

# Introducing C++



C++ is an amazing programming language. Most of what you see in front of you when you power up your computer, regardless of whether you're using Windows, macOS or Linux, is created using C++. Being able to code in C++ opens a whole new world for you, in terms of desirable professional skills and the ability to code amazing apps and games.

C++ is an efficient and powerful language that's used to develop operating systems, applications, games and much more in science, engineering, banking, education and the space industry, among others.

This section looks at the necessary equipment and software needed to get up and running with C++ for Windows, Mac and Linux systems.

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# Why C++?

C++ is one of the most popular programming languages available today. Originally called C with Classes, the language was renamed to C++ in 1983. It's an extension of the original C language, and is a general purpose object-oriented (OOP) environment.

## C EVERYTHING

Due to both the complexity of the language and its power and performance, C++ is often used to develop games, programs, device drivers, and even entire operating systems.

Dating back to 1979, the start of the golden era of home computing, C++, or rather C with Classes, was the brainchild of Danish computer scientist Bjarne Stroustrup, while working on his Ph.D thesis. Stroustrup's plan was to further the original C language, which had been widely used since the early seventies.

C++ proved to be popular among the developers of the 80s, since it was a much easier environment with which to get to grips, and, more importantly, it was 99% compatible with the original C language. This meant that, beyond the mainstream computing labs, regular people who didn't have access to the mainframes and large computing data centres could use it.

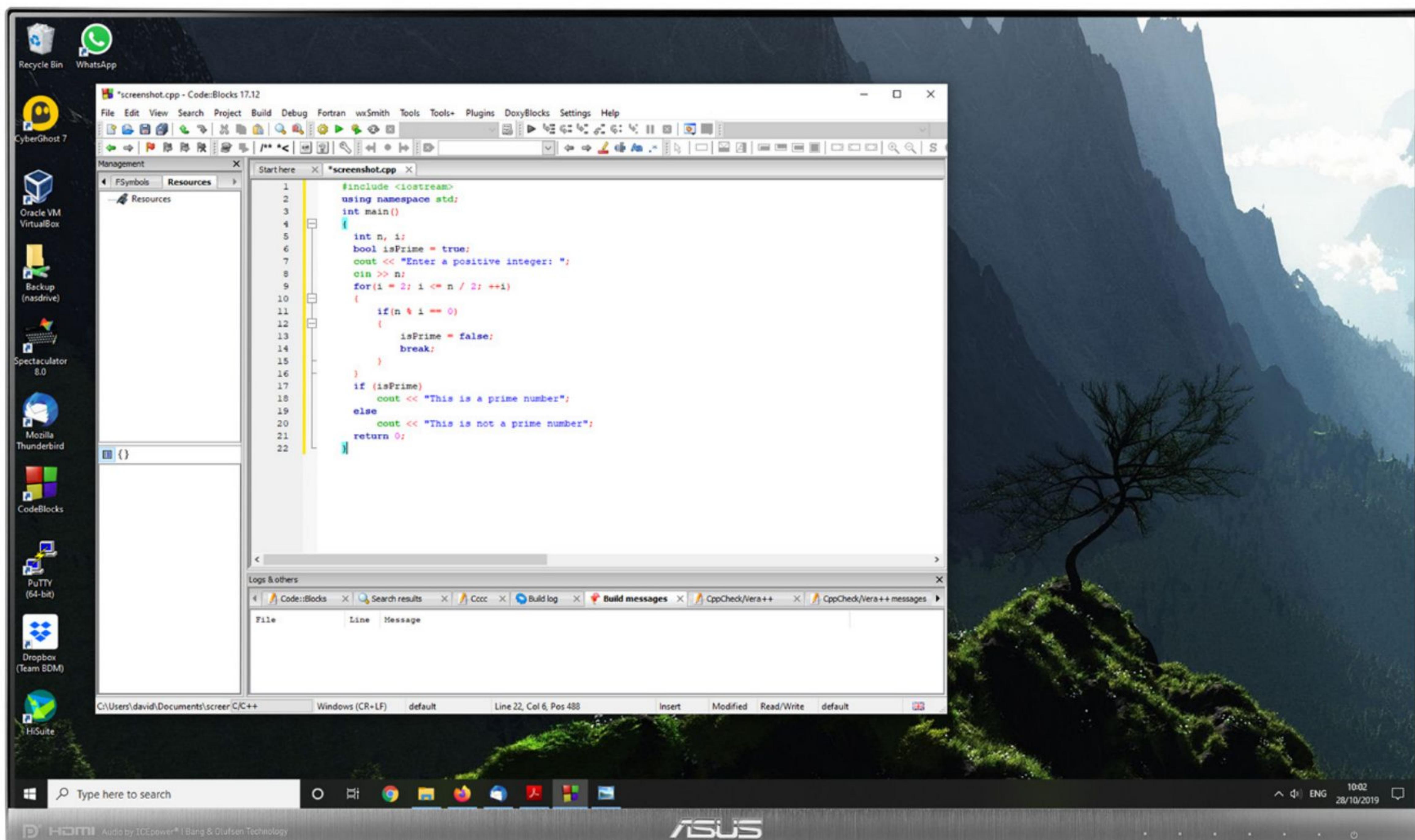
C++'s impact in the digital world is immense. Many of the programs, applications, games, and even operating systems are coded

