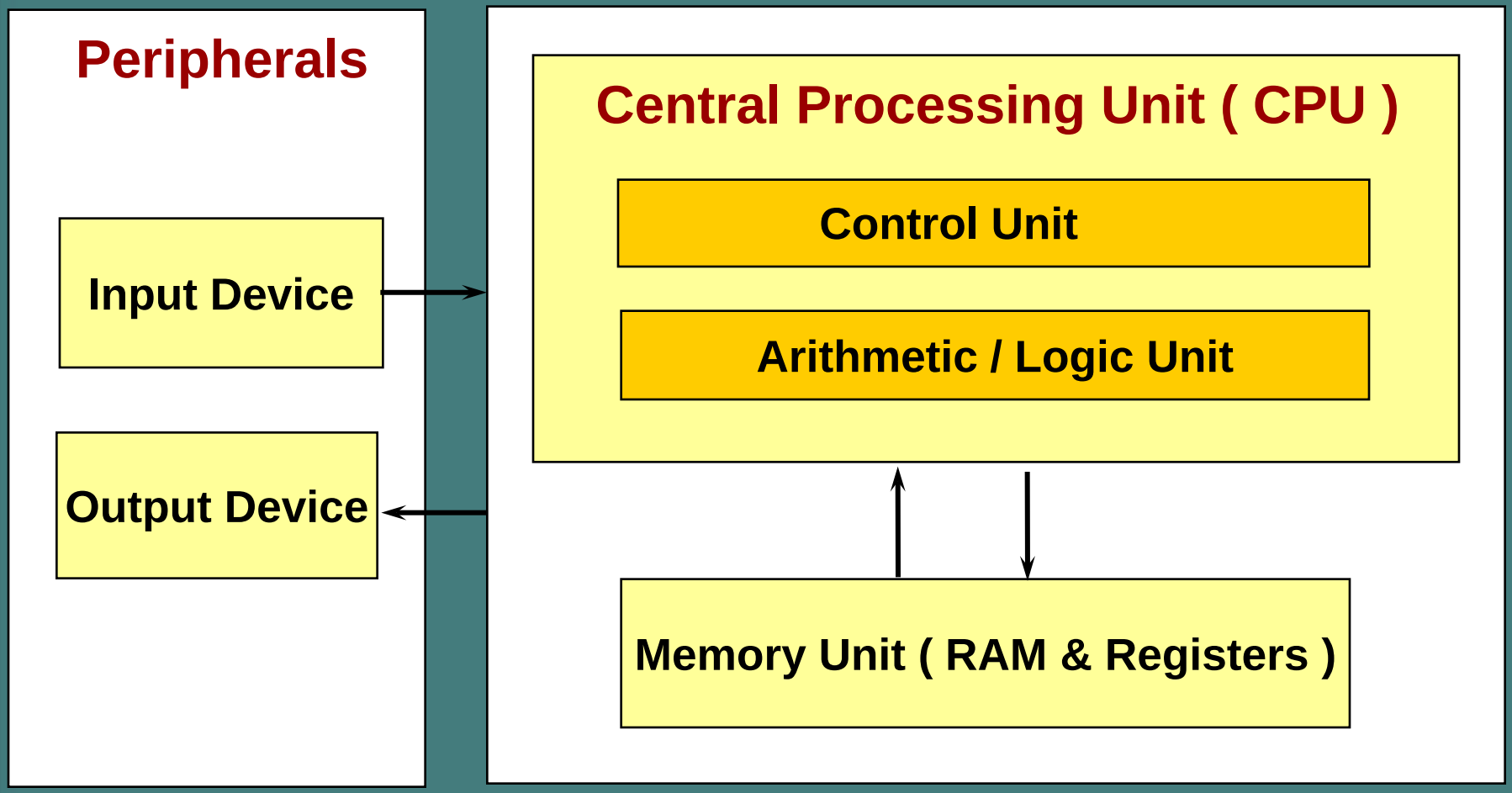
Chapter 1
Overview of C++

Chapter 1 Topics

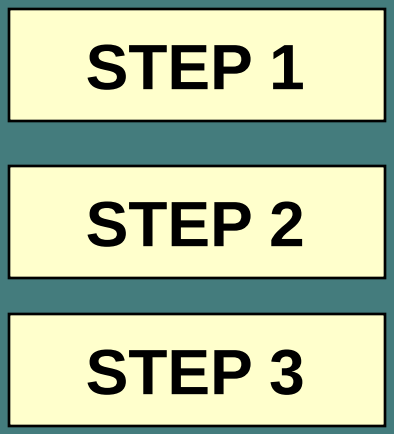
- Computer Programming
- C++ History
- Program Construction
- Compilation and Execution Processes

Computer Components



What is Computer Programming?

- It is the process of planning a sequence of steps (called instructions) for a computer to follow.



What is a Programming Language?

- It is a language with strict grammar rules, symbols, and special words used to construct a computer program.

Machine Language

- is not portable
- runs only on specific type of computer
- is made up of binary-coded instructions (strings of 0s and 1s)
- is the language that can be directly used by the computer

High Level Languages

- are portable

- user writes program in language similar to natural language
- most are standardized by ISO/ANSI to provide an official description of the language
- examples ---

Chapter 1 Topics

- Computer Programming
- C++ History
- Program Construction
- Compilation and Execution Processes

Some C++ History

- 1972 : Dennis Ritchie at Bell Labs designs C
- Late 70's : OOP becomes popular
- Early 80's: Bjarne Stroustrup at Bell Labs adds features to C to form "C with Classes"
- 1983 : Name C++ first used
- 1998 : ISO/ANSI standardization of C++
- 2014: Current standard, C++14

