Lecture (1)
" Programming Essentials in C++ "

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Course Information

- **Lecturers:**

–Dr. Nehal Elazaly -Dr. Ghada Fathy

- Credit hours (3)
- Requirements & Grading (Total 150 marks)
  - Class work and attendance (40 marks)
  - Midterm exam (30 marks)
  - Final Exam during finals week (75 marks)

About C++

- C++ is a general-purpose programming language that was developed as an enhancement of the C language to include object-oriented paradigm. C++ is a high level programming language. It can be compiled into machine code and executed on a computer.

OBJECTIVES in this chapter you'll learn:

- To write simple computer programs in C++.
- To write simple input and output statements.
- Basic computer memory concepts.
- To use arithmetic operators.
- The precedence of arithmetic operators.
- To write simple decision-making statements.

Why we learn C++?

- C++ is an object-oriented programming language.
- C++ maintains the features of C which allowed for low-level memory access but also gives the programmer new tools to simplify memory management.
- C++ is a powerful general-purpose programming language. It can be used to create small programs or large applications.

First Program in C++: Printing a Line of Text

- First Program in C++: Printing a Line of Text

(How to display messages on the screen ?)

(How to display comment on the screen ?)

- Modifying Our First C++ Program
- To write simple input and output statements

(How to obtain information from the user ?)

- Another C++ Program: Adding Integers
- Memory Concepts
- Arithmetic

(How to perform arithmetic calculations ?)

A simple C++ Program

```
1) #include <iostream>
2) using namespace std;
3) int main()
4) {
5) cout << "Hello world!";
6)     return 0;
7) }
```

Lines beginning with # are preprocessor directives.

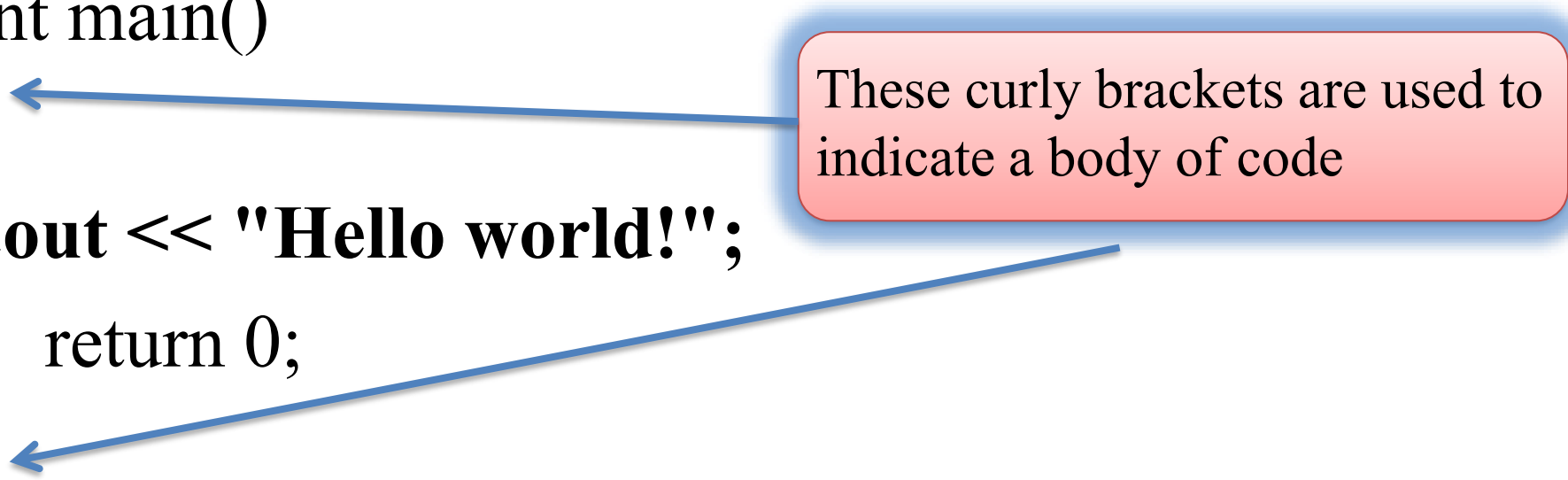
Include the contents of the iostream library which contains input/output operations.

The C++ standard library is defined within this namespace.

The main function is called when the executable file is run

A simple C++ Program

```
// Online C++ compiler to run C++ program
1)  #include <iostream>
2)  using namespace std;
•   int main()
•   {
•   cout << "Hello world!";
•       return 0;
•   }
```



