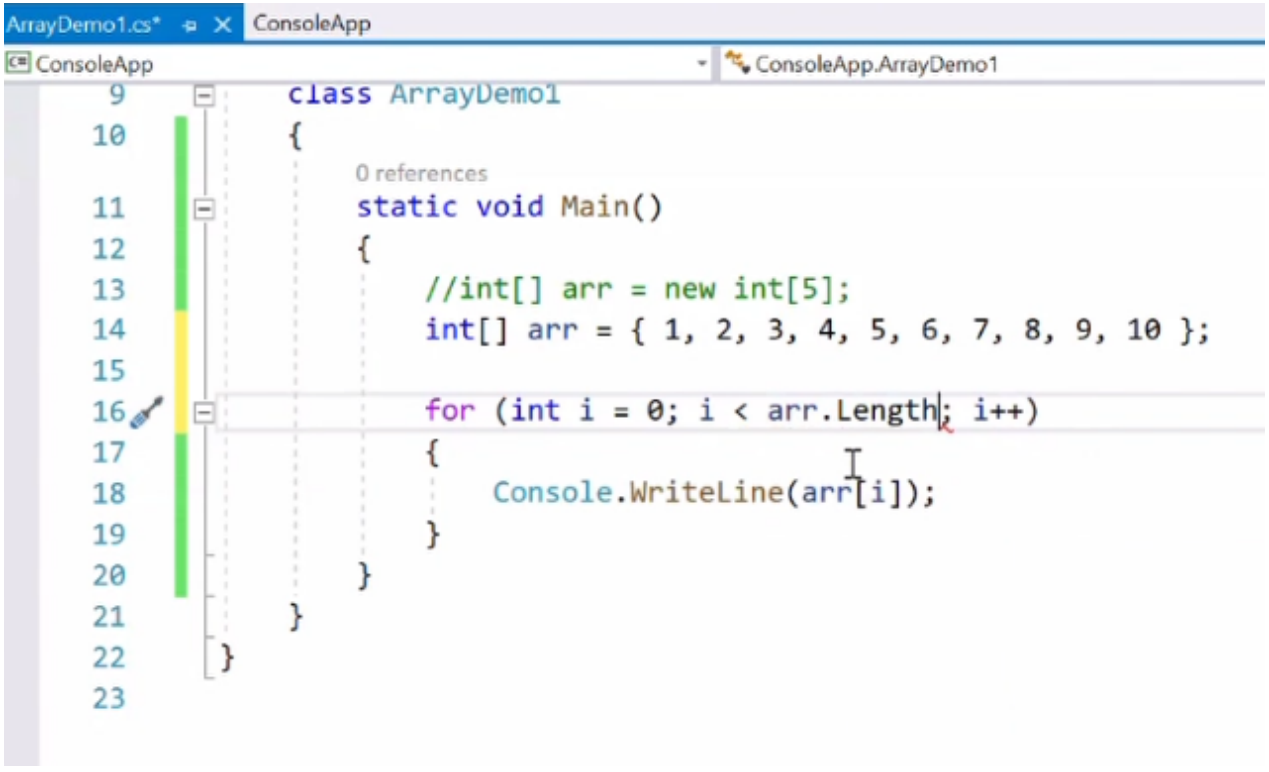


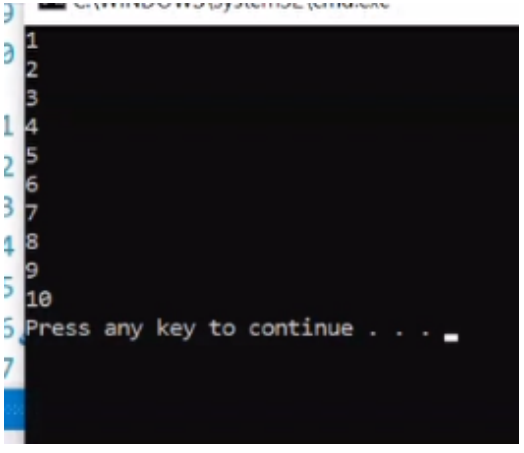
now what if we add few more element here ,will this loop still work **No**

because it run from 0 to 4 only i.e only first 5 element only

.Length


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
ConsoleApp
Debug
Any CPU
Start
ArrayDemo1.cs*
ConsoleApp
ConsoleApp.ArrayDemo1
Main()
Server Explorer
Toolbox
class ArrayDemo1
{
0 references
static void Main()
{
//int[] arr = new int[5];
int[] arr = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
for (int i = 0; i < arr.l; i++)
{
Console.WriteLine(ar
}
}
}
}
so instead of writing 5 or 10 here
we have a property arrayname.Length
Length
Last<>
LastOrDefault<>
LongLength
GetLength
GetLongLength
int Array.Length { get; }
Gets the total number of elements in all the dimensions of the Array.
IntelliCode suggestion based on this context
Look at the symbol it represent
Property





Ab hum for me initialize karre ;condition check karre; increment karre

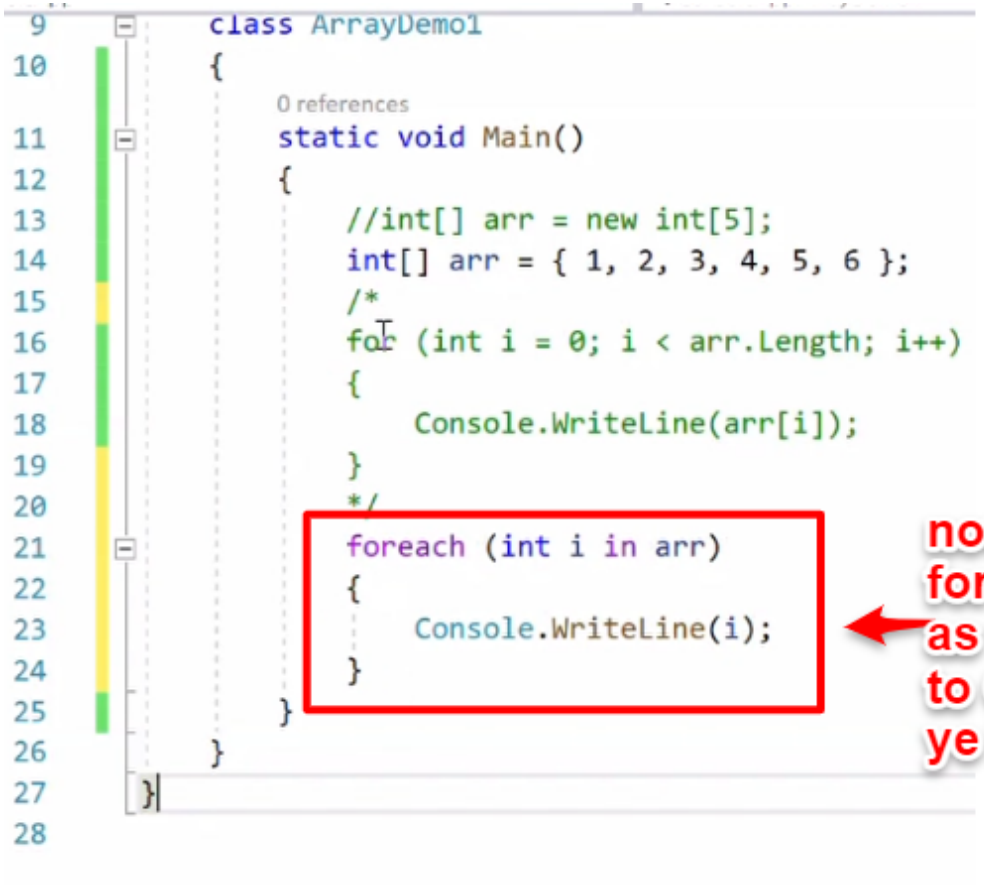
then value fetch karre so i am doing 4jobs at this particular time .

So, instead of using for if you want to fetch this you can always use

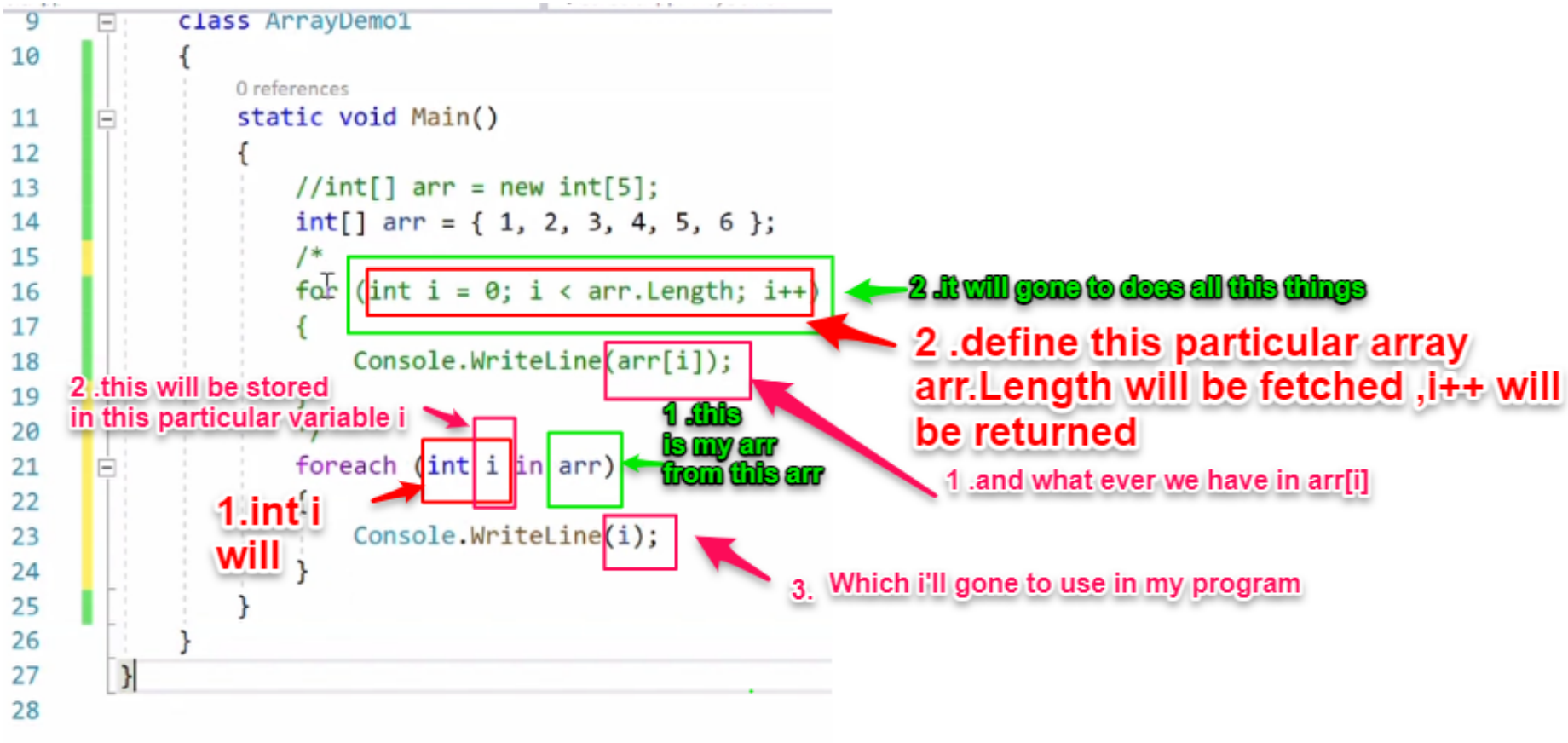
foreach

how foreach work?

