Introduction to C++

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Brief History of C++

- Between 1969 and 1972 Dennis Richie and Ken Thompson built the programming language C.
  - C was designed for writing low level, cross platform performance critical code, such as operating systems.

- In 1979 Bjarne Stroustrup began work on what he called “C with Classes.”
  - C with Classes added features of object oriented programming from another language called Simula on top of C.

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History of C++

- In 1983 C With Classes was renamed to C++ as more features were added.
- In 1989 C++ ‘2.0’ was completed adding many of the additional features that defines C++ today including templates, exceptions and namespaces.
- In 1998 C++ was standardized by the ISO
- In 2003 a new standard was released that updated and fixed many small problems with the original standard.

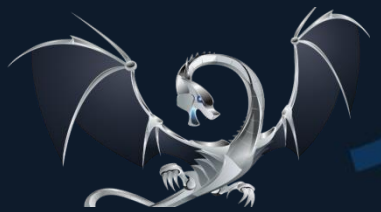
History of C++

- In 2011 C++11, another new version of the standard was released adding many, many new features to both the core language and the standard library.

- Yet another new standard called C++14 has very recently been approved adding a range of yet more features.

How C++ code executes

- C++ is a *statically compiled language*.
- This means you write your code, you then run something called a compiler.



- The compiler reads the code you wrote and generates an executable.
  - This executable contains the machine code your computer executes.

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The Basics of a C++ Program

```
#include <iostream>

int main()
{
    std::cout << "Hello World!";
    return 0;
}
```

The Basics of a C++ Program

- The #include keyword is how we add existing functionality to our program
- C++ has a large set of premade code called the ‘standard library’
- For this program, we want to print out some text to the screen. The code that lets us do this is inside the iostream module of the standard library.

```
#include <iostream>
```

The Basics of a C++ Program

- This is what we call a function.
- Functions let us group chunks of code together. Most code can only exist inside a function. The code being grouped goes between the { } and is called a block.
- The important part here is where it says ‘main’. This is the name of the function.
- When you compile a C++ program, it looks through the program for a function called main and sets the starting to be the first line of that function.

```
int main()
{
}
```

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The Basics of a C++ Program

- This is the first statement in our program.
- In a real program, statements make up the majority of your code.
- Statements are the parts of your code that actually *do something*.
- Statements in C++ are always ended with a semi-colon.

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

The Basics of a C++ Program

- This statement uses the stream-out operator to print text (in programming, we call this a string) out to the screen.

- << is the stream-out operator. It sends whatever data is on the right into the object on the left.

- std::cout represents the screen, so this line sends the string “Hello World!” to the screen.

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

The Basics of a C++ Program

- This is the second (and final) statement of our program.
- This is a return statement.
- The return keyword is how you exit a function. A return in the main function is how you exit your program.
  - Here, the 0 means success. Anything other that 0 means your program failed.

```
return 0;
```

Summary

- C++ was created between 1979 and 1983
- C++ is constantly being updated, adding new features.
- The latest C++ standard is C++14.
- C++ is a statically compiled language.
- The #include statement adds in the functionality from another file.
- A C++ program is made up of statements.
- The C++ standard library provides functions we can use to do common tasks.
- The main function is where your code starts executing from.
- std::cout << prints text to the screen.
- The return keyword exits the main function.

References


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