


# Lesson 1

“C++ makes it harder to shoot yourself in the foot, but when you do it'll **blow** your whole **leg** off.

# Where is C++ Used?

- AAA Video Games (Unreal Engine)
- Visual Effects (Adobe After Effects)
- High-Performance Servers
- Operating Systems
- Major Databases (MySQL, MongoDB)
- Government & Space Exploration (NASA)

# The Evolution of C++



A horizontal timeline with a yellow line and arrow pointing right. Three yellow dots mark the stages: Pre-1979, 1979, and Present. Each stage has a label in a box and a description below it.

Pre-1979

Inspired by the high performance of the C language.

1979

"C with Classes" is created by computer scientist Bjarne Stroustrup.

Present

New versions of the language are released every 3 years.



C++ is a **superset** of C,  
meaning almost any C  
program is also a **valid** C++  
program.



# 1

## Your First C++ Program

The "Hello World"



`#include` imports the 'input-output stream' library, providing tools to write text to the screen.





Every C++ program starts  
executing from the `main`  
function. It is the mandatory  
entry point for your code.







```
std::cout << "Hello World";
```

uses the character output  
(`cout`) object to print the text  
string to the console.





return 0; signals to the  
operating system that the  
program finished successfully  
without any critical errors.



# 2

## Code's Fundamentals

The "Grammar" of C++

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# Syntax

The grammar for a programming language. It's the set of rules that defines how to write valid code.



# Key C++ Syntax Rules

- C++ is **case-sensitive** (`main` is not the same as `Main`).
- Every statement must end with a **semicolon** (`;`).
- Whitespace is often ignored but used for readability.
- Comments, starting with `//`, are **ignored** by the compiler.

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# Variable

A name given to a location in the computer's memory used to temporarily store data.



# The Life of a Variable

## 1. Declaration

``int score;`` (Creates the labeled memory location).

## 2. Assignment

``score = 100;`` (Puts a value in the location).

## 3. Initialization

``int score = 100;`` (Does both at the same time).

3

# Unlocking C++'s Power

Powerful Abstractions



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# Class

A blueprint for creating objects. It bundles data (attributes) and functions (methods) into a single unit.





**Manual Pointers:** Manually allocate and deallocate memory. Powerful, but can lead to critical errors.

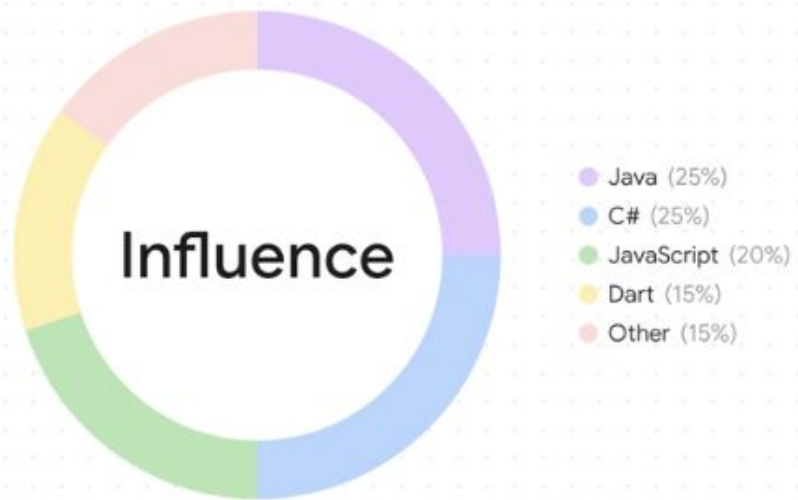


**Smart Pointers:** A modern C++ feature that handles memory automatically, making code easier and safer.

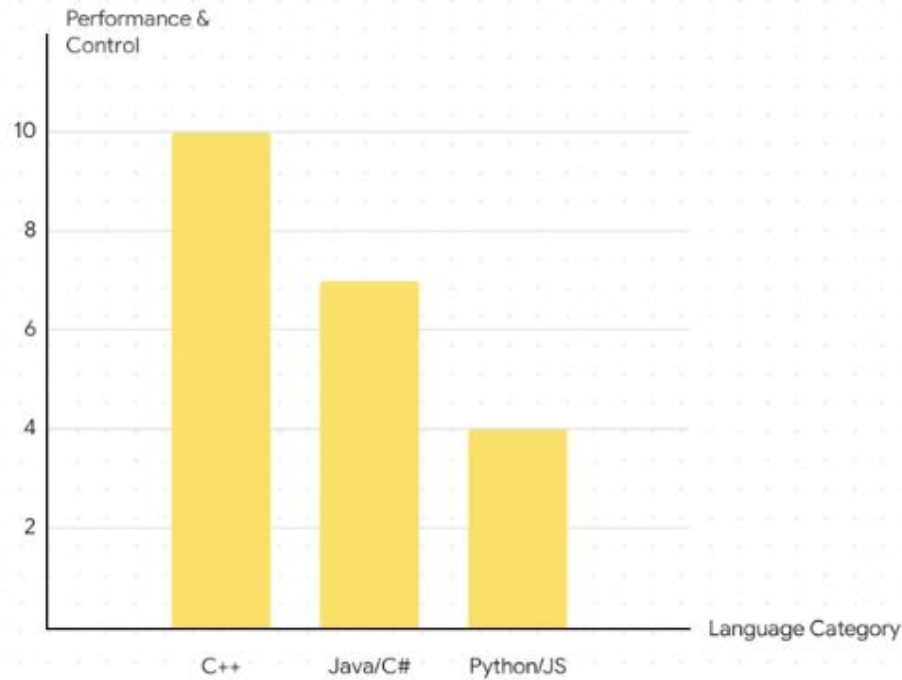
# 4

## Why C++ Still Matters

Legacy and Future

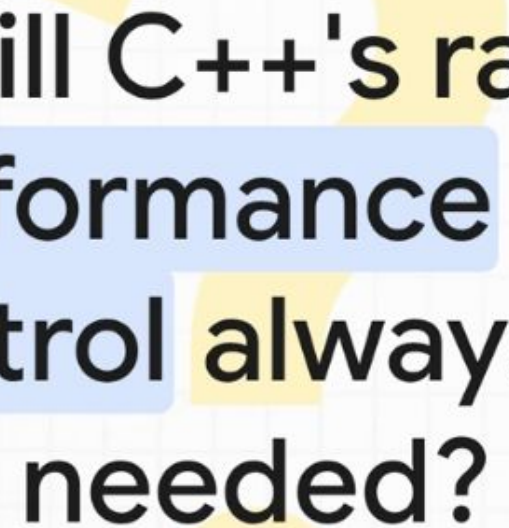


C++ has heavily influenced many modern programming languages.



While other languages may be easier, C++ provides maximum speed and control over hardware.

\$170,000



**Will C++'s raw  
performance and  
control always be  
needed?**