Bjarne Stroustrup

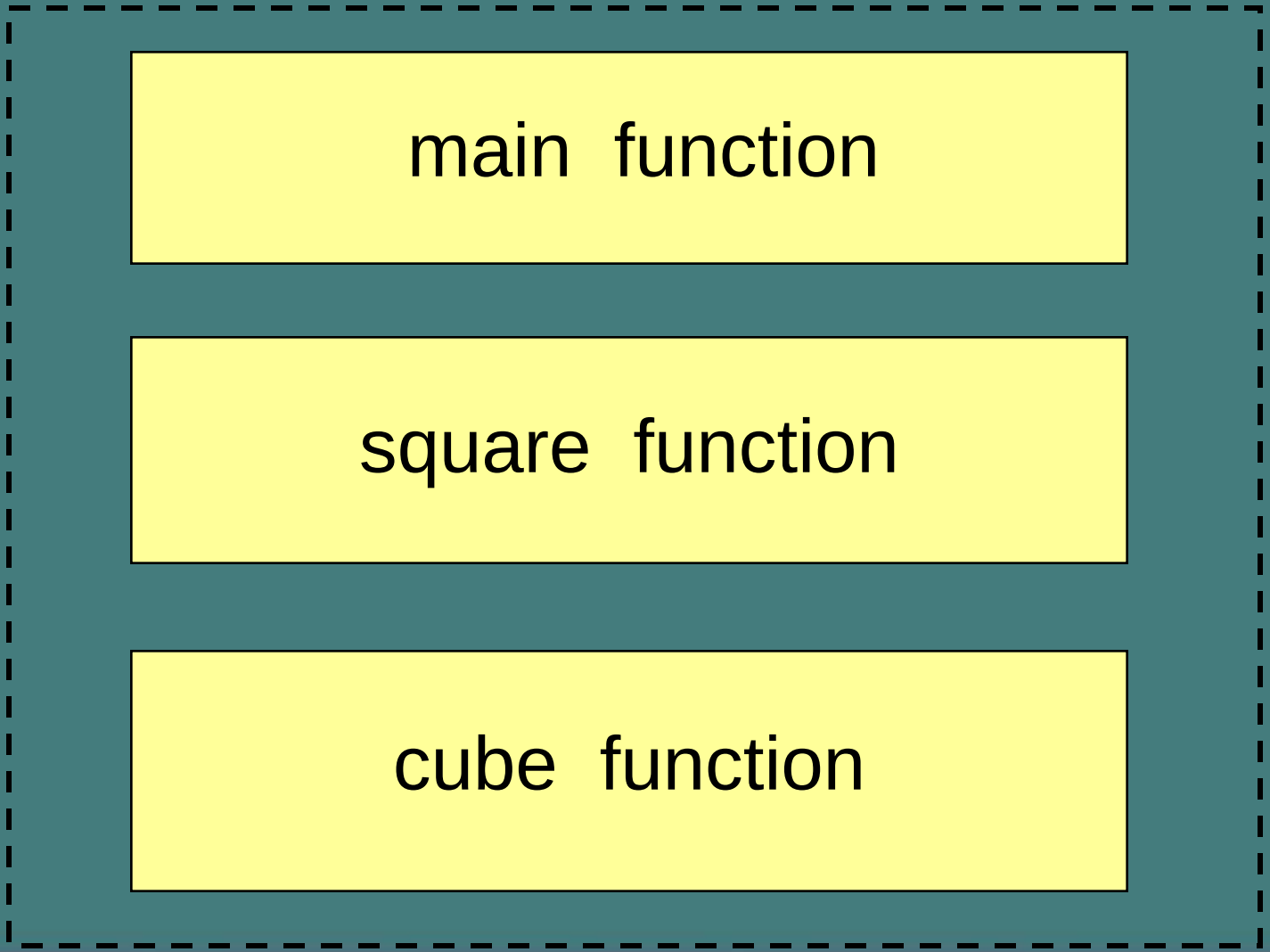
Chapter 1 Topics

- Computer Programming
- C++ History
- Program Construction
- Compilation and Execution Processes

A C++ program is a collection of one or more functions

- there must be a function called main( )
- execution always begins with the first statement in function main( )
- any other functions in your program are subprograms and are not executed until they are called

An Example: Program with Three Functions



```
#include <iostream>     // preprocessor directive

