



```
Console.WriteLine("Hello, world!");
```

Introduction to C#

C# Fundamentals – .NET Development

Agenda

C# Background

What Is C#?

Compilation

History

Design Principles

C# Design

Language Type

Why Static Types?

C# Project Structure

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- System independent, and code can be analyzed and changed at runtime

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Variables have fixed data types which must be known at compile-time

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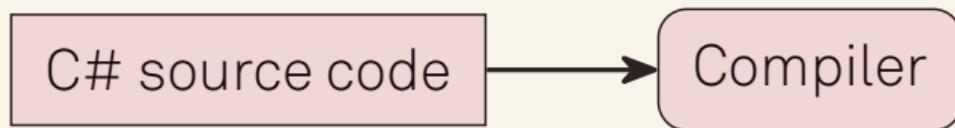
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- .NET's bytecode is called *common-intermediate-language (CIL) code*
- The virtual machine used to execute .NET applications is known as the *common language runtime (CLR)*

C# Compilation

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C# source code

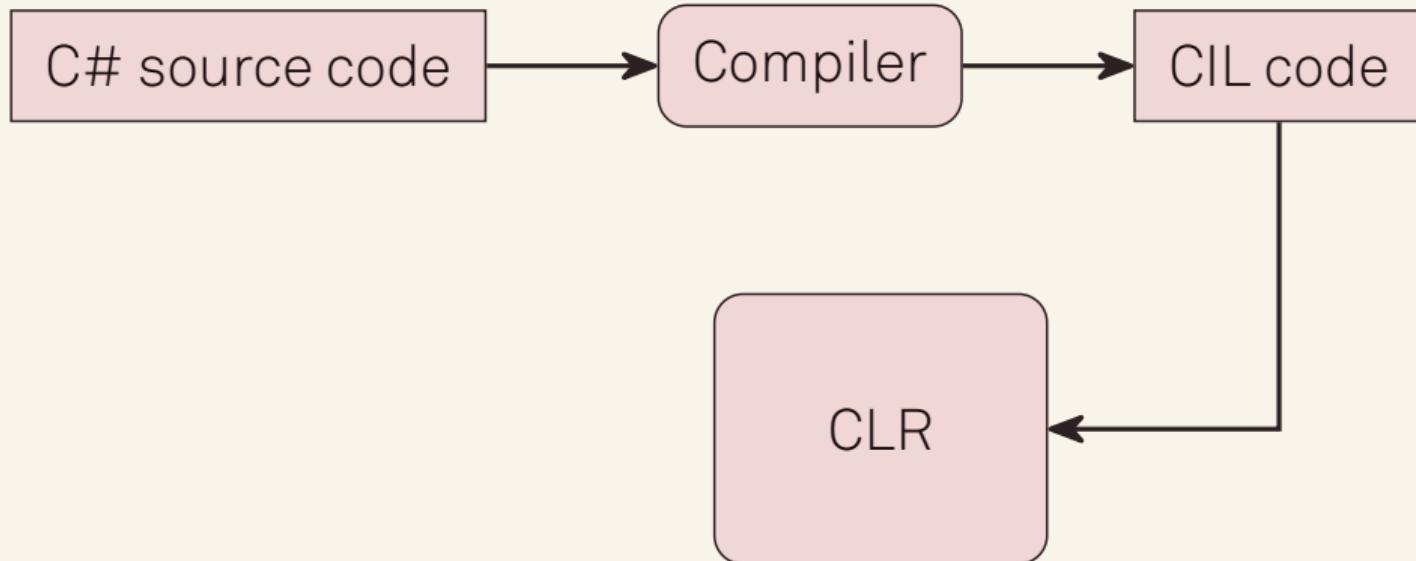
C# Compilation



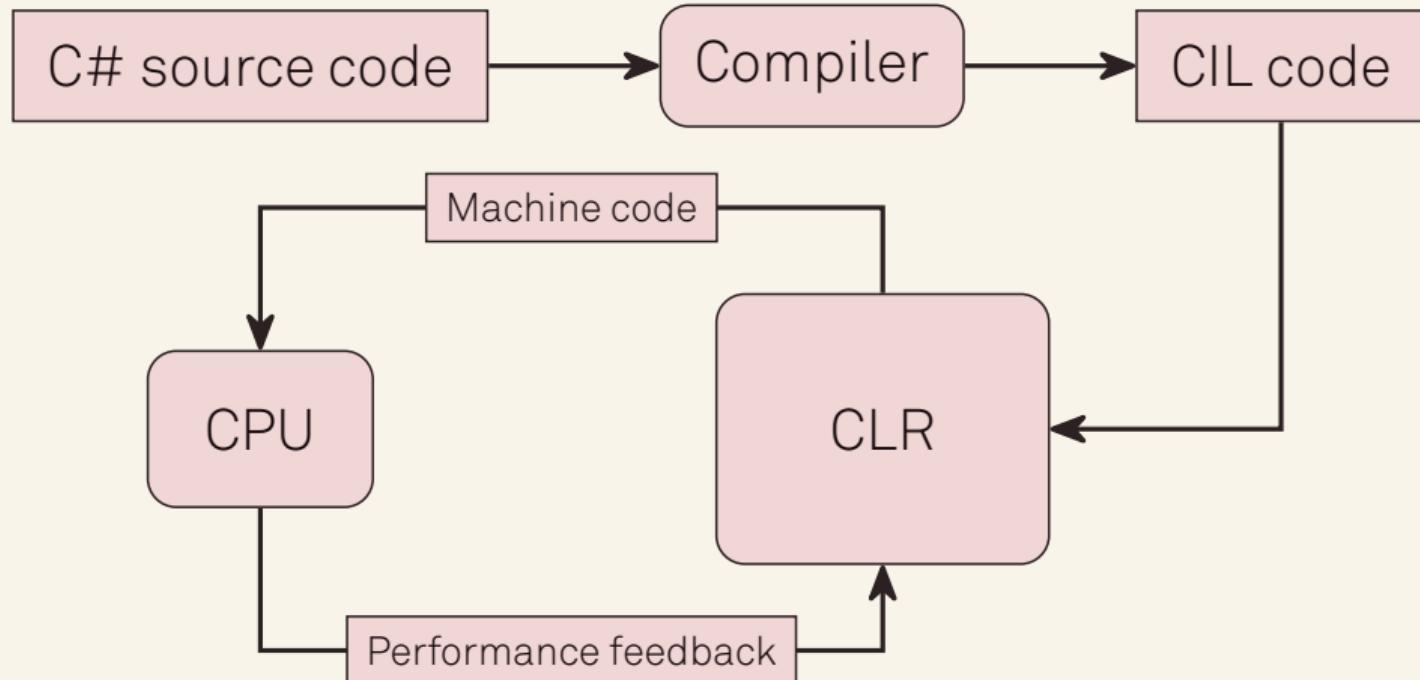
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- C# is ECMA-standardized (ECMA-334)

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- The language is intended to be a simple, modern, general-purpose programming language
- The language, and implementations thereof, should provide support for software engineering principles such as strong type checking, array bounds checking, detection of attempts to use uninitialized variables, and automatic garbage collection. Software robustness, durability, and programmer productivity are important.

