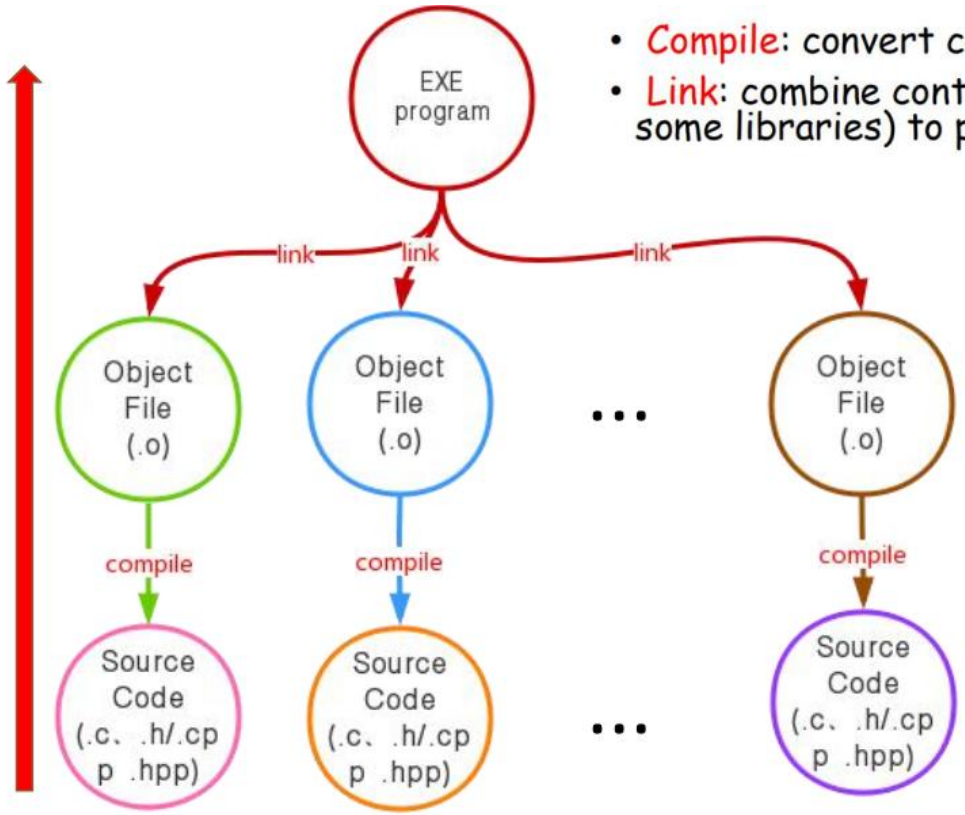
4 Compile, Link and Run C/C++ Programs

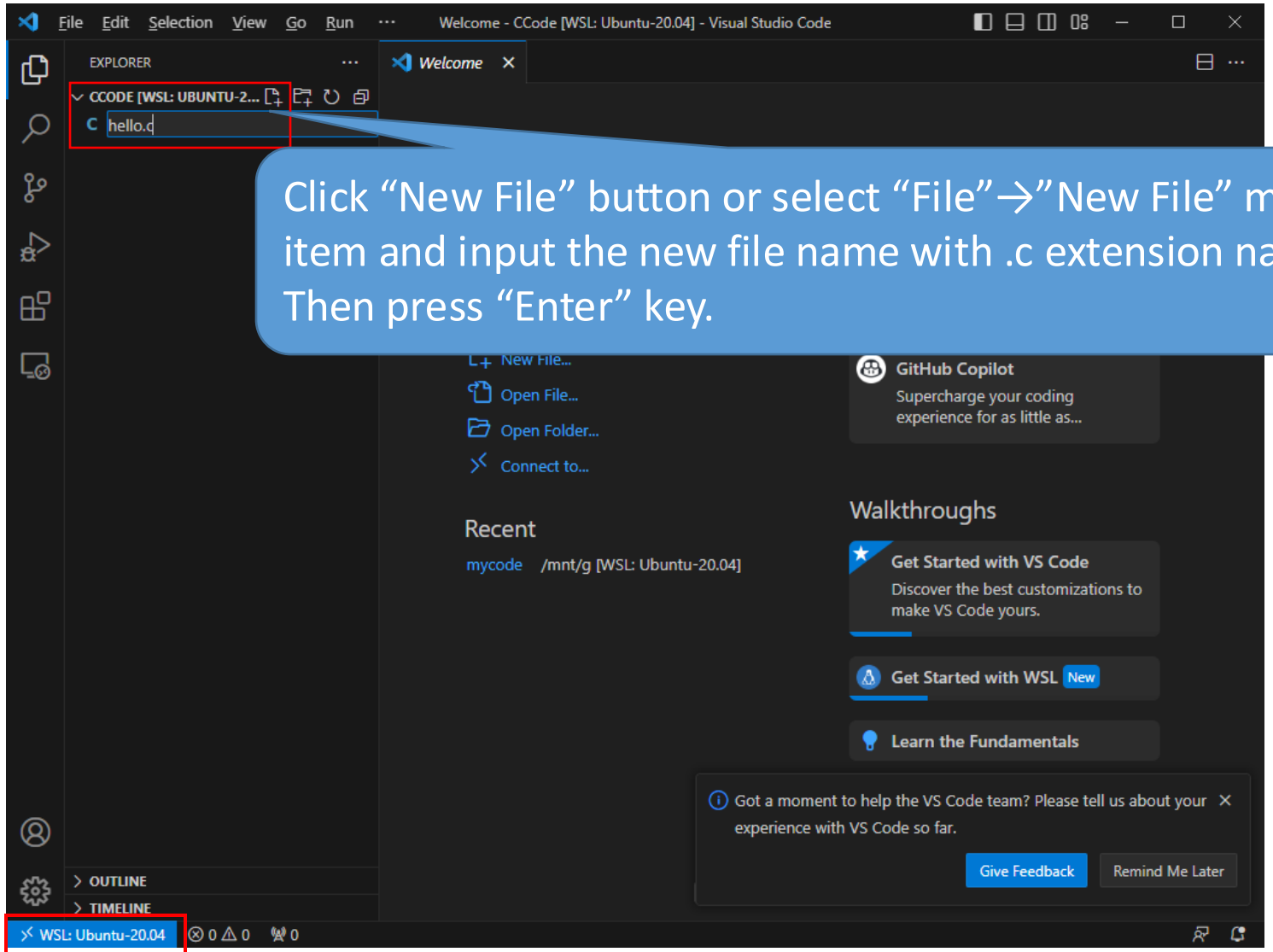
4.1 The program compilation process