int Square( int );      // declares these two
int Cube( int );        // value-returning functions

using namespace std ;

int main( )
{
    cout << "The square of 2 is "
         << Square(2) << endl;      // function call

    cout << "The cube of 2 is "
         << Cube(2) << endl;        // function call

    return 0;
}

int Square( int n )
{
      return n * n;
}

int Cube( int n )
{
     return n * n * n;
}
```

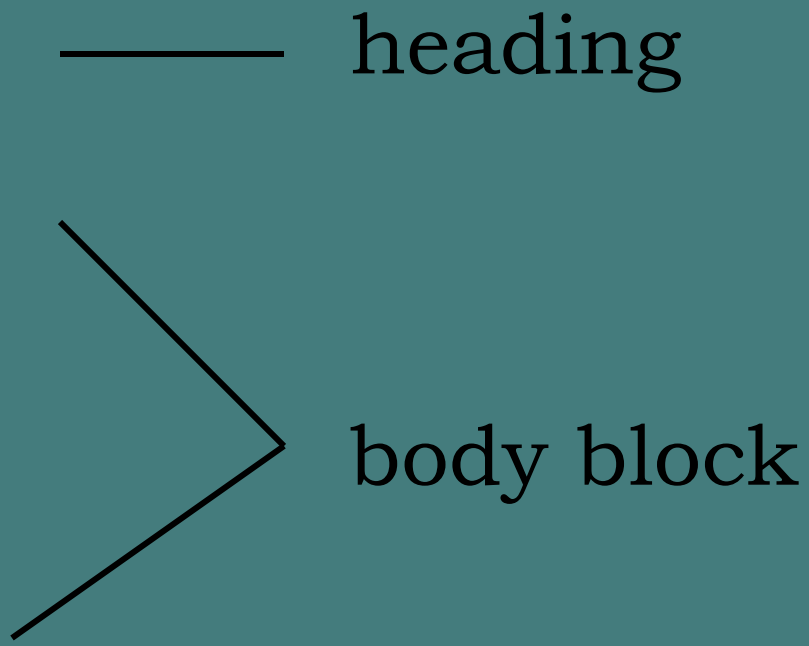
Output of program

```
The square of 2 is 4
The cube of 2 is 8
```