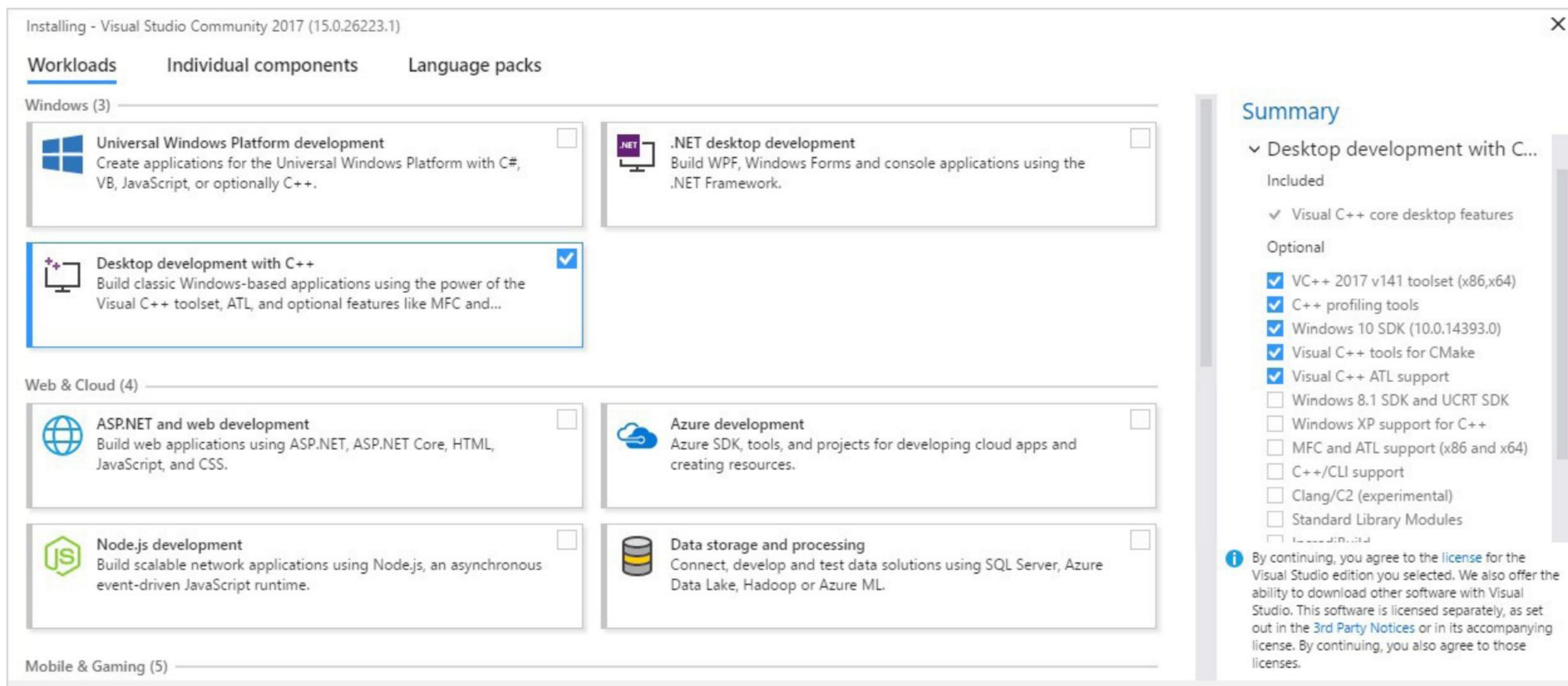
using C++. For example, all of Adobe's major applications, such as Photoshop, InDesign and so on, are developed in C++. You will find that the browser you use to surf the Internet is written in C++, as well as Windows 10, Microsoft Office, and the backbone to Google's search engine. Apple's macOS is written largely in C++ (with some other languages mixed in depending on the function), and the likes of NASA, SpaceX, and even CERN use C++ for various applications, programs, controls, and umpteen other computing tasks.

As well as being an easier addition to the core C language, C++ is also extremely efficient and performs well across the board. This higher level of performance over other languages, such as Python, BASIC and such, makes it an ideal development environment for modern computing; hence the aforementioned companies using it so widely.



**C++ code is much faster than other programming languages.**





### Microsoft's Visual Studio is a great, free environment in which to learn C++.

C++ puts the developer in a much wider world of coding. By mastering C++, you will find yourself being able to develop code for the likes of Microsoft, Apple and so on. Generally, C++ developers enjoy a higher salary than programmers of some other languages, and, due to its versatility, the C++ programmer can move between jobs and companies without the need to re-learn anything specific.

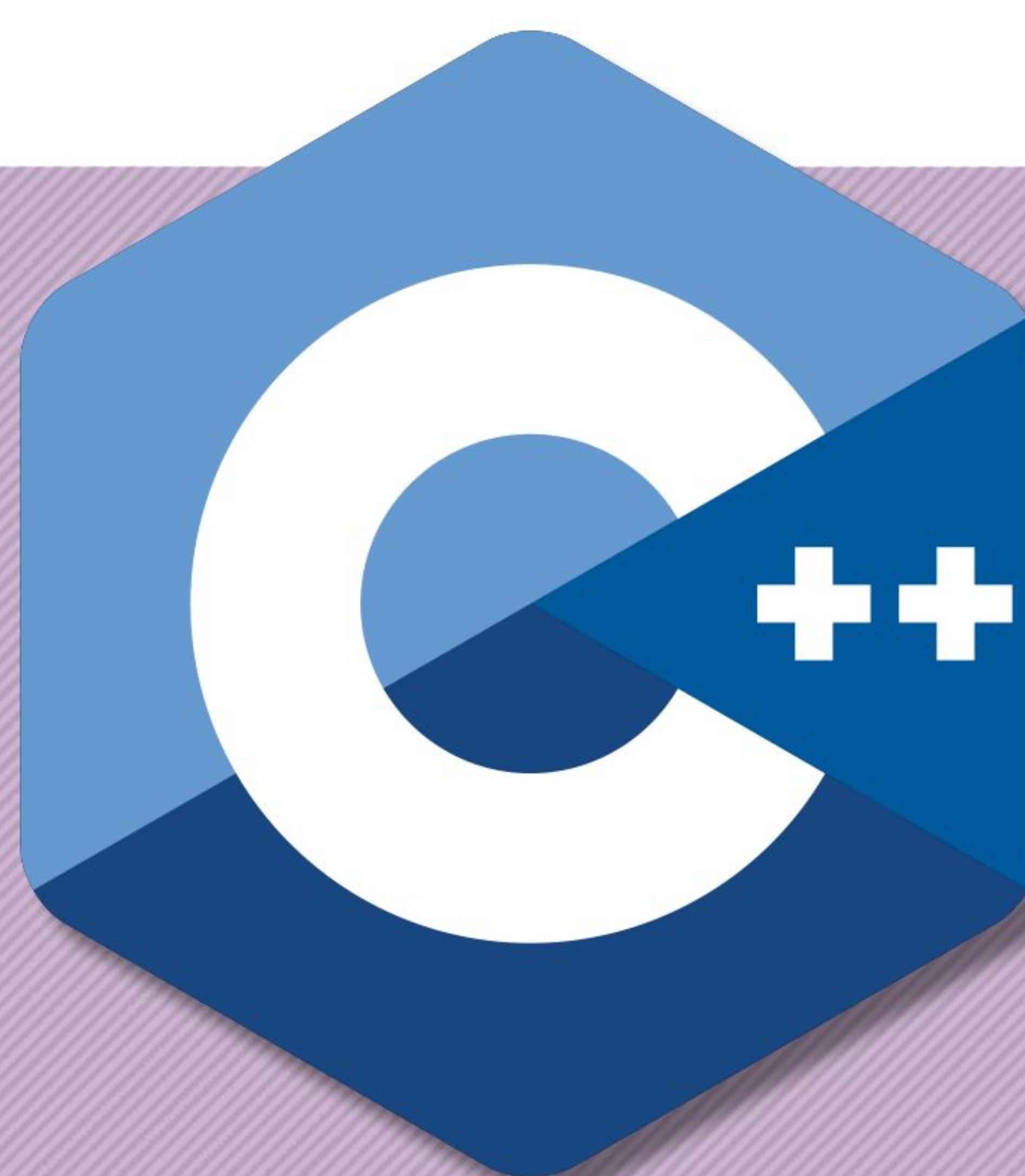
You will discover, as you become a more advanced coder, that many of the developers in various coding jobs around the world tend to use pre-designed development engines. For example, when creating games, the likes of Bethesda, the team behind Oblivion and Skyrim, utilise a 3D game engine called The Creation Engine. This enables the team to quickly create animations, characters, items, terrains, rooms, and just about everything else you'd see in the game. The engine itself has been modified to make the most of the current graphics card hardware, and computer or console processing power. These engines are mostly written in C++, and when making