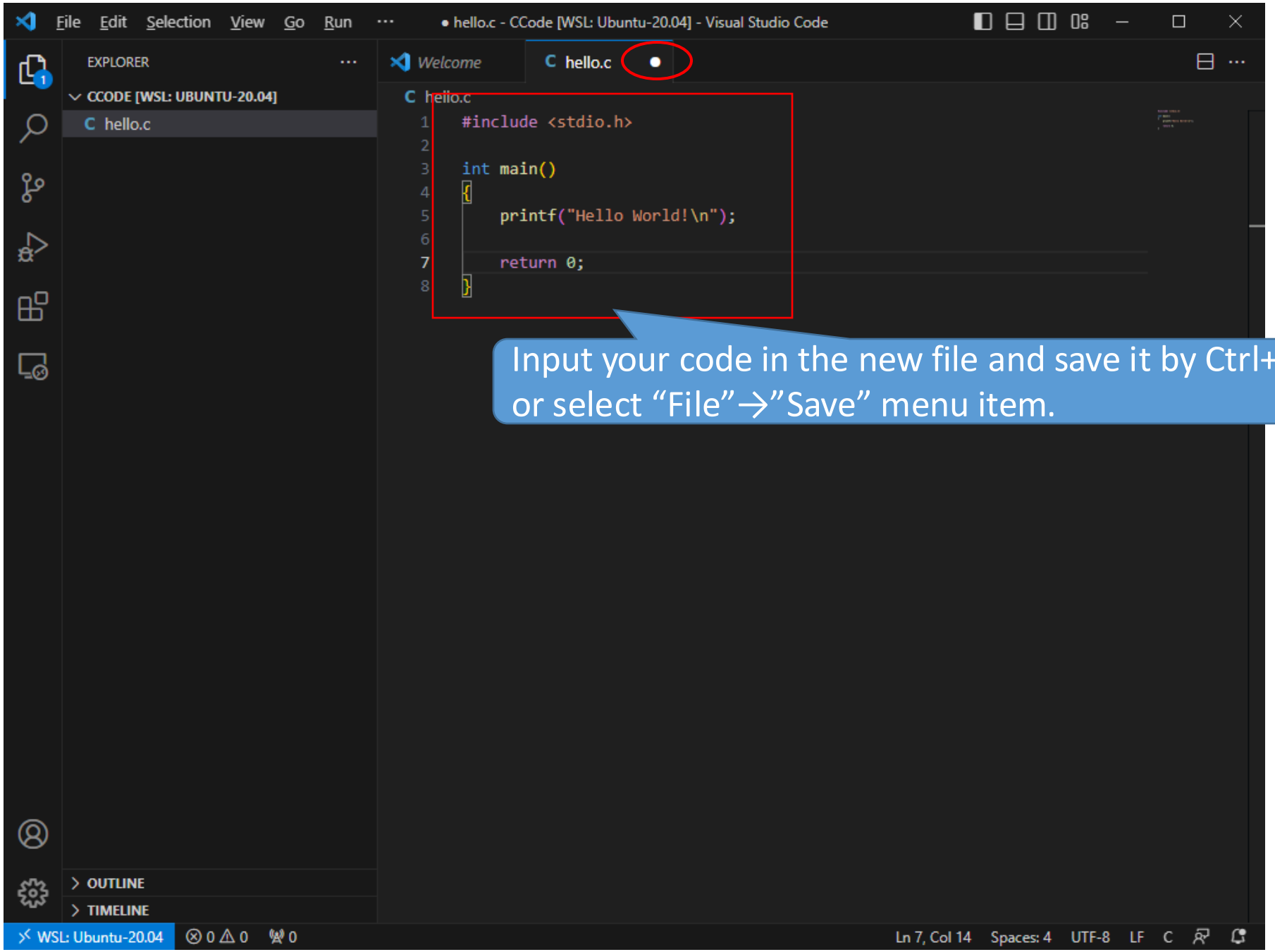


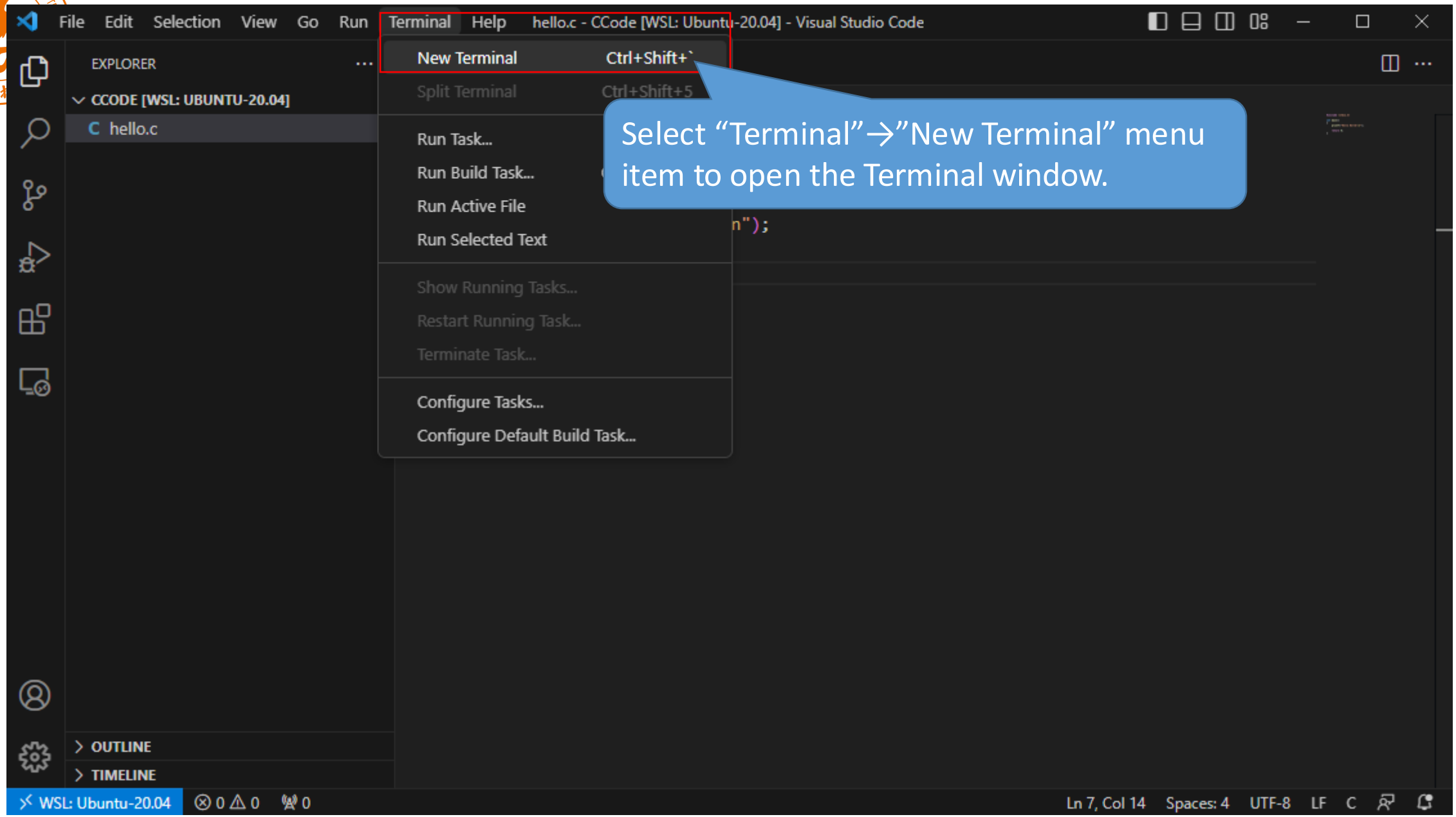
- Compile: convert code to object code stored in object file (.o)
- Link: combine contents of one or more object files (and possibly some libraries) to produce executable program