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- Portability is very important for source code and programmers, especially those already familiar with C and C++.
- Support for internationalization is very important.

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- Although C# applications are intended to be economical with regard to memory and processing power requirements, the language was not intended to compete directly on performance and size with C or assembly language.

C# Design

What Type of Language Is C#

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 - Console apps
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- It's a *high-level* language compared to C and a *very high-level* language compared to Assembly language

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 - Remove details about hardware control

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 - Many abstractions
 - Automated memory management (garbage collector)

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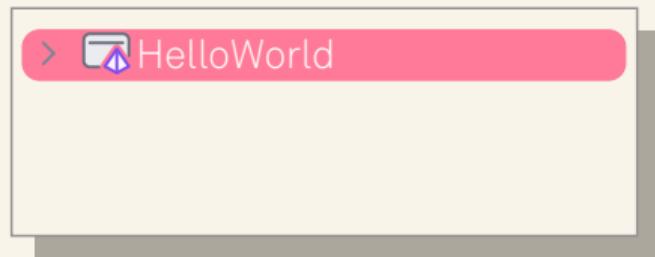
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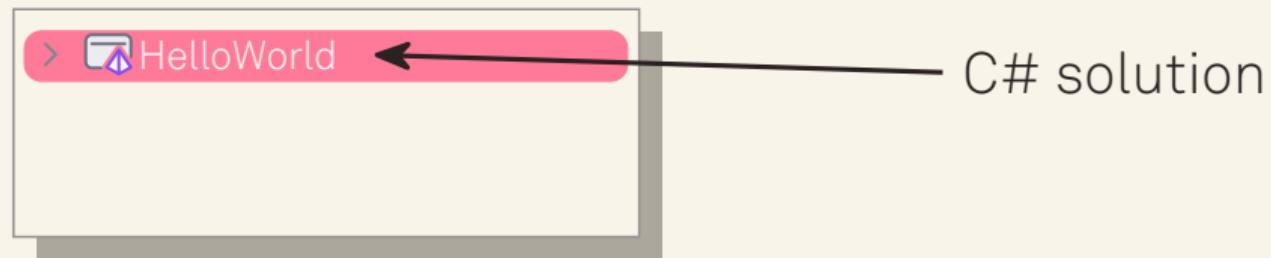
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 - TypeScript/JSDoc comments

C# Project Structure

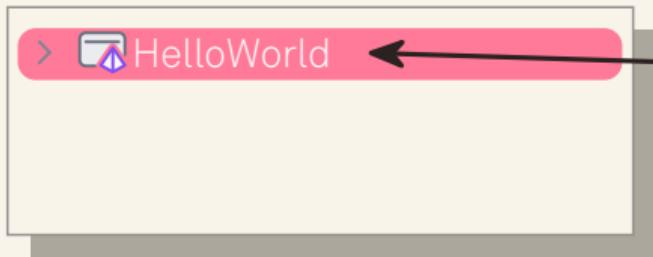
Project Structure



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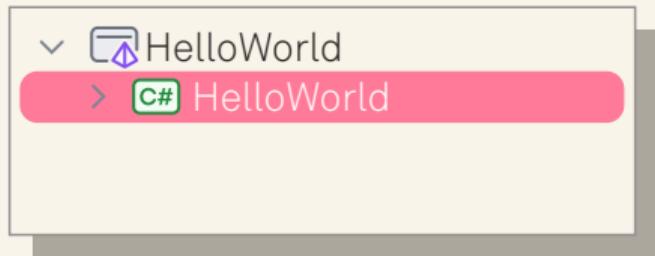