improvements to the engine, or when creating a new game, if the developers want to add something that the engine can't do, they will use C++ to create the new content or link between two different engines. The end result, of course, is a game that contains the latest graphical technology, while being seamlessly bound together with some pretty clever C++ coding.

Getting to use C++ is quite easy, all you need is the right set of tools in which to communicate with the computer in C++, and you can start your journey. A C++ IDE is free of charge, even the immensely powerful Visual Studio from Microsoft is freely available to download and use. You can get into C++ from any operating system, be it macOS, Linux, Windows, or even mobile platforms.

So, to answer the question of Why C++, the answer is because it's fast, efficient, and developed by most of the applications you regularly use. It's cutting edge, and a fantastic language to have mastered.

### Indeed, the operating system you're using is written in C++.



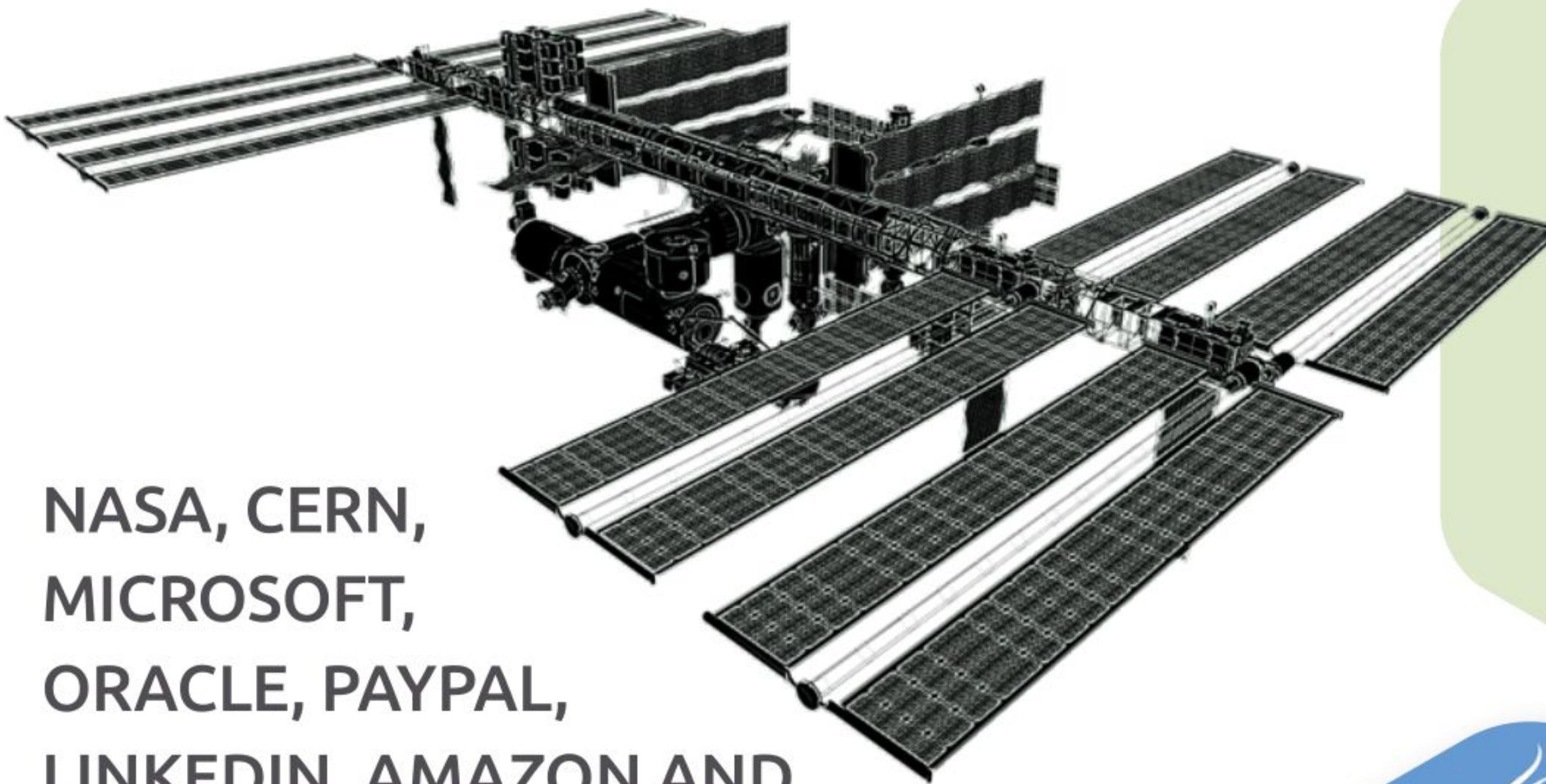


**Top 5  
Tech  
Topics**



C++ is one of the top programming languages in the industry. It's quick, powerful, and used by nearly every major tech and gaming company in the world. Here's some interesting facts about the rather wonderful C++.

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NASA, CERN, MICROSOFT, ORACLE, PAYPAL, LINKEDIN, AMAZON AND THE MILITARY USE C++.

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**C++ IS USED FREQUENTLY IN ANIMATION PROCESSES.**

**3D ANIMATION,  
MODELLING,  
AND SIMULATIONS**

**ALL UTILISE C++.**

A lot of the Linux operating system is coded using C++, therefore you could say that most of the world's Internet hosting servers are available thanks to C++.

