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1. 安装 python 相关组件

命令终端中输入

`pip install PyYAML Jinja2 jsonschema` 后回车

安装需要的 python 相关组件

```
管理员: C:\windows\system32\cmd.exe
Microsoft Windows [版本 10.0.19045.2311]
(c) Microsoft Corporation. 保留所有权利。

C:\Users\Administrator>pip install PyYAML Jinja2 jsonschema
Collecting PyYAML
  Downloading PyYAML-6.0.2-cp39-cp39-win_amd64.whl (162 kB)
    |#####| 162 kB 17 kB/s
Collecting Jinja2
  Downloading Jinja2-3.1.5-py3-none-any.whl (134 kB)
    |#####| 134 kB 11 kB/s
Collecting jsonschema
  Downloading jsonschema-4.23.0-py3-none-any.whl (88 kB)
    |#####| 88 kB 19 kB/s
Collecting MarkupSafe>=2.0
  Downloading MarkupSafe-3.0.2-cp39-cp39-win_amd64.whl (15 kB)
Collecting rpds-py>=0.7.1
  Downloading rpds-py-0.22.3-cp39-cp39-win_amd64.whl (231 kB)
    |#####| 231 kB 10 kB/s
Collecting referencing>=0.28.4
  Downloading referencing-0.36.2-py3-none-any.whl (26 kB)
Collecting jsonschema-specifications>=2023.03.6
  Downloading jsonschema-specifications-2024.10.1-py3-none-any.whl (18 kB)
Collecting attrs>=22.2.0
  Downloading attrs-25.1.0-py3-none-any.whl (63 kB)
    |#####| 63 kB 12 kB/s
Requirement already satisfied: typing-extensions>=4.4.0; python_version < "3.13" in c:\users\administrator\appdata\local\programs\python\python39\lib\site-packages (from referencing>=0.28.4->jsonschema) (4.12.2)
Installing collected packages: PyYAML, MarkupSafe, Jinja2, rpds-py, attrs, referencing, jsonschema-specifications, jsonschema
Successfully installed Jinja2-3.1.5 MarkupSafe-3.0.2 PyYAML-6.0.2 attrs-25.1.0 jsonschema-4.23.0 jsonschema-specifications-2024.10.1 referencing-0.36.2 rpds-py-0.22.3
WARNING: You are using pip version 20.2.3; however, version 25.0 is available.
You should consider upgrading via the 'c:\users\administrator\appdata\local\programs\python\python39\python.exe -m pip install --upgrade pip' command.

C:\Users\Administrator>
```

2. 安装 ST-Link/V2 Drivers

2.1 点击解压 ST-Link/V2 Drivers



DFU软件	2024/12/22 17:30	360压缩 ZIP :
gcc-arm-none-eabi-7-2018-q2-updat...	2024/12/22 17:20	360压缩 ZIP :
Git-2.25.0-64-bit	2024/12/22 17:19	应用程序
gnu-mcu-eclipse-windows-build-tool...	2024/12/22 17:18	360压缩 ZIP :
OpenOCD	2024/12/22 17:21	360压缩 ZIP :
python-3.8.1	2024/12/22 17:19	应用程序
ST-Link_Drivers	2024/12/22 17:24	360压缩 ZIP :
tup-latest	2024/12/22 17:22	360压缩 ZIP :
VSCodeUserSetup-x64-1.42.0	2024/12/22 17:20	应用程序

2.2 选择解压路径到纯英文路径下

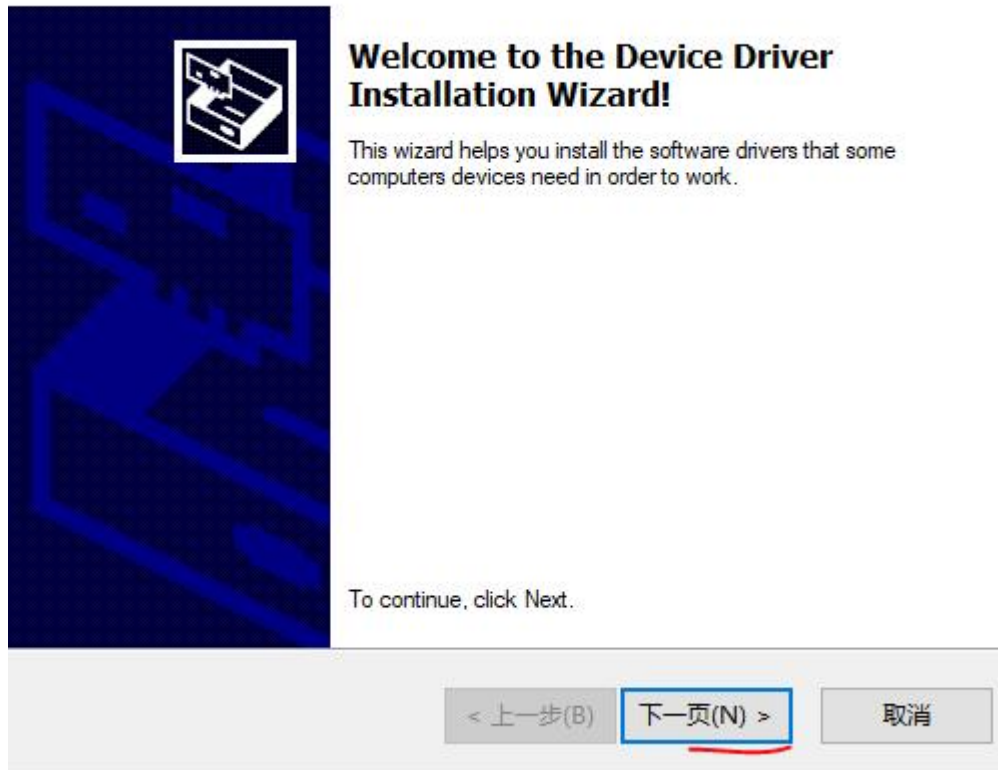
解压 ST-Link_Drivers.zip 生成 ST-Link_Drivers 文件夹，进入文件夹双击运行 dpinst_amd64.exe 按照提示保持默认安装即可。

名称	修改日期	类型	大小
amd64	2025/1/30 18:01	文件夹	
x86	2025/1/30 18:01	文件夹	
dpinst_amd64	2018/2/8 1:24	应用程序	665 KB
dpinst_x86	2018/2/8 1:24	应用程序	540 KB
readme	2018/9/11 16:15	文本文档	1 KB
stlink_bridge_winusb	2018/2/8 1:25	安装信息	3 KB
stlink_dbg_winusb	2018/2/8 1:26	安装信息	5 KB
stlink_VCP	2018/2/8 1:29	安装信息	3 KB
stlink_winusb_install	2017/6/23 22:16	Windows 批处理...	1 KB
stlinkbridgewinusb_x64	2018/2/8 1:33	安全目录	11 KB
stlinkbridgewinusb_x86	2018/2/8 1:33	安全目录	11 KB
stlinkdbgwinusb_x64	2018/2/8 1:33	安全目录	11 KB
stlinkdbgwinusb_x86	2018/2/8 1:33	安全目录	11 KB
stlinkvcp_x64	2018/2/8 1:33	安全目录	10 KB
stlinkvcp_x86	2018/2/8 1:33	安全目录	10 KB

