

What and When to use Tuple? [duplicate]

Asked 6 years, 10 months ago Active 3 years, 5 months ago Viewed 112k times



123

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[Practical example where Tuple can be used in .Net 4.0?](#) 19 answers



May someone please explain what a Tuple is and how to use it in a Real World Scenario. I would like to find out how this can enrich my coding experience?



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c#

.net

c#-4.0

.net-4.0

tuples

edited Apr 18 '16 at 15:24



L C

440

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asked Nov 30 '12 at 6:47



Donny

2,259

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marked as duplicate by [JasonMArcher](#), [BradleyDotNET](#), [Divi](#), [Lee Taylor](#), [T.C.](#) Jun 27 '14 at 4:20

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5 Answers



123

This [msdn article](#) explains it very well with examples, "*A tuple is a data structure that has a specific number and sequence of elements*".



Tuples are commonly used in four ways:

1. To represent a single set of data. For example, a tuple can represent a database record, and its components can represent

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3. To return multiple values from a method without using out parameters (in C#) or `ByRef` parameters (in Visual Basic).
4. To pass multiple values to a method through a single parameter. For example, the `Thread.Start(Object)` method has a single parameter that lets you supply one value to the method that the thread executes at startup time. If you supply a `Tuple<T1, T2, T3>` object as the method argument, you can supply the thread's startup routine with three items of data.

edited Feb 11 '15 at 19:39



Habib

189k 25 340 375

answered Nov 30 '12 at 6:51



Adil

130k 20 178 189



76



A tuple allows you to combine multiple values of possibly different types into a single object without having to create a custom class. This can be useful if you want to write a method that for example returns three related values but you don't want to create a new class.

Usually though you should create a class as this allows you to give useful names to each property. Code that extensively uses tuples will quickly become unreadable because the properties are called `Item1`, `Item2`, `Item3`, etc..

edited Nov 30 '12 at 6:59

answered Nov 30 '12 at 6:52



Mark Byers

628k 140 1406
1360

33 I use it maximally for 2 values and each of different type i.e. string, int. Otherwise it is becoming the worst code you can write. – Ondra Nov 30 '12 at 7:27

4 Keep the usage limited, perhaps preferring to only use it privately within a class/module. Also, Tuple usage containing complex types ("Customer", "Employee", etc.) can be a bit more straightforward than primitives. Nothing is worse than trying to work with a lot of `Tuple<int, int, int, string, string>`s. – user74754 Jan 8 '16 at 23:17



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The difference between a tuple and a class is that a tuple has no property names. This is almost never a good thing, and I would only use a tuple when the arguments are fairly meaningless like in an abstract math formula Eg. abstract calculus over 5,6,7 dimensions might take a tuple for the coordinates.

edited Apr 25 '14 at 10:08

answered Nov 30 '12 at 9:07



Kaido

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- 1 In this case (where probably the types of values are the same) using a simple array is not enough? There is some advantage to use a Tuple? – [Alex 75](#)
Oct 5 '16 at 8:58 

The types could just as easily be different, but I guess the IComparable implementation could be an advantage in the homogenous case sometimes. As you say, I'd be inclined to use an array for simpler scenarios. – [Kaido](#) Nov 14 '16 at 15:03

Very nice answer! – [N_E](#) Mar 2 '17 at 15:17



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This is the most important thing to know about the Tuple type. Tuple is a class, not a struct. It thus will be allocated upon the managed heap. Each class instance that is allocated adds to the burden of garbage collection.

Note: The properties Item1, Item2, and further do not have setters. You cannot assign them. The Tuple is immutable once created in memory.


answered Apr 3 '14 at 17:22



[Azhar Kiani](#)

278 2 11

- 1 "Burden" - have you ever observed a garbage collection issue? – [Gusdor](#) Mar 23 '16 at 18:14

- 4 Absolutely! Think about network communications processing code. It's allocating and deallocating tons of memory so every couple minutes the GC is running and may take seconds to complete. This is unacceptable if something downstream is relying on that data in real-time. Another example is a resource constrained device, such as mobile device, running a real-time app, such as a driving directions app. – [stuckintheshuck](#) Jun 23 '16 at 18:05 



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Tuple classes allow developers to be 'quick and lazy' by not defining a specific class for a specific use.

The property names are Item1, Item2, Item3 ..., which may not be meaningful in some cases or without documentation.

Tuple classes have strongly typed generic parameters. Still users of the Tuple classes may infer from the type of generic parameters.

answered Nov 30 '12 at 8:11



[linquize](#)

15.3k 8 50 74

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