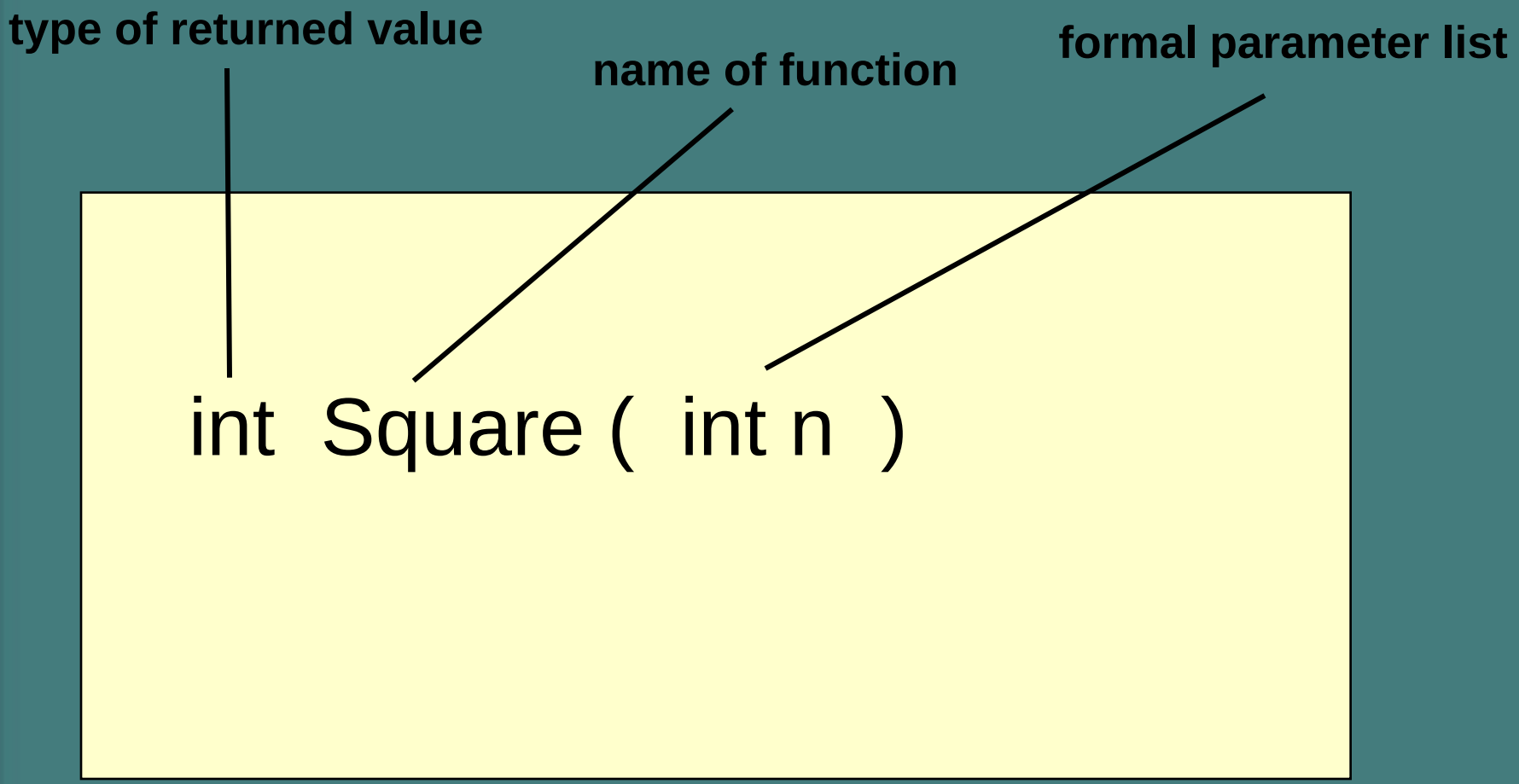
Every C++ function has 2 parts

```
int Square ( int  n )

{
    return n * n ;
}
```