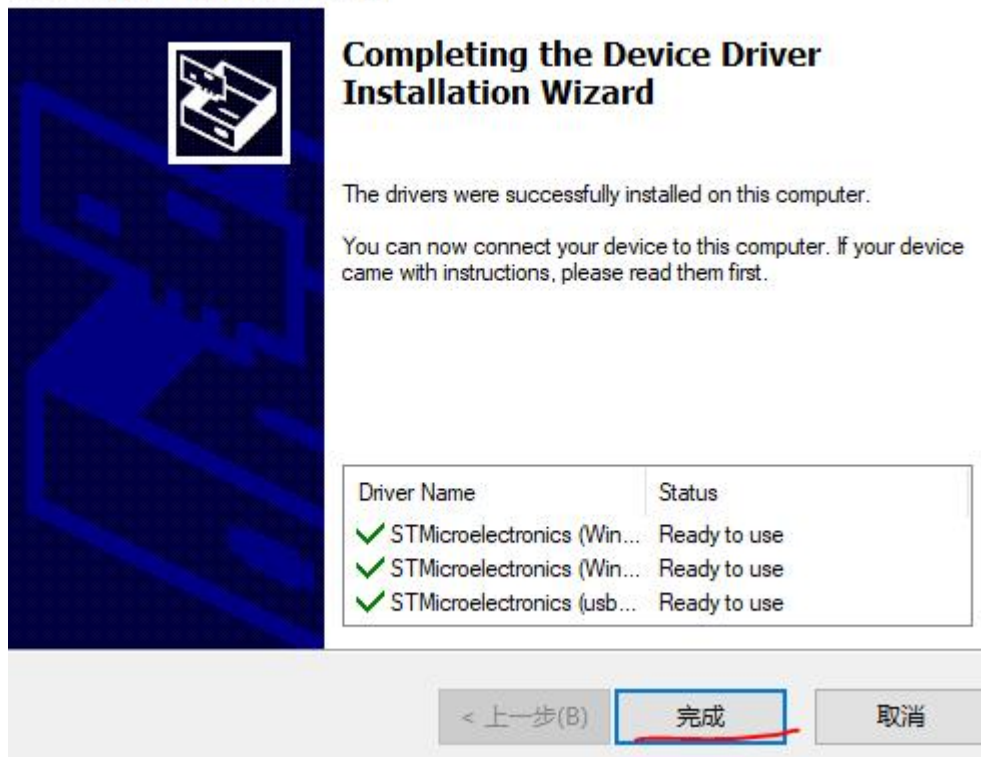
2.3 点击安装即可



Device Driver Installation Wizard



Device Driver Installation Wizard



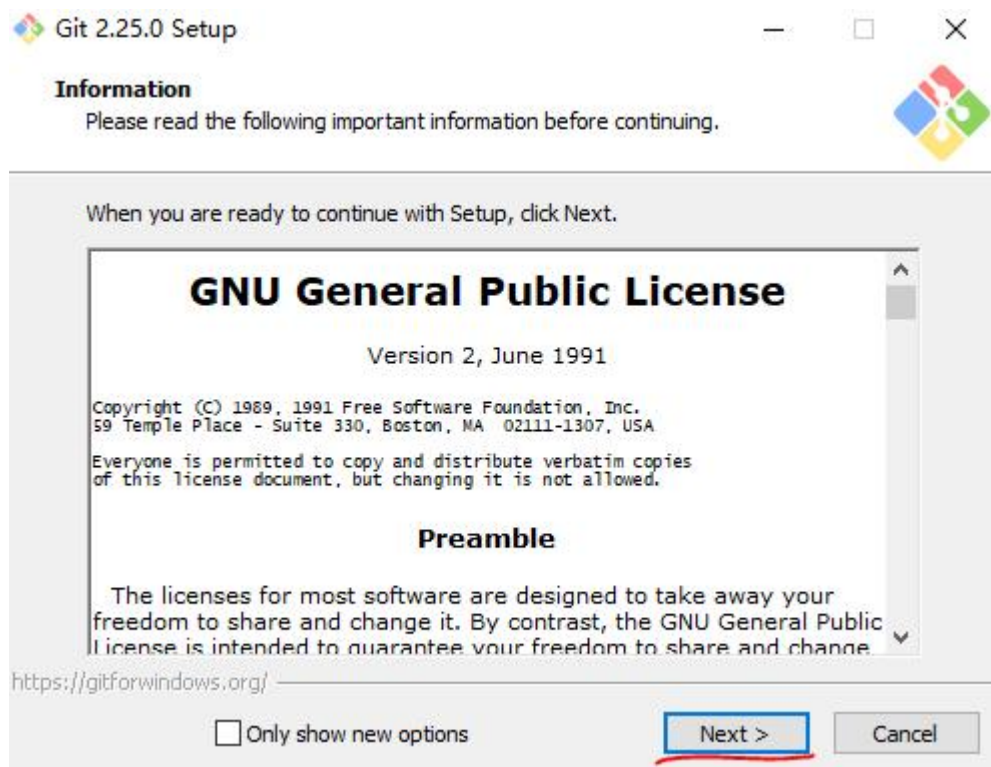
3.安装 Git for Windows



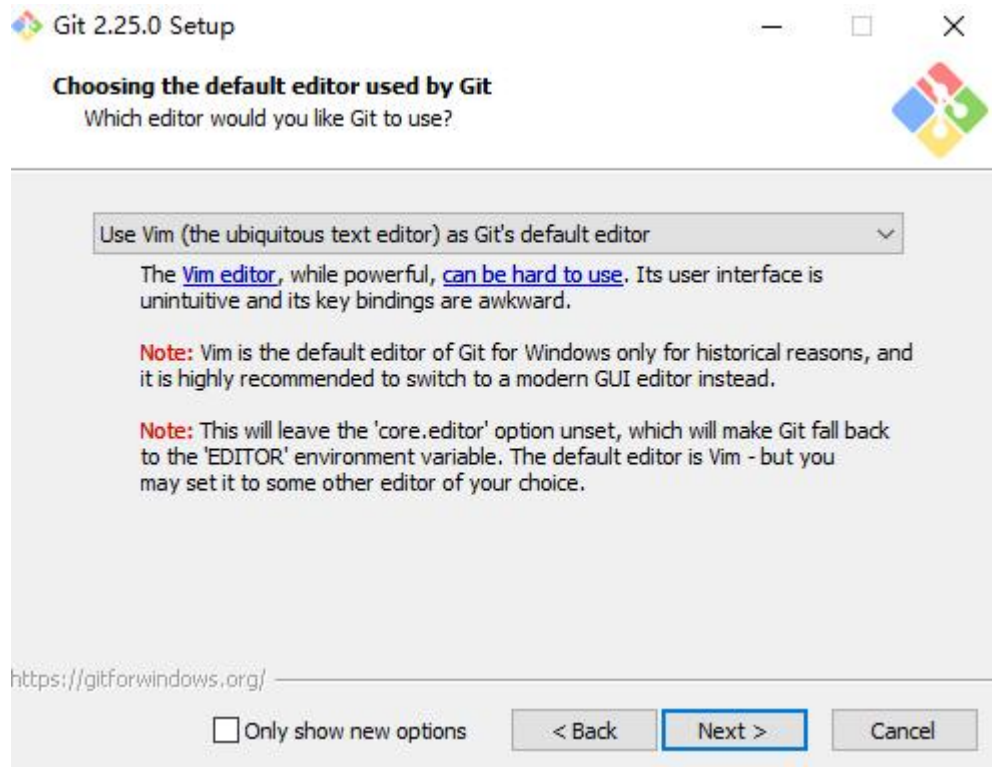
3.1 双击安装 Git-2.25.0-64-bit.exe

ST-Link_Drivers	2025/1/30 18:01	文件夹
DFU软件	2024/12/22 17:30	360压缩 ZIP 文件
gcc-arm-none-eabi-7-2018-q2-updat...	2024/12/22 17:20	360压缩 ZIP 文件 1
<u>Git-2.25.0-64-bit</u>	2024/12/22 17:19	应用程序
gnu-mcu-eclipse-windows-build-tool...	2024/12/22 17:18	360压缩 ZIP 文件
OpenOCD	2024/12/22 17:21	360压缩 ZIP 文件
python-3.8.1	2024/12/22 17:19	应用程序
ST-Link_Drivers	2024/12/22 17:24	360压缩 ZIP 文件
tup-latest	2024/12/22 17:22	360压缩 ZIP 文件
VSCodeUserSetup-x64-1.42.0	2024/12/22 17:20	应用程序