it is the same as for now,here my i will going to have the fetched value



now internally this
foreach will be converted
as this for loop
to C# ne or microsoft ne hamara
ye kaam bhi aasan kar diya



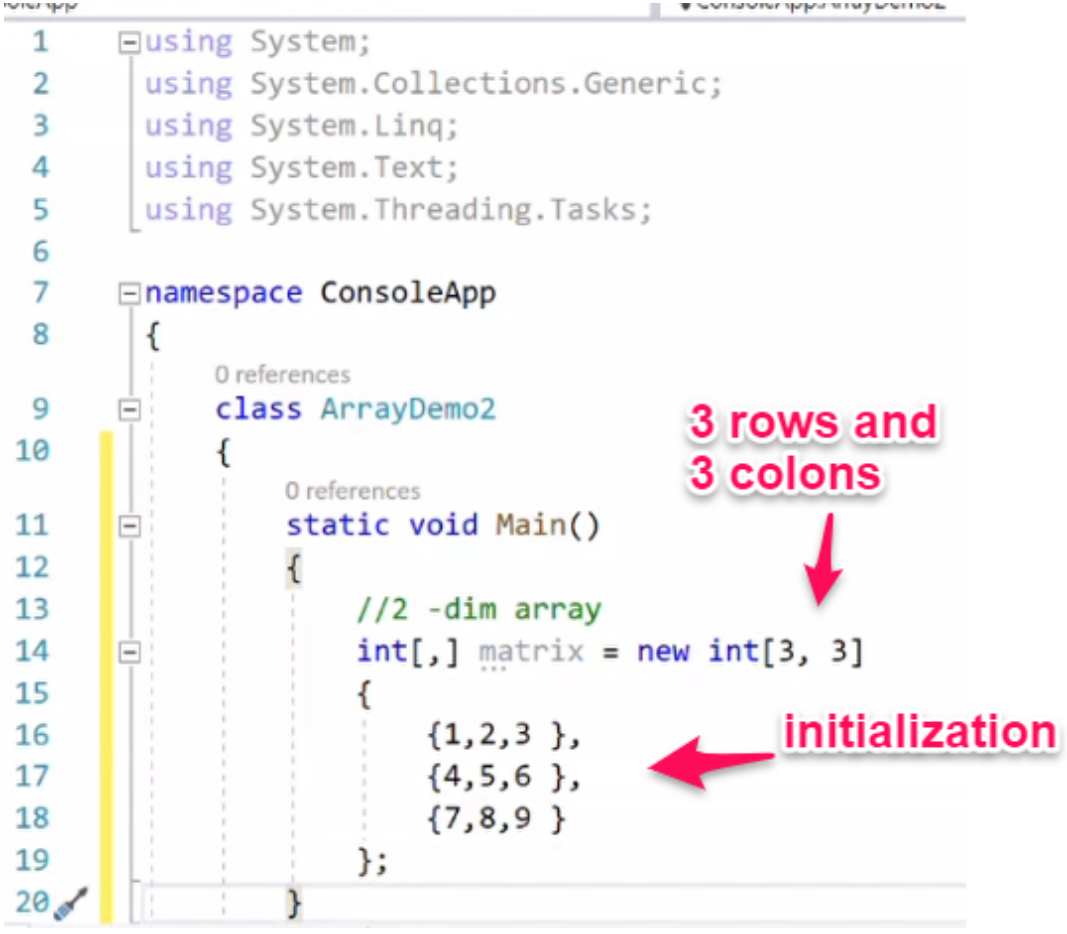
Assignment 1:-

1. Search for the element (Write a program to accept 10 number from the user and ask for search key ,display the element position if the element is not found print the message element not found)(here we have to find onlt the 1st occourace means if the element is found in 1st place so we print that the element is found in this place and we come out) for ex :-in the above program if user enter the search key as 1 to 1 arr[0]location pe hai ,so o/p= the element 1 is found at the position 1 and you will come out .....if user enter the search key as 4 to 4 arr[3]location pe hai ,so o/p= the element 4 is found at the position 4 and you will come out.....if user enter the search key as 10 so 10 is not there in our array ,so o/p= element 10 is not found
2. write a program to find all the occourance (for ex:- agar 1 arr[0] pe bhi hai and arr[5] pe bhi hai then o/p= the element 1 is found at the position 1 and 6 and you will come out).....if user enter the search key as 10 so 10 is not there in our array ,so o/p= element 10 is not found

Multi Dimentional Array

1. Whenever you want to create multidimentional array you should always put comma

arraytype [,] array name = new arraytype[,]



How to Fetch the data from this ?

```
10      {
            0 references
11          static void Main()
12          {
13              //2 -dim array
14              int[,] matrix = new int[3, 3]
15              {
16                  { 1, 2, 3 },
17                  { 4, 5, 6 },
18                  { 7, 8, 9 }
19              };
20              Console.WriteLine("Matrix value is");
21              for (int i = 0; i < 3; i++)
22              {
23                  for (int j = 0; j < 3; j++)
24                  {
25                      Console.Write(matrix[i,j] + " ");
26                  }
27                  Console.WriteLine();
28              }
29          }
30      }
```

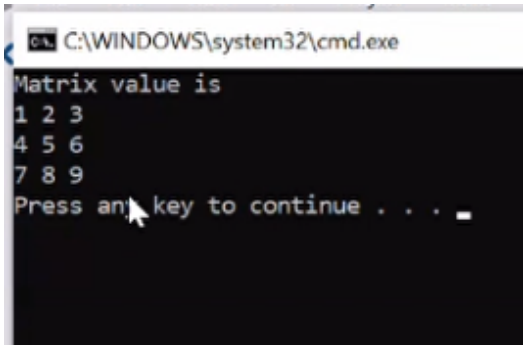
this will get me the rows

this will give me colons

i'll give some space

it will print me the value of matrix[i,j]

to print the content in the next line



Assignment 2 :

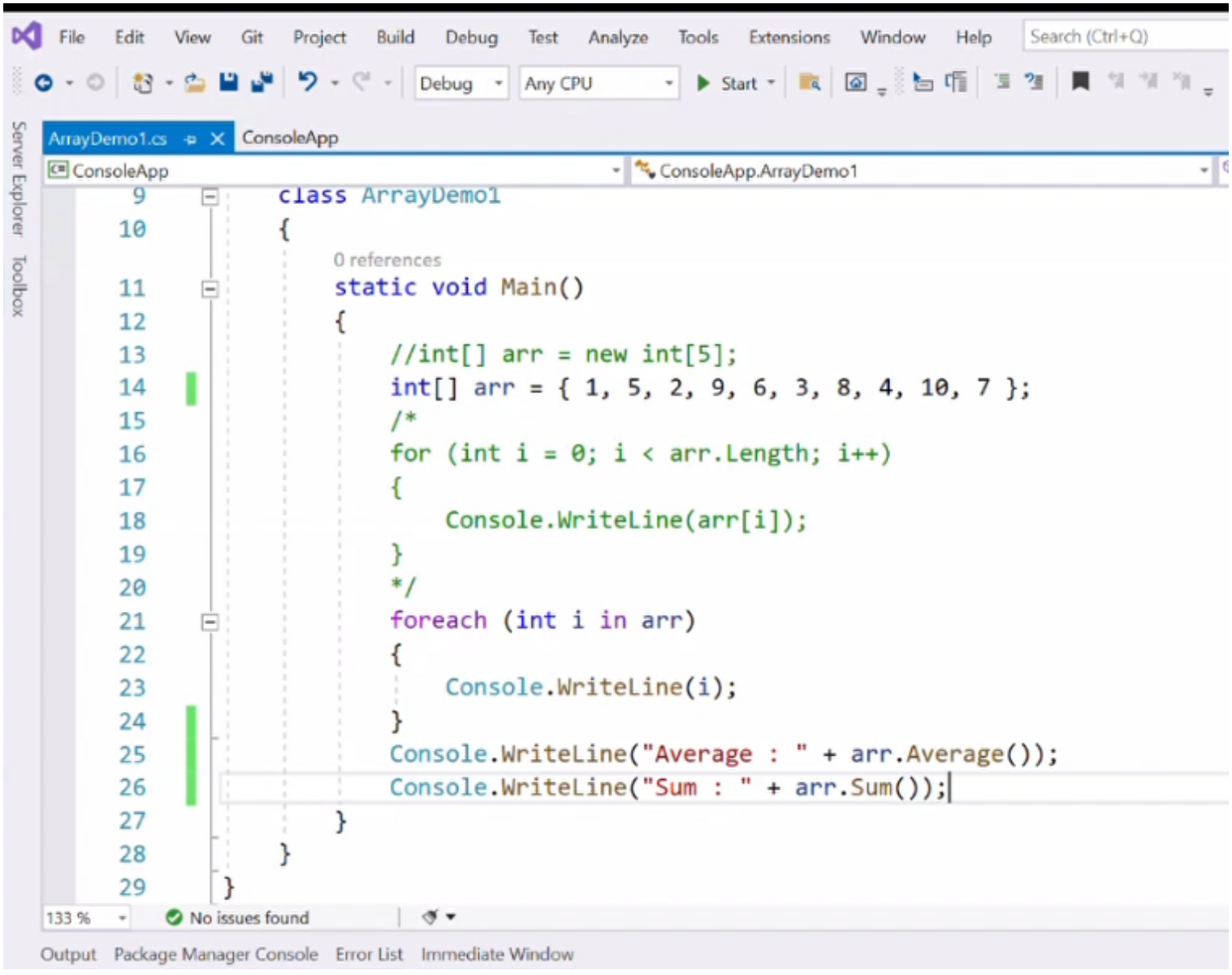
1. Write a program to print 1st row element ,last row element , 1st colon element ,last colon element ,both diagonal element .

