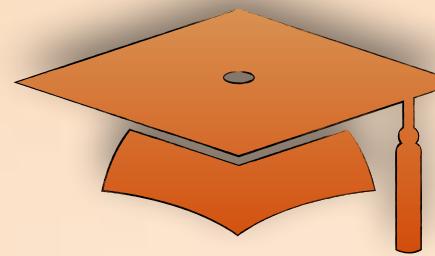


The Complete C# Developer Course



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

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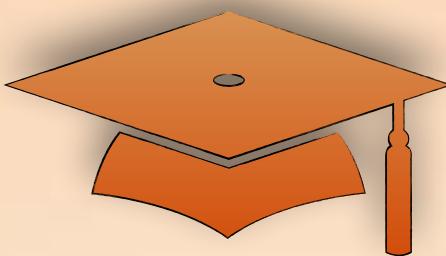
- ✓ Recursive methods
- ✓ Methods parameters
- ✓ Params
- ✓ Extension methods
- ✓ Delegates
- ✓ Events
- ✓ Expression-bodied members



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

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Recursive methods



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Recursive methods

Recursive methods : means a method calling itself.

- *Recursive method calls itself a number of times until a specific condition happens.*
- *Recursive method has parameters and each time it calls itself it has a new parameter values.*

Recursive methods

A factorial is a function that multiplies a number by every number below it.

$$1! = 1$$

$$2! = 2(1) = 2$$

$$3! = 3(2)(1) = 6$$

$$4! = 4(3)(2)(1) = 24$$

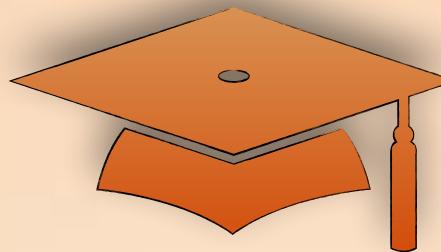
$$5! = 5(4)(3)(2)(1) = 120$$

Recursive methods exercise

What is .Net framework?

It is a component of Windows that includes a virtual execution system called the (CLR) Common Language Runtime and a unified set of class libraries.

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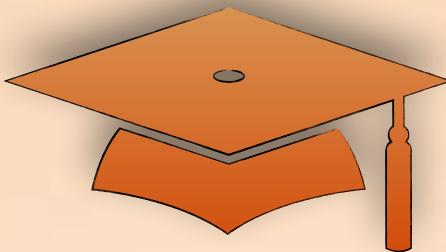
Recursive methods exercise



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

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Params exercise



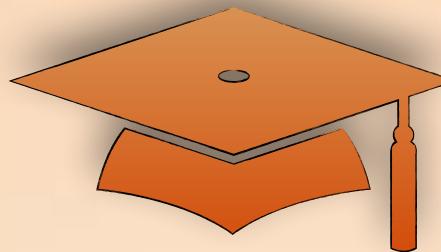
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E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Params exercise

Create a method the takes an array (using params) of any datatype and display the items inside of this array

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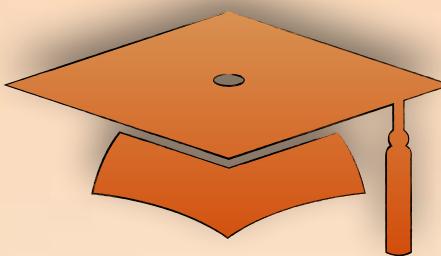
Local functions (nested functions)



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

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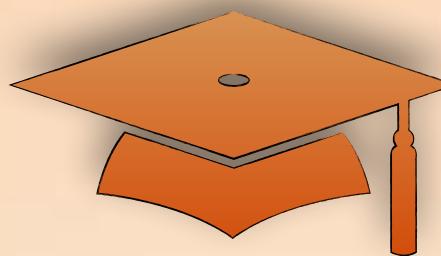
Anonymous methods



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

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Extension methods



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Extension methods

Extension methods enable you to *add methods to existing types* without modifying the original type.