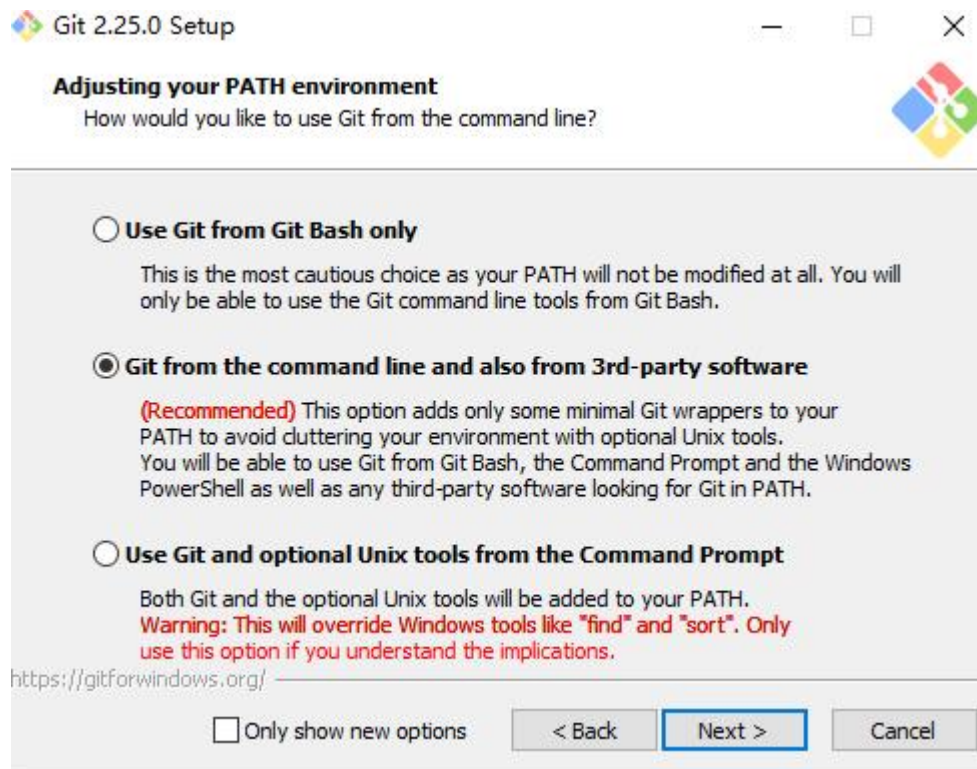
点击 Next



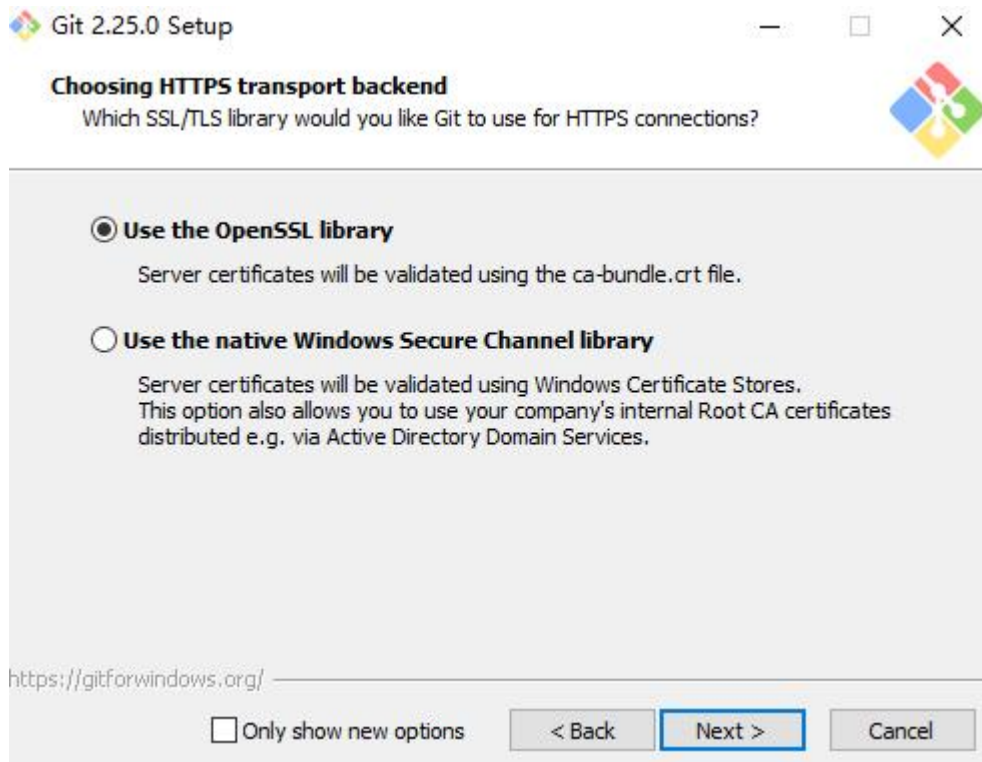
选择安装组件，建议默认勾选，点击 next。
点击“Next”



