

# C++ Programming Fundamentals

C++ Lecture I

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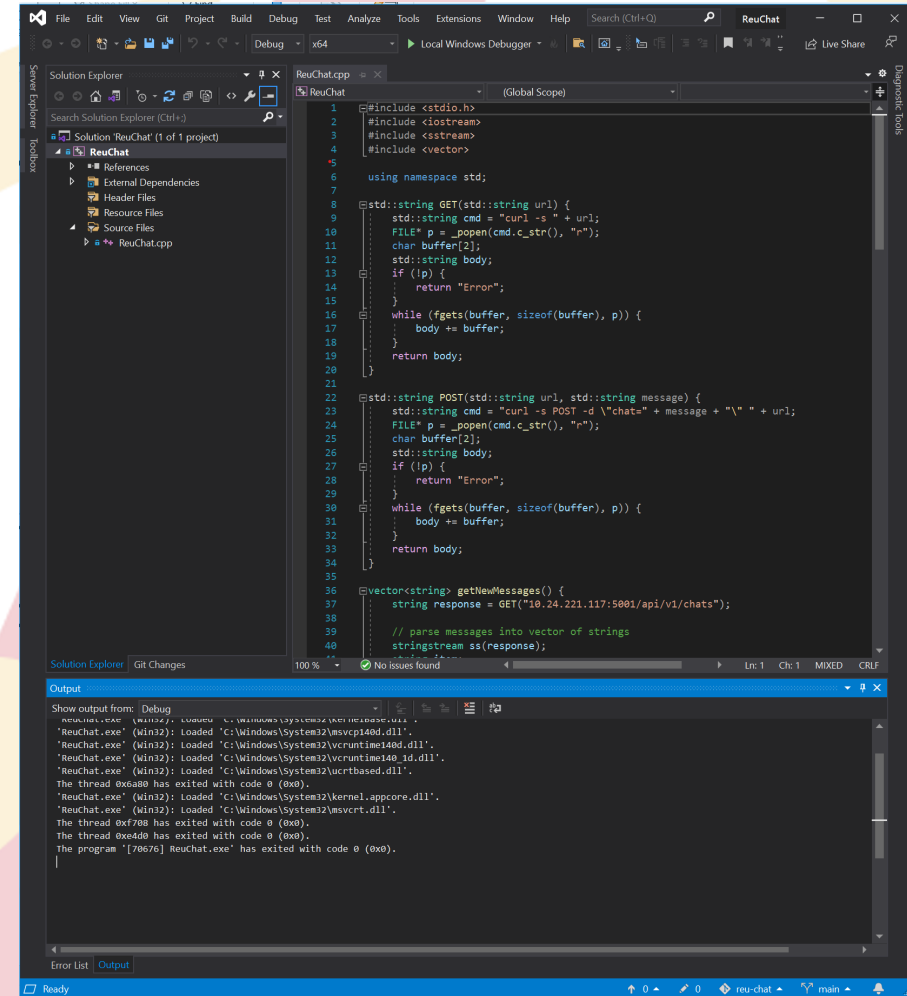
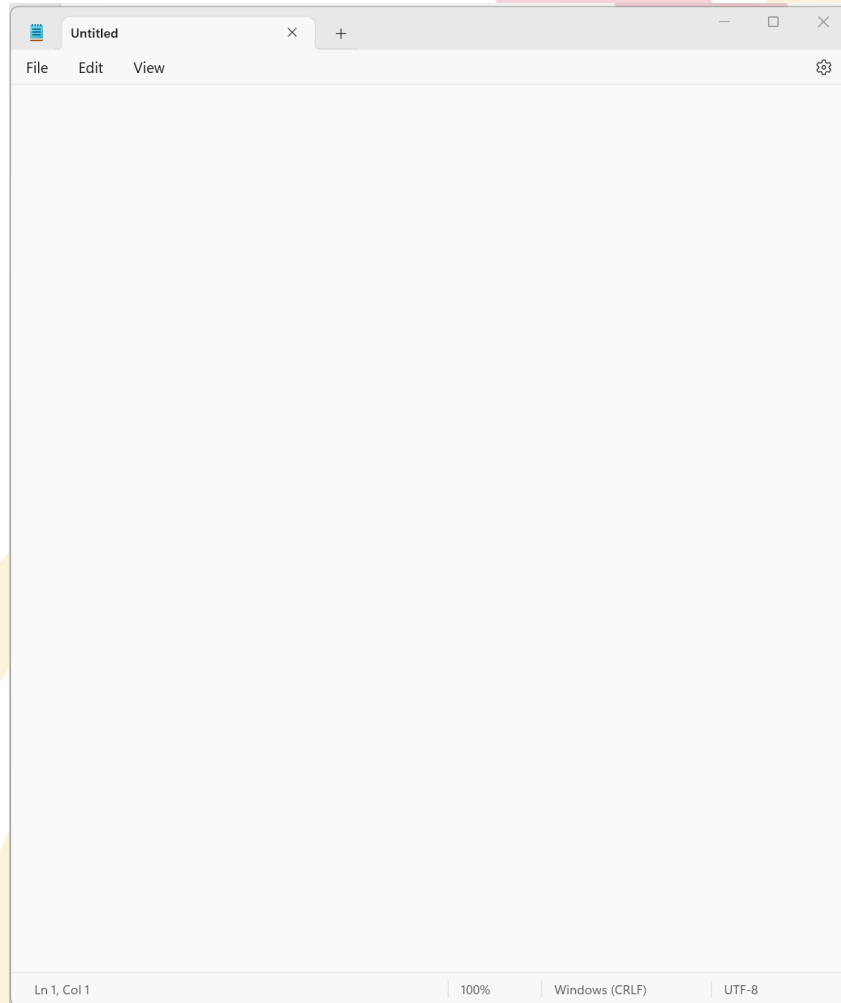
# Lecture Goals

