

Writing C++ on Your PC (Laptop)

- The essential components: **a compiler** and **an editor**
- Windows: **g++** and **visual studio code**

Installing g++

- Download MinGW: <http://bit.ly/mingw10>

MinGW Distro - nuwen.net
WISDOM LIKE SILENCE

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Download

My MinGW distribution ("distro") is **x64-native** and currently contains **GCC 11.2.0** and **Boost 1.77.0**.

[mingw-18.0.exe](#) (96.9 MB) : This is a self-extracting archive. It's incredibly easy to install; see [How To Install](#) below.

[mingw-18.0-without-git.exe](#) (49.9 MB) : This is simpler, if you've already installed git.

My build scripts are [available on GitHub](#), and they're also stored within the distro itself.


Contents

The components of this distro fall into four categories:

- Essentials: The components of MinGW itself. They are required in order to run GCC.
- Libraries: Useful C and C++ libraries.
- Utilities: Programs used by programmers.
- Utilities (Binary): More programs used by programmers. Unlike everything else, I obtained these executables from their official websites instead of building them myself.

Essentials	Libraries	Utilities	Utilities (Binary)
binutils 2.37	Boost 1.77.0	coreutils 9.0***	7-Zip 19.00
GCC 11.2.0	FreeType 2.11.0	gdb 11.1	gh 2.2.0
mingw-w64 9.0.0	glbinding 3.1.0	grep 3.7	git 2.33.1
	GLFW 3.3.5	LAME 3.100	
	GLM 0.9.9.8	make 4.3	
	libjpeg-turbo 2.1.1*	OggPNG 0.7.7	
	libogg 1.3.5	pngcheck 3.0.3	
	libpng 1.6.37	sed 4.8	
	libvorbis 1.3.7	vorbis-tools 1.4.2	
	PCRE 8.45***		
	PCRE2 10.37**		
	SDL 2.0.16		
	SDL_mixer 2.0.4		
	zlib 1.2.11		
	zstd 1.5.0		

* With jpegtran.

 mingw-18.0-without-git.exe

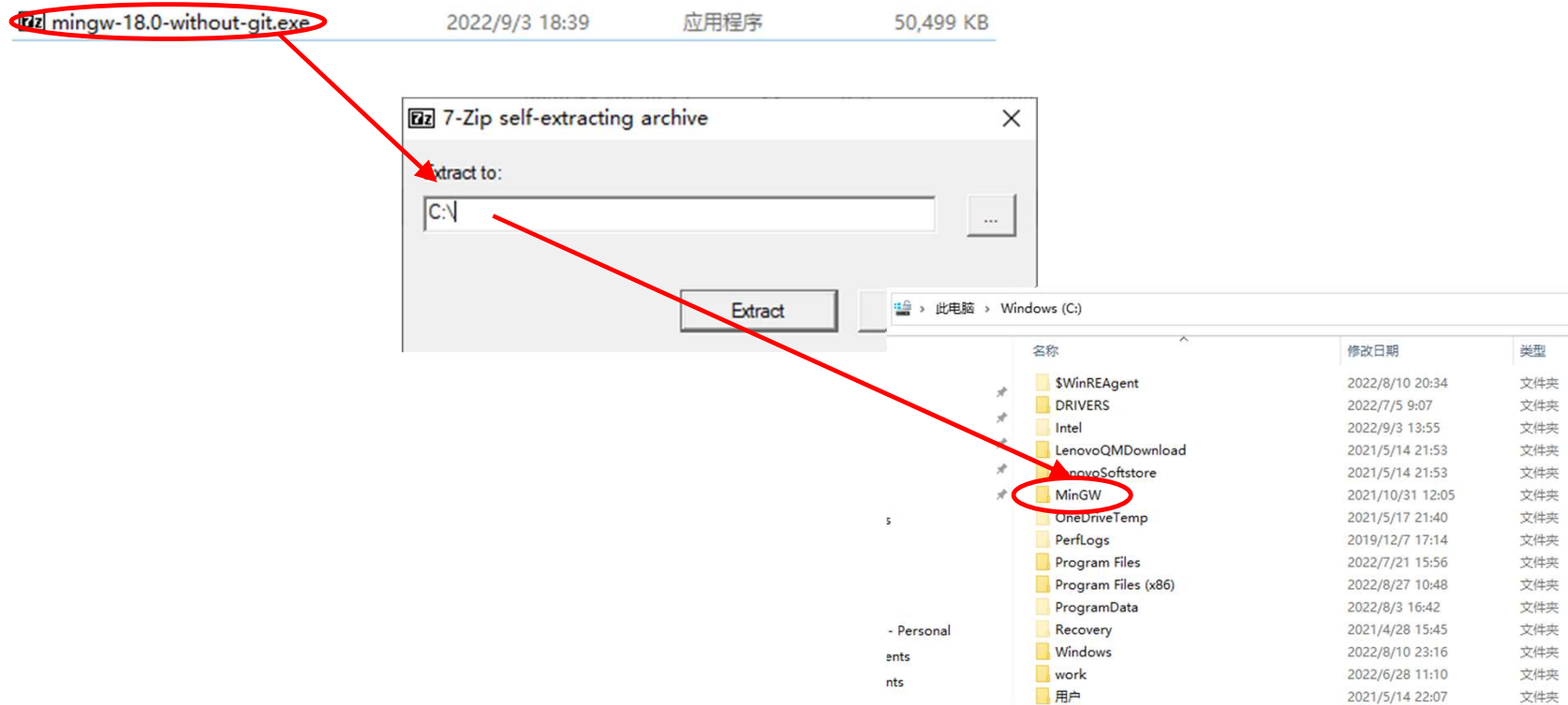
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应用程序