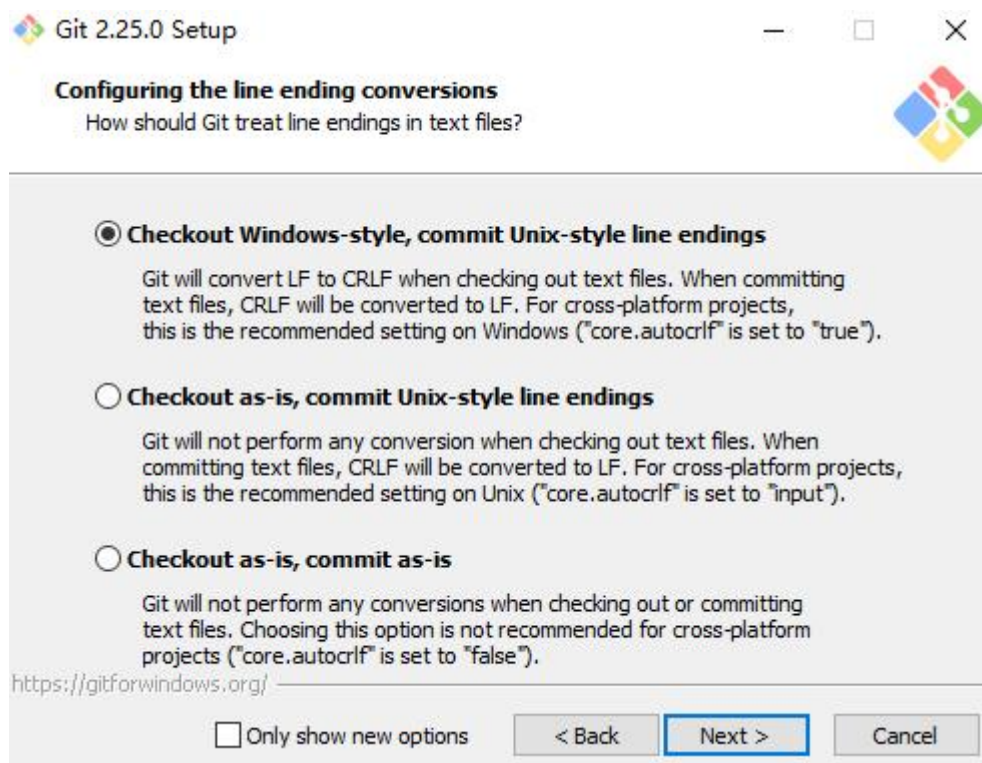
推荐第二种配置，点击 next



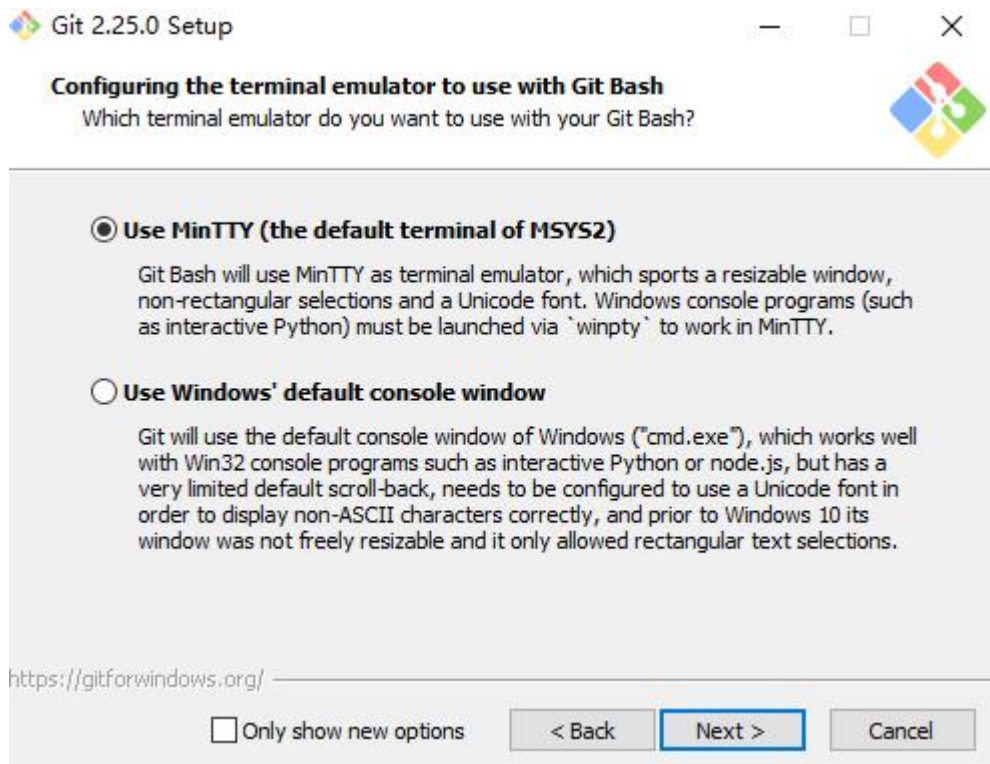
使用默认选项第一项，点击 next



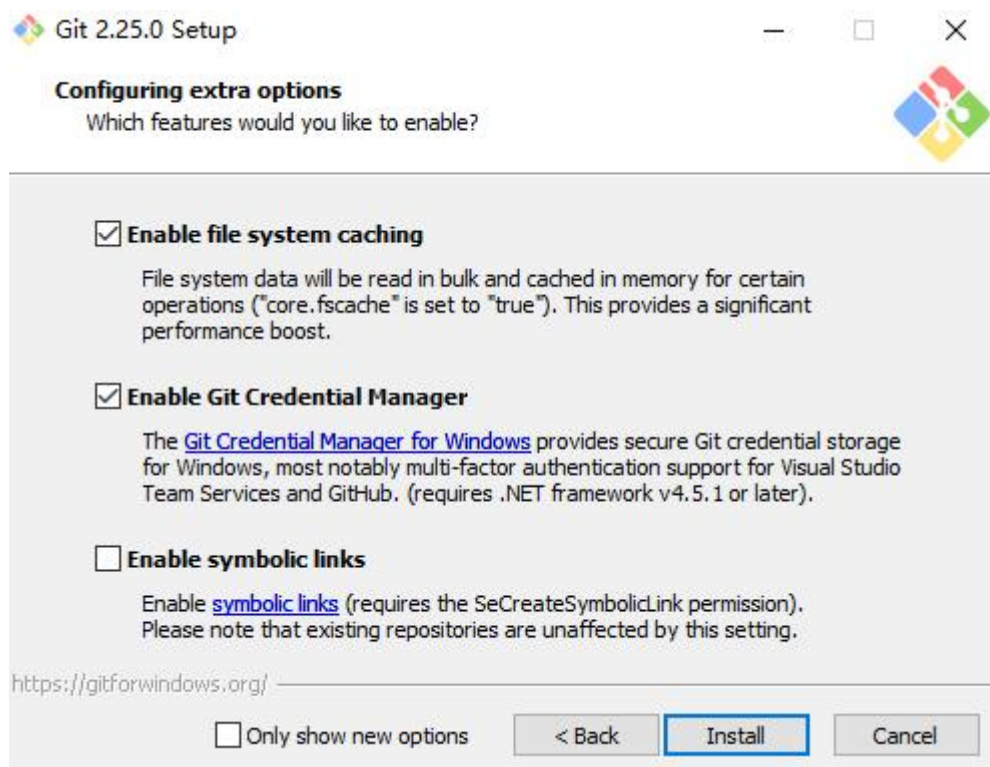
选择第一种选项，点击 next



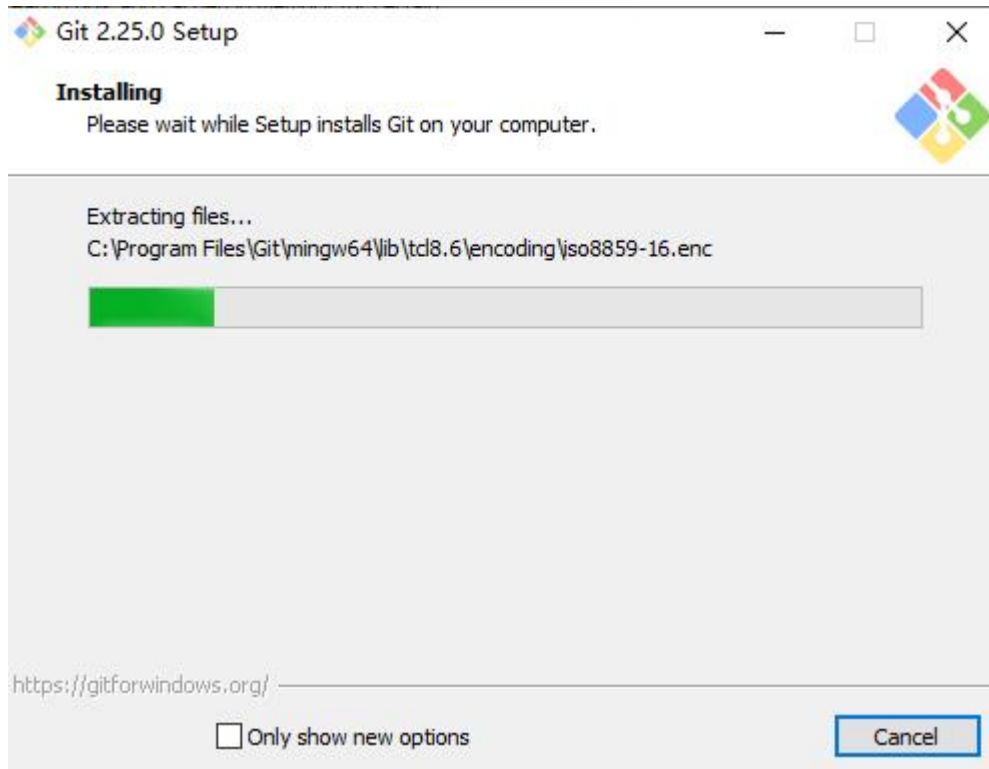
选择默认的第一种选项，点击 next



勾选默认的第一、第二选项，点击 install 安装



3.2 等待安装完成

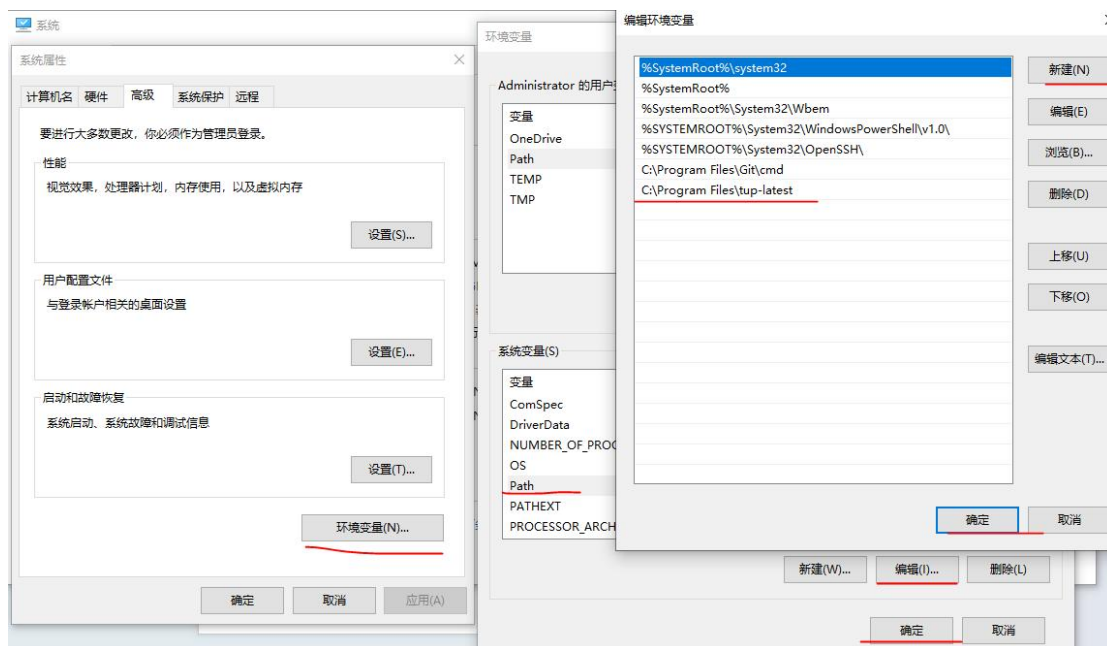


安装完成，点击 next

Git for Windows 安装完成

4. 安装 TUP

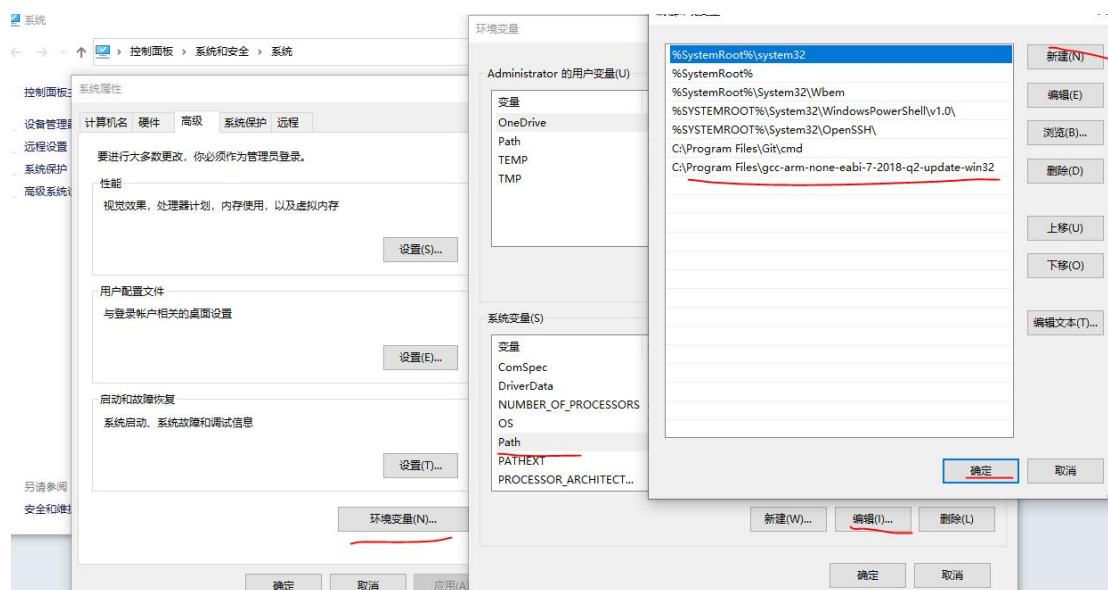
解压 tup-latest.zip 到 C:\Program Files，然后将 C:\Program Files\tup-latest 添加到系统环境变量 Path 中，如下图所示