**SUPERCOMPUTING USES C++ CODE TO CALCULATE VAST AMOUNTS OF DATA, INCLUDING THE NASA-BASED SUPERCOMPUTING FARM THAT RUNS SIMULATIONS OF THE UNIVERSE.**

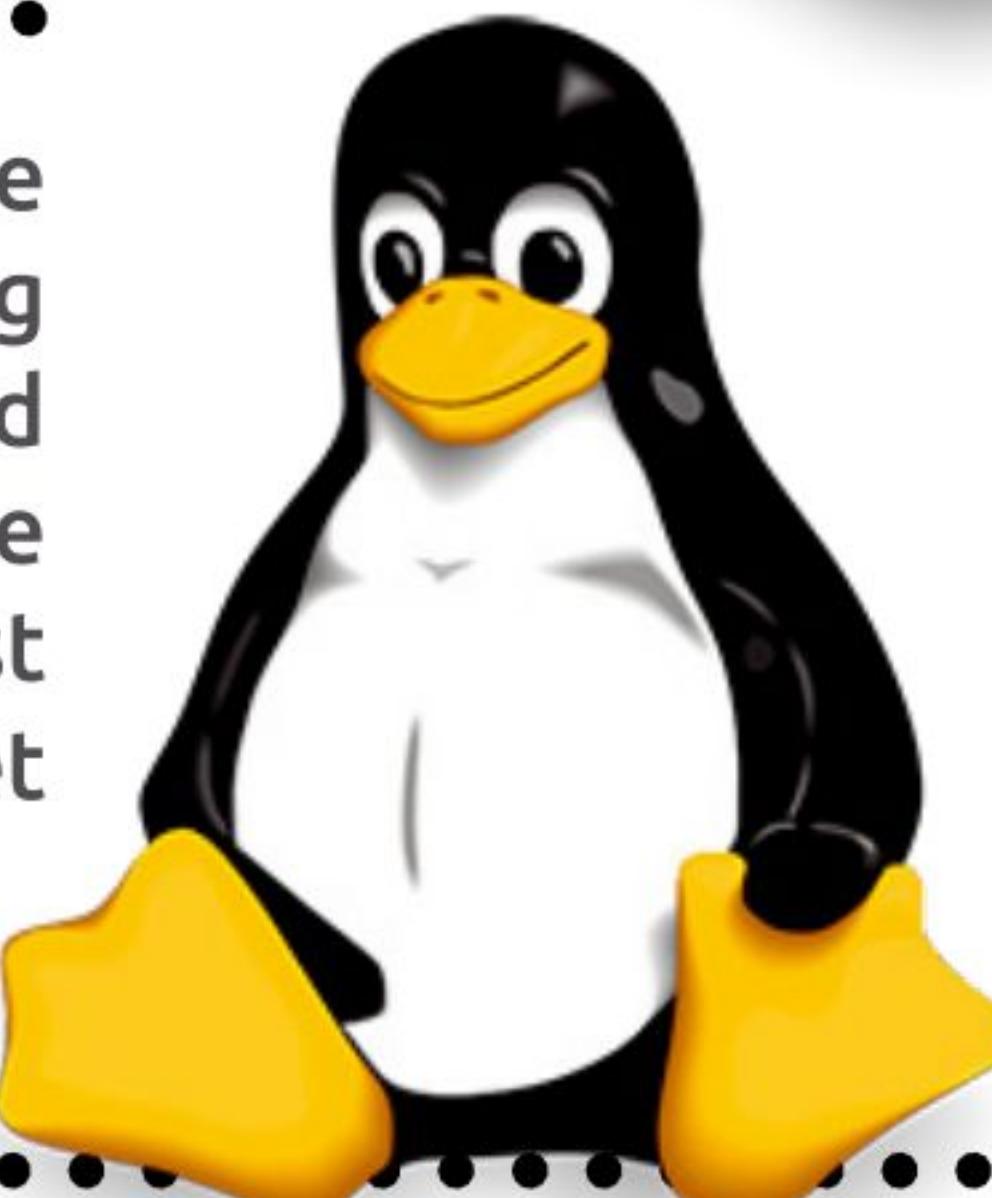
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**C++ is one of the predominant programming languages for the development of all kinds of technical and commercial software.**

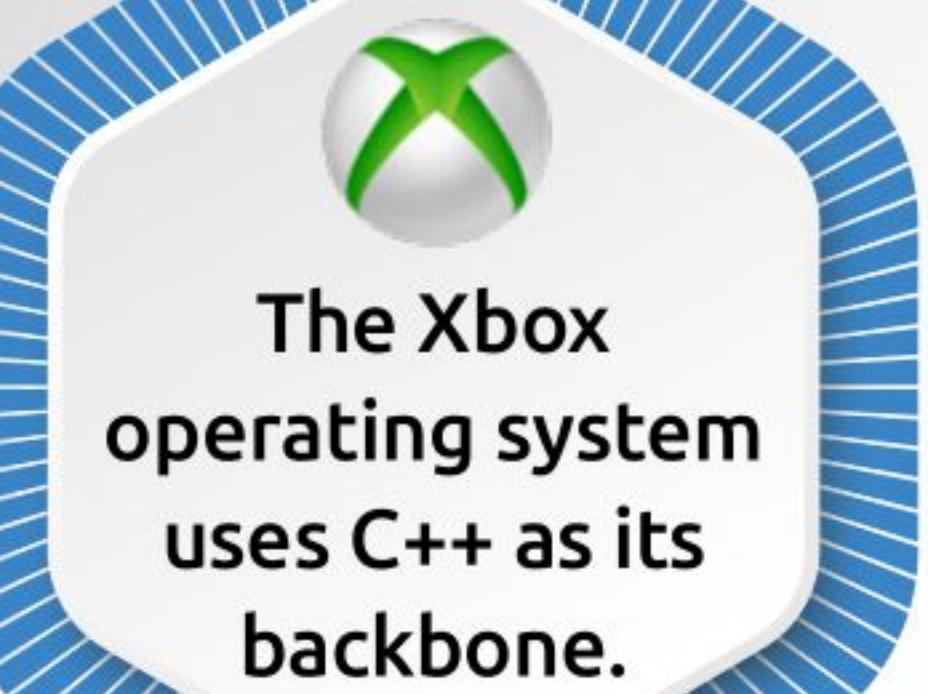


**C++ has influenced other programming languages, such as C# and Java.**



**70%**

More than 70% of all trading is known as High Frequency Trading (HFT), and the software responsible is written in C++ to make use of its high speed.



The Xbox operating system uses C++ as its backbone.