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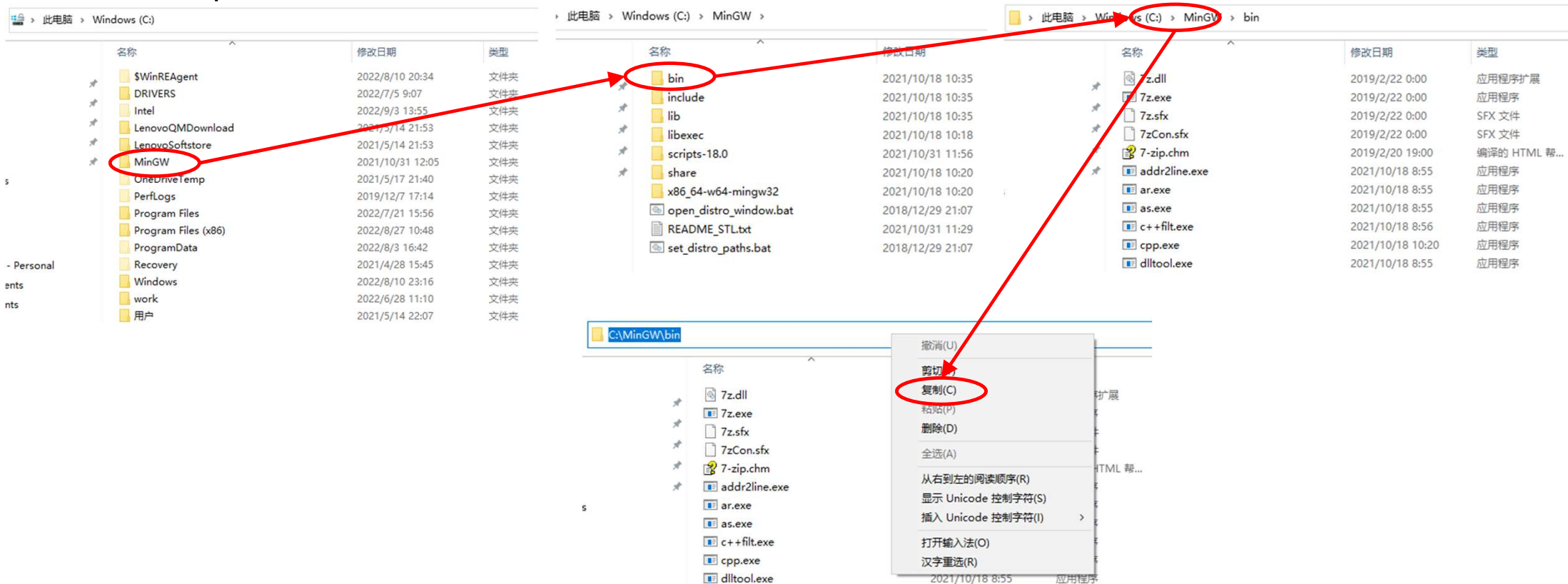
Installing g++