5. 安装 ARM GNU Compiler

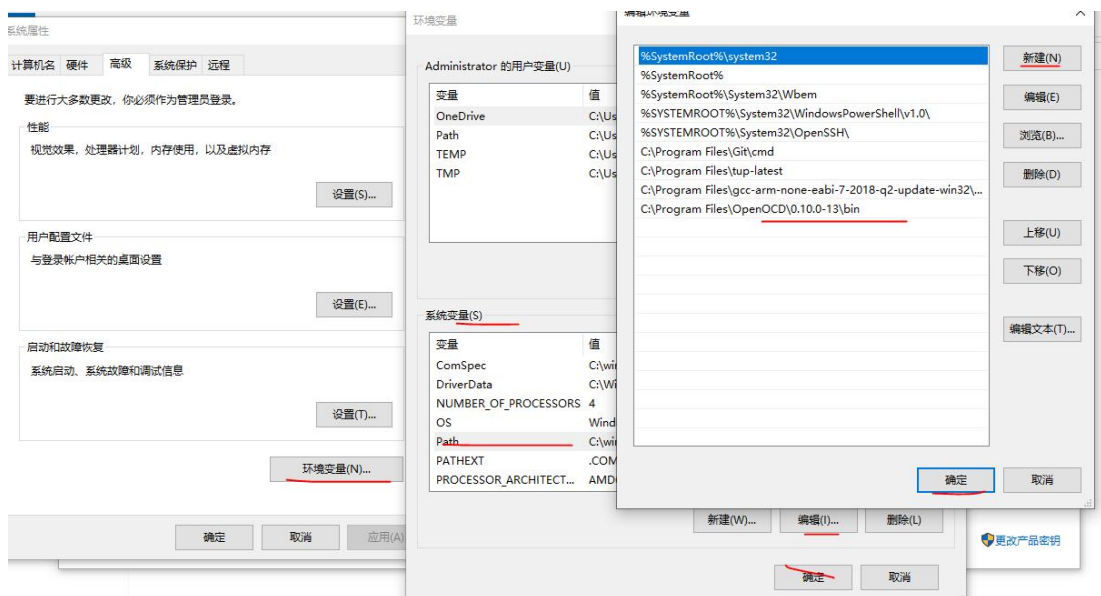
解压 gcc-arm-none-eabi-7-2018-q2-update-win32.zip 到 C:\Program Files，然后将 C:\Program Files\gcc-arm-none-eabi-7-2018-q2-update-win32\bin

地址添加到系统环境变量 Path 中，如下图所示。



6. 安装 OpenOCD

解压 OpenOCD.zip 到 C:\Program Files，然后将 C:\Program Files\OpenOCD\0.10.0-13\bin 地址添加到系统环境变量 Path 中，如下图所示

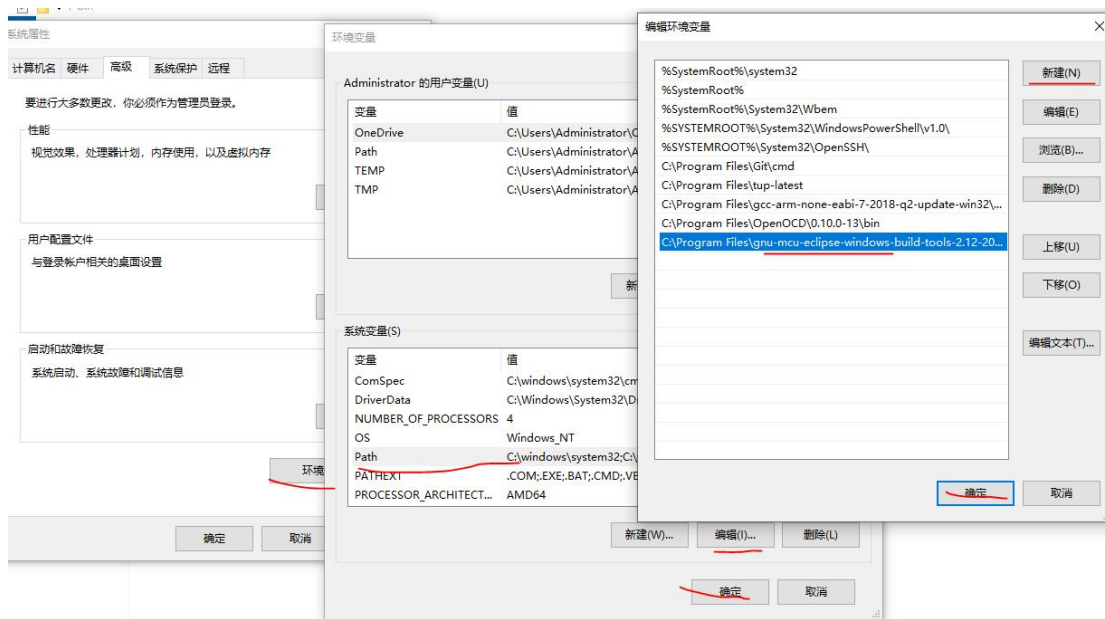


7. 安装 GNU MCU Eclipse's Windows Build Tools

解压 gnu-mcu-eclipse-windows-build-tools-2.12-20190422-1053-win64.zip 到 C:\Program Files，然后将

C:\Program Files\GNU MCU Eclipse\Build Tools\2.12-20190422-1053\bin

地址添加到系统环境变量 Path 中，如下图所示。





8.验证是否安装正确

一切准备就绪后，您可以打开命令终端
运行以下命令来验证安装是否正确：

8.1.arm-none-eabi-gcc --version

```
管理员: C:\windows\system32\cmd.exe
Microsoft Windows [版本 10.0.19045.2311]
(c) Microsoft Corporation. 保留所有权利。

C:\Users\Administrator>arm-none-eabi-gcc --version
arm-none-eabi-gcc (GNU Tools for Arm Embedded Processors 7-2018-q2-update) 7.3.1 20180622 (release) [ARM/embedded-7-bran
ch revision 261907]
Copyright (C) 2017 Free Software Foundation, Inc.
This is free software; see the source for copying conditions. There is NO
warranty, not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

C:\Users\Administrator>
```

8.2.arm-none-eabi-gdb --version

```
C:\Users\Administrator>arm-none-eabi-gdb --version
GNU gdb (GNU Tools for Arm Embedded Processors 7-2018-q2-update) 8.1.0.20180315-git
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law. Type "show copying"
and "show warranty" for details.
This GDB was configured as "--host=i686-w64-mingw32 --target=arm-none-eabi".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.
For help, type "help".
Type "apropos word" to search for commands related to "word".

C:\Users\Administrator>
```

8.3.openocd --version

```
C:\Users\Administrator>openocd --version
xPack OpenOCD, 32-bit Open On-Chip Debugger 0.10.0+dev (2019-07-17-07:34)
Licensed under GNU GPL v2
For bug reports, read
    http://openocd.org/doc/doxygen/bugs.html

C:\Users\Administrator>
```

8.4.tup --version

```
C:\Users\Administrator>tup --version
tup v0.7.8-20-g1d2fd514

C:\Users\Administrator>
```


8.5.python --version

```
C:\Users\Administrator>python --version
Python 3.9.1
C:\Users\Administrator>
```