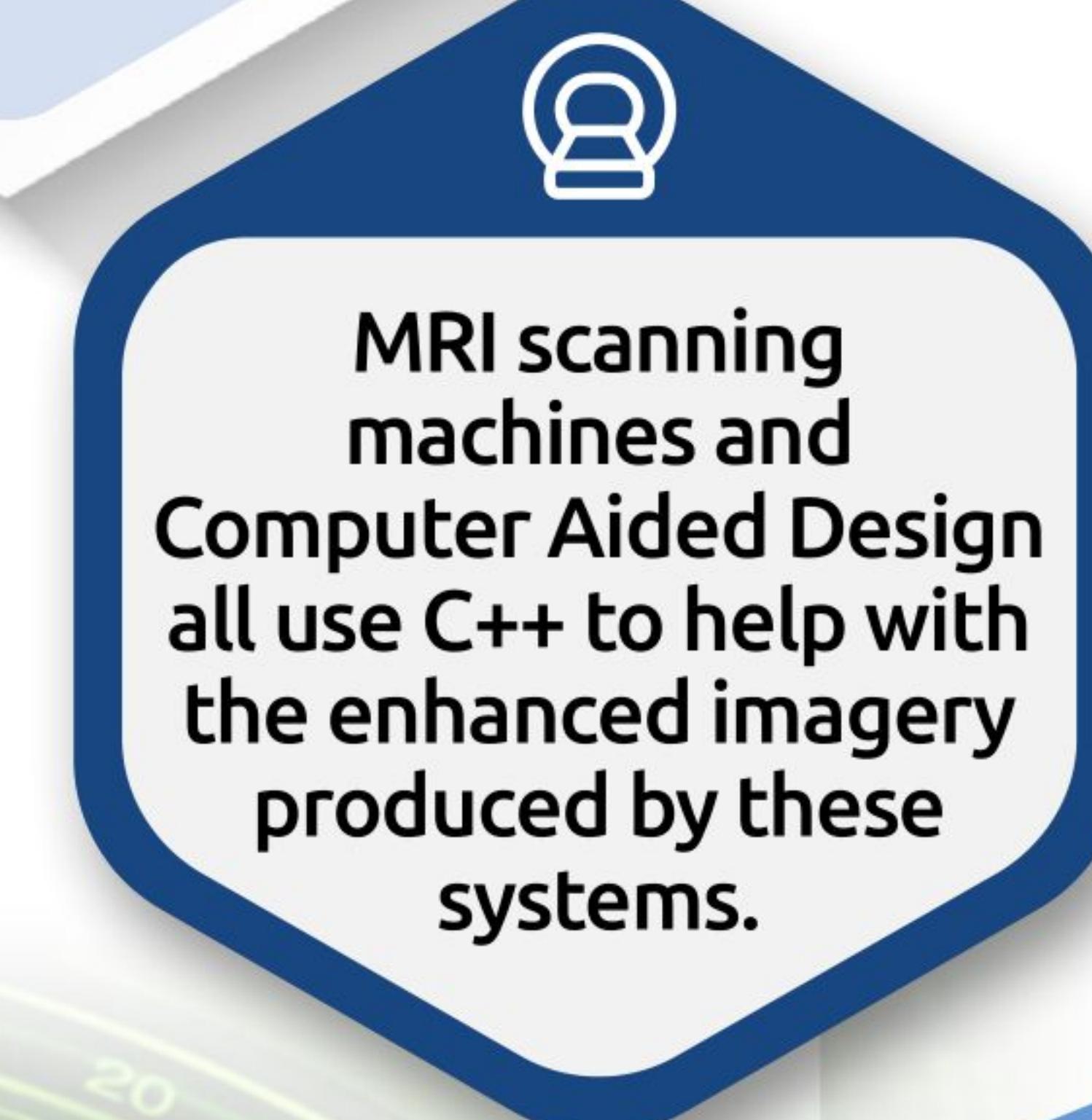
Many database applications are built using C++, such as MySQL, it's also used by Wikipedia, Yahoo and YouTube.



C++ is used in computer networking as the main code behind the Programmable Logic Controller, connecting servers, processors, other hardware, and even robotics.



Windows 95, 89, 2000, XP, 7, 8.1 and 10, as well as Microsoft Office, use C++ as the backbone programming language of choice.



MRI scanning machines and Computer Aided Design all use C++ to help with the enhanced imagery produced by these systems.



Google Chrome, Mozilla's Firefox, and even Microsoft's Edge web browsers are coded in C++.



Most of Adobe's stable of products are developed using C++.

THE  
**90th**  
PERCENTILE SALARY  
FOR A UK-BASED C++  
DEVELOPER IS  
**£120,000**



The Unreal 4 Engine, which is coded in C++, is used for hundreds of games, including Fortnite.