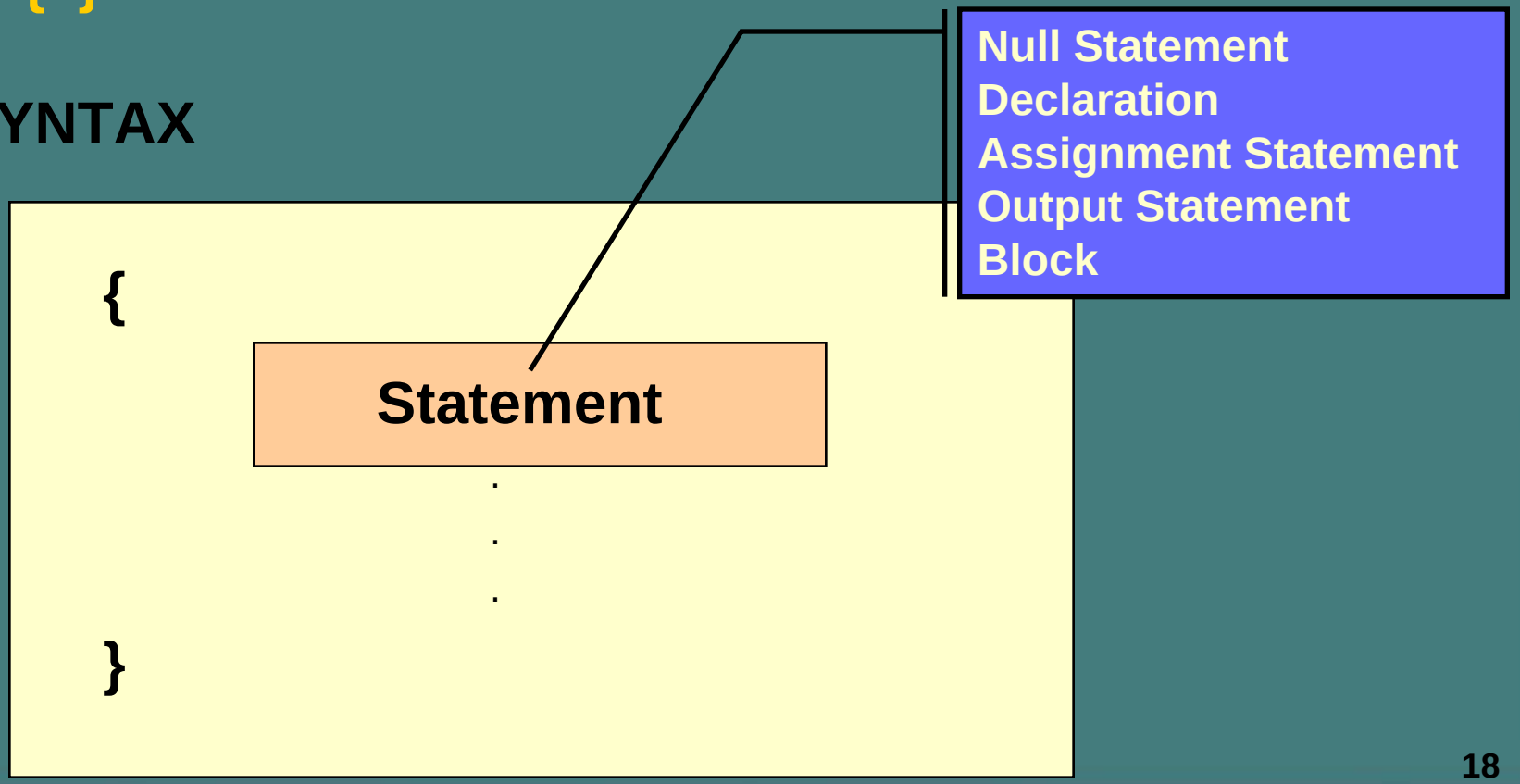
What is in a heading?