- Install MinGW



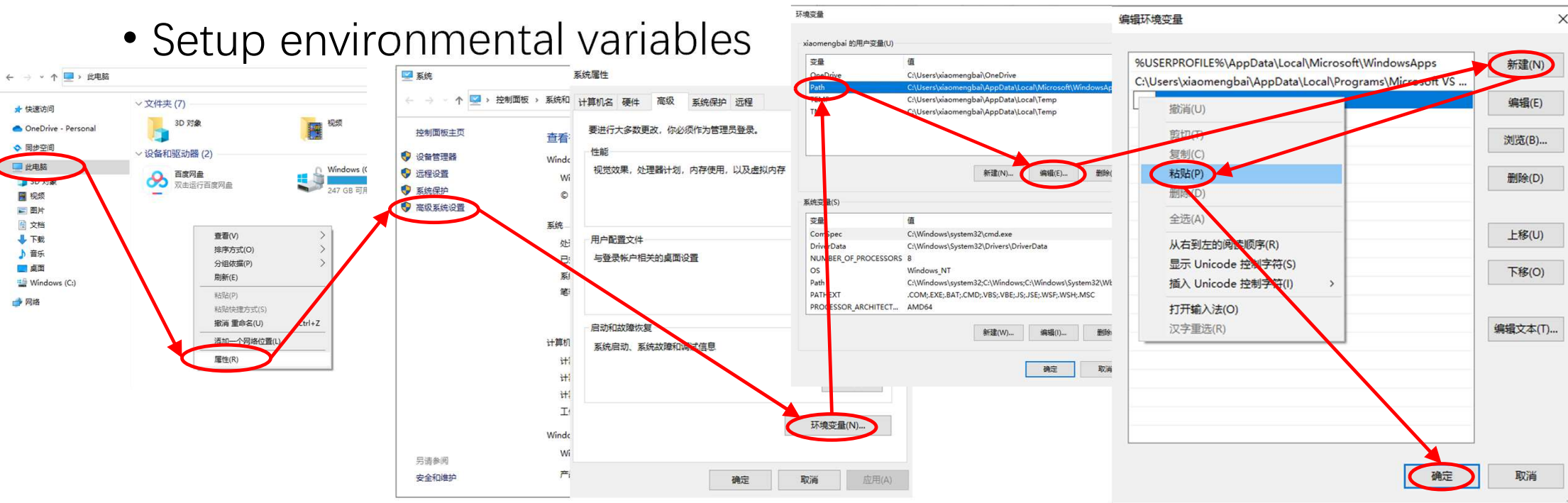
Installing g++

- Setup environmental variables



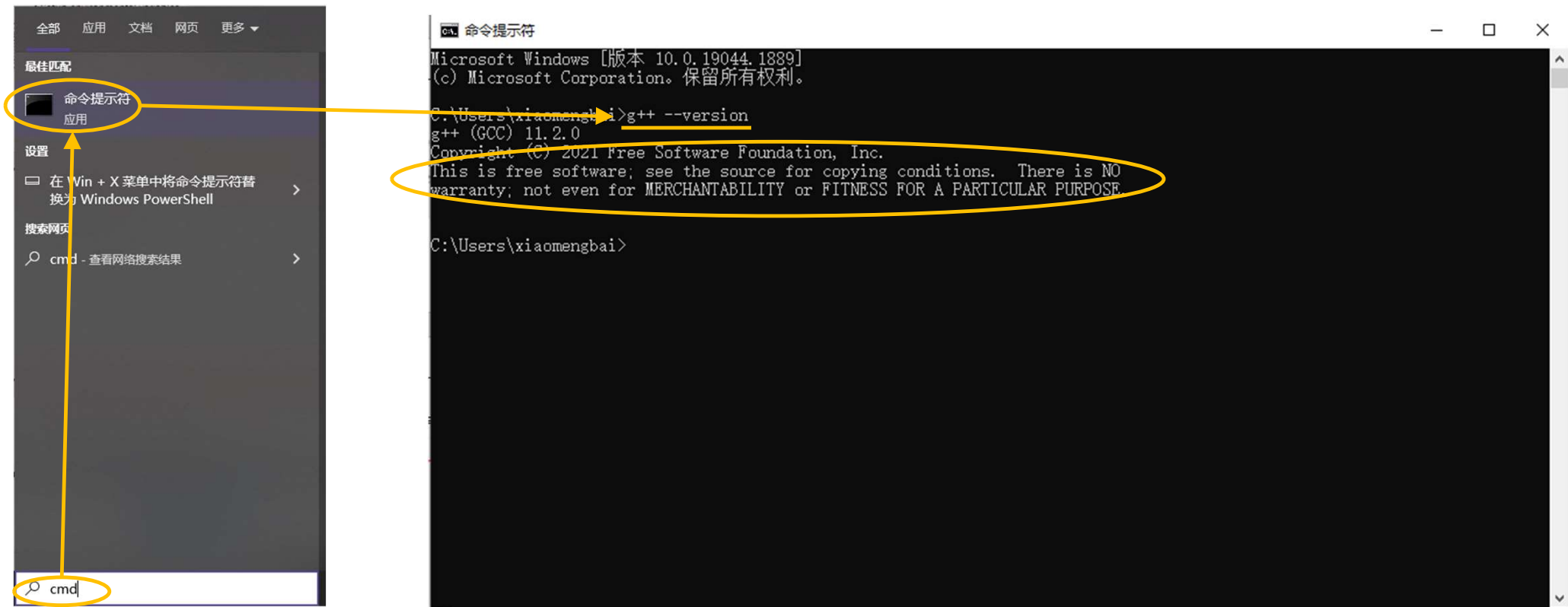
Installing g++

- Setup environmental variables



Installing g++

- Check if successful install



Installing Visual Studio Code

- download: <https://code.visualstudio.com/download>

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Windows	User Installer, System Installer, .zip	64 bit, 32 bit, ARM
Linux	.deb, .rpm, .tar.gz, Snap Store	64 bit, ARM 64
Mac	.zip, .dmg, .pkg	Intel Chip, Apple Silicon

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Installing VS Code

- Install VS Code

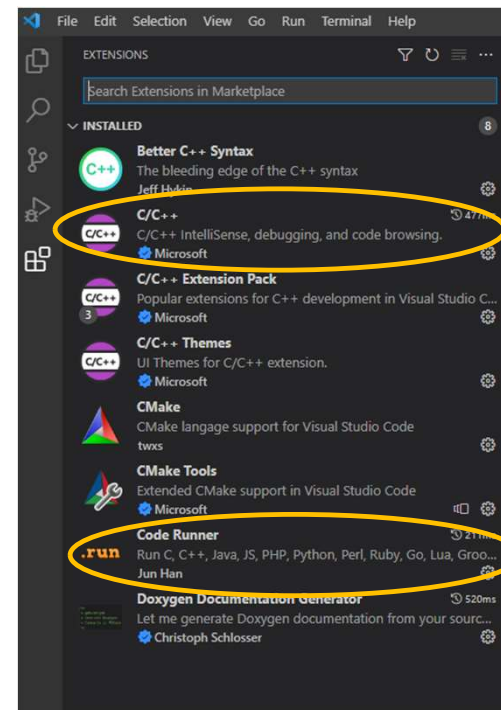
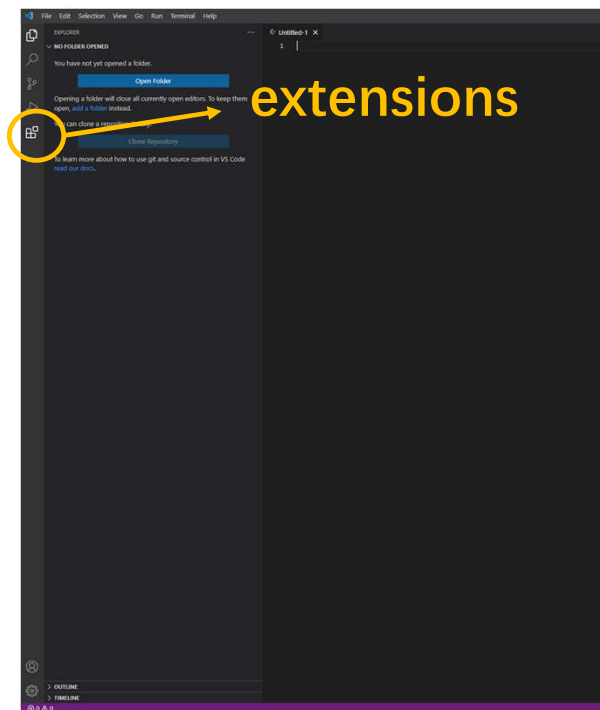