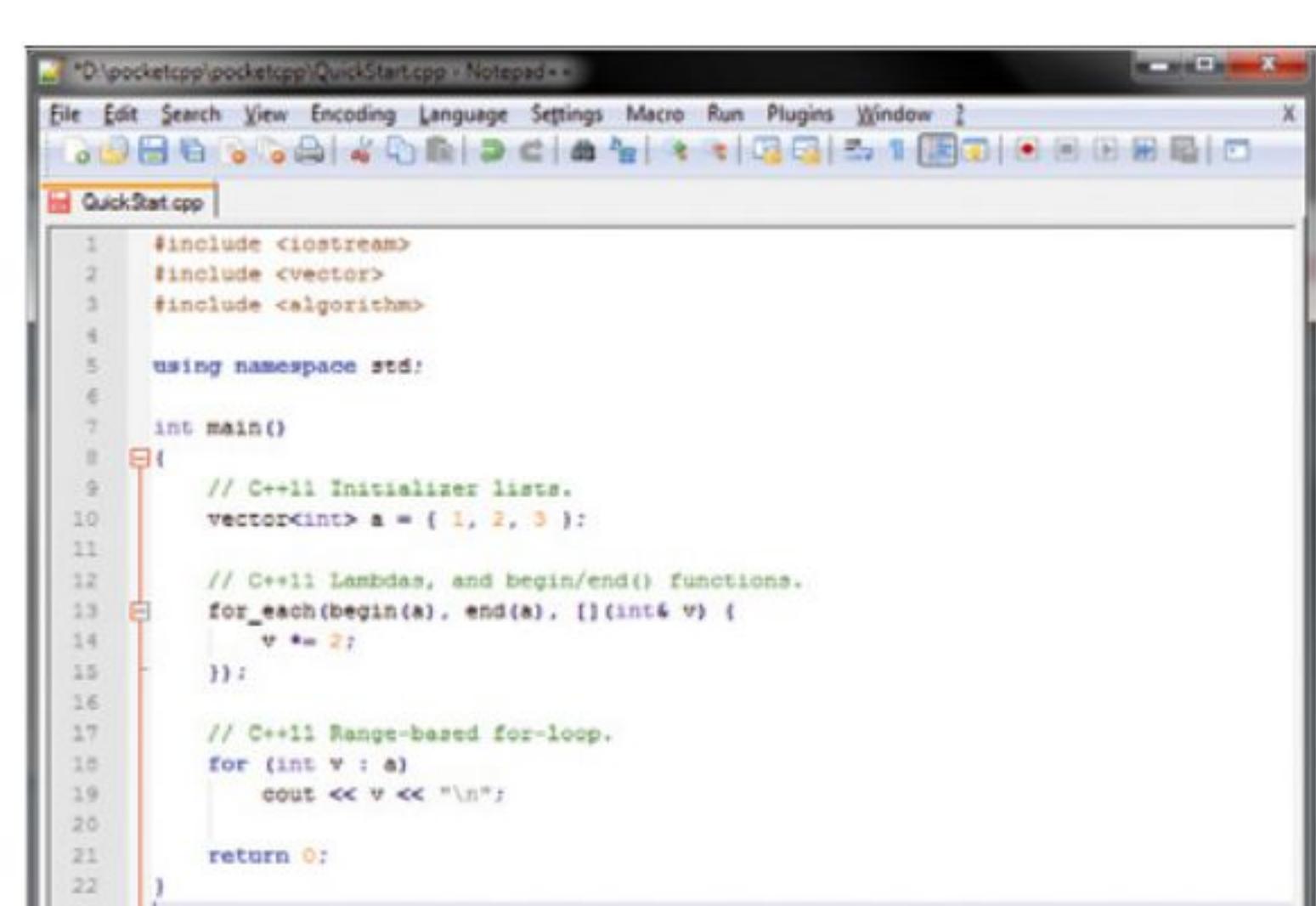
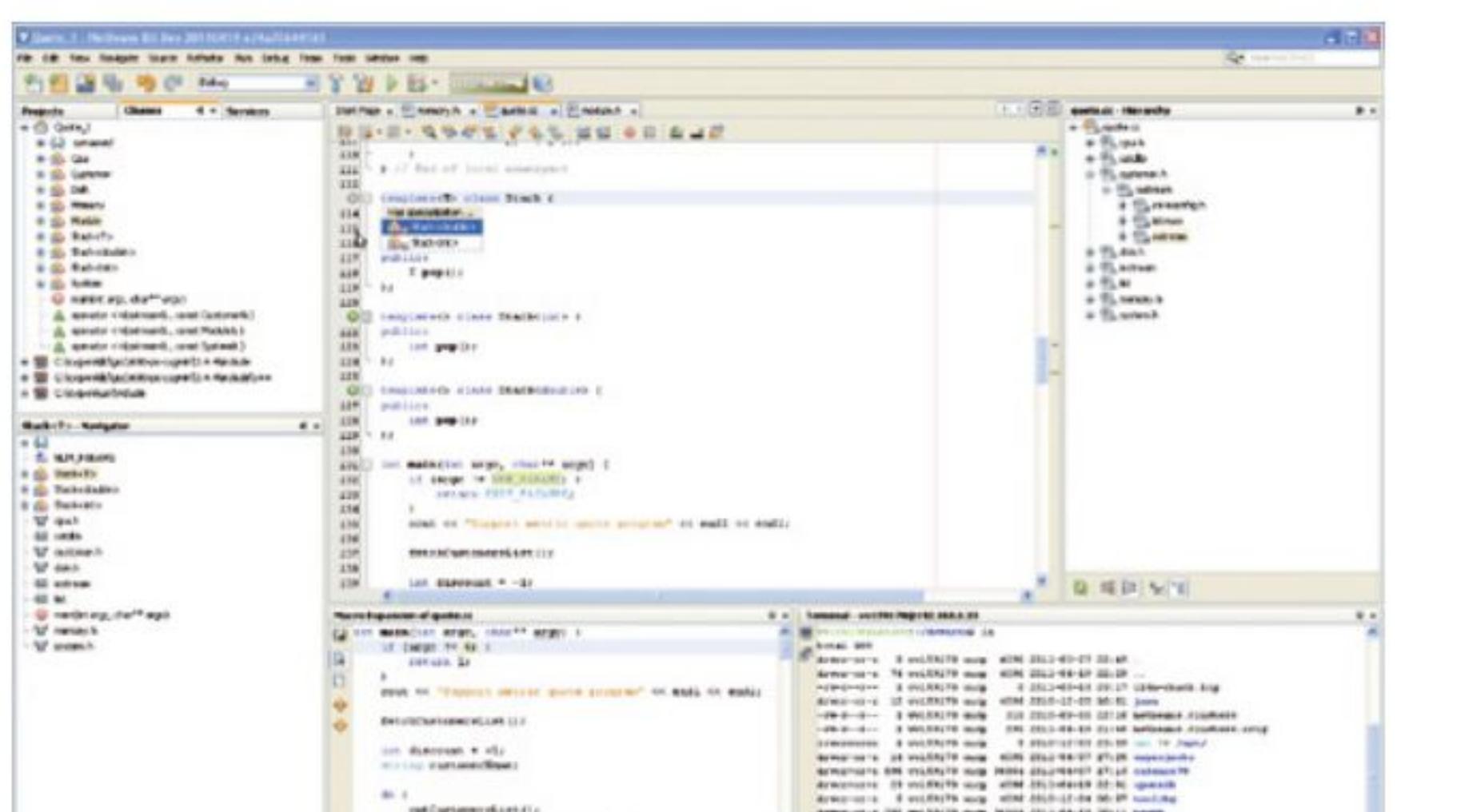
# Equipment You Will Need



You don't need to invest a huge amount of money in order to learn C++, and you don't need an entire computing lab at your disposal either. Providing you have a fairly modern computer, everything else is freely available.

## C++ SETUPS

As most, if not all, operating systems have C++ at their core, it stands to reason that you can learn to program in C++ no matter what OS you're currently using.



### COMPUTER

Unless you fancy writing out your C++ code by hand on a sheet of paper (which is something many older coders used to do), then a computer is an absolute must have component. PC users can have any recent Linux distro or Windows OS, Mac users the latest macOS.

### AN IDE

As with Python, an IDE is used to enter and execute your C++ code. Many IDEs come with extensions and plugins that help make it work better, or add an extra level of functionality. Often, an IDE will provide enhancements depending on the core OS being used, such as being enhanced for Windows 10.

### COMPILER

A compiler is a program that will convert the C++ language into binary that the computer can understand. While some IDEs come with a compiler built in, others don't. Code::Blocks is our favourite IDE that comes with a C++ compiler as part of the package. More on this later.

### TEXT EDITOR

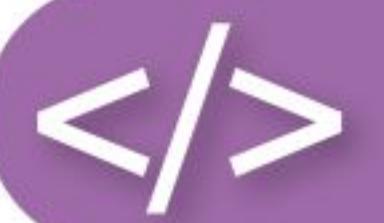
Some programmers much prefer to use a text editor to assemble their C++ code before running it through a compiler. Essentially you can any text editor to write code, just save it with a .cpp extension. However, Notepad++ is one of the best code text editors available.