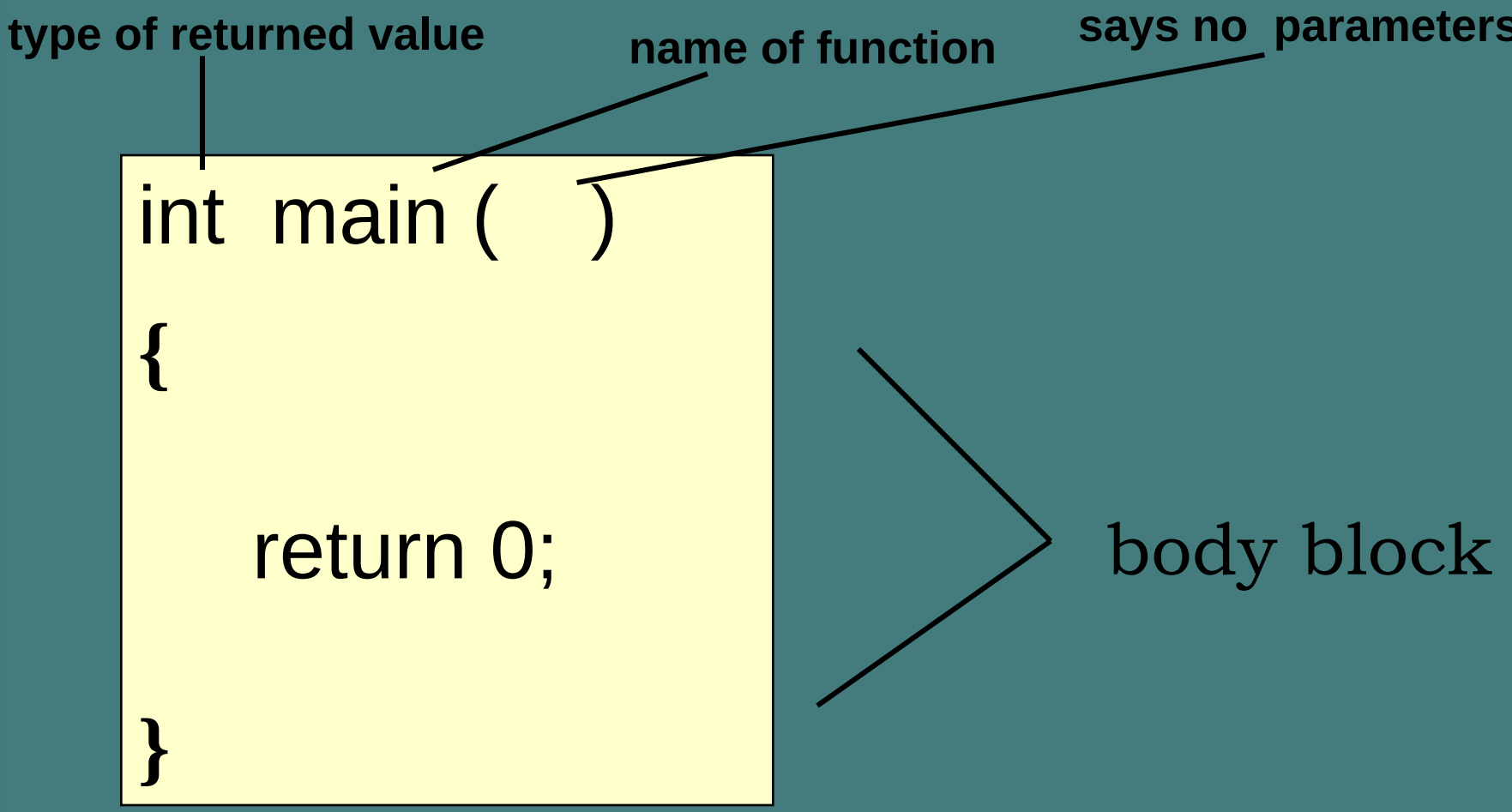
Block (Compound Statement)

- a block is a sequence of zero or more statements enclosed by a pair of curly braces { }

SYNTAX



Shortest C++ Program



Chapter 1 Topics

- Computer Programming
- C++ History
- Program Construction
- Compilation and Execution Processes

Three C++ Program Stages