- Open VS Code



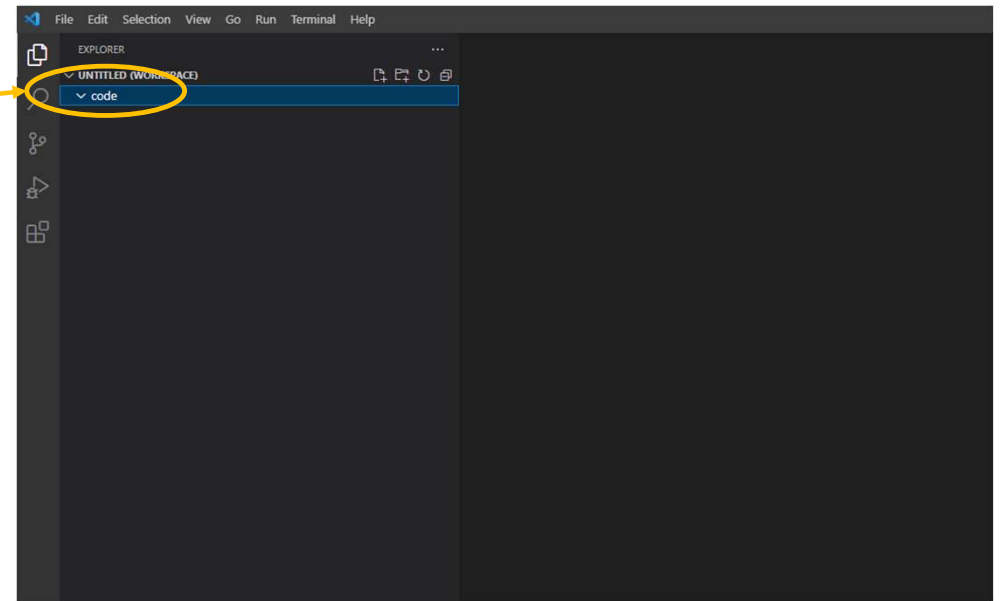
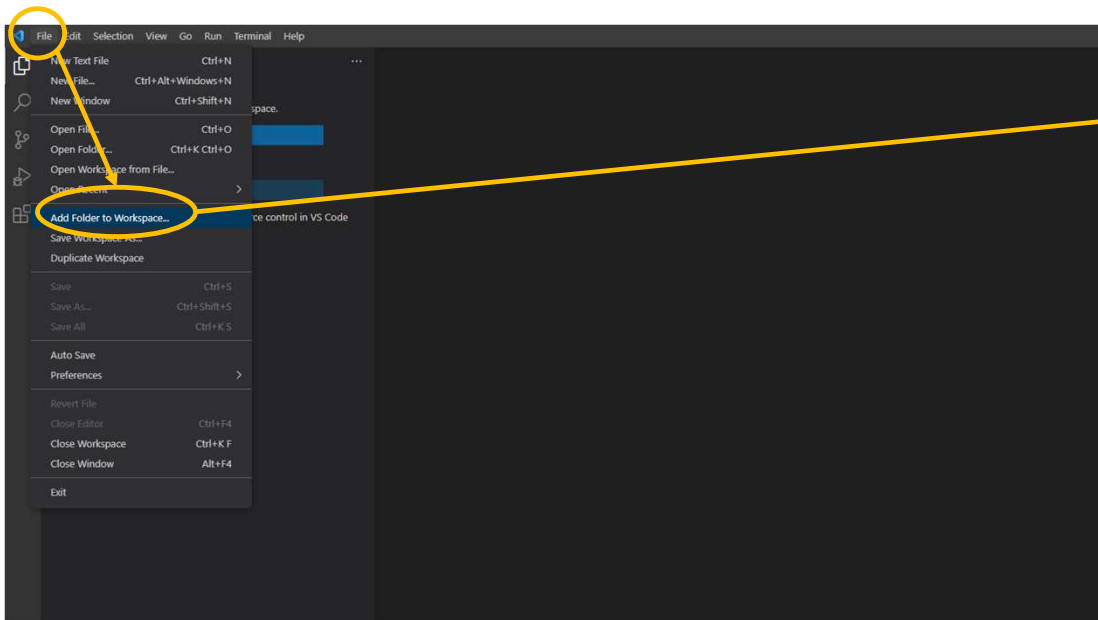
Installing VS Code