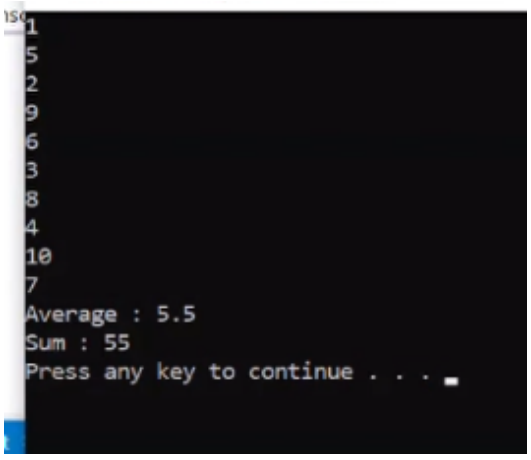
With array what we have created has some methods Explore them like

arrayname.Average( )----------returns average of array elements

arrayname.Sum( )----------returns sum of array elements

and may more we have pls explore


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
Debug
Any CPU
Start
ArrayDemo1.cs
ConsoleApp
ConsoleApp
ConsoleApp.ArrayDemo1
Server Explorer
Toolbox
class ArrayDemo1
{
0 references
static void Main()
{
//int[] arr = new int[5];
int[] arr = { 1, 5, 2, 9, 6, 3, 8, 4, 10, 7 };
/*
for (int i = 0; i < arr.Length; i++)
{
Console.WriteLine(arr[i]);
}
*/
foreach (int i in arr)
{
Console.WriteLine(i);
}
Console.WriteLine("Average : " + arr.Average());
Console.WriteLine("Sum : " + arr.Sum());
}
}
}
133 %
No issues found
Output
Package Manager Console
Error List
Immediate Window



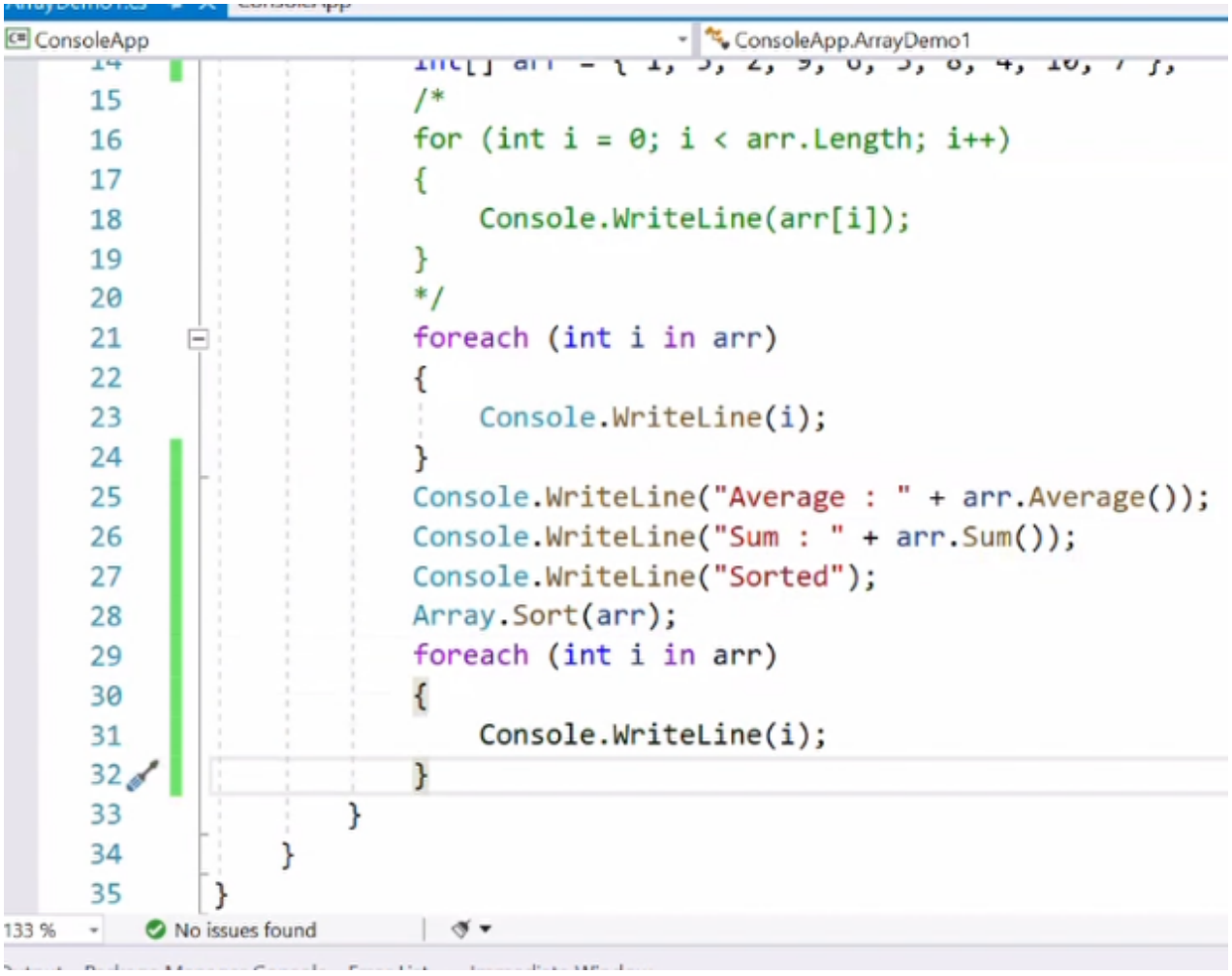
and With array we have some methods

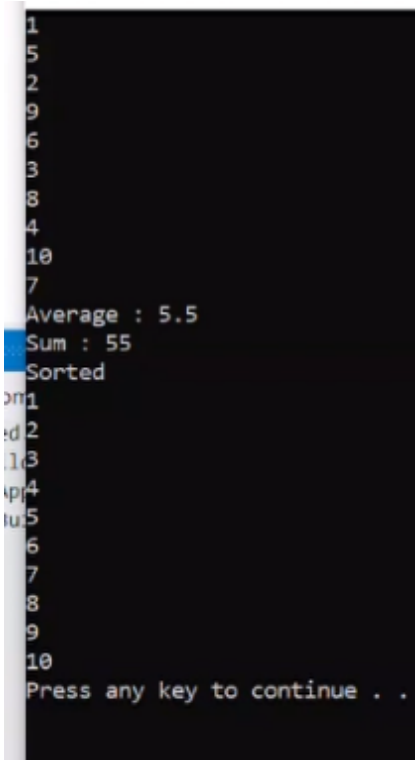
Array.sort(arrayname); ----------return the sorted array.

Array.Reverse(arrayname);

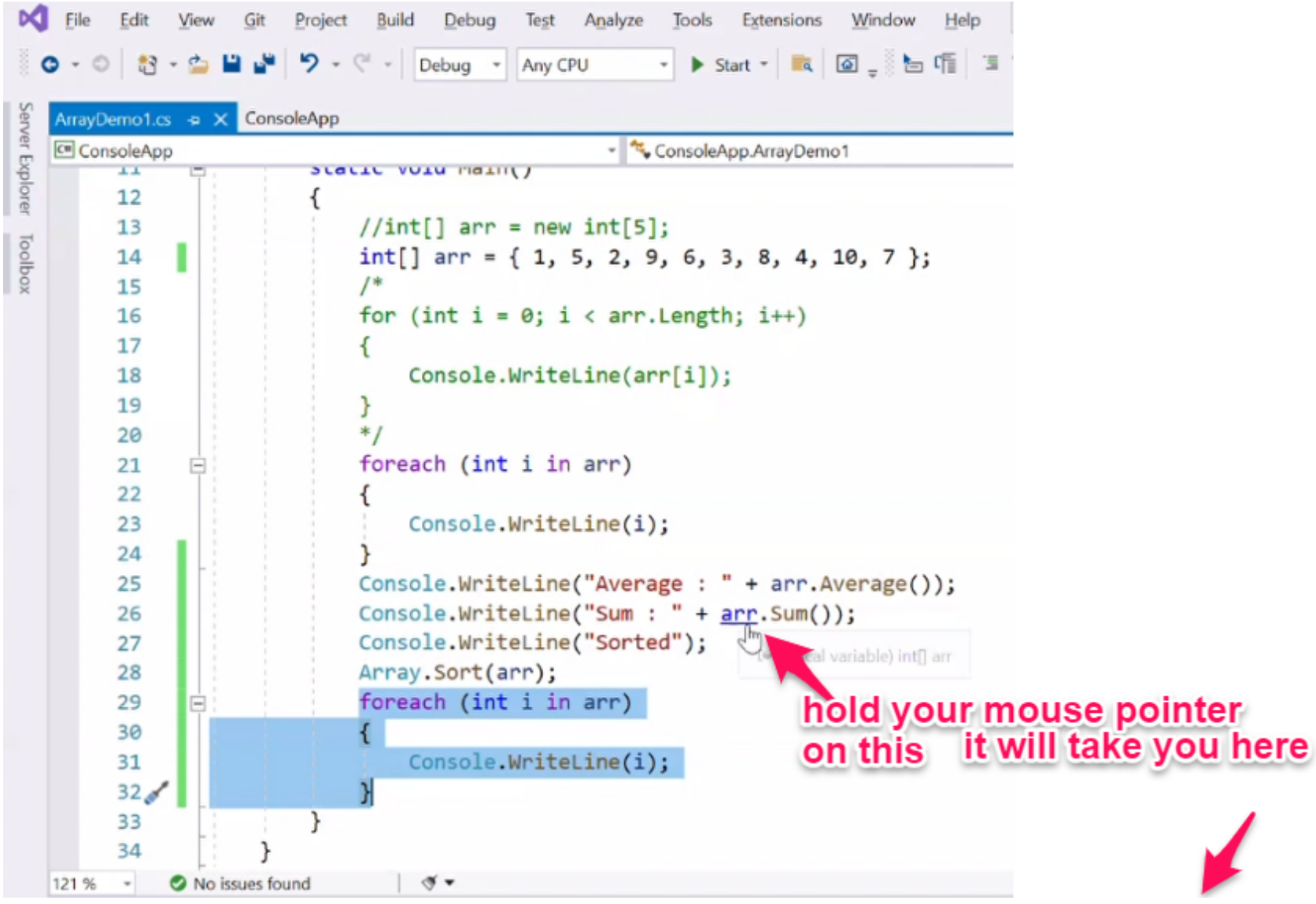
and may more we have pls explore

So you need to figure out what are the other methods what **arr.Average()** as an object will gone to support and What are the different methods which **Array.Sort()** Array will gone to support