`int x = 0;`

`CompareTo`

`Equals`

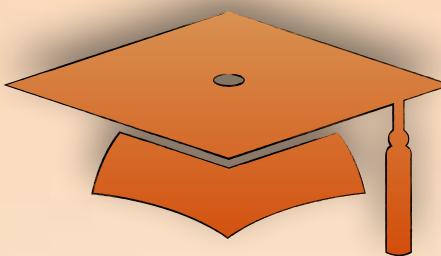
`GetHashCode`

`GetType`

`ToString`

- An extension method is *defined as static* method but it is *called like as instance method*.
- Must be created inside a *static class*.
- The first parameter specifies which type *the method operates on*, and it is preceded by the "this" keyword.
- An extension method having the same name and signature like as an instance method will never be called since it has low priority than instance method.

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Extension method exercise



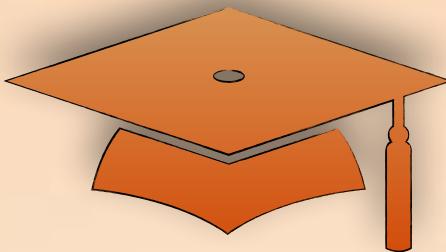
Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Extension method exercise

**Wednesday 1
November 2000**

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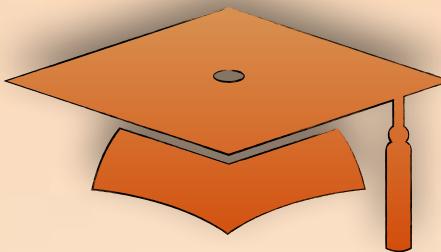
Stopwatch



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

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Delegates



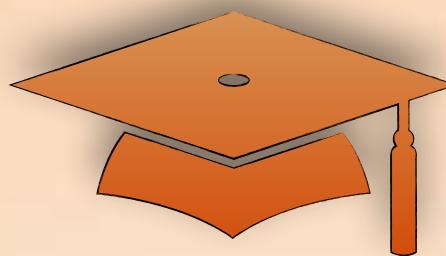
Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Delegates

A delegate is a reference type variable that holds the reference to a method. Which means delegates allow methods to be passed as parameters.

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Delegates exercise



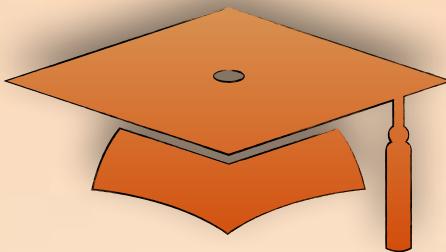
Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Delegates exercise

Create a delegate that takes a dictionary (int, string) as a parameter and display the content of the dictionary

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Multicast delegates



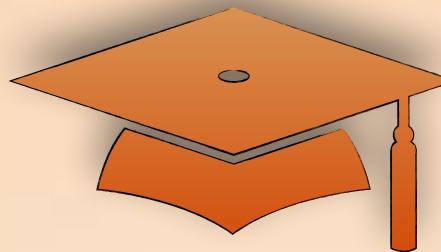
Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Anonymous methods

Anonymous method is a method *without a name*. It is defined using the *delegate keyword* and can be assigned to a delegate instance.

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Lambda expressions



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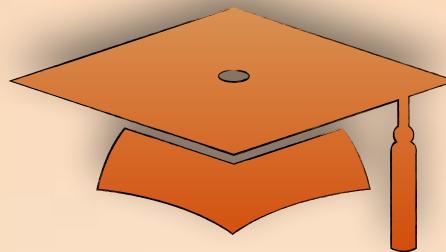
E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Lambda expressions

Lambda Expression is a shorter way of representing anonymous method.