- Install Extensions: **C/C++** and **Code Runner**



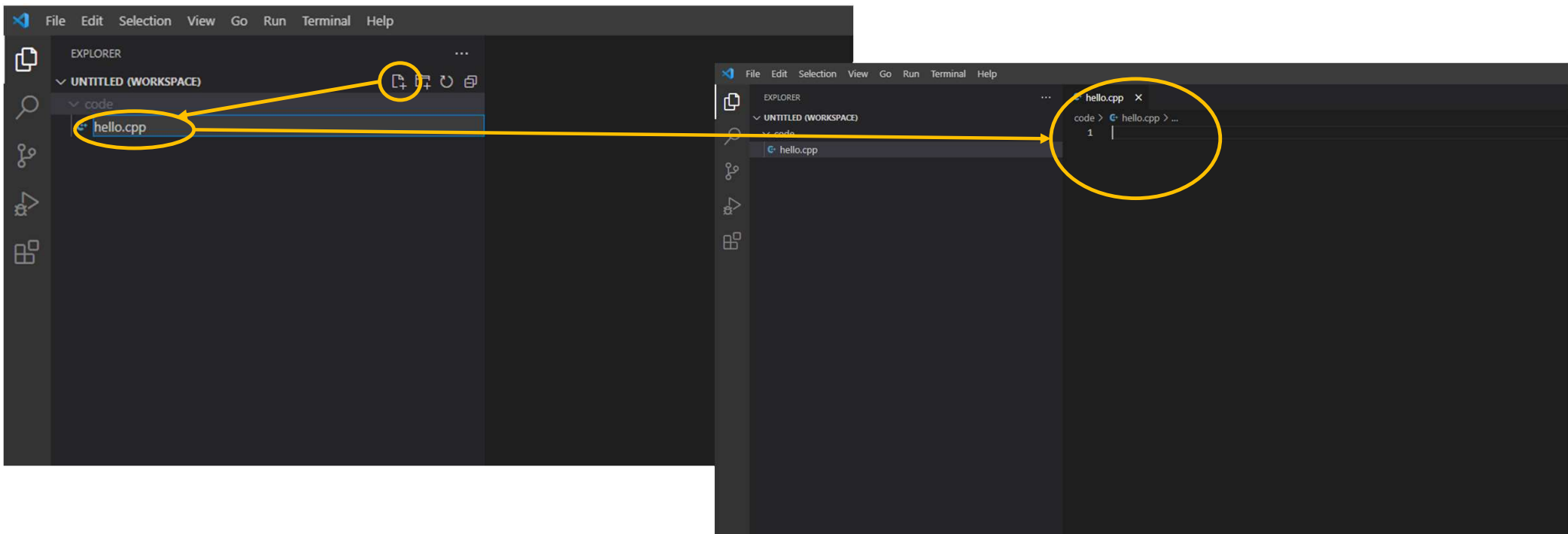
Hello.cpp

- Open a folder in the workspace



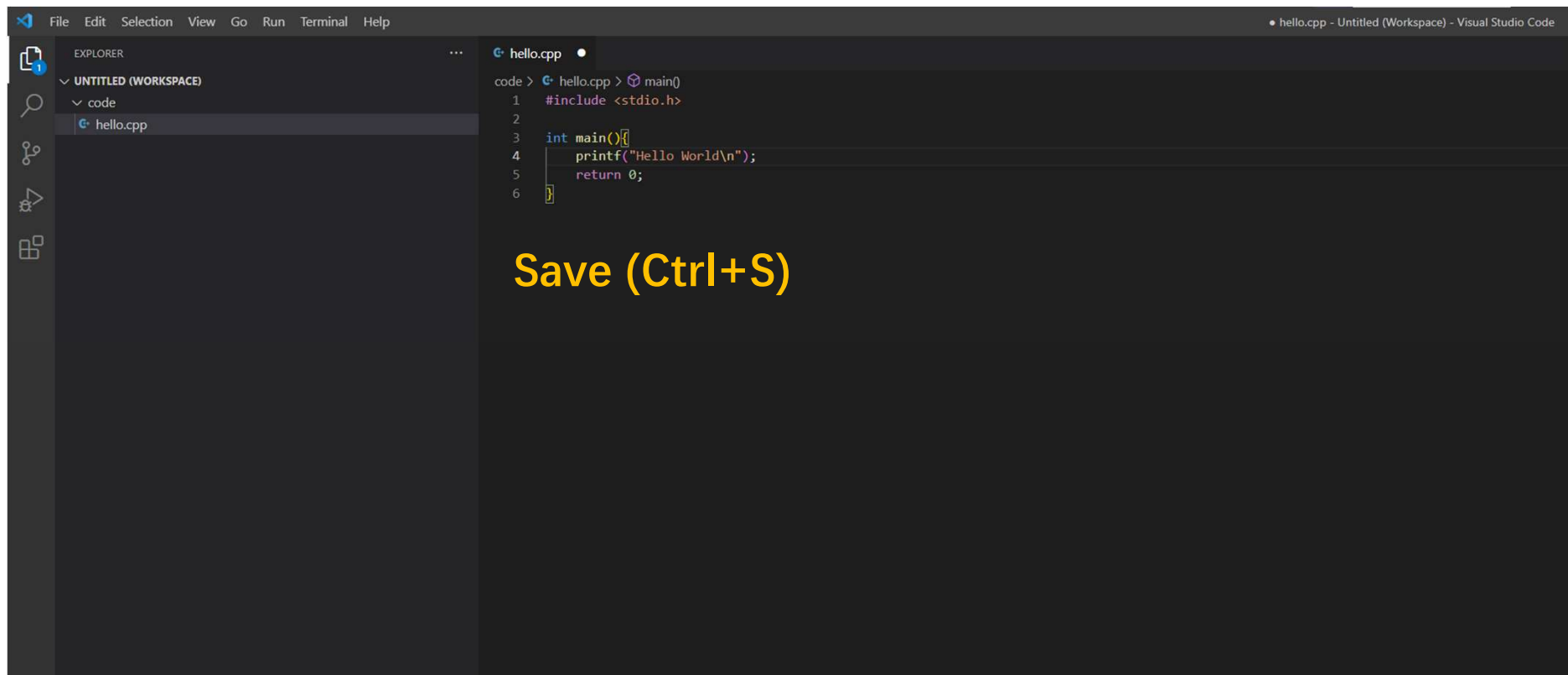
Hello.cpp

- Create a new file `hello.cpp`



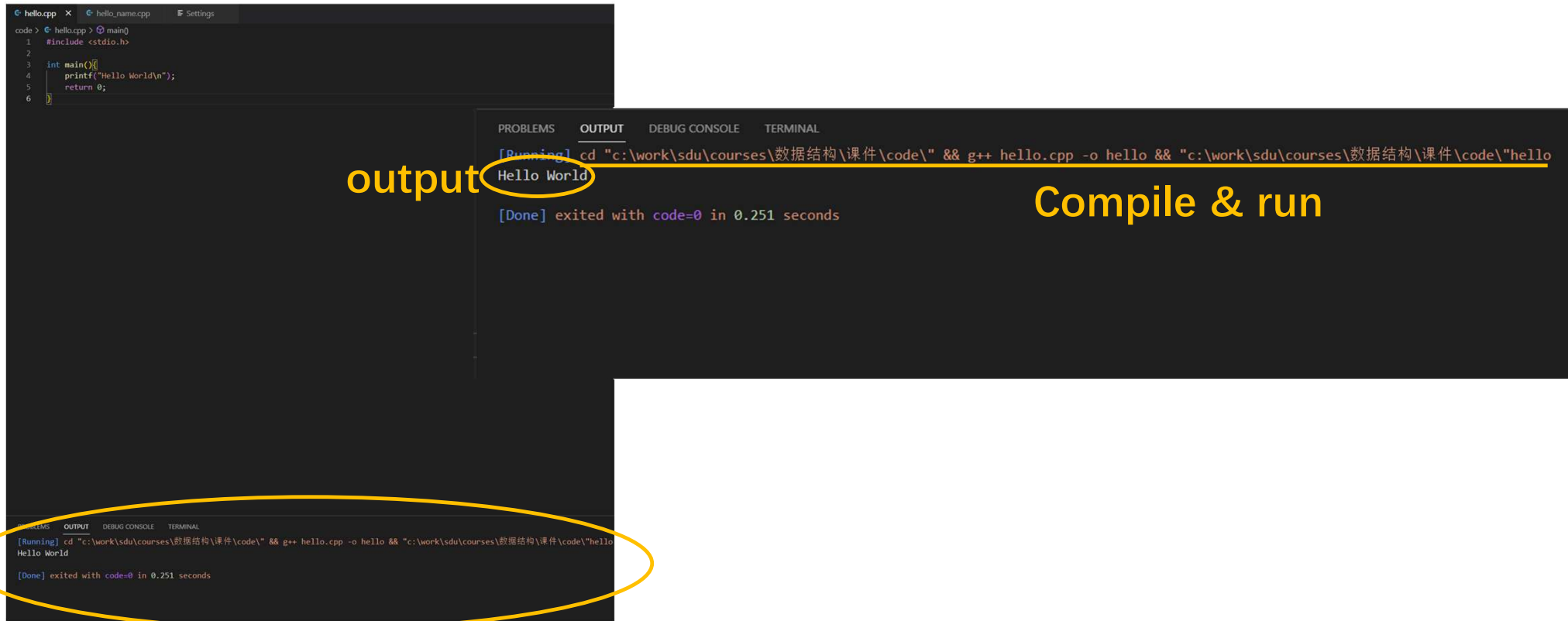
Hello.cpp

- Write the code



Hello.cpp

- Run the code



```
code > hello.cpp > main()
1 #include <stdio.h>
2
3 int main()
4 {
5     printf("Hello World\n");
6     return 0;
7 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

[Running] cd "c:\work\sdu\courses\数据结构\课件\code\" && g++ hello.cpp -o hello && "c:\work\sdu\courses\数据结构\课件\code\hello" && echo Hello World

[Done] exited with code=0 in 0.251 seconds

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

[Running] cd "c:\work\sdu\courses\数据结构\课件\code\" && g++ hello.cpp -o hello && "c:\work\sdu\courses\数据结构\课件\code\hello" && echo Hello World

[Done] exited with code=0 in 0.251 seconds

Compile & run

Configure to run in a terminal

- A program accepting inputs