4.2 Compile, Link and Run C programs

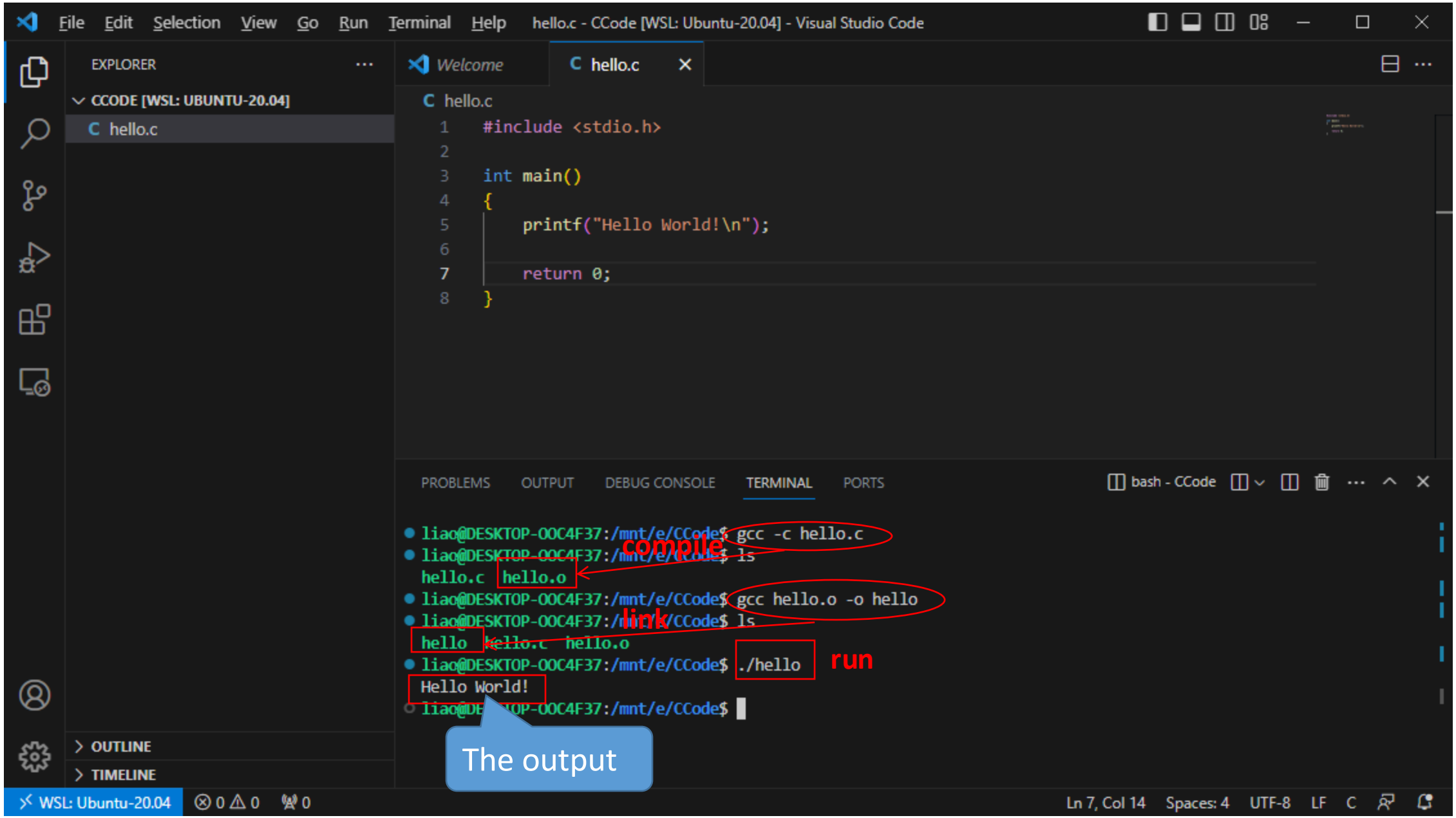
Compile/Link/Run a simple C program – hello.c



