

PEN203

Introduction to Computer
Programming

**C++ How to Program
Deitel & Deitel**

Outline

- **First C++ Program: Printing a Line of Text**
- **Second C++ Program: Adding Two Integers**
- **Memory Concepts**
- **Arithmetic in C++**
- **Decision Making: Equality and Relational Operators**

First C++ Program: Printing a Line of Text

```
○ 1 // Fig. 1.2: fig01_02.cpp
○ 2 // A first program in C++.
○ 3 #include <iostream>
○ 4
○ 5 // function main begins program execution
○ 6 int main()
○ 7 {
○ 8     std::cout << "Welcome to C++!\n";
○ 9
○ 10    return 0; // indicate that program ended successfully
○ 11
○ 12 } // end function main
```

First C++ Program: Printing a Line of Text

- The textual information given between `/*` and `*/` is called as comments.
- Comments are not executable statements.
- They are used to inform users of the program.
- `#include <iostream>`
 - `#include` is a preprocessor directive and used to load a specific file.
 - In this example, the file is `iostream` and it is used for standard input/output operations.

First C++ Program: Printing a Line of Text

- Each C++ program must have `main()` function.
- `int main()` – `int` shows that main function returns integer value.
- Like in all functions, `{` and `}` braces are used to specify function body in main function.

First C++ Program: Printing a Line of Text

- `cout<<"Welcome to C++!\n";`
 - `cout` is used to print a string of characters given in quotes.
 - All statements like `cout` must end with semicolon (;)
 - `\` is used to specify an escape character. In this example `\n` is the newline character.
 - `\n` Newline
 - `\t` Horizontal tab
 - `\a` Alert
 - `\\` Backslash
 - `\"` Double quote

First C++ Program: Printing a Line of Text

- `return 0;`
 - It shows that C++ program terminated successfully without any problem.
- `}` right brace indicates main function ends.

First C++ Program: Printing a Line of Text

```
○ 1 // Fig. 1.4: fig01_04.cpp
○ 2 // Printing a line with multiple statements.
○ 3 #include <iostream>
○ 4
○ 5 // function main begins program execution
○ 6 int main()
○ 7 {
○ 8     std::cout << "Welcome ";
○ 9     std::cout << "to C++!\n";
○ 10
○ 11     return 0; // indicate that program ended successfully
○ 12
○ 13 } // end function main
```

```
○ 1 // Fig. 1.5: fig01_05.cpp
○ 2 // Printing multiple lines with a single statement
○ 3 #include <iostream>
○ 4
○ 5 // function main begins program execution
○ 6 int main()
○ 7 {
○ 8     std::cout << "Welcome\n\t\n\nC++!\n";
○ 9
○ 10     return 0; // indicate that program ended successfully
○ 11
○ 12 } // end function main
```


Second C++ Program: Adding Two Integers

```
○ 1 // Fig. 1.6: fig01_06.cpp
○ 2 // Addition program.
○ 3 #include <iostream>
○ 4
○ 5 // function main begins program execution
○ 6 int main()
○ 7 {
○ 8     int integer1; // first number to be input by user
○ 9     int integer2; // second number to be input by user
○ 10    int sum;     // variable in which sum will be stored
○ 11
○ 12    std::cout << "Enter first integer\n"; // prompt
○ 13    std::cin >> integer1;                // read an integer
○ 14
○ 15    std::cout << "Enter second integer\n"; // prompt
○ 16    std::cin >> integer2;                // read an integer
○ 17
○ 18    sum = integer1 + integer2; // assign result to sum
○ 19
○ 20    std::cout << "Sum is " << sum << std::endl; // print sum
○ 21
○ 22    return 0; // indicate that program ended successfully
○ 23
○ 24 }
```

```
○ Enter first integer
○ 45
○ Enter second integer
○ 72
○ Sum is 117
```

Second C++ Program: Adding Two Integers

- `int integer1, integer2, sum;` is used to define variables.
- Variable names include letters and digits. They are case sensitive.
- Variable declarations are placed before executable statements.
- `int` variables hold integers.

Second C++ Program: Adding Two Integers

- `cin>>integer1;` is used to get a value from user.
- `integer1` shows the location in which the input value will be stored.
- `=` assignment operator is used to assign a value to a variable.
- `cout<<"Sum is "<<sum;` is used to print a string of characters and a value of a variable.
- `sum` is the variable name to be printed on the screen.
- Calculations can be performed inside `printf` statements.