```
hello.cpp  hello_name.cpp x
code > hello_name.cpp > main()
1  #include <stdio.h>
2
3  int main(){
4      char firstName[64];
5      char lastName[64];
6
7      printf("Your first name: ");
8      scanf("%s", firstName);
9      printf("Your last name: ");
10     scanf("%s", lastName);
11     printf("Hello! %s %s\n", firstName, lastName);
12     return 0;
13 }
```

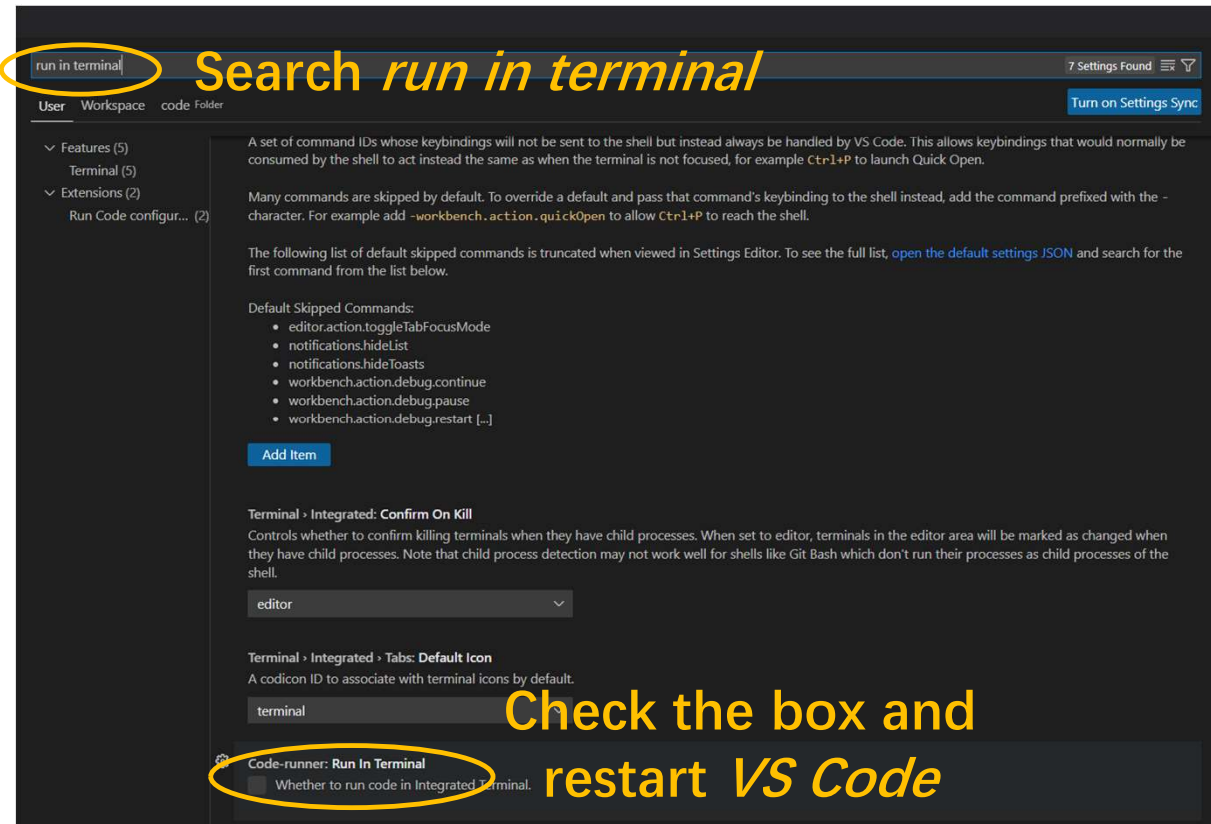
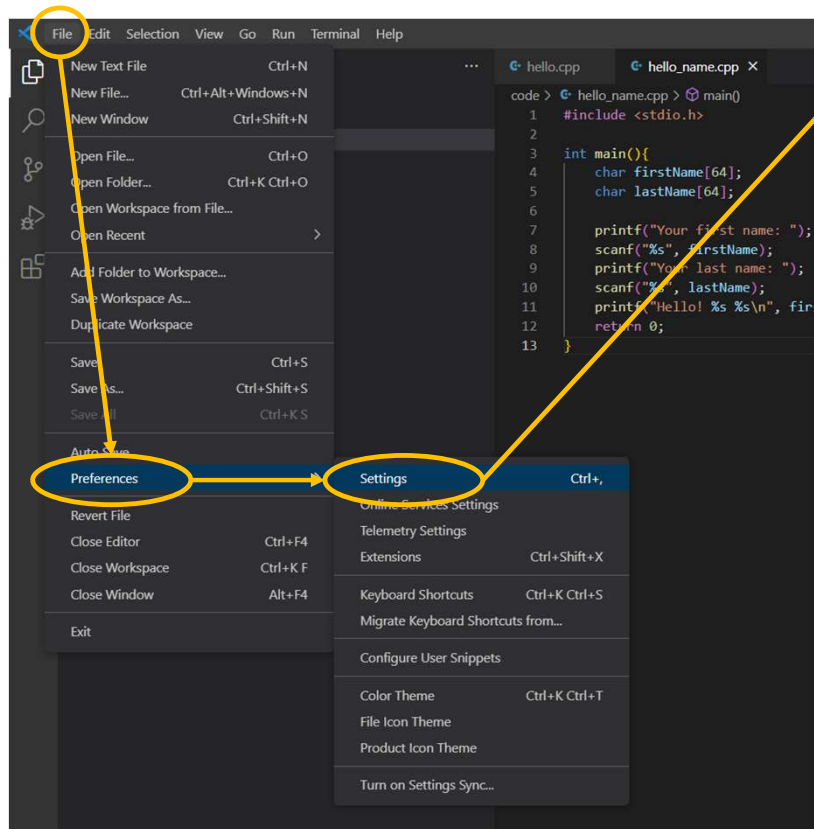
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
[Running] cd "c:\work\sdu\courses\数据结构\课件\code\" && g++ hello_name.cpp -o hello_name && "c:\work\sdu\courses\数据结构\课件\code\"hello_name
|
```

