C# Fundamentals 1 (CSF1)

Jeremy Rutherford

Course Objectives

- Describe the key parts of the .NET architecture.
- Create a simple .NET console application using Visual Studio 2015 Community.
- Define the fundamental data types used in .NET applications.
- Demonstrate the ability to declare and assign a variable using C#.
- Understand commonly-used naming conventions.
- Identify and explain how to use operators in a .NET application.
- Determine the appropriate control structure to use in a given scenario.
- Understand the benefits of using an Object-Oriented Programming language.
- Use string formatting to customize the output of data into a console window.
- Understand and use basic collections to store multiple values.
- Perform basic debugging in a .Net application

Module 1: Introduction to C# and .NET

Intro to C# - Objectives

- Discuss the .NET Framework
- Understand the key traits of C#
- Explain the compilation process
- Identify the three basic types of errors

.NET Overview

- Mainly runs on Windows
- Like a mini-OS or gaming console
- Multi-Language support via a Common Type System (CTS)

- Less interaction with the System Registry
- Easier Versioning
- Manages Code Execution

- Framework Class Library (FCL)
- Built in Security
- Object Oriented (OO)

C# Traits

- Specifically written for the .NET Framework
- Object Oriented Programming (OOP)

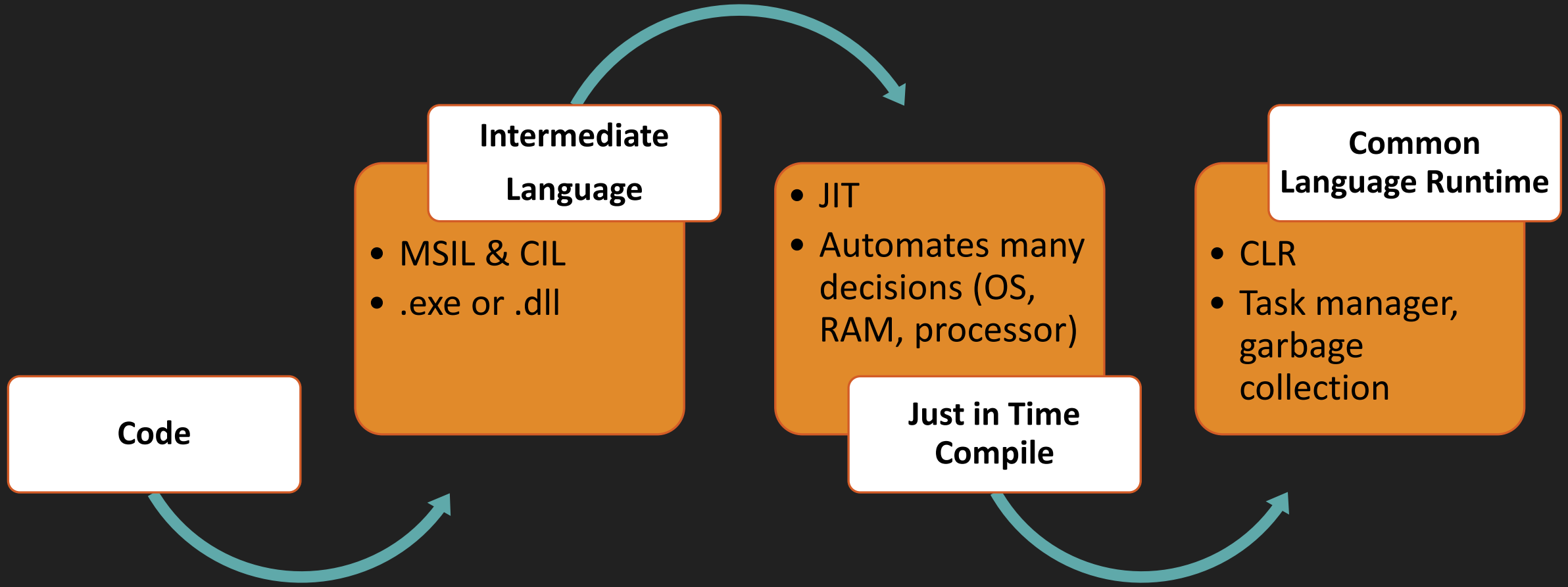
- Designed to be managed
- Similar to Java and C++

- Case Sensitive
- Uses curly braces {}

- Semi-colons are like periods
- Largely ignores whitespace

- Type Safe
- File extension .cs

Compilation Process



Intro to C# -
Errors

- Syntax:
  - the code was written wrong
- Runtime:
  - Syntax is correct, but code encounters an unexpected error during execution
- Logic:
  - The logic written yields unexpected results

- .NET Framework
- Key traits of C#
- Compilation process
- Identify the three basic types of errors

Homework:

1. Quizlet Vocabulary

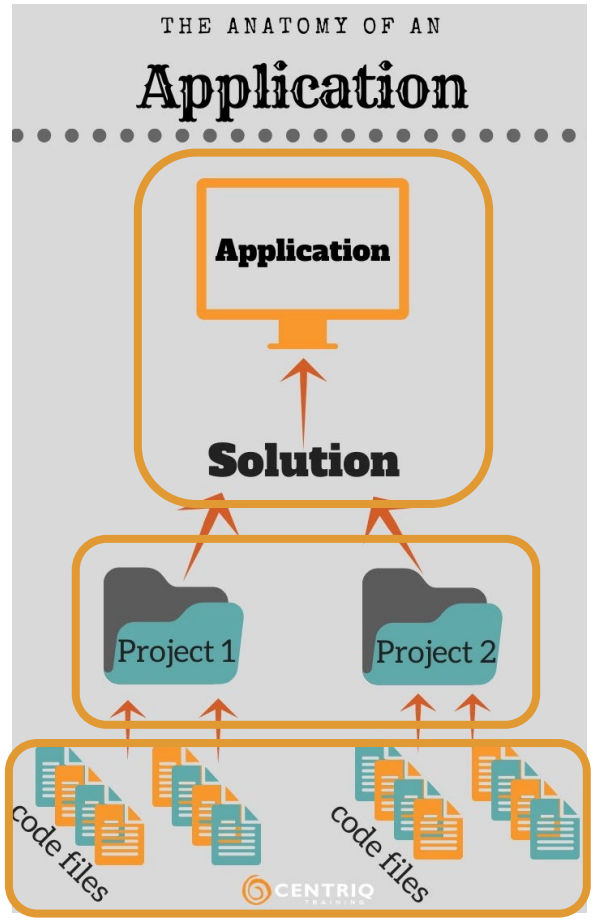
Module 2: Introduction to Variables

Intro to Variables – Objectives

- Understand the role of variables in Code.
- Utilize two data types in C# to create variables
- Demonstrate how to make code comments.
- Understand the basic rules of the C# language & how it's written.

Intro to Variables – Anatomy of an App

- Solution (.sln) – The application. Contains all the basic files necessary to run a program.
- Project: Division within a solution that contains 1 or more code files. a solution will ALWAYS contain at least one project.
- Code Files (CLASS): files that contain code that may be used by your application. A project will ALWAYS contain at least one code file.



CODE ALONG!

- Understand the role of variables in Code.
- Utilize two data types in C# to create variables
- Demonstrate how to make code comments.
- Understand the basic rules of the C# language & how it's written.

Homework:

1. Quizlet Vocabulary
2. Read Chapters 1 & 2 in Course Text

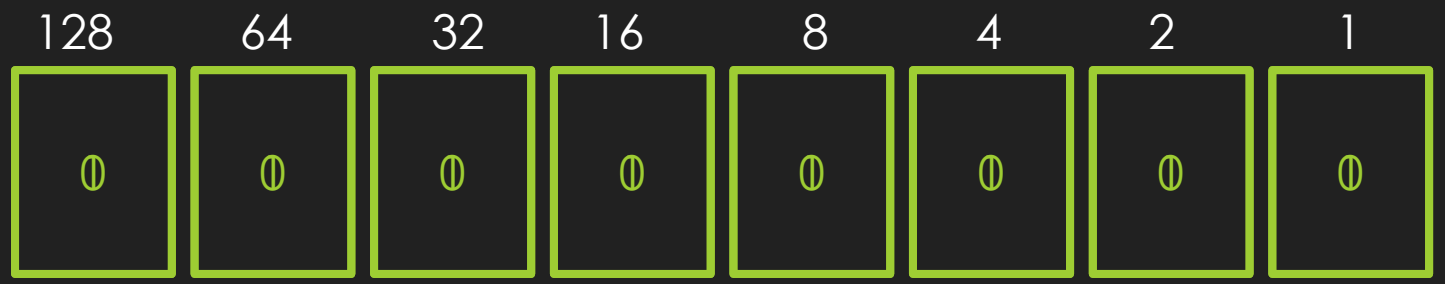
Module 3:
More Data Types

More Data Types – Objectives

- Discover additional intrinsic data types in C#
- Understand how values are stored

More Data Types –
Bob Sure Is Loving!

	Data Type	Lesser Used Variant	Bit (binary digit) size	Value Range
Bob	byte		8	0 to 255
		sbyte(signed)	8	-128 to 127
Sure	short		16	~-32k to ~32k
		ushort(unsigned)	16	0 to ~65k
Is	int		32	~-2bil to ~2bil
		uint	32	0 to ~4bil
Loving	long		64	~ -9quint to ~9 quint
		ulong	64	0 to ~18quint



255

More Data Types –
Bitmap

128	64	32	16	8	4	2	1	Total
1	1	1	1	1	1	1	1	255
0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	33

More Data Types – Summary

- String
- Int
- Byte/SByte
- Short/Ushort
- Int/UInt
- Long/Ulong
- Bool
- Char

CODE ALONG!

QUIZ!

Module 1-3 Quiz in Canvas

- 14 Total Datatypes
- Understand how values are stored

Homework:

1. Quizlet Vocabulary
2. Read Chapters 1 & 2 in Course Text

Module 4:
Naming Conventions

Naming Conventions –
Objectives

- Understand naming conventions given to variables.
- Demonstrate the typing convention associated with each naming conventions.

CODE ALONG!

Naming Conventions –
Summary

- **UPPERCASE –** all capital letters
- **lowercase –** all lowercase letters
- **Pascal Case –** A capital letter for each word in the name
- **camelCase –** lowercase first letter for the first word, followed by a capital first letter for each following word
- **Hungarian / Lezenski –** camelCase, but the first word represents a description of the type of object the variable is

- Understand naming conventions given to variables
- Demonstrate the typing convention associated with each naming convention

Homework:

1. Quizlet Vocabulary
2. Read chapter 3 in the course text