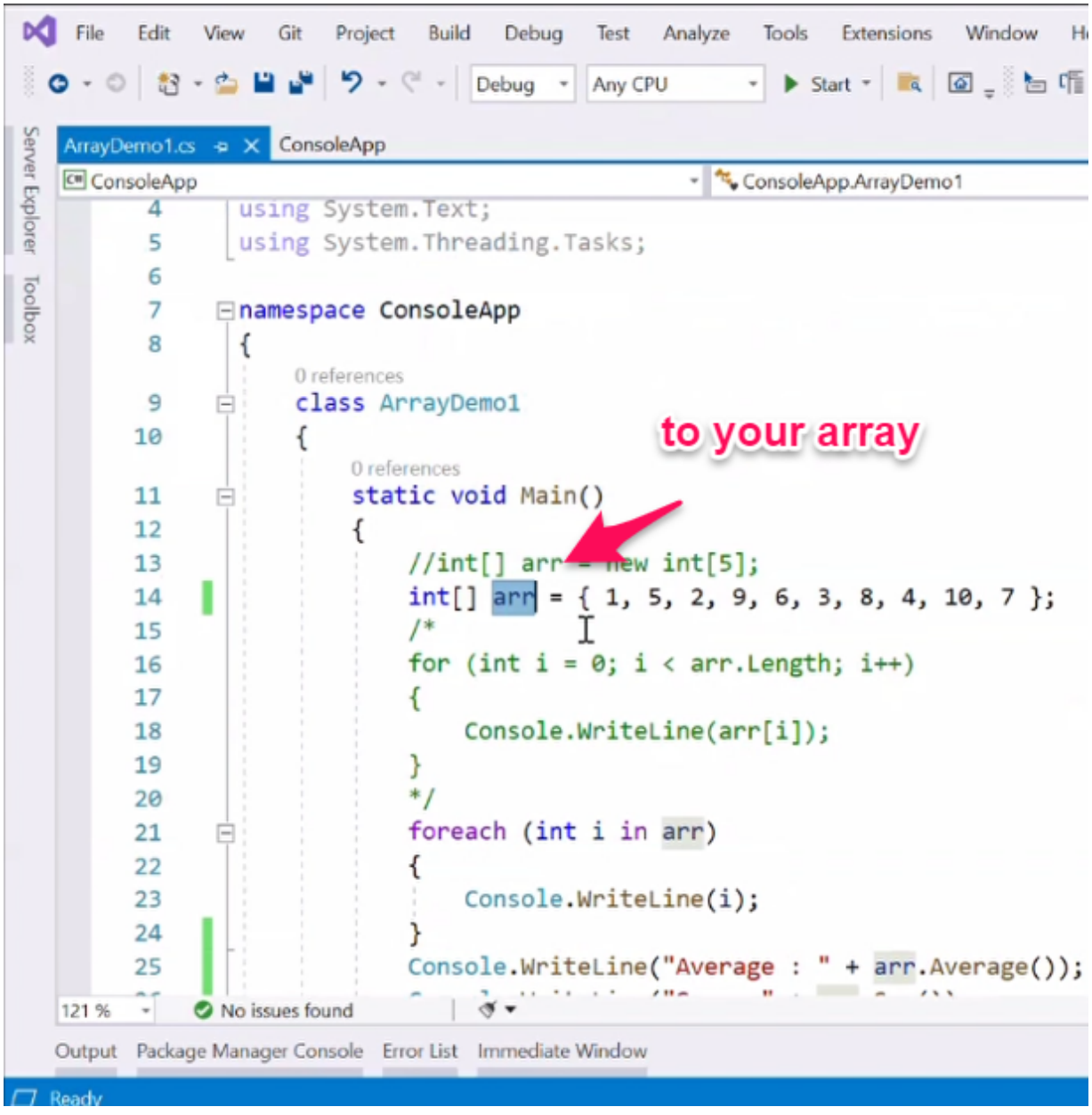

ConsoleApp
ConsoleApp.ArrayDemo1
int[] arr = { 1, 3, 2, 9, 6, 5, 8, 4, 10, 7 };
/*
for (int i = 0; i < arr.Length; i++)
{
Console.WriteLine(arr[i]);
}
*/
foreach (int i in arr)
{
Console.WriteLine(i);
}
Console.WriteLine("Average : " + arr.Average());
Console.WriteLine("Sum : " + arr.Sum());
Console.WriteLine("Sorted");
Array.Sort(arr);
foreach (int i in arr)
{
Console.WriteLine(i);
}
}
}
}
133 %
No issues found