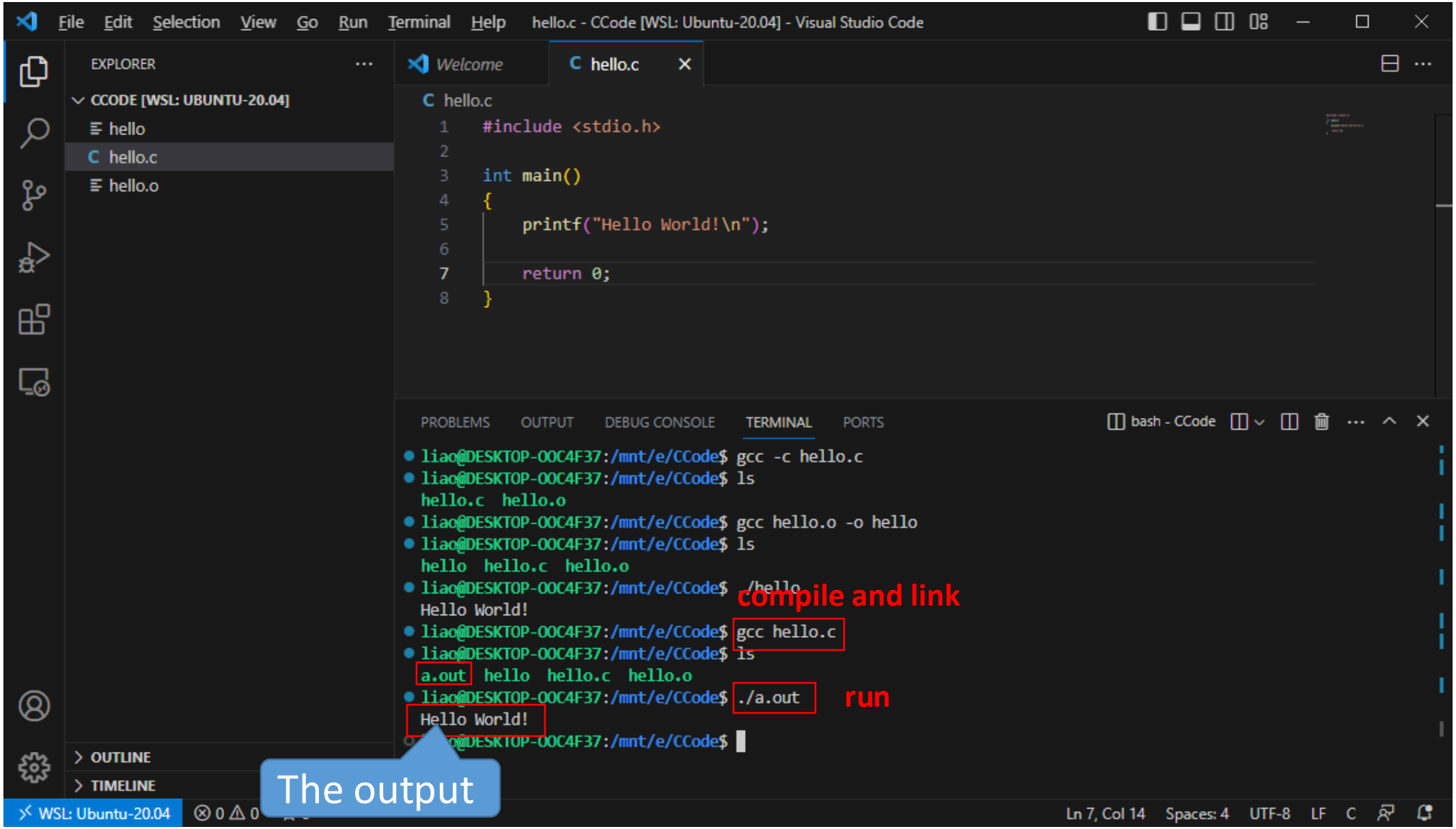

File Edit Selection View Go Run ···
• hello.c - CCode [WSL: Ubuntu-20.04] - Visual Studio Code
EXPLORER
CCODE [WSL: UBUNTU-20.04]
hello.c
Welcome
hello.c
hello.c
#include <stdio.h>
int main()
{
printf("Hello World!\n");
return 0;
}
Input your code in the new file and save it by Ctrl+s or select “File”→”Save” menu item.
OUTLINE
TIMELINE
WSL: Ubuntu-20.04
Ln 7, Col 14
Spaces: 4
UTF-8
LF
C


File Edit Selection View Go Run Terminal Help hello.c - CCode [WSL: Ubuntu-20.04] - Visual Studio Code
EXPLORER
CCODE [WSL: UBUNTU-20.04]
hello.c
New Terminal Ctrl+Shift+`
Split Terminal Ctrl+Shift+5
Run Task...
Run Build Task...
Run Active File
Run Selected Text
Show Running Tasks...
Restart Running Task...
Terminate Task...
Configure Tasks...
Configure Default Build Task...
Select “Terminal”→”New Terminal” menu item to open the Terminal window.
OUTLINE
TIMELINE
WSL: Ubuntu-20.04
Ln 7, Col 14 Spaces: 4 UTF-8 LF C

Use gcc to compile the .c file.