Lambda expressions use this [=>](#)

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Generic delegate : Func



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Generic delegate : Func

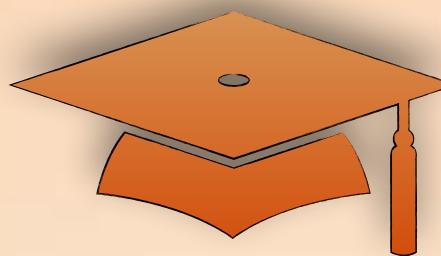
Func is a built-in generic delegate, it has up to 16 parameters.

Func has one out parameter.

The last parameter is considered as an out parameter.

Func delegate type must return a value.

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Generic delegate : Action



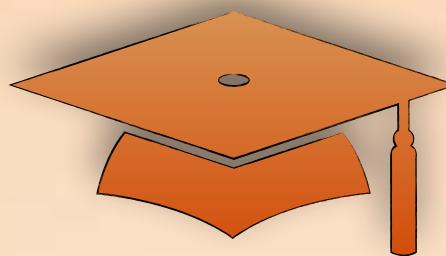
Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Generic delegate : Action

Action delegate is the same as Func delegate except that the Action delegate doesn't return a value

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Generic delegate : Predicate



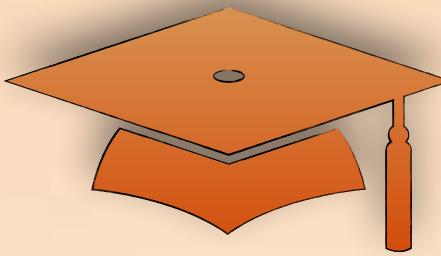
Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Generic delegate : Predicate

Predicate delegate is the same as Action delegate and Func delegate. But it must take one input parameter and returns a boolean value

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Events



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Events

Events are just a user action such as mouse clicks, key pressed and many other more

The events are declared and raised in a class and associated with the event handlers using delegates within the same class or some other class.

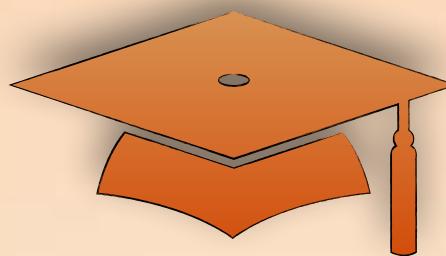
Publisher

**is an object that contains
the definition of the event
and the delegate**

Subscriber

**is an object that accepts the
event and provides an event
handler**

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Assignments(16, 17, 18)



Ahmad Mohey | Full Stack Developer

E-mail : ahmadmohey@gmail.com
Twitter : [@ahmadmohey85](https://twitter.com/ahmadmohey85)

Assignments

Assignment No.16: (Enhancement of recursive methods exercise)

- Get the files inside each folder and display its name and its creation date

Languages : created on (10/7/2017 6:12:38 PM)

c:\files\Languages\Arabic\log.txt : created on (10/7/2017 6:12:55 PM)

Arabic : created on (10/7/2017 6:12:55 PM)

c:\files\Languages\Chinese\log.txt : created on (10/7/2017 6:13:36 PM)

Chinese : created on (10/7/2017 6:13:36 PM)

c:\files\Languages\English\log.txt : created on (10/7/2017 6:12:55 PM)

English : created on (10/7/2017 6:12:55 PM)

United Kingdom : created on (10/31/2017 4:44:51 PM)

United States : created on (10/31/2017 4:44:47 PM)

c:\files\Languages\German\log.txt : created on (10/7/2017 6:12:55 PM)

German : created on (10/7/2017 6:12:55 PM)

c:\files\Languages\Hindi\log.txt : created on (10/7/2017 6:13:36 PM)

Hindi : created on (10/7/2017 6:13:36 PM)

Assignments

Assignment No.17: (Capitalize First Letter)

- Create an extension method to capitalize each letter in a string.

Assignments

Assignment No.18: (Math Operations)

- Using multicast delegate and expression-bodied members perform the 5 basic math operations (addiction, subtraction, multiplication, division and remainder)