- Introduction to your integrated development environments (IDE)
- The basic building blocks (“Hello World”)
  - Setting up the IDE
  - C++ Syntax
  - Using the “Includes” Statement
  - Commenting Code
  - Output to the Command Line
- Understanding of IDE’s, C++ Syntax, and Libraries

# What is an IDE?

- Definition: An **Integrated Development Environment (IDE)** is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of a **source code editor, build automation tools and a debugger.**
- Let's simplify →

# Text Editor vs IDE



# Visual Studio Anatomy

## Toolbar

Tools for applying actions to your program

## Project Explorer

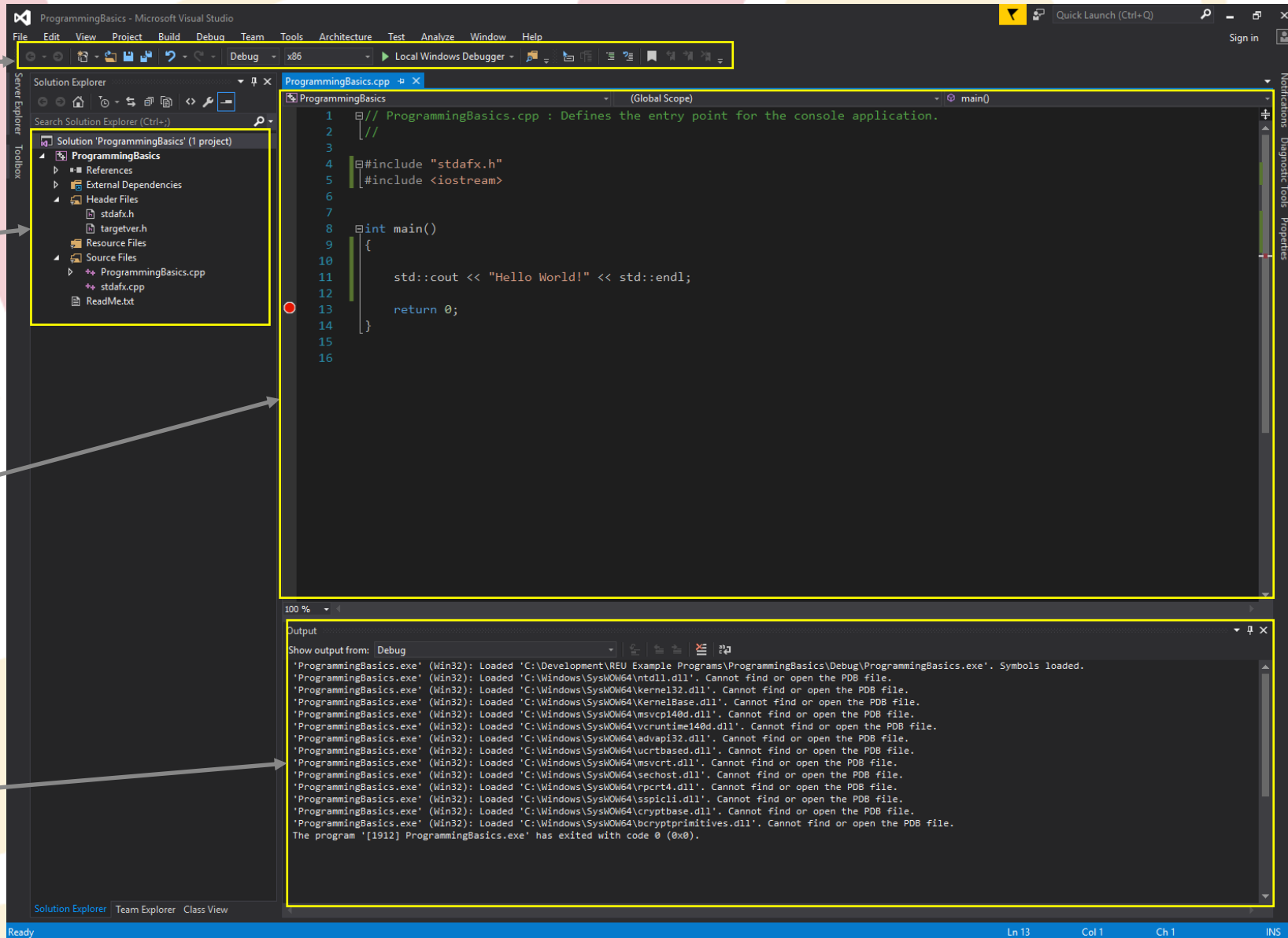
Same as File Explorer

## Editor Window

Where you write code

## Console

Build output and debug information



## Mini Task

- Open Visual Studio and create a new visual C++ Console Application
- Run the default file with HelloWorld!

# What's Happening?!

1. The C++ compiler links the included **libraries**
2. The C++ compiler looks for the **main() function**
3. Program is executed starting at the first line of **main()**

```
1  #include <iostream>
2
3  int main() {
4      std::cout << "Hello World!" << std::endl;
5  }
```

# Programming Syntax

- Letters and symbols must be arranged in a specific way for your program to run
- **Syntax** describes this “language”
- Like UK English and American English, many programming languages have the same fundamental structure, but differ slightly