### INTERNET ACCESS

While it's entirely possible to learn how to code on a computer that's not attached to the Internet, it's extraordinarily difficult. You will need to install the relevant software, keep it up to date, install any extras or extensions, and look for help when coding. All of which require access to the Internet.

### TIME AND PATIENCE

Yes, as with Python, you're going to need to set aside significant time to spend on learning how to code in C++. Sadly, unless you're a genius, it's not going to happen overnight, or even a week. A good C++ coder has spent many years honing their craft, so be patient, start small and keep learning.

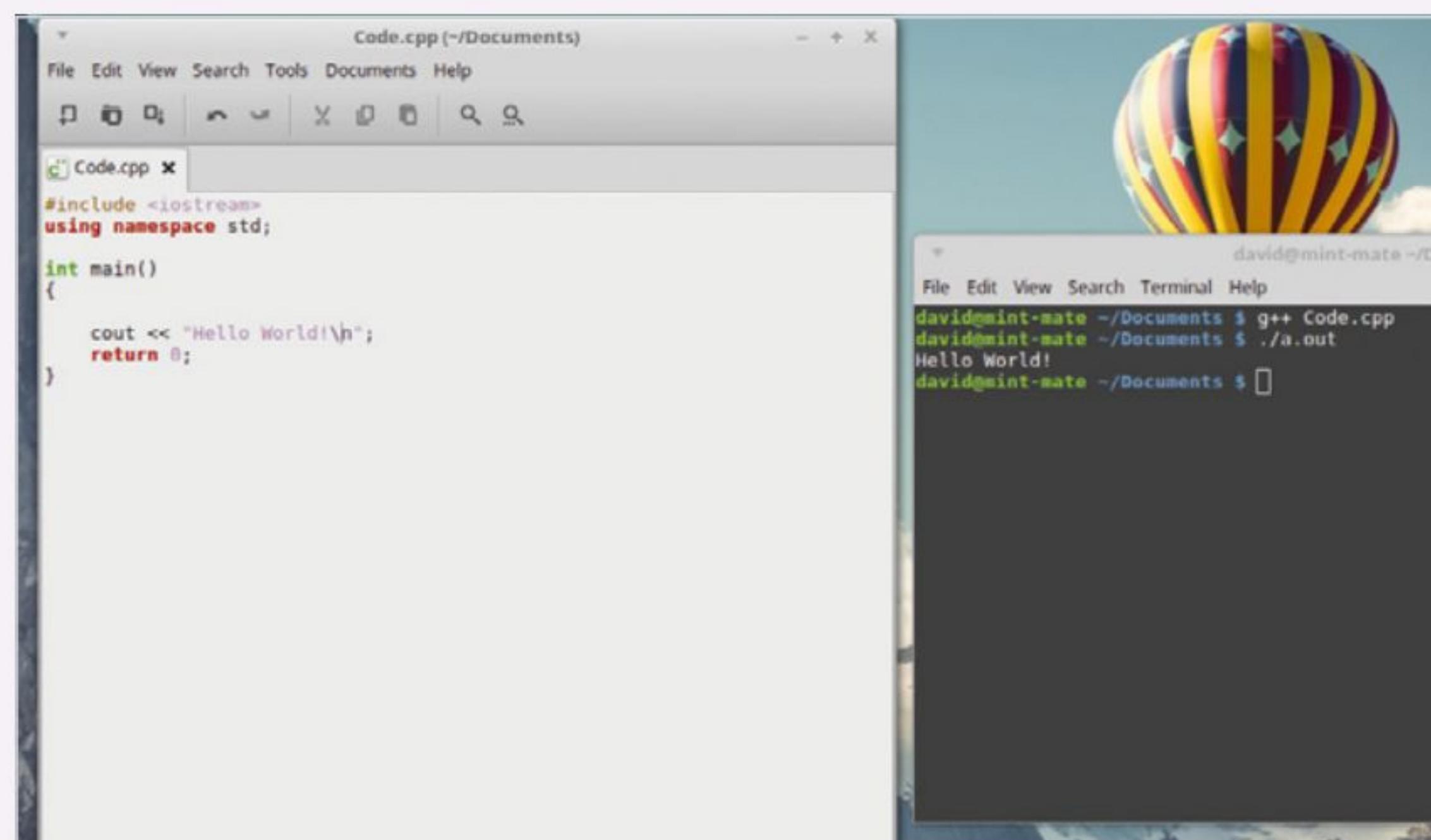


## OS SPECIFIC NEEDS

C++ will work in any operating system, however, getting all the necessary pieces together can be confusing to a newcomer. Here's some OS specifics for C++.