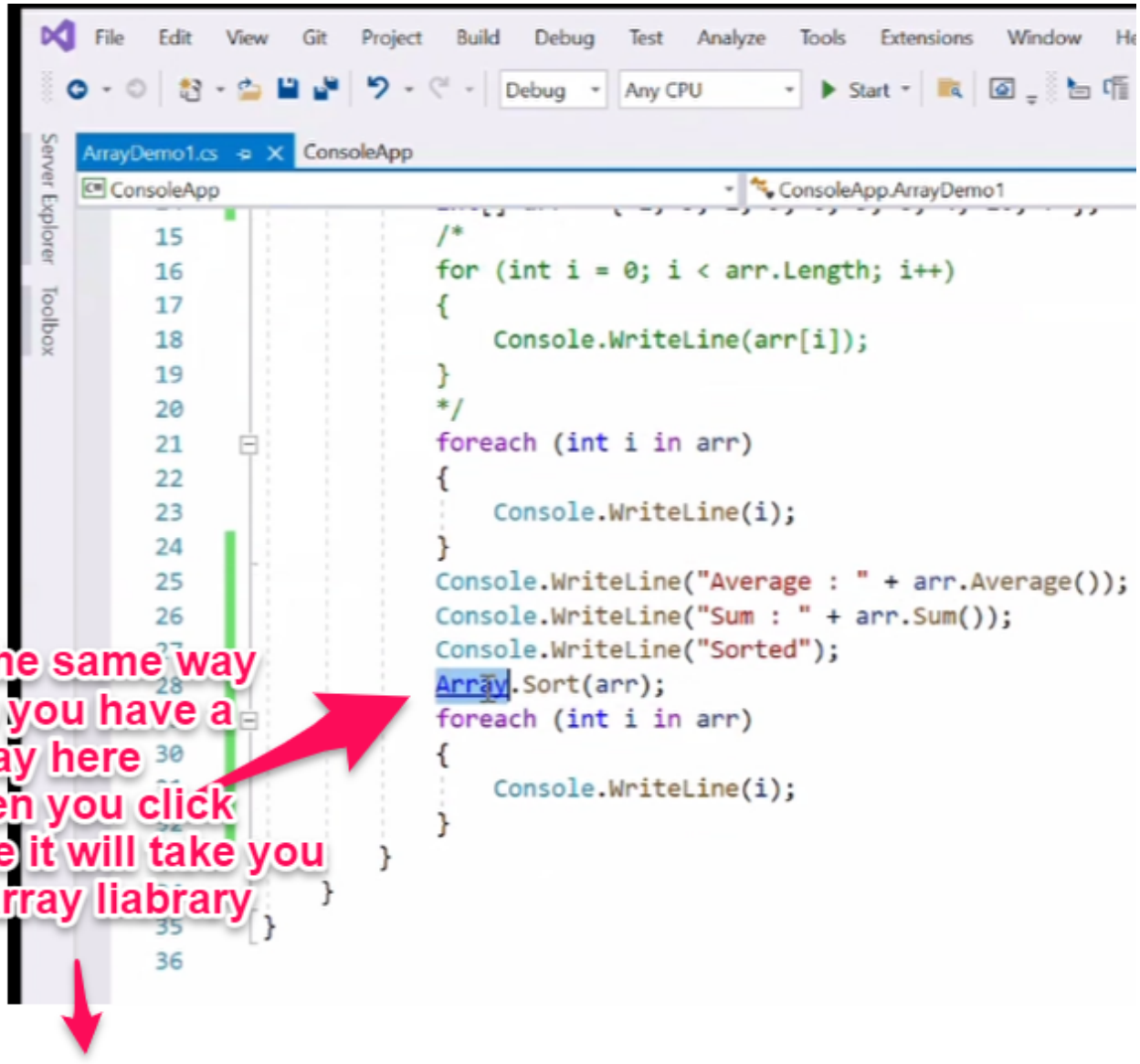


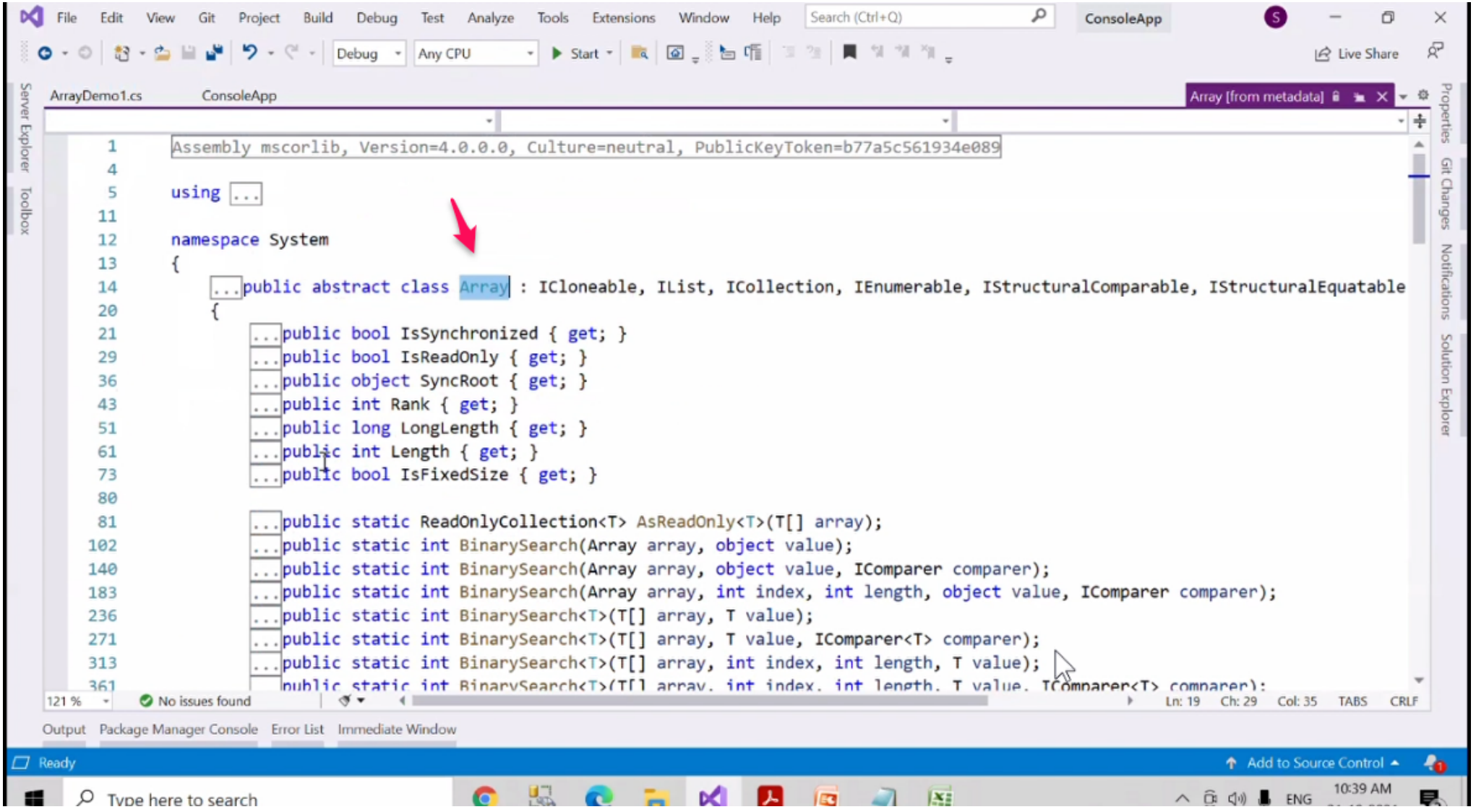
how to dive little deep in it and learn



hold your mouse pointer on this it will take you here

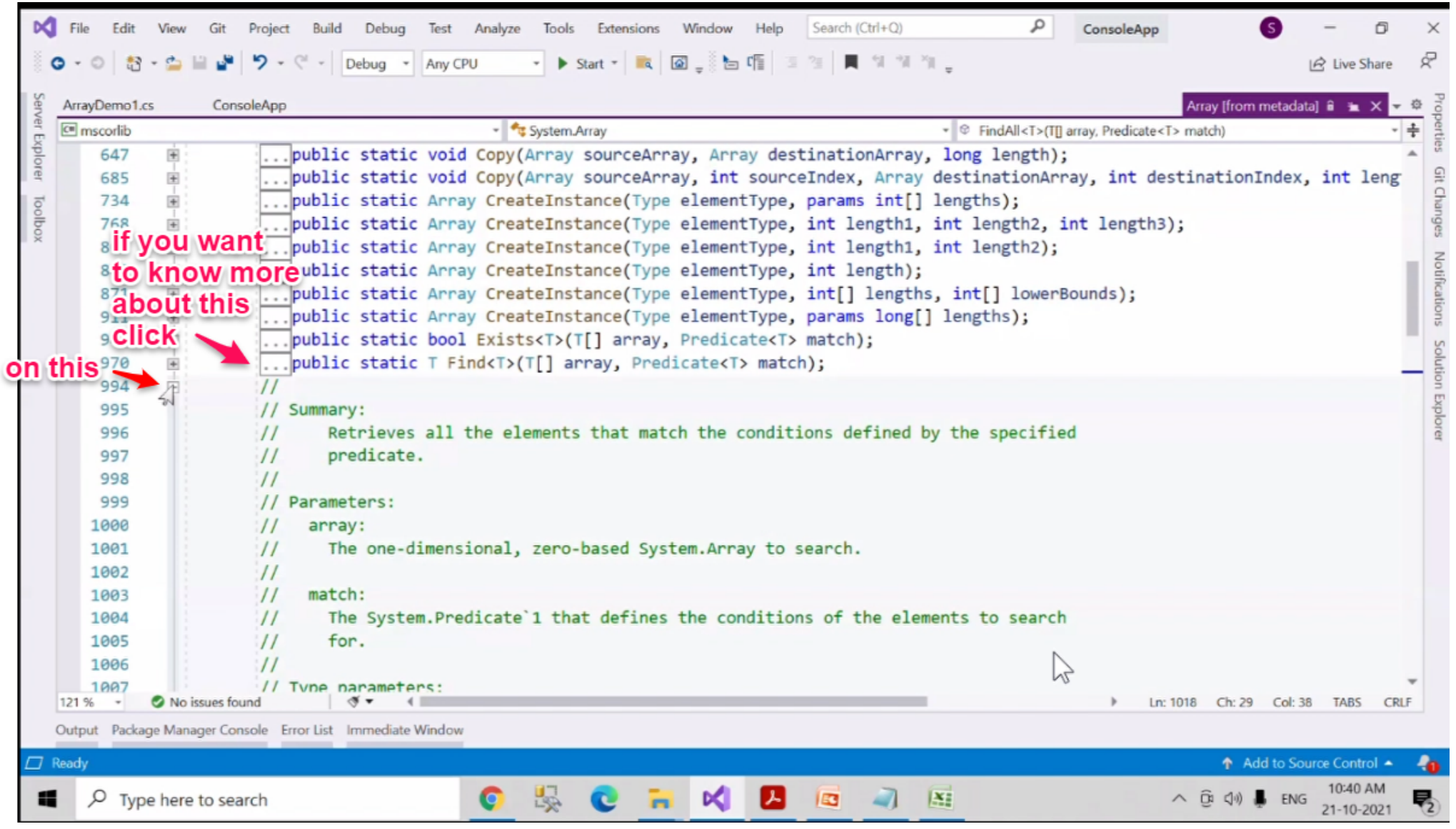

File Edit View Git Project Build Debug Test Analyze Tools Extensions Window
Debug
Any CPU
Start
ArrayDemo1.cs
ConsoleApp
ConsoleApp
ConsoleApp.ArrayDemo1
Server Explorer
Toolbox
using System.Text;
using System.Threading.Tasks;
namespace ConsoleApp
{
0 references
class ArrayDemo1
{
to your array
0 references
static void Main()
{
//int[] arr = new int[5];
int[] arr = { 1, 5, 2, 9, 6, 3, 8, 4, 10, 7 };
/*
for (int i = 0; i < arr.Length; i++)
{
Console.WriteLine(arr[i]);
}
*/
foreach (int i in arr)
{
Console.WriteLine(i);
}
Console.WriteLine("Average : " + arr.Average());
121 %
No issues found
Output
Package Manager Console
Error List
Immediate Window
Ready


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window
Debug
Any CPU
Start
ArrayDemo1.cs
ConsoleApp
ConsoleApp
ConsoleApp.ArrayDemo1
Server Explorer
Toolbox
/*
for (int i = 0; i < arr.Length; i++)
{
Console.WriteLine(arr[i]);
}
*/
foreach (int i in arr)
{
Console.WriteLine(i);
}
Console.WriteLine("Average : " + arr.Average());
Console.WriteLine("Sum : " + arr.Sum());
Console.WriteLine("Sorted");
Array.Sort(arr);
foreach (int i in arr)
{
Console.WriteLine(i);
}
in the same way see you have a Array here when you click here it will take you to array liabrary



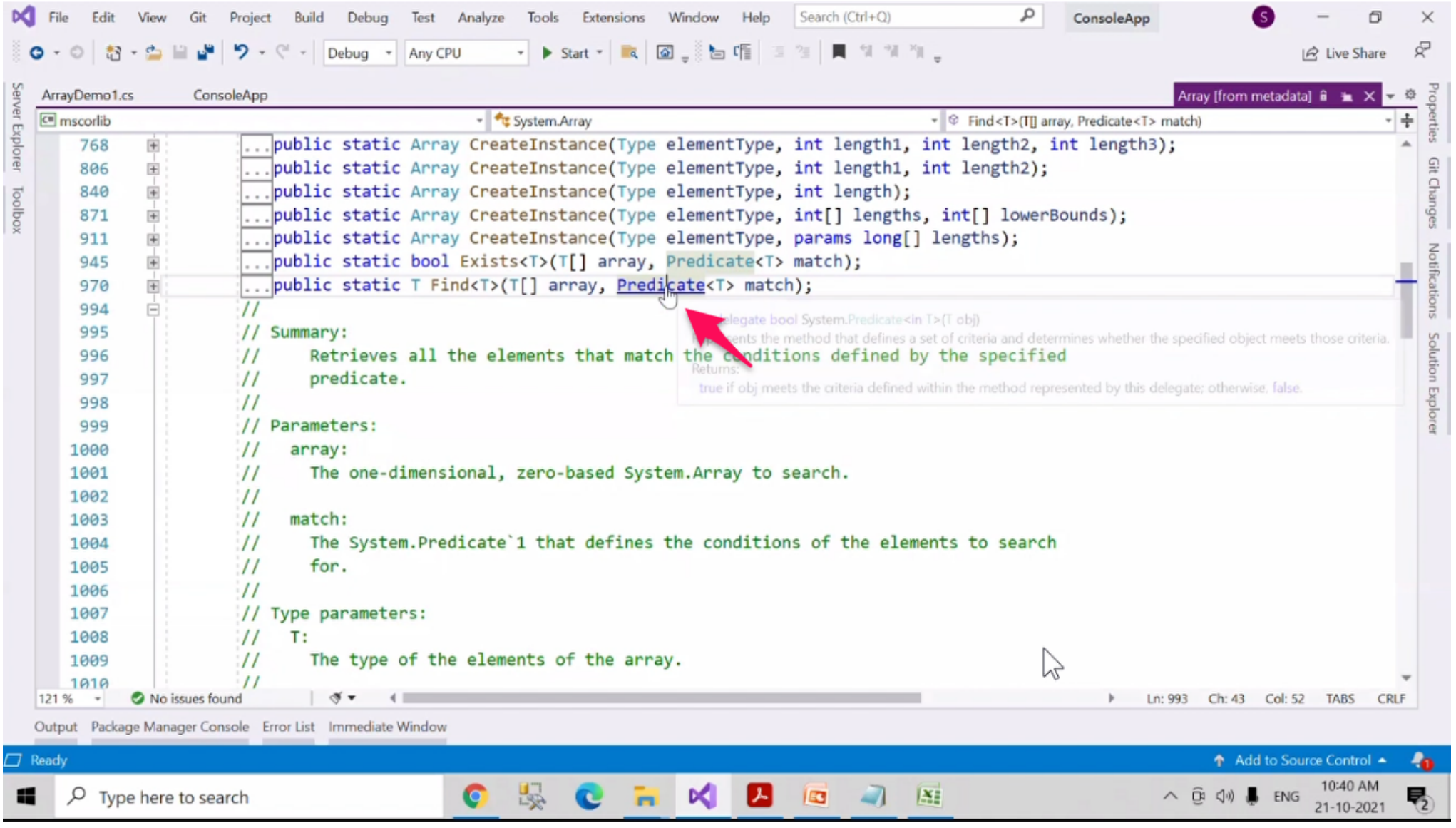
This is my meta data you can see that array has soo many methods in it ,,,,,no need to write any search algorithm by you self you already have a **binary search** So you can always use it ,