# 👉 Syntax Mini Task 🖋️

Delete the ';' symbol and run the program.

What happens?

```
1  #include <iostream>
2
3  int main() {
4      std::cout << "Hello World!" << std::endl;
5  }
```

# Code Comments

- Good programmers comment their code
- Comments explain in plain language what a portion of code does
- Comments are helpful to yourself and OTHERS when reading code!

```
1  #include <iostream> // Include the iostream library for printing to the console
2
3  /*
4  Multi-line comments can be made with a slash and an asterisk.
5  This is a multi-line comment.
6  */
7  int main() {
8      // This is a above line comment
9      std::cout << "Hello World!" << std::endl; // This is an inline comment
10 }
```

# Include Statements

- There are commonly used functions, objects, and data structures that programmers want to use.
- We don't want to reinvent the wheel every time we program
- We include the **C++ Standard Library** to use pre-written code in our programs.

# Include Statements

- To specify what features we want, we use **#include** at the top of our file.
- For example, in our Hello World program we used **#include <iostream>**, giving us access to the **cout** object, allowing us to print to the console.
- **Tiny Task:** Remove the “**#include <iostream>**” and see what happens.

**Questions?**

## 👉 Mini Task 🖍️

- Play around with the Hello World application
- Add single line and multiline comments
- Have the program print something other than Hello World