

C++ for Science and Engineering COSC3000/6000

2018 Spring Semester

Part II

C++ Basics

1 A Sample Program

```
//  
//  main.cpp  
//  sample01  
//  
//  Created by Hideki Fujioka on 3/12/13.  
//  Copyright (c) 2013 Tulane University. All rights reserved.  
//  
/*  
    this is comments  
*/  
  
#include <iostream>  
  
int main(int argc, const char * argv[])  
{  
  
    // cout is in the namespace 'std'  
    std::cout << "Hello, World!\n";  
    std::cout << "Hello, World!" << std::endl;  
  
    using namespace std;  
    cout << "Hello, World!" << endl;  
  
    return 0;  
}
```

1.1 Comments

- `//` is the symbol for a single line comment
 - Comments are explanatory notes for the programmer
 - All text on the line following `//` is ignored by the compiler
 - Example: `//calculate regular wages gross_pay = rate * hours;`
- `/*` and `*/` enclose multiple line comments
 - Example: `/* This is a comment that spans multiple lines without a comment symbol on the middle line
*/`

1.2 #include Directives

- Include Directives add library files to our programs
- Tells compiler where to find information about items used in the program.
- **iostream** is a library containing definitions of **cin** and **cout**
- Standard C++ Library reference <http://www.cplusplus.com/reference/>
 - To make the definitions of the **cin** and **cout** available to the program:

```
#include <iostream>
```

- Using Directives include a collection of defined names
 - To make the names **cin** and **cout** available to our program:

```
using namespace std;
```

1.3 using namespace std;

- Tells the compiler to use names in **iostream** in a “standard” way.
 - A **namespace** is a declarative region that provides a scope to the identifiers (the names of types, functions, variables, etc) inside it.
 - Namespaces are used to organize code into logical groups and to prevent name collisions that can occur especially when your code base includes multiple libraries.
 - All identifiers at namespace scope are visible to one another without qualification.
 - Identifiers outside the namespace can access the members by using the fully qualified name for each identifier.

1.4 main Function

To begin the main function of the program

```
int main(int argc, const char * argv[]) {
```

To end the main function

```
    return 0;
```

```
}
```

Main function ends with a return statement