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Ref Vs Out Keywords in C#

This article explains the ref and out keywords with differences in C#.

Jignesh Trivedi   Oct 29 2018

16   10   626.1k

Introduction

The keywords ref and out are used to pass arguments within a method or function. Both

passed to a method by value. By using these keywords (ref and out) we can pass a parameter
by reference.

Ref Keyword

The ref keyword passes arguments by reference. It means any changes made to this argument
in the method will be reflected in that variable when control returns to the calling method.

Example code

```
01.  public static string GetNextName(ref int id)
02.  {
03.      string returnText = "Next-" + id.ToString();
04.      id += 1;
05.      return returnText;
06.  }
07.  static void Main(string[] args)
08.  {
09.      int i = 1;
10.      Console.WriteLine("Previous value of integer i:" + i.ToString());
11.      string test = GetNextName(ref i);
12.      Console.WriteLine("Current value of integer i:" + i.ToString());
13.  }
```

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Previous value of integer i:1
Current value of integer i:2

Out Keyword

The out keyword passes arguments by reference. This is very similar to the ref keyword.

Example Code

```
01.  public static string GetNextNameByOut(out int id)
02.  {
03.      id = 1;
04.      string returnText = "Next-" + id.ToString();
05.      return returnText;
06.  }
07.  static void Main(string[] args)
08.  {
09.      int i = 0;
10.      Console.WriteLine("Previous value of integer i:" + i.ToString());
11.      string test = GetNextNameByOut(out i);
12.      Console.WriteLine("Current value of integer i:" + i.ToString());
```

Output

Previous value of integer i:0
Current value of integer i:1

Ref Vs Out

Ref	Out
The parameter or argument must be initialized first before it is passed to ref.	It is not compulsory to initialize a parameter or argument before it is passed to an out.
It is not required to assign or initialize the value of a parameter (which is passed by ref) before returning to the calling method.	A called method is required to assign or initialize a value of a parameter (which is passed to an out) before returning to the calling method.
Passing a parameter value by Ref is useful when the called method is also needed to modify the pass parameter.	Declaring a parameter to an out method is useful when multiple values need to be returned from a function or method.
It is not compulsory to initialize a parameter value before using it in a calling method.	A parameter value must be initialized within the calling method before its use.
When we use REF, data can be passed bi-	When we use OUT data is passed only in a

Properties are not variables, therefore it cannot be passed as an out or ref parameter.

Ref / Out keyword and method Overloading

Both ref and out are treated differently at run time and they are treated the same at compile time, so methods cannot be overloaded if one method takes an argument as ref and the other takes an argument as an out.

Example code

```
01.  public static string GetNextName(ref int id)
02.  {
03.      string returnText = "Next-" + id.ToString();
04.      id += 1;
05.      return returnText;
06.  }
07.  public static string GetNextName(out int id)
08.  {
09.      id = 1;

12.  }
```

Output when the code is compiled:

	Description
❌ 1	Cannot define overloaded method 'GetNextName' because it differs from another method only on ref and out

However, method overloading can be possible when one method takes a ref or out argument and the other takes the same argument without ref or out.

Example Code

```
01.  public static string GetNextName(int id)
02.  {
03.      string returnText = "Next-" + id.ToString();
04.      id += 1;
05.      return returnText;
06.  }
07.  public static string GetNextName(ref int id)
08.  {
09.      string returnText = "Next-" + id.ToString();
10.      id += 1;
11.      return returnText;
```

Summary

The out and ref keywords are useful when we want to return a value in the same variables as are passed as an argument.

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Jignesh Trivedi   *TOP 50*

Jignesh Trivedi is a Developer, C# Corner MVP, Microsoft MVP, Author, Blogger,eager to learn new technologies

https://www.c-sharpcorner.com/members/jignesh-trivedi

7	20.2m	7	2

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In case of ref

jitendra jayswal   Feb 12, 2019

1708   **62**   **0**   0   0   Reply

Wrong (It is not compulsory to initialize a parameter value before using it in a calling method.)

jitendra jayswal   Feb 12, 2019

1708   **62**   **0**   0   1   Reply

Hi Jitendra, Thanks you for reading article. Please read statement carefully. I am talking about calling method i.e. where ref variable are passed.

Jignesh Trivedi   Feb 13, 2019

7   **55.9k**   **20.2m**   0

Excellent explanation..

Raj Sharma   May 17, 2018

1707   **63**   **481**   1   0   Reply

Public static string GetNextNameByOut(out int id) { id = 1; string returnText = "Next-" +

int id){ id=1 you initialized. when ever we passing any value for it (out i) id value changed into 1, then why we have to call out key word? Please give assist..

Rajenthiran T   Apr 25, 2018

1717   **53**   **0**   1   1   Reply

Out is used to get the value from function or method. As you aware, function has only one return type. Out is best suited when you required more than one value from function (one as return and other using Out key word). hope this is answer of your question .

Jignesh Trivedi   Apr 25, 2018

7   **55.9k**   **20.2m**   1

Great article. Thank you very much. keep it up

x x   Feb 01, 2018

1728   **42**   **0**   2   0   Reply

nice sir

Upendra Pratap Shahi   Nov 21, 2015

186   **10.2k**   **1.1m**   2   0   Reply

nice explained

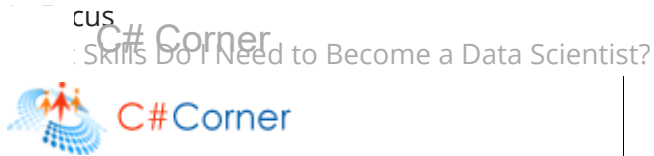**Ravi Patel**   Nov 1(

277   **6.2k**   **683.7k**   2   0

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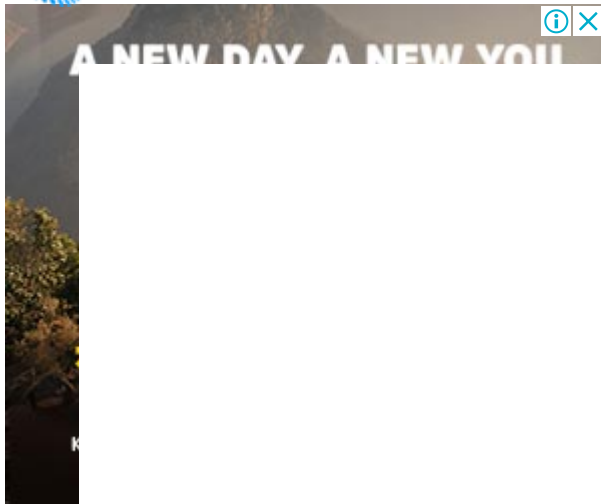
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