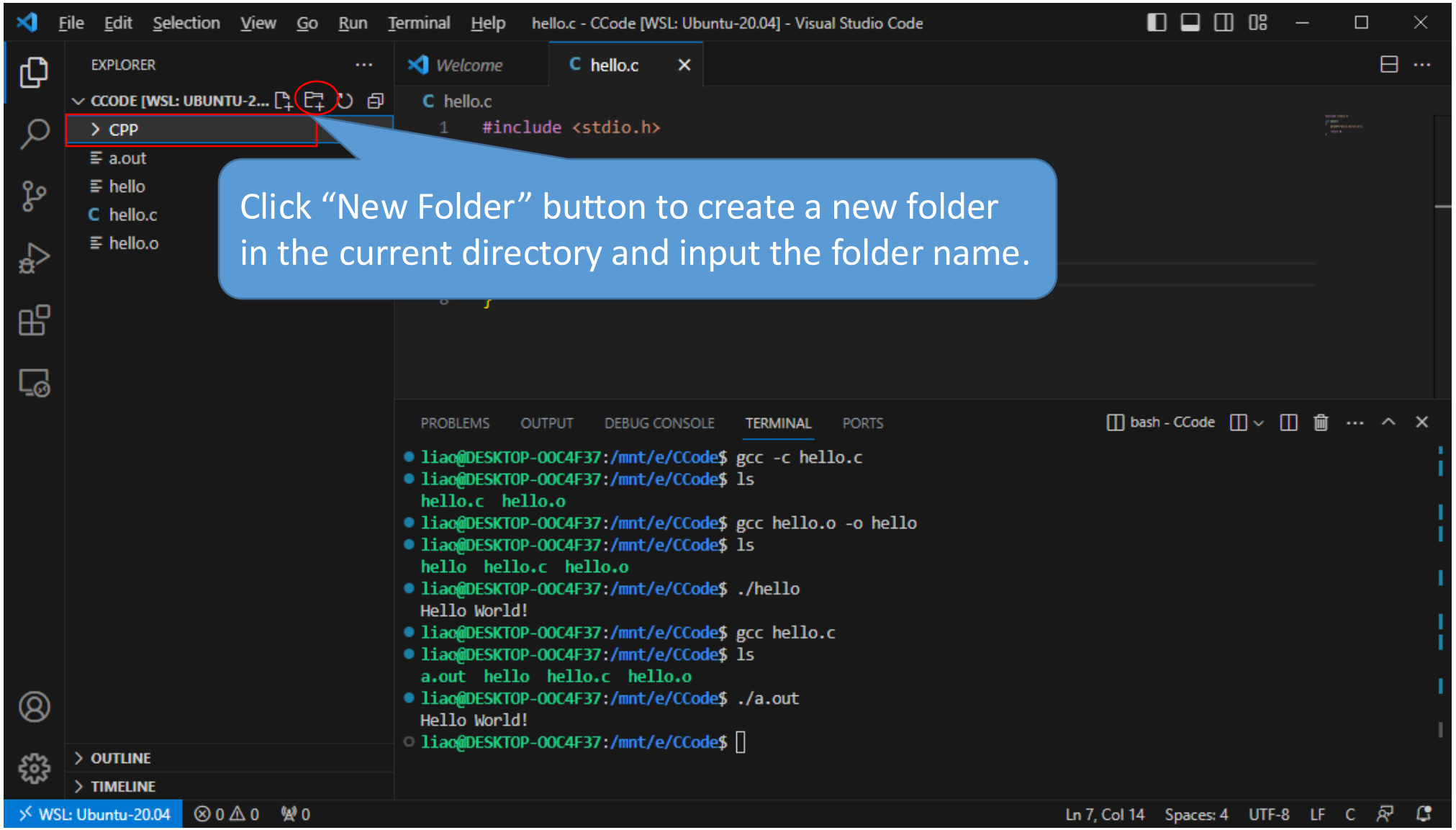


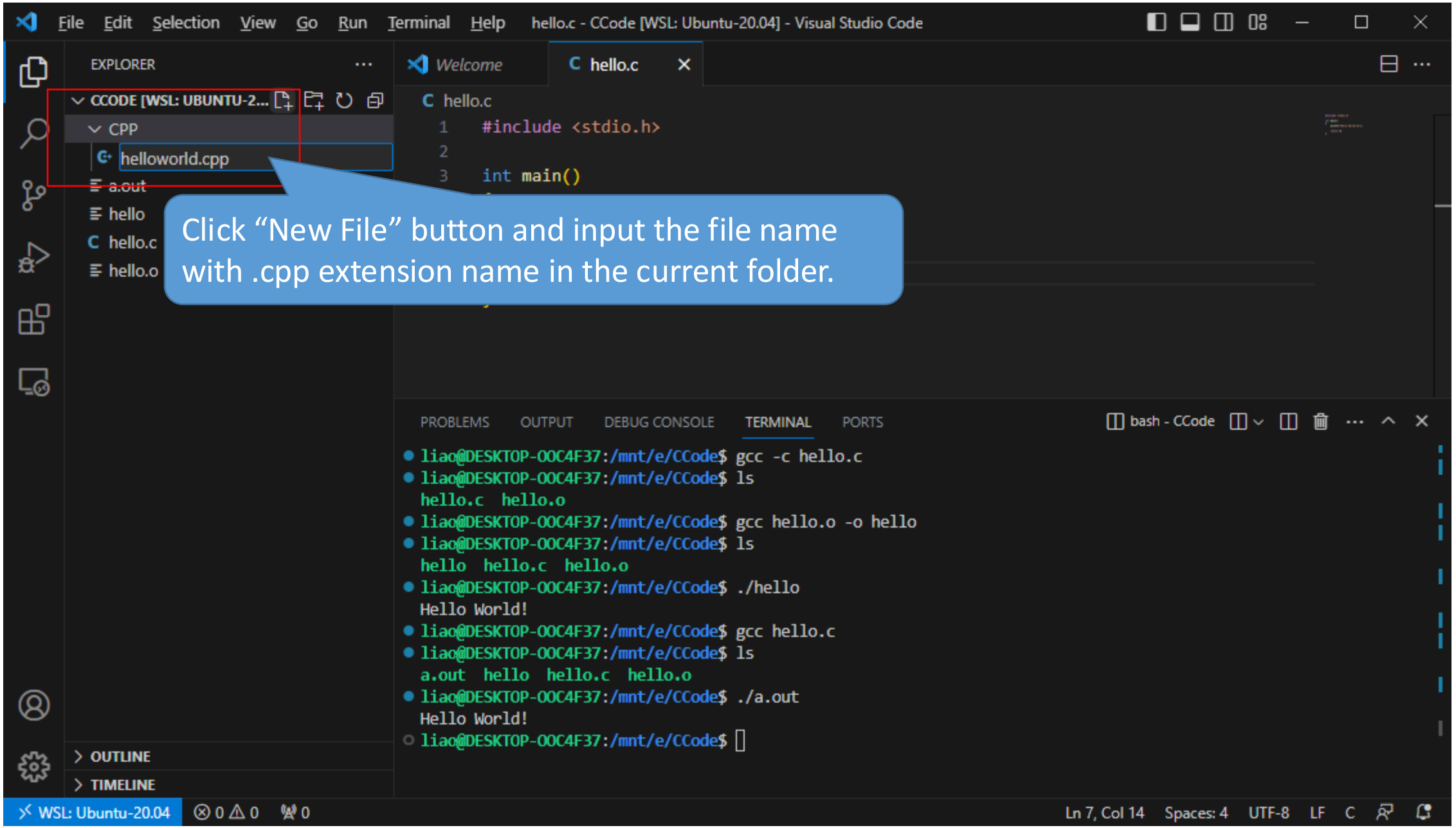
The default output executable file is called “a.exe”(Windows) or “a.out”(Unix and Mac OS) if you don’t specify the name in compiling and linking step.