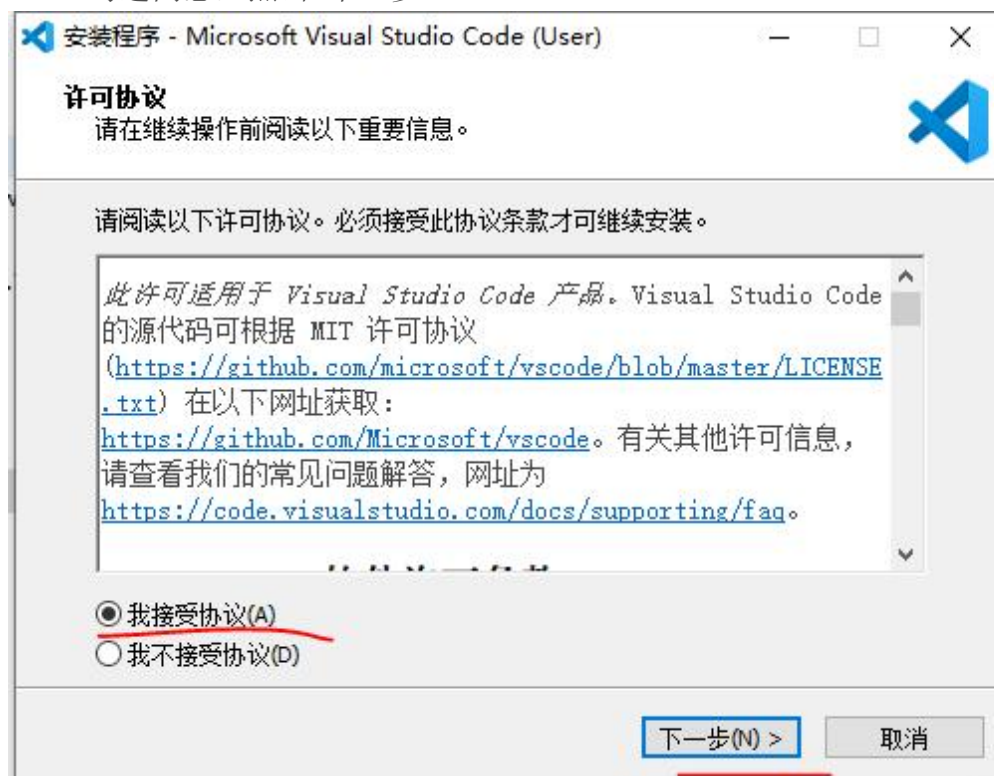
9. Visual Studio Code 的安装和使用

9.1 安装 Visual Studio Code

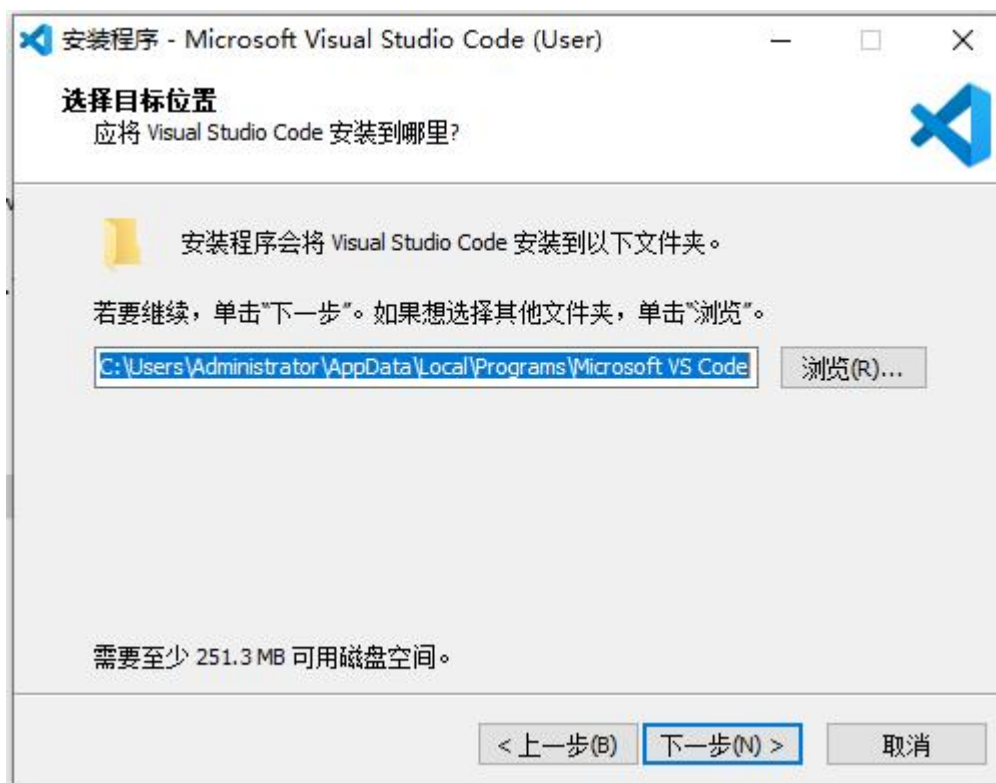
9.1.1 点击安装 VSCodeUserSetup-x64-1.50.1

Git-2.25.0-64-bit	2021/2/21 17:13	应用程序	45,388 KB
gnu-mcu-eclipse-windows-build-tool...	2021/2/21 17:11	360压缩 ZIP 文件	1,946 KB
ODrive-fw-v0.5.1	2021/2/8 21:38	360压缩 ZIP 文件	5,465 KB
OpenOCD	2021/2/21 17:11	360压缩 ZIP 文件	3,035 KB
python-3.9.1-amd64	2021/2/22 11:31	应用程序	27,544 KB
ST-Link_Drivers	2021/2/21 17:14	360压缩 ZIP 文件	5,218 KB
tup-latest	2021/2/21 17:14	360压缩 ZIP 文件	2,776 KB
<u>VSCodeUserSetup-x64-1.50.1</u>	2020/10/31 17:04	应用程序	62,581 KB