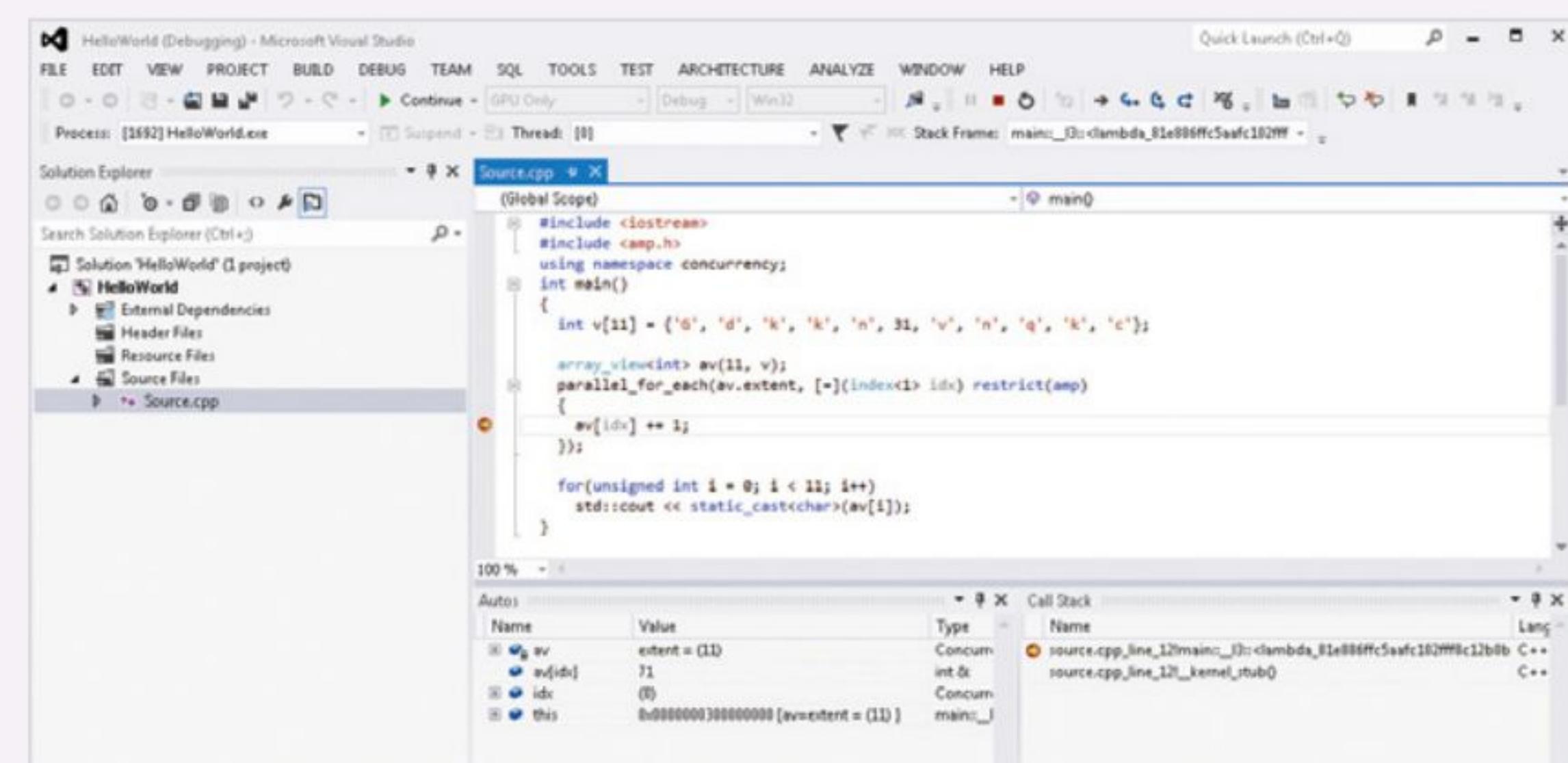
### LINUX

Linux users are lucky in that they already have a compiler and text editor built into their operating system. Any text editor will allow you type out your C++ code, when it's saved with a .cpp extension, use g++ to compile it.



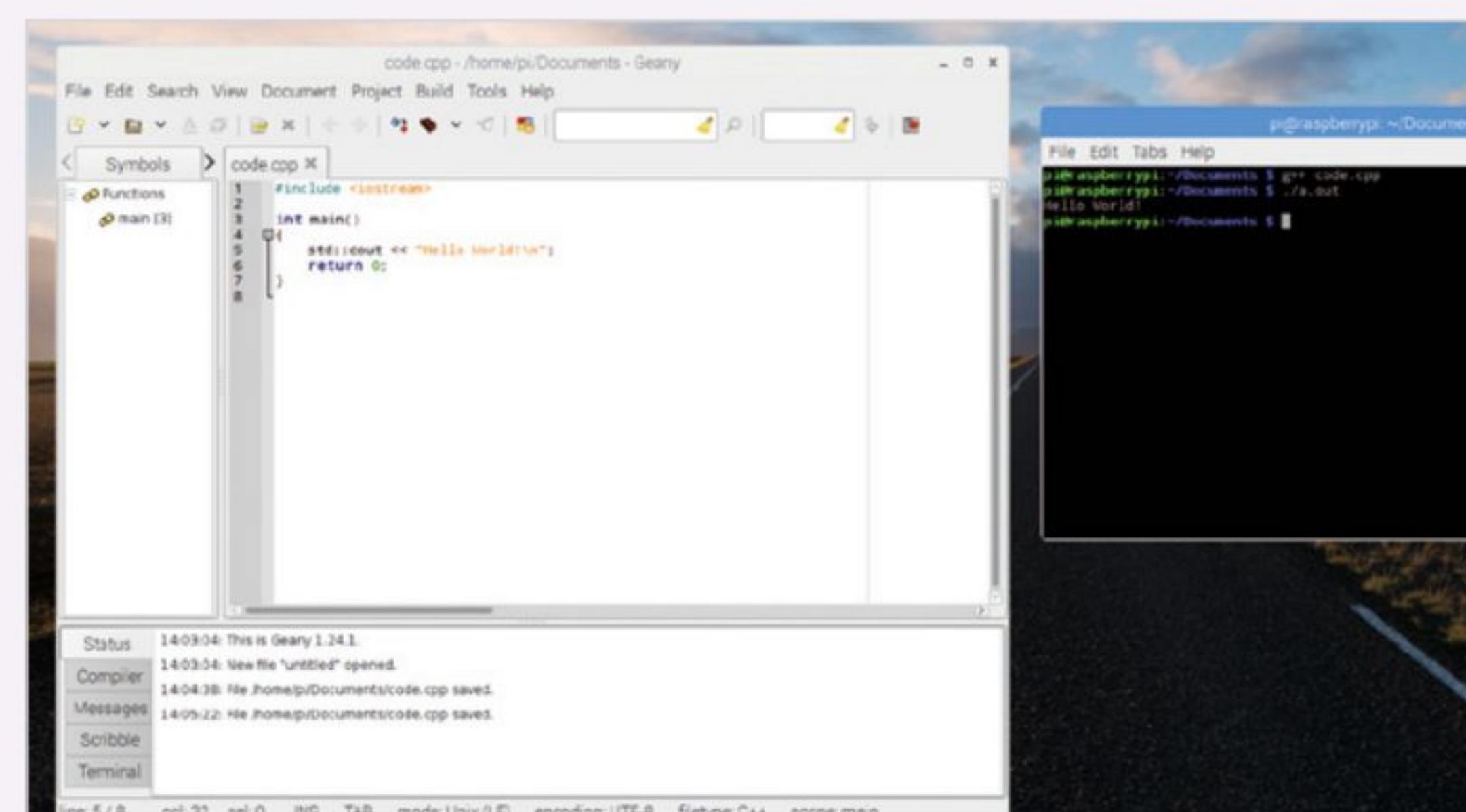
### WINDOWS

As we've mentioned previously, a good IDE is Microsoft's Visual Studio. However, a better IDE and compiler is Code::Blocks, which is regularly kept up to date with a new release twice a year, or so. Otherwise Windows users can enter their code in Notepad++ then compile it with MinGW – which Code::Blocks uses.



### RASPBERRY PI

The Raspberry Pi's operating system is Raspbian, which is Linux based. Therefore, you're able to write your code out using a text editor, then compile it with g++ as you would in any other Linux distro.



### MAC

Mac owners will need to download and install Xcode to be able to compile their C++ code natively. Other options for the macOS include Netbeans, Eclipse or Code::Blocks. Note: the latest Code::Blocks isn't available for Mac due to a lack of Mac developers.