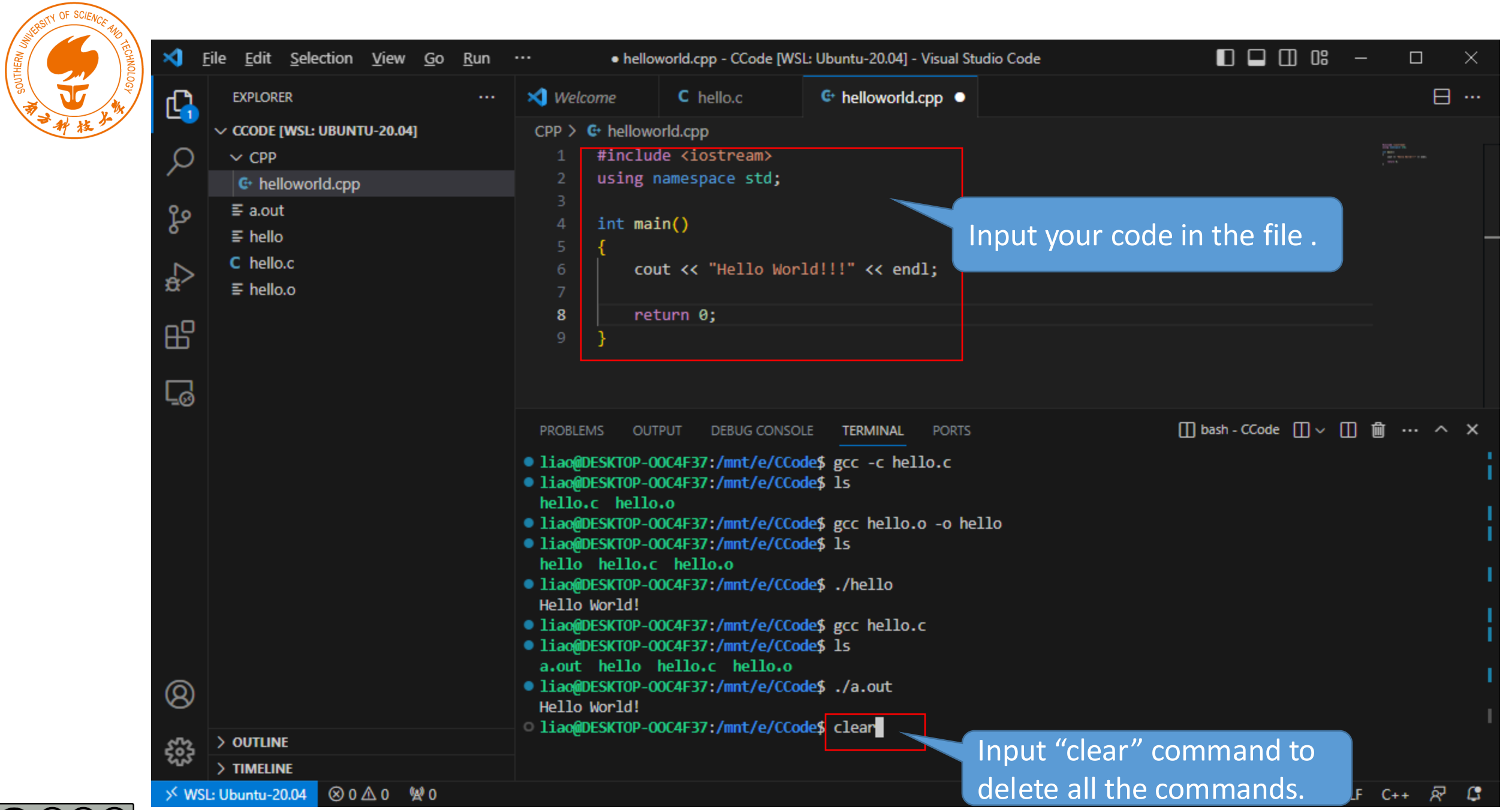


4.3 Compile, Link and Run C++ programs

Compile/Link/Run a simple C++ program – helloworld.cpp




File Edit Selection View Go Run Terminal Help hello.c - CCode [WSL: Ubuntu-20.04] - Visual Studio Code
EXPLORER
CCODE [WSL: UBUNTU-2...
CPP
helloworld.cpp
a.out
hello
hello.c
hello.o
Welcome
hello.c
hello.c
1 #include <stdio.h>
2
3 int main()
Click “New File” button and input the file name with .cpp extension name in the current folder.
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - CCode
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ gcc -c hello.c
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ls
hello.c hello.o
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ gcc hello.o -o hello
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ls
hello hello.c hello.o
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ./hello
Hello World!
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ gcc hello.c
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ls
a.out hello hello.c hello.o
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ./a.out
Hello World!
liao@DESKTOP-OOC4F37:/mnt/e/CCode$
OUTLINE
TIMELINE
WSL: Ubuntu-20.04
Ln 7, Col 14 Spaces: 4 UTF-8 LF C


File Edit Selection View Go Run
• helloworld.cpp - CCode [WSL: Ubuntu-20.04] - Visual Studio Code
EXPLORER
CCODE [WSL: UBUNTU-20.04]
CPP
helloworld.cpp
a.out
hello
hello.c
hello.o
Welcome
hello.c
helloworld.cpp
CPP > helloworld.cpp
#include <iostream>
using namespace std;
int main()
{
cout << "Hello World!!!" << endl;
return 0;
}
Input your code in the file .
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
bash - CCode
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ gcc -c hello.c
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ls
hello.c hello.o
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ gcc hello.o -o hello
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ls
hello hello.c hello.o
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ./hello
Hello World!
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ gcc hello.c
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ls
a.out hello hello.c hello.o
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ ./a.out
Hello World!
liao@DESKTOP-OOC4F37:/mnt/e/CCode$ clear
Input “clear” command to delete all the commands.
OUTLINE
TIMELINE
WSL: Ubuntu-20.04
C++

You need to use **g++** to compile C++ program. The **-o** option is used to specify the output file name.