



C# and .NET Fundamental Exercises

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When we build c# code why do we have two folders, "bin" and "obj" ?

<p>Name</p> <ul style="list-style-type: none"> bin obj BoxingUnboxing.csproj Program.cs 	<p>The "obj" has individual compilation of files while "bin" folder is the final assembly which is compiled.</p>
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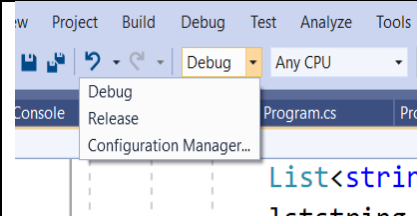
Internet reference for reading	Stack over flow discussion https://tinyurl.com/questpondex1
Q and A video	Explain the Importance of bin folder & obj folder in C#. ?

Understand other data types Char,Byte,Short,Long,Float, Decimal & Unsigned ?

1. How does computer store data ?
2. Byte data type and size of it.
3. Char data type and size of it.
4. Why does Char have double size than Byte ?
5. Char vs String.
6. What is Signed vs Unsigned?
7. What is Short, Int and Long and what is the size of each?
8. How is Short,Int,Long connected to int16,int32 and int64 ?
9. What is the size of Float,Double and Decimal ?.
10. Demonstrated how does casting affect performance?

Internet reference for reading	Microsoft Documentation https://tinyurl.com/questpondex3
Internal Q and A video	What are different .NET datatypes and in what scenarios to use what? (39 Minutes)

What is the difference between debug and release mode?

	Debug is for development while release is for production. So a code which is in release mode should be optimized.
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Internet reference for reading	https://stackoverflow.com/questions/2446027/debug-vs-release-performance
Internal Q and A video	What is the difference between Debug and Release? (8 Minutes)

How to implement thread safety and thread pooling ?

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/keywords/lock-statement https://docs.microsoft.com/en-us/dotnet/standard/threading/the-managed-thread-pool
Internal Q and A video	How can we make a object thread safe using LOCK in multithreading? What is Mutex, Semaphore & SemaphoreSlim? What is AutoResetEvent and ManualResetEvent? What is Thread Pooling? How to debug Threads?

Prove TPL Task runs on Multiple cores?

Hint :- Use processor performance counters.

Internet reference for reading	https://stackoverflow.com/questions/52914450/performance-comparison-between-thread-and-task-using-c-sharp
Internal Q and A video	What is TPL (Task Parallel Library) and how different it is from threads?

Prove Async/Await does not create threads?

Hint :- Use thread debugging to check if new threads are created.

Internet reference for reading	https://stackoverflow.com/questions/1050222/what-is-the-difference-between-concurrency-and-parallelism
Internal Q and A video	Explain Concurrency VS Parallelism? - (Part 1) Does Async use threads? - (Part 2)

What is stack trace and how to create Custom exceptions?

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/standard/exceptions/how-to-create-user-defined-exceptions
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Internal Q and A video	Explain C# Exceptions ?
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What is importance of VAR keyword ?

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/keywords/var
Internal Q and A video	What is the use of Var keyword?

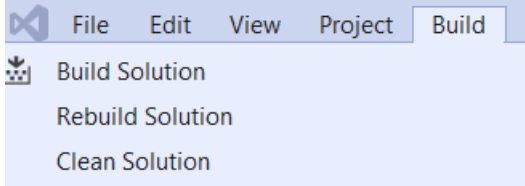
Try to understand Events?

Event is a encapsulation over delegates.

Also look in to Multicast delegates , Action , Predicate and Func.

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/events-overview
Internal Q and A video	Explain Synch, Asynch, Delegates, Multicast Delegates and Events? What is the use of Lambda Expression Action<>, Predicate<> & Func<>?

What's the importance of Build, Rebuild and Clean Solution?

	Build only changed code , Re-Build deletes and build from scratch and when you say clean it just deletes but does not build and rebuild.
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Internet reference for reading	Stack over flow discussion https://tinyurl.com/questpondex2
Internal Questpond video demo	In .NET Q and A video section see video What is the difference between Build VS Rebuild Vs Clean? (6 Minutes)

What is GC 0,1 and 2 ?

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/standard/garbage-collection/fundamentals#generations
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Internal Q and A video	What is Garbage Collector Gen 0, 1 & 2? (10 Minutes)
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Understand the sentence :- Strings are Immutable?

How does StringBuilder improve performance of strings?

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/standard/base-types/stringbuilder
Internal Q and A video	Explain the sentence "C# strings are immutable"?(Also covers string builder & interning) (22 Minutes)

What's the importance of yield keyword ?

Hint: - It is meant for Stateful iterations.

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/keywords/yield
Internal Q and A video	What is the use of Yield Keyword in C#? (11 Minutes)

How to browse files and folders using system.io?

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/programming-guide/file-system/how-to-get-information-about-files-folders-and-drives
Internal Q and A video	How to work with files and folders (System.IO)?

Out and Ref keyword c#

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/keywords/out-parameter-modifier https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/keywords/ref
Internal Q and A video	How to work with files and folders (System.IO)?

Reflection

Internet reference for reading	https://docs.microsoft.com/en-us/dotnet/csharp/programming-guide/concepts/reflection
Internal Q and A video	What is C# reflection? (11 Minutes) What is Dynamic keyword & How does it differ from Reflection? (9 Minutes)

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