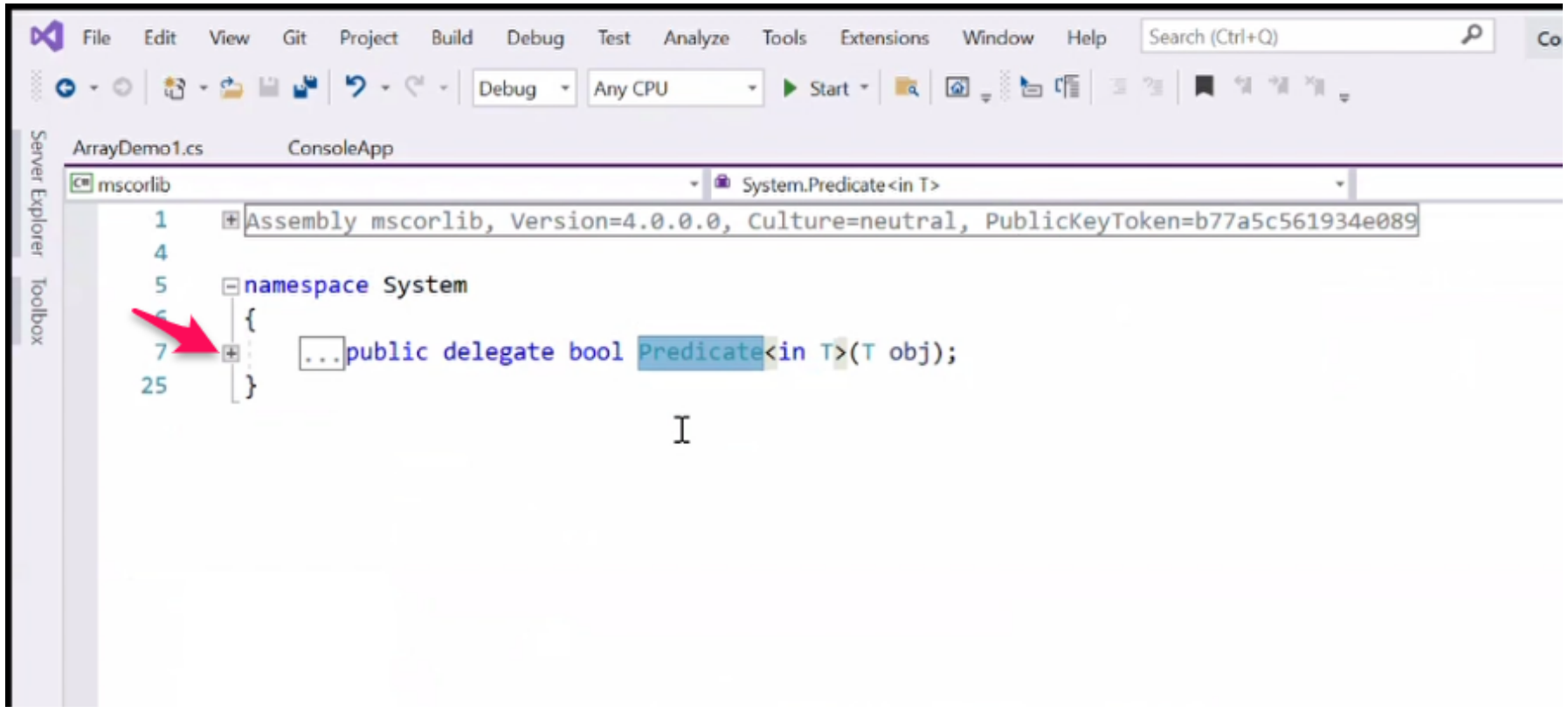
you have a **find method** ,**find all method**.....many more just check exactly what it does

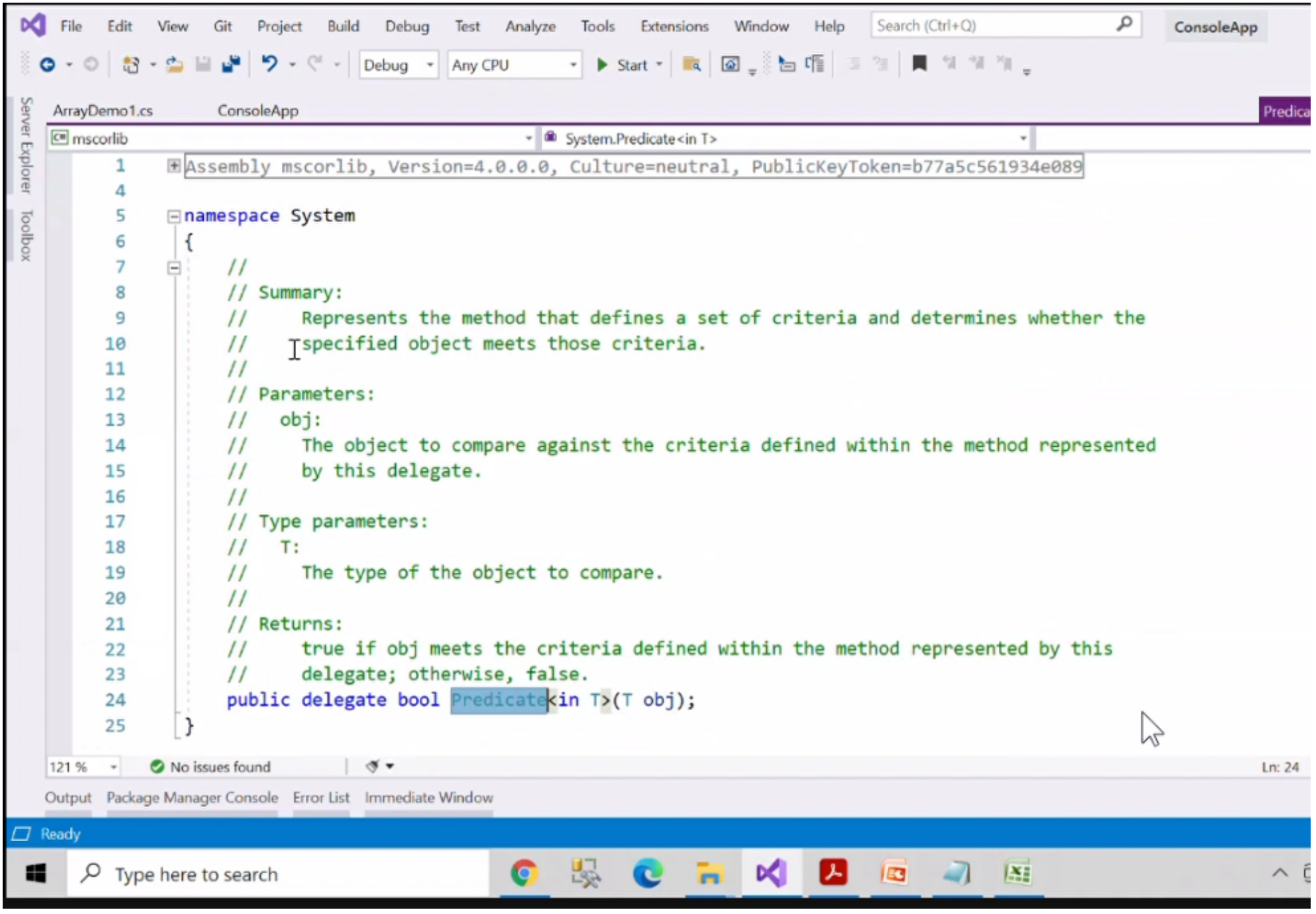


it will give you the complete help like what it does

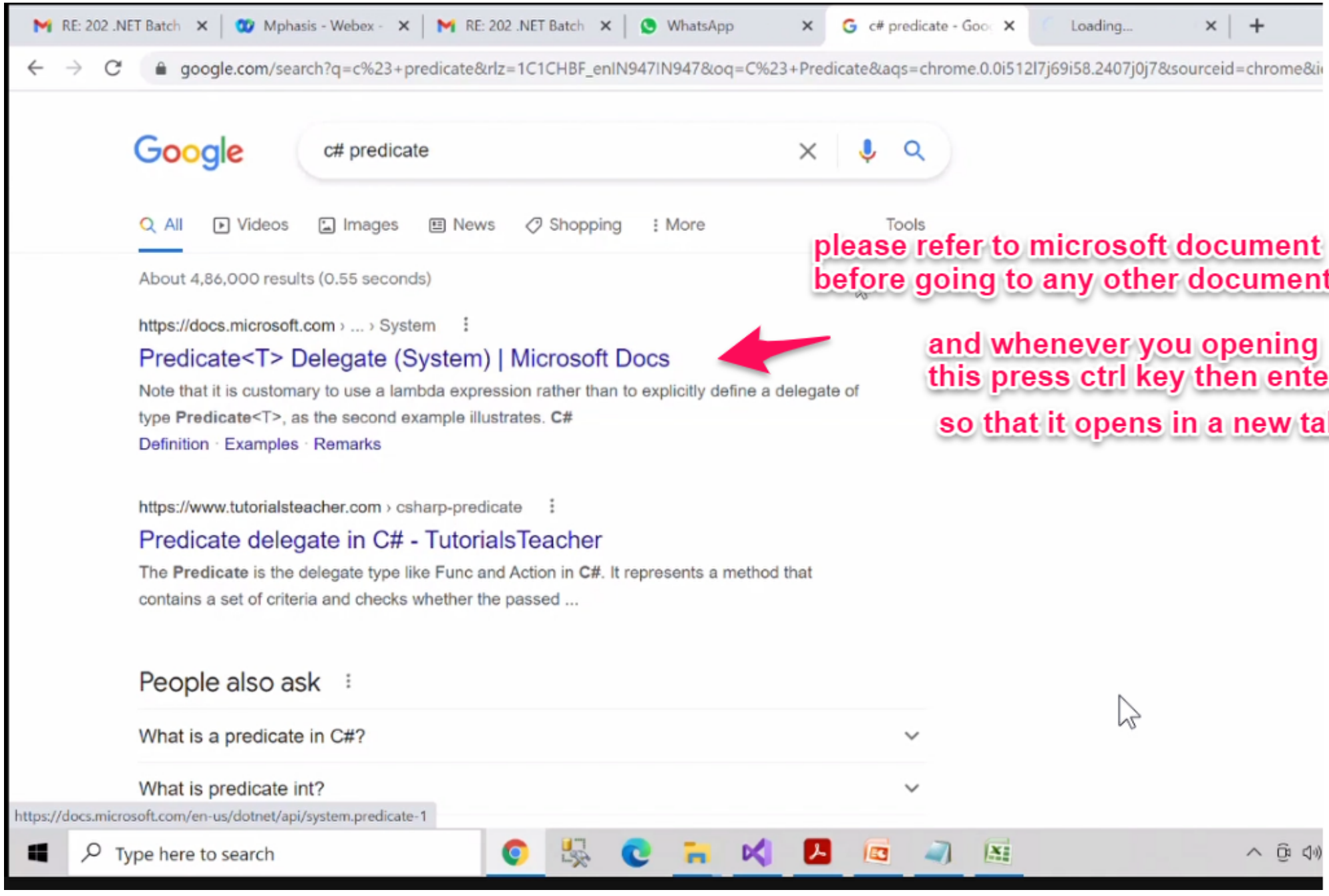
now while reading line no 997 you dont know about **predicate**