Cannot input

Ctrl + Alt + M: terminate the running program

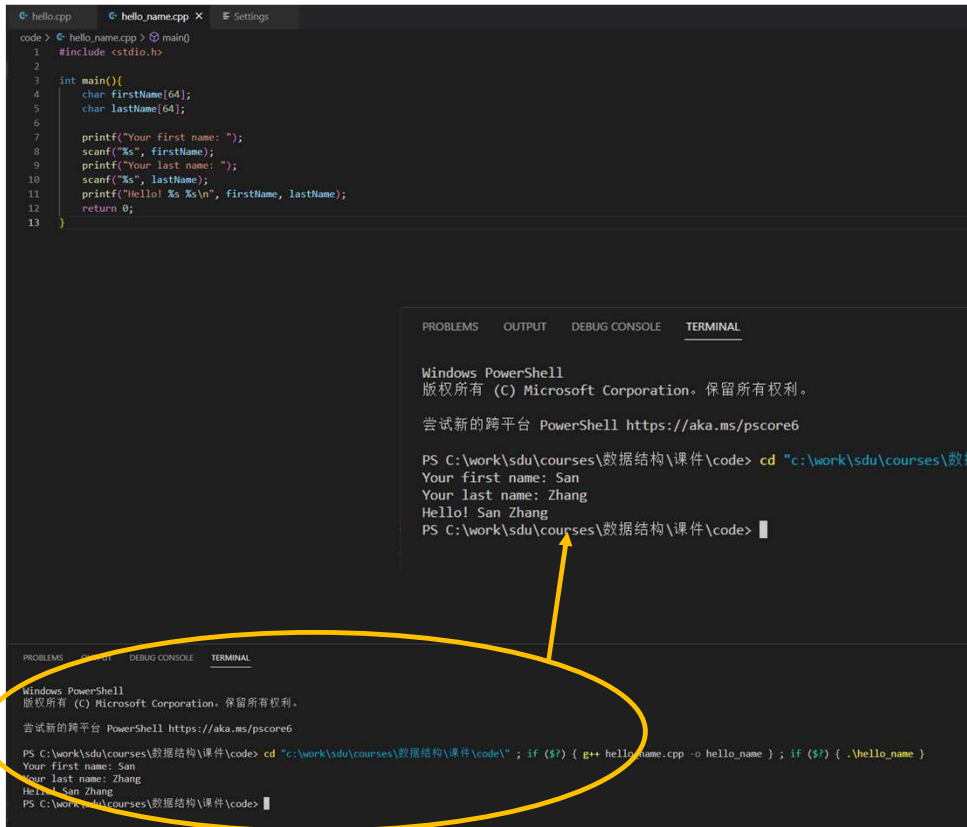
Configure to run in a terminal

- Configure the code-runner extension



Configure to run in a terminal

- Run the program again



```
code > hello_name.cpp x Settings
code > hello_name.cpp > main()
1 #include <stdio.h>
2
3 int main(){
4     char firstName[64];
5     char lastName[64];
6
7     printf("Your first name: ");
8     scanf("%s", firstName);
9     printf("Your last name: ");
10    scanf("%s", lastName);
11    printf("Hello! %s %s\n", firstName, lastName);
12    return 0;
13 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
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尝试新的跨平台 PowerShell <https://aka.ms/pscore6>

PS C:\work\sdu\courses\数据结构\课件\code> cd "c:\work\sdu\courses\数据结构\课件\code\" ; if (\$?) { g++ hello_name.cpp -o hello_name } ; if (\$?) { .\hello_name }

Your first name: San
Your last name: Zhang
Hello! San Zhang
PS C:\work\sdu\courses\数据结构\课件\code>

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Windows PowerShell
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尝试新的跨平台 PowerShell <https://aka.ms/pscore6>

PS C:\work\sdu\courses\数据结构\课件\code> cd "c:\work\sdu\courses\数据结构\课件\code\" ; if (\$?) { g++ hello_name.cpp -o hello_name } ; if (\$?) { .\hello_name }

Your first name: San
Your last name: Zhang
Hello! San Zhang
PS C:\work\sdu\courses\数据结构\课件\code>

Run C/C++ in Linux

- g++ and nano/vim/emacs/...

```
~/code$ nano hello.cpp_

GNU nano 4.8 hello.cpp Modified
#include <stdio.h>

int main(){
    printf("Hello World\n");
    return 0;
}
```

Save & Exit: Ctrl + x, y, Enter

Get Help Write Out Where Is Cut Text Justify Cur Pos
Exit Read File Replace Paste Text To Spell Go To Line

```
xiaomb@LAPTOP-IUK2M5JJ:~/code$ nano hello.cpp
xiaomb@LAPTOP-IUK2M5JJ:~/code$ g++ hello.cpp -o hello
xiaomb@LAPTOP-IUK2M5JJ:~/code$ ./hello
Hello World
xiaomb@LAPTOP-IUK2M5JJ:~/code$ _
```

Compile & run