Chapter 2
Hello World!

Bjarne Stroustrup

www.stroustrup.com/Programming

Why C++ ?

- You can't learn to program without a programming language
- The purpose of a programming language is to allow you to express your ideas in code
- C++ is the language that most directly allows you to express ideas from the largest number of application areas
- C++ is the most widely used language in engineering areas
  - http://www.stroustrup.com/applications.html

Why C++ ?

- C++ is precisely and comprehensively defined by an ISO standard
  - And that standard is almost universally accepted
  - The most recent standard is ISO C++ 2014
- C++ is available on almost all kinds of computers
- Programming concepts that you learn using C++ can be used fairly directly in other languages
  - Including C, Java, C#, and (less directly) Fortran

A first program – just the guts...

```cpp
#include <iostream>

int main()                          // main() is where a C++ program starts
{
    cout << "Hello, world!\n";      // output the 13 characters  Hello, world!
                                    // followed by a new line
    return 0;                       // return a value indicating success
}
```

// quotes delimit a string literal
// NOTE: "smart" quotes " " will cause compiler problems.
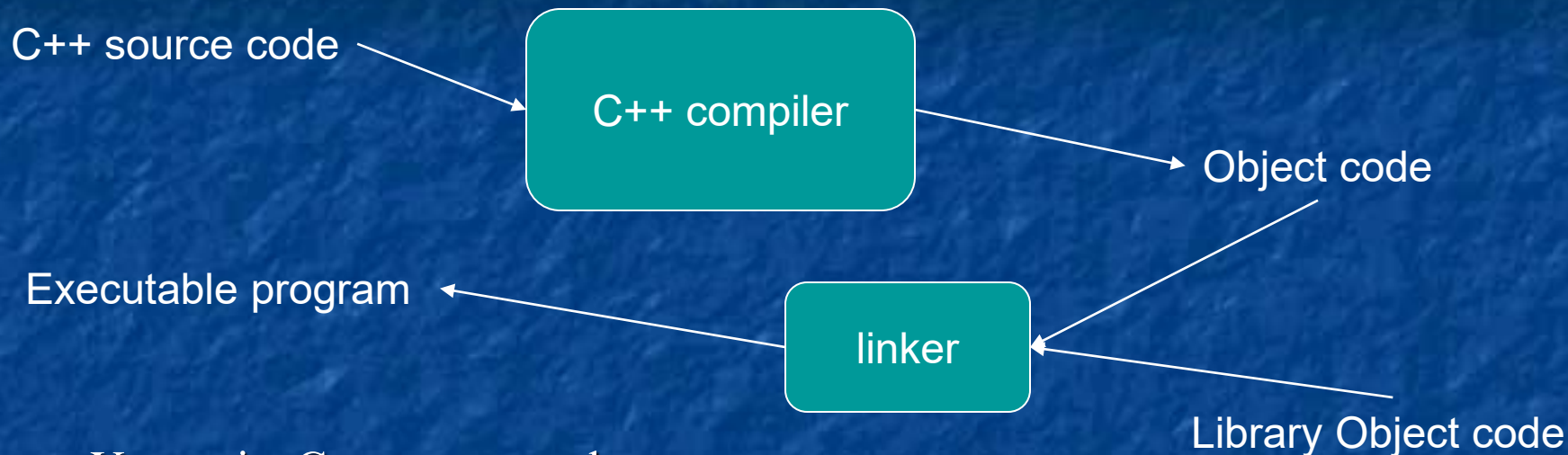//   so make sure your quotes are of the style " "
// \n is a notation for a new line

Hello, world!

- "Hello world" is a very important program
  - Its purpose is to help you get used to your tools
    - Compiler
    - Program development environment
    - Program execution environment

Compilation and linking

C++ source code → **C++ compiler** → Object code

Executable program ← **linker** ← Object code

linker ← Library Object code

- You write C++ source code
  - Source code is (in principle) human readable
- The compiler translates what you wrote into object code (sometimes called machine code)
  - Object code is simple enough for a computer to "understand"
- The linker links your code to system code needed to execute
  - E.g., input/output libraries, operating system code, and windowing code
- The result is an executable program
  - E.g., a **.exe** file on windows or an **a.out** file on Unix

generic makefile
in /public/examples/c++