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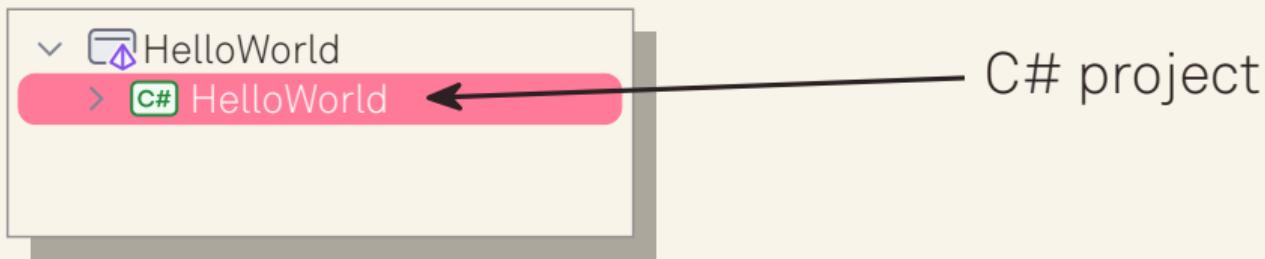


- Solutions are containers for one or more related projects

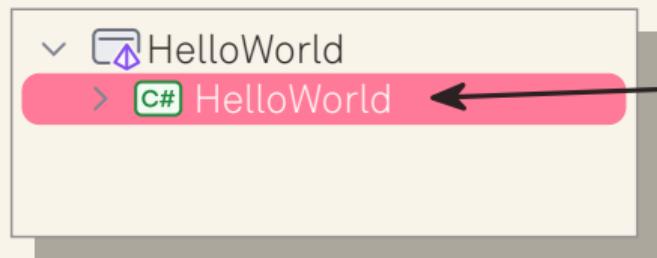
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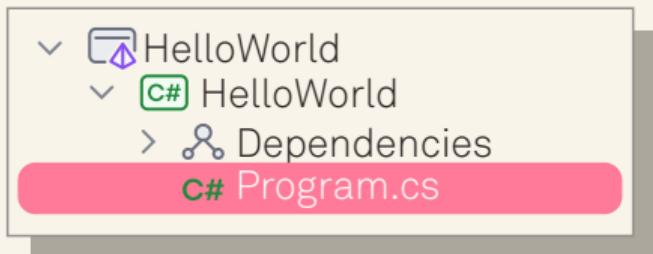


- C# project
- Projects contain all code compiled into an executable, library, or website

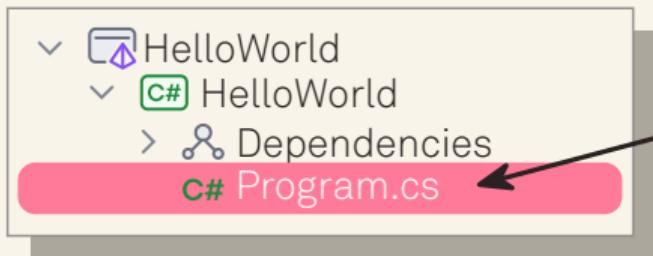
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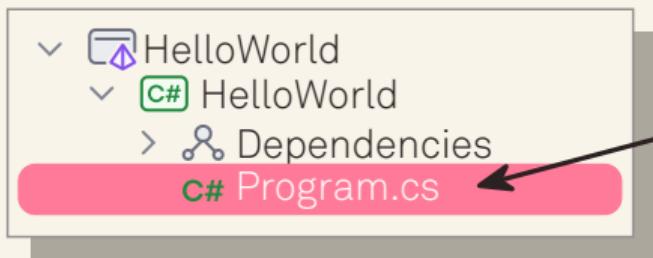


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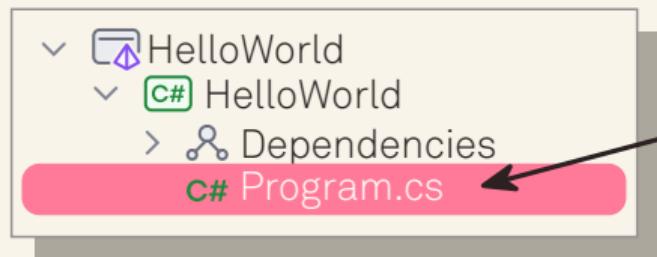
C# Program class

Project Structure



- C# Program class**
- This is the main class for a basic console application

Project Structure



C# Program class

- This is the main class for a basic console application
- This is where the code from the title slide goes

Any Questions?