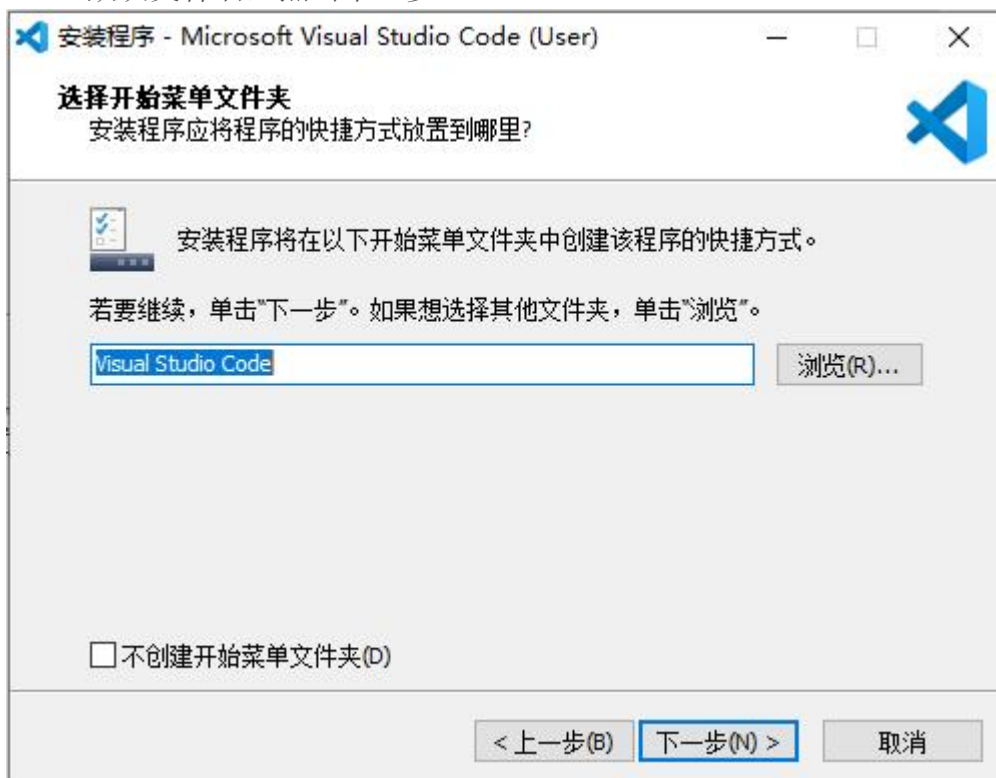
9.1.2 勾选同意，点击 下一步



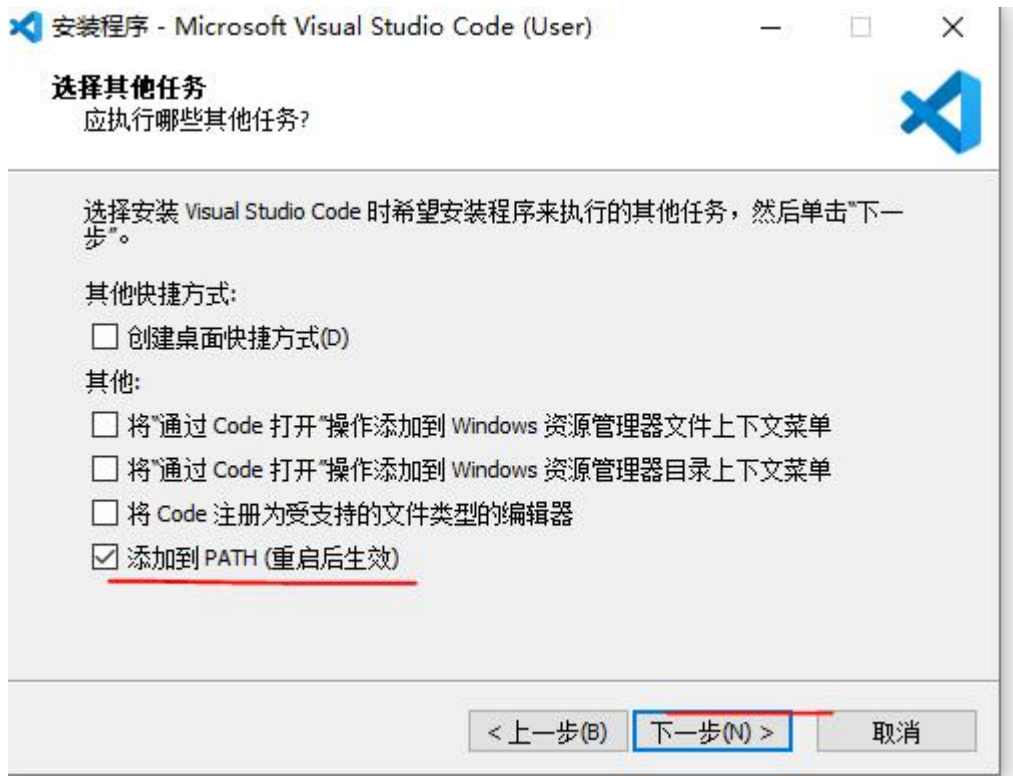
9.1.3.默认安装路径，点击下一步



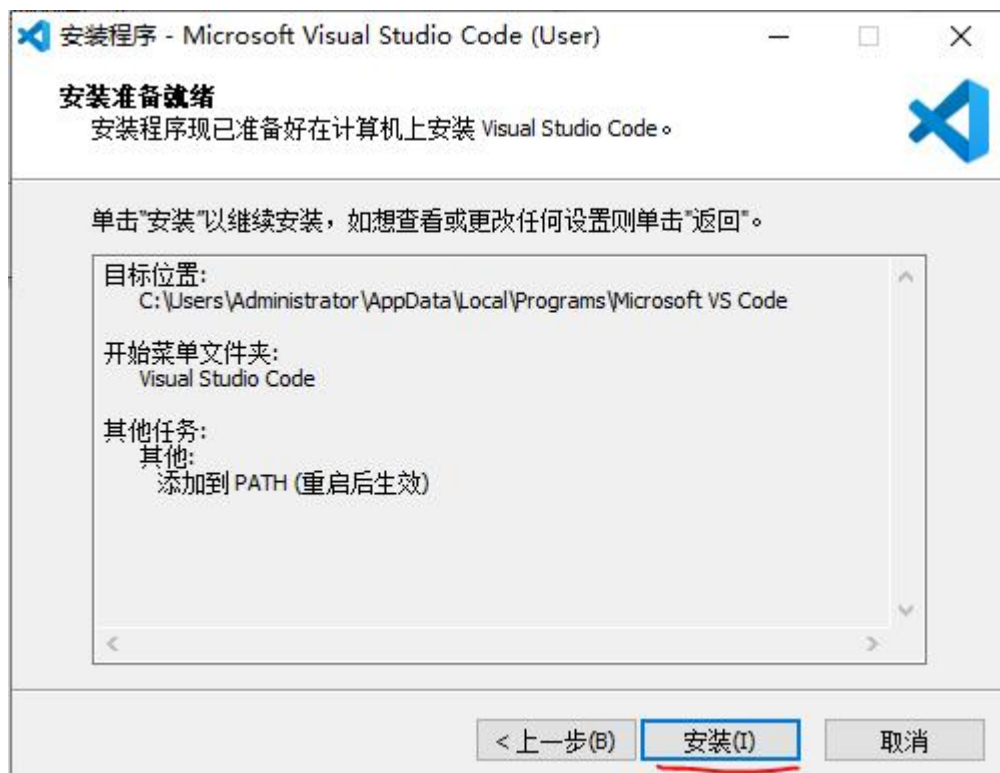
9.1.4. 默认文件名，点击下一步

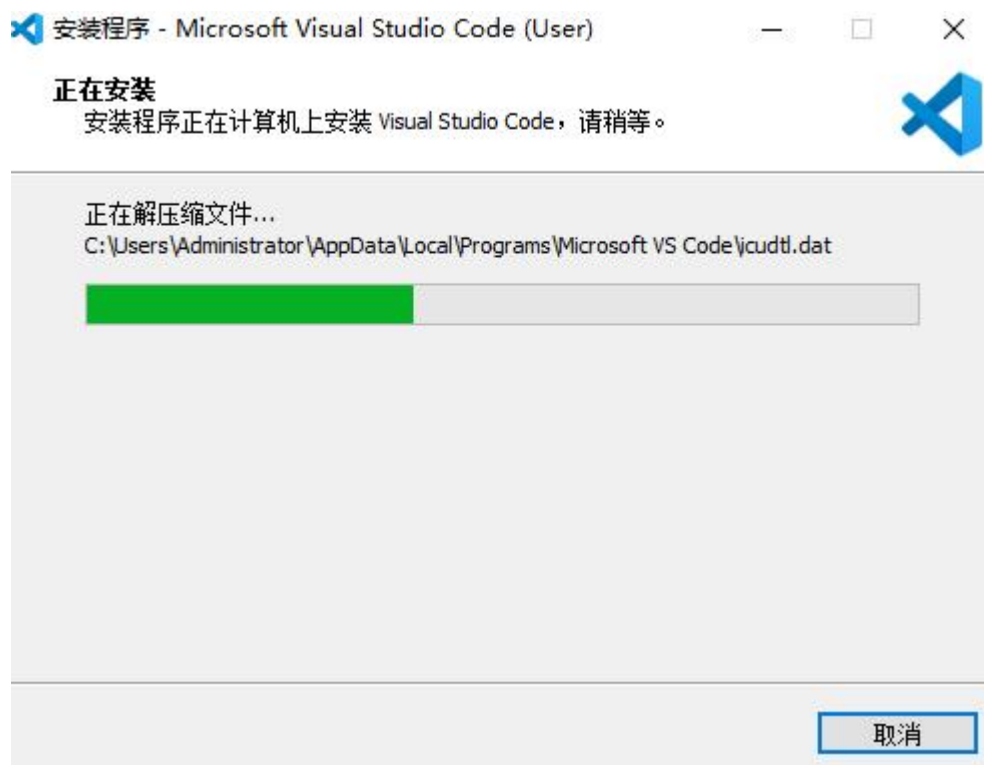


9.1.5. 勾选添加到 path 选项，点击下一步



9.1.6. 点击安装





点击完成

9.2 安装 Visual Studio Code 插件

需要安装以下 5 个插件:

C/C++

Cortex-Debug

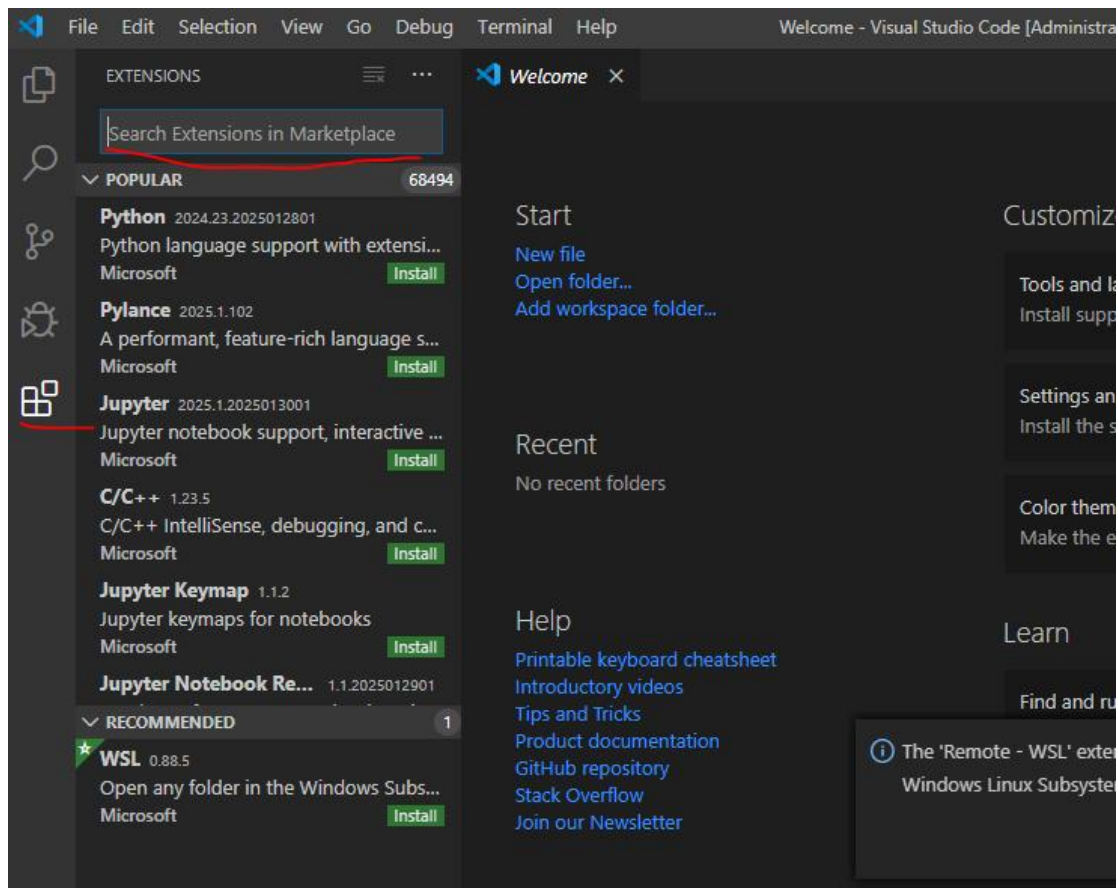
Include Autocomplete

Path Autocomplete

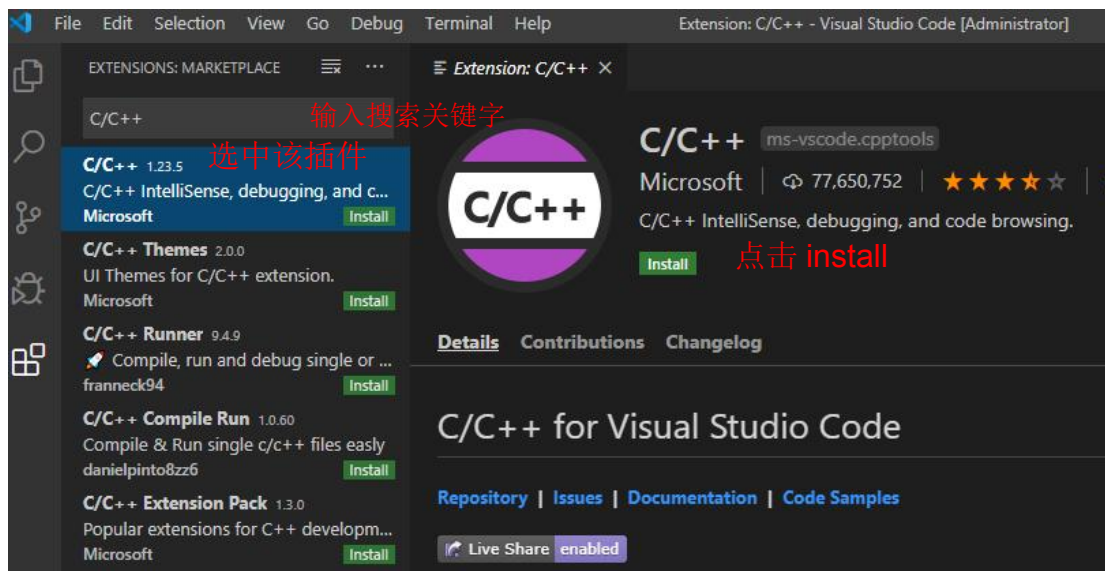
Auto Comment Blocks

上面 5 个插件均按以下步骤安装。

9.2.1 .打开 Visual Studio Code，打开插件库



9.2.2. 输入插件名（例如 C/C++），选中该插件，点击 install



9.2.3.等待下载完成



ODRIVE 开发

联控智能无刷电机开发板教程

EXTENSIONS: MARKETPLACE

Extension: C/C++

C/C++ 0.27.1
C/C++ IntelliSense, debugging, and code browsing.
Microsoft

C/C++ Themes 2.0.0
UI Themes for C/C++ extension.
Microsoft

C/C++ Runner 9.4.9
Compile, run and debug single or multiple C/C++ programs.
franneck94

C/C++ ms-vscode.cpptools
Microsoft | 77,635,504 | ★★★★★
C/C++ IntelliSense, debugging, and code browsing.
[Disable] [Uninstall] This extension is enabled globally.

安装完成

Details Contributions Changelog

EXTENSIONS: MARKETPLACE

Extension: Cortex-Debug

Cortex-Debug 0.3.9
ARM Cortex-M GDB Debugger support for VS Code
marus25

RTOS Views 0.0.7
RTOS views for microcontrollers
mcu-debug

MemoryView 0.0.25
Provide memory views for debuggers
mcu-debug

Cortex-Debug: Device Support... 1.0.0
This package contains additional support for various Cortex-M devices.
marus25

Venus's Cortex-Debug 0.3.14
ARM Cortex-M GDB Debugger support for VS Code
marus25

Cortex-Debug marus25.cortex-debug
marus25 | 954,770 | ★★★★★ | Repository
ARM Cortex-M GDB Debugger support for VS Code
[Disable] [Uninstall] This extension is enabled globally.

Details Contributions Changelog

Cortex Debug

Debugging support for ARM Cortex-M Microcontrollers with the following features:

EXTENSIONS: MARKETPLACE

Extension: Include Autocomplete

Include Autocomplete 0.0.4
Autocompletion for C++ includes
ajshort

Node.js extension pack 1.0.0
The most common extensions for Node.js development.
walkme

Mudlet Scripts SDK 1.10.0
Extension to easily include Mudlet's API.
Delwing

Symfony extension pack 1.0.0
The most common extensions for Symfony development.
walkme

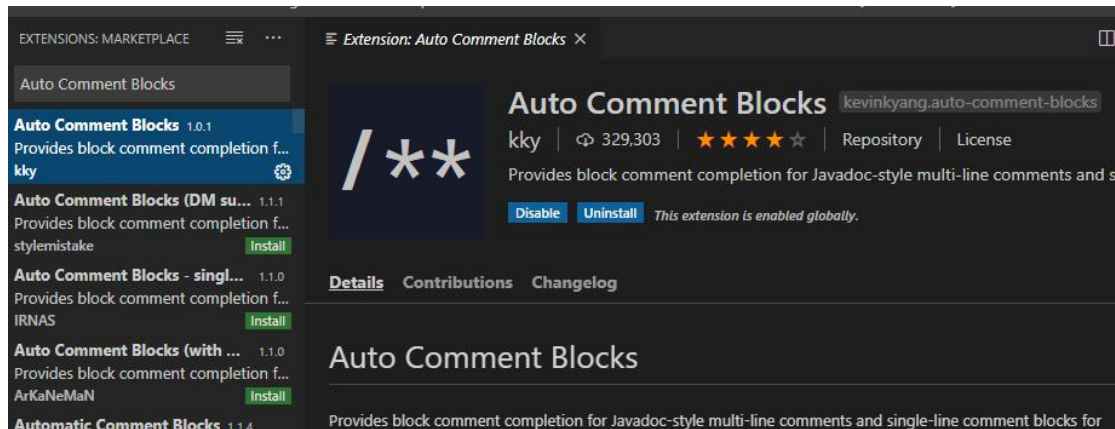
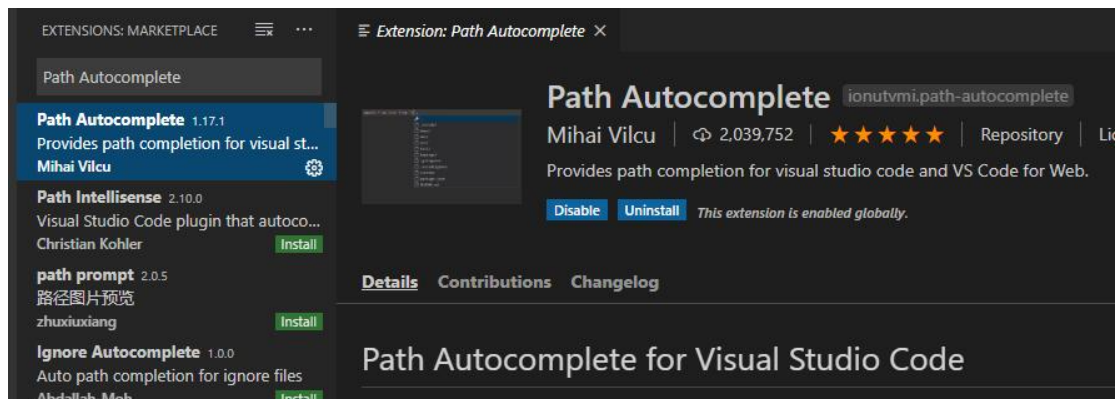
Toolititude for Protobuf (protobuf) 0.20.5
Support for protobuf. Includes language support and schema validation.
Toolititude Team

Include Autocomplete ajshort.include-autocomplete
ajshort | 750,818 | ★★★★★ | Repository | License
Autocompletion for C++ includes
[Disable] [Uninstall] This extension is enabled globally.

Details Contributions Changelog