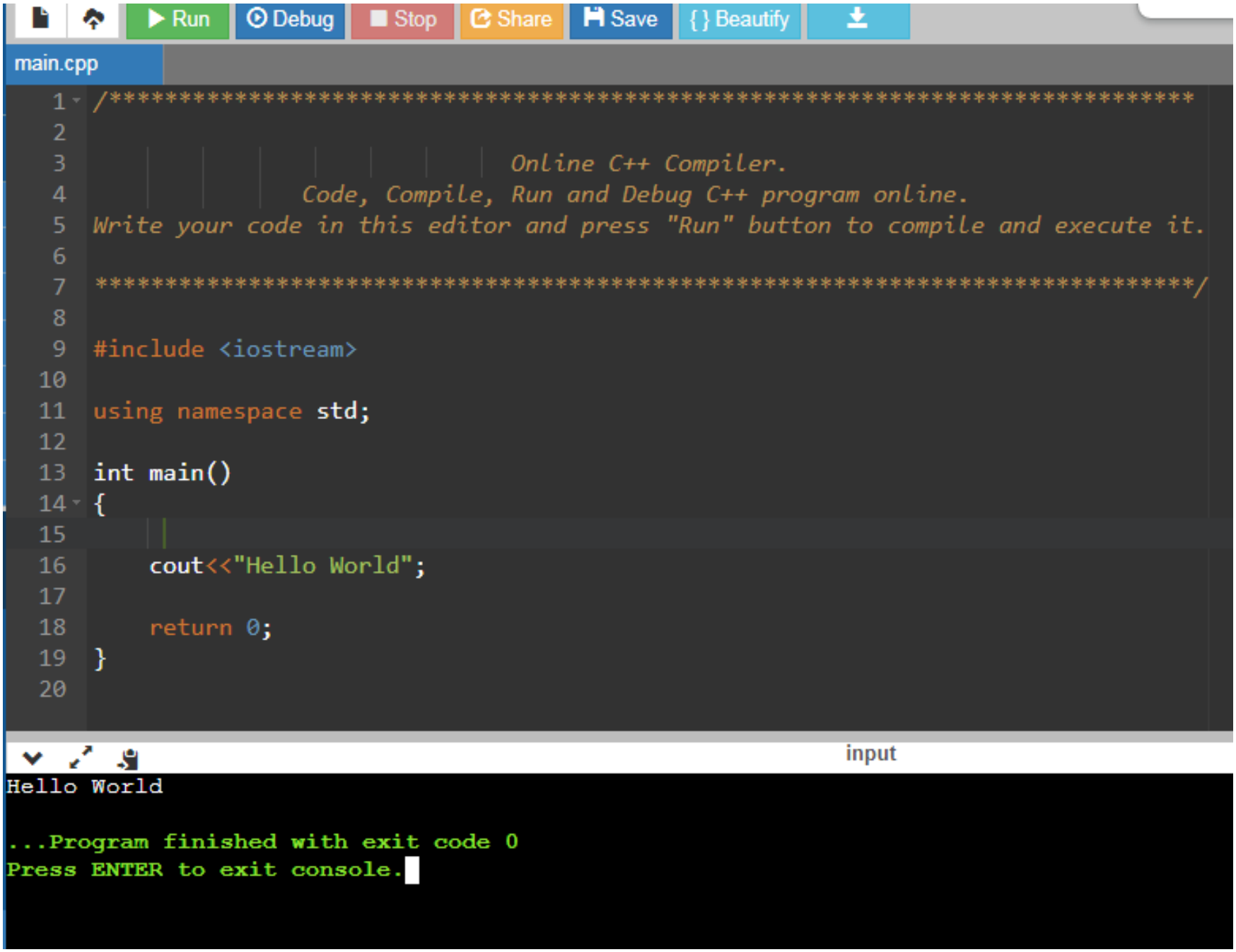
A simple C++ Program

```
// Online C++ compiler to run C++ program
1)  #include <iostream>
2)  using namespace std;
•   int main()
•   {
•   cout << "Hello world!";
•       return 0;
•   }
```

Standard output stream object, Words in double quotes ("")

A semi-colon indicates the end of a C++ command

Indicate that program ended successfully


Run
Debug
Stop
Share
Save
{ } Beautify
main.cpp
/***
Online C++ Compiler.
Code, Compile, Run and Debug C++ program online.
Write your code in this editor and press "Run" button to compile and execute it.
***/
#include <iostream>
using namespace std;
int main()
{
cout<<"Hello World";
return 0;
}
input
Hello World
...Program finished with exit code 0
Press ENTER to exit console.

First Program in C++: Printing a Line of Text

- **Comments**

Written between /* **and** */ or following a //.

*** To begin a new line**

cout << "Welcome to C++!\n";

cout << "Welcome to C++!<<endl;

- **\n** or write **<<endl;** -----Cursor moves to beginning of next line on the screen

Another Simple Program

```
1)  #include <iostream>
2)  using namespace std;
3)  int main()
{
cout << "Hi\n";
cout << "Hello world";
return 0;
}
```


Run
Debug
Stop
Share
Save
{ } Beautify
main.cpp
/***
Online C++ Compiler.
Code, Compile, Run and Debug C++ program online.
Write your code in this editor and press "Run" button to compile and execute it.
***/
#include <iostream>
using namespace std;
int main()
{
cout<<"Hi\n";
cout<<"Hello World";
return 0;
}
input
Hi
Hello World
...Program finished with exit code 0
Press ENTER to exit console.

Variables

1	**int**	**Integer variables represent integer numbers**
2	**Double**	Store fractional numbers up to 14 numbers after the point.
4	**Float**	Store fractional numbers up to 7 numbers after the point.
3	**String**	Store text
5	**char**	Used for characters: letters, digits, and special symbols.
6	**bool**	Has two values (true) and (false).

A simple C++ Program

```
#include <iostream>
using namespace std;
int main()
{
int x=15;
cout << x<<endl;
 return 0;
}
```

Run | Debug | Stop | Share | Save | { } Beautify

main.cpp

```
/******************************************************************************

                              Online C++ Compiler.
                   Code, Compile, Run and Debug C++ program online.
Write your code in this editor and press "Run" button to compile and execute it.

*******************************************************************************/

#include <iostream>

using namespace std;
int main()
{
    int x=15;
    cout<<x<<endl;


}
```

input

```
15


...Program finished with exit code 0
Press ENTER to exit console.
```


Thank
you