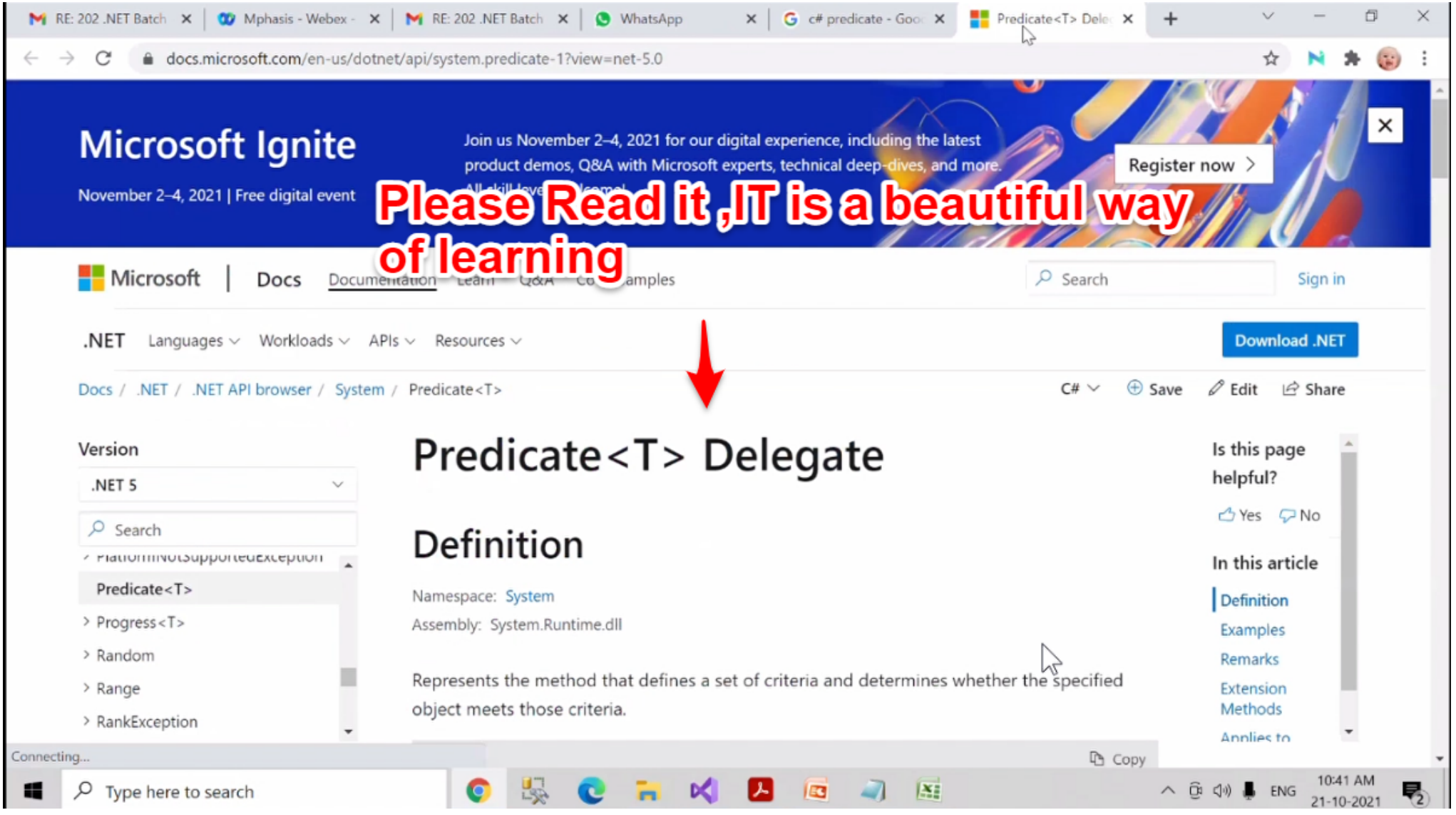



File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
Debug
Any CPU
Start
ArrayDemo1.cs
ConsoleApp
mscorlib
System.Predicate<in T>
Server Explorer
Toolbox
1 Assembly mscorlib, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
4
5 namespace System
{
7 public delegate bool Predicate<in T>(T obj);
25 }


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
ConsoleApp
Debug
Any CPU
Start
ArrayDemo1.cs
ConsoleApp
mscorlib
System.Predicate<in T>
Server Explorer
Toolbox
1 Assembly mscorlib, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
4
5 namespace System
6 {
7 //
8 // Summary:
9 // Represents the method that defines a set of criteria and determines whether the
10 // specified object meets those criteria.
11 //
12 // Parameters:
13 // obj:
14 // The object to compare against the criteria defined within the method represented
15 // by this delegate.
16 //
17 // Type parameters:
18 // T:
19 // The type of the object to compare.
20 //
21 // Returns:
22 // true if obj meets the criteria defined within the method represented by this
23 // delegate; otherwise, false.
24 public delegate bool Predicate<in T>(T obj);
25 }
121 %
No issues found
Ln: 24
Output
Package Manager Console
Error List
Immediate Window
Ready
Type here to search

So no need to go to google for searching all this things
but if you know more about this always goto Google Aunty pick the keyword and search
like **C# predicate**

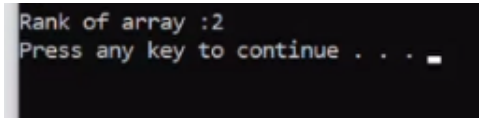

RE: 202 .NET Batch
Mphasis - Webex -
RE: 202 .NET Batch
WhatsApp
c# predicate - Goo
Loading...
google.com/search?q=c%23+predicate&rlz=1C1CHBF_enIN947IN947&oq=C%23+Predicate&aqs=chrome.0.0i512l7j69i58.2407j0j7&sourceid=chrome&i
Google
c# predicate
All
Videos
Images
News
Shopping
More
Tools
About 4,86,000 results (0.55 seconds)
https://docs.microsoft.com › ... › System
Predicate<T> Delegate (System) | Microsoft Docs
Note that it is customary to use a lambda expression rather than to explicitly define a delegate of type Predicate<T>, as the second example illustrates. C#
Definition · Examples · Remarks
https://www.tutorialsteacher.com › csharp-predicate
Predicate delegate in C# - TutorialsTeacher
The Predicate is the delegate type like Func and Action in C#. It represents a method that contains a set of criteria and checks whether the passed ...
People also ask
What is a predicate in C#?
What is predicate int?
https://docs.microsoft.com/en-us/dotnet/api/system.predicate-1
Type here to search
please refer to microsoft document
before going to any other document s
and whenever you opening
this press ctrl key then enter
so that it opens in a new tab



arrayname.Rank----------Rank will always say what is the dimention of array you are using weather you are going with

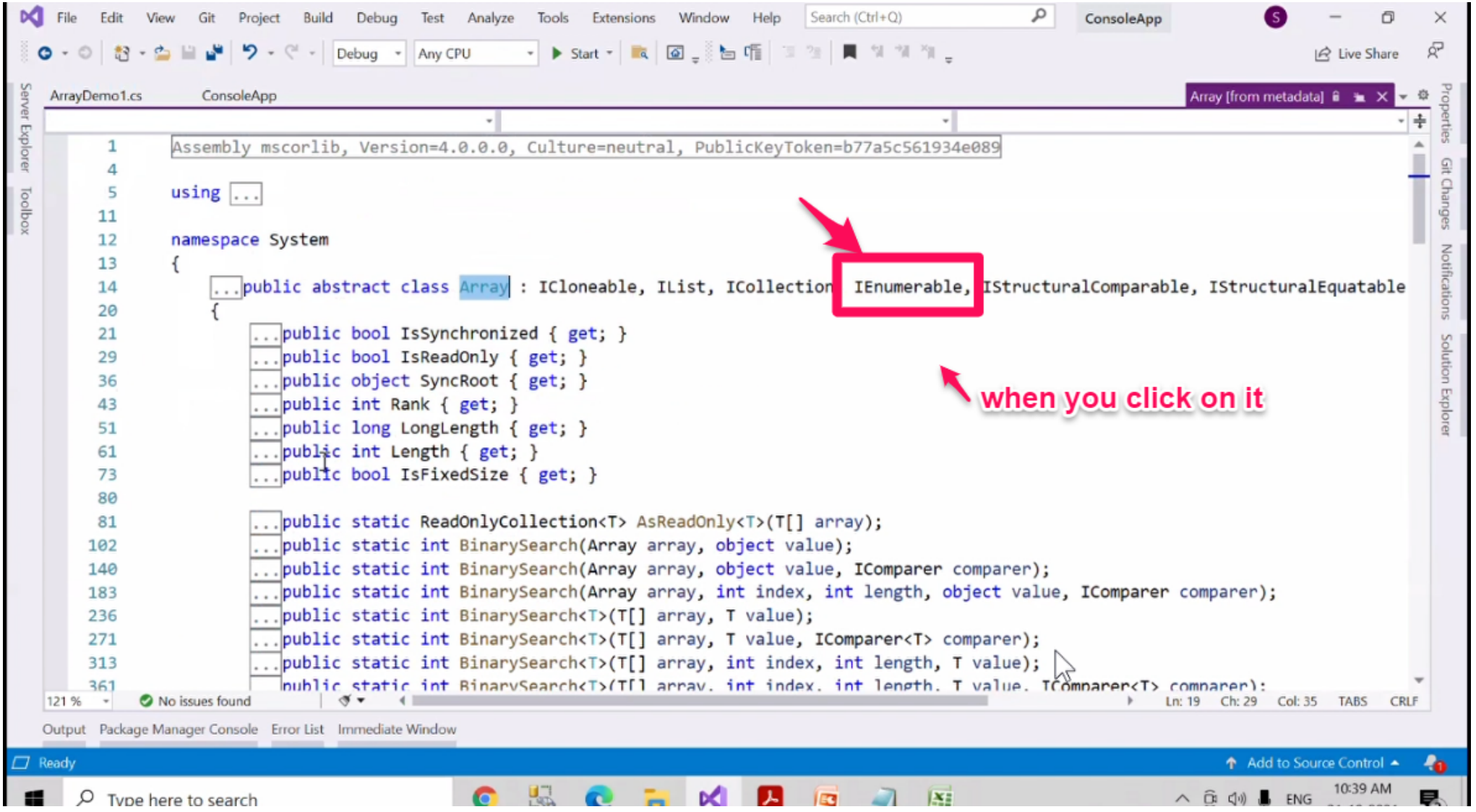
multidimentional weather you are going with single dimention

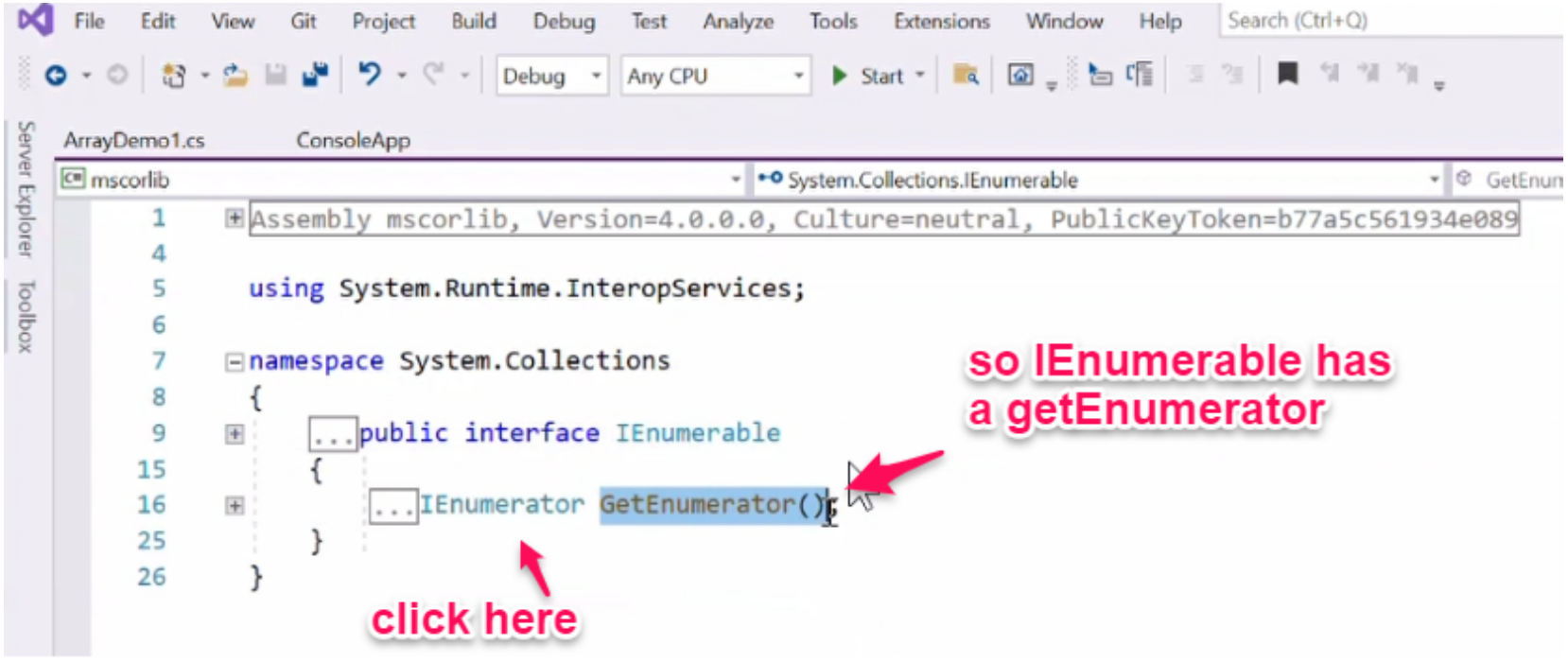
```
int[,] arr = new int[3,3];
Console.WriteLine("Rank of array :" + arr.Rank);
```

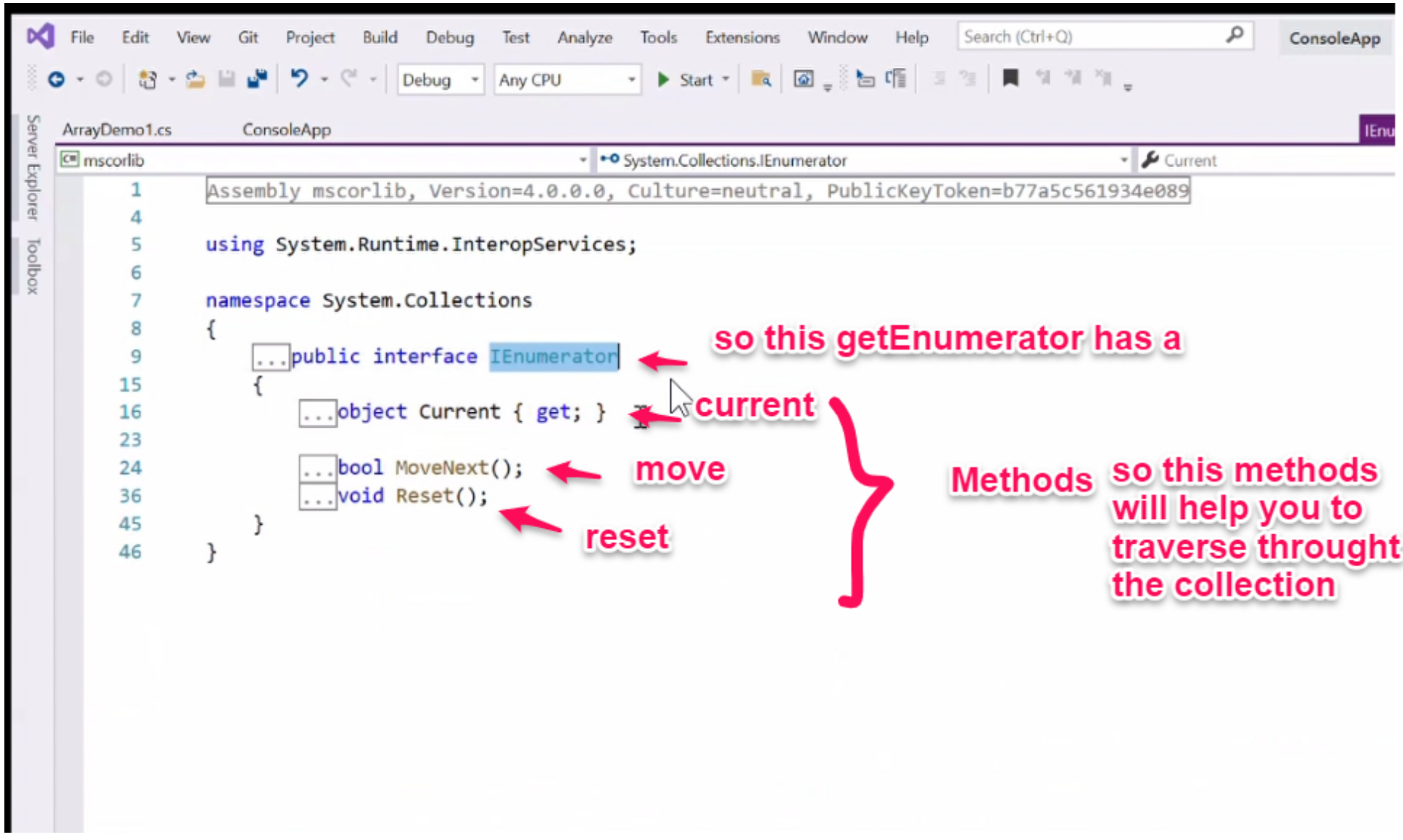


Array are defined or Derived from the abstract class called type Array , this particular arrays are implimenting called IEnumerable

When you come here we can see this are IEnumerable they are inheriting from IEnumerable


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
ConsoleApp
Debug
Any CPU
Start
Live Share
ArrayDemo1.cs
ConsoleApp
Array [from metadata]
Assembly mscorlib, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
using ...
namespace System
{
public abstract class Array : ICloneable, IList, ICollection IEnumerable, IStructuralComparable, IStructuralEquatable
{
public bool IsSynchronized { get; }
public bool IsReadOnly { get; }
public object SyncRoot { get; }
public int Rank { get; }
public long LongLength { get; }
public int Length { get; }
public bool IsFixedSize { get; }
public static ReadOnlyCollection<T> AsReadOnly<T>(T[] array);
public static int BinarySearch(Array array, object value);
public static int BinarySearch(Array array, object value, IComparer comparer);
public static int BinarySearch(Array array, int index, int length, object value, IComparer comparer);
public static int BinarySearch<T>(T[] array, T value);
public static int BinarySearch<T>(T[] array, T value, IComparer<T> comparer);
public static int BinarySearch<T>(T[] array, int index, int length, T value);
when you click on it
121 %
No issues found
Ln: 19 Ch: 29 Col: 35 TABS CRLF
Output Package Manager Console Error List Immediate Window
Ready
Add to Source Control
Type here to search
ENG
10:39 AM


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
Debug
Any CPU
Start
Server Explorer
Toolbox
ArrayDemo1.cs
ConsoleApp
mscorlib
System.Collections.IEnumerable
GetEnum
1 Assembly mscorlib, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
4
5 using System.Runtime.InteropServices;
6
7 namespace System.Collections
8 {
9 public interface IEnumerable
15 {
16 IEnumerator GetEnumerator();
25 }
26 }
so IEnumerable has
a getEnumerator
click here


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
ConsoleApp
Debug
Any CPU
Start
ArrayDemo1.cs
ConsoleApp
mscorlib
System.Collections.IEnumerator
Current
Server Explorer
Toolbox
1 Assembly mscorlib, Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
4
5 using System.Runtime.InteropServices;
6
7 namespace System.Collections
8 {
9 public interface IEnumerator
15 {
16 object Current { get; }
23
24 bool MoveNext();
36 void Reset();
45 }
46 }
so this getEnumerator has a
current
move
reset
Methods
so this methods will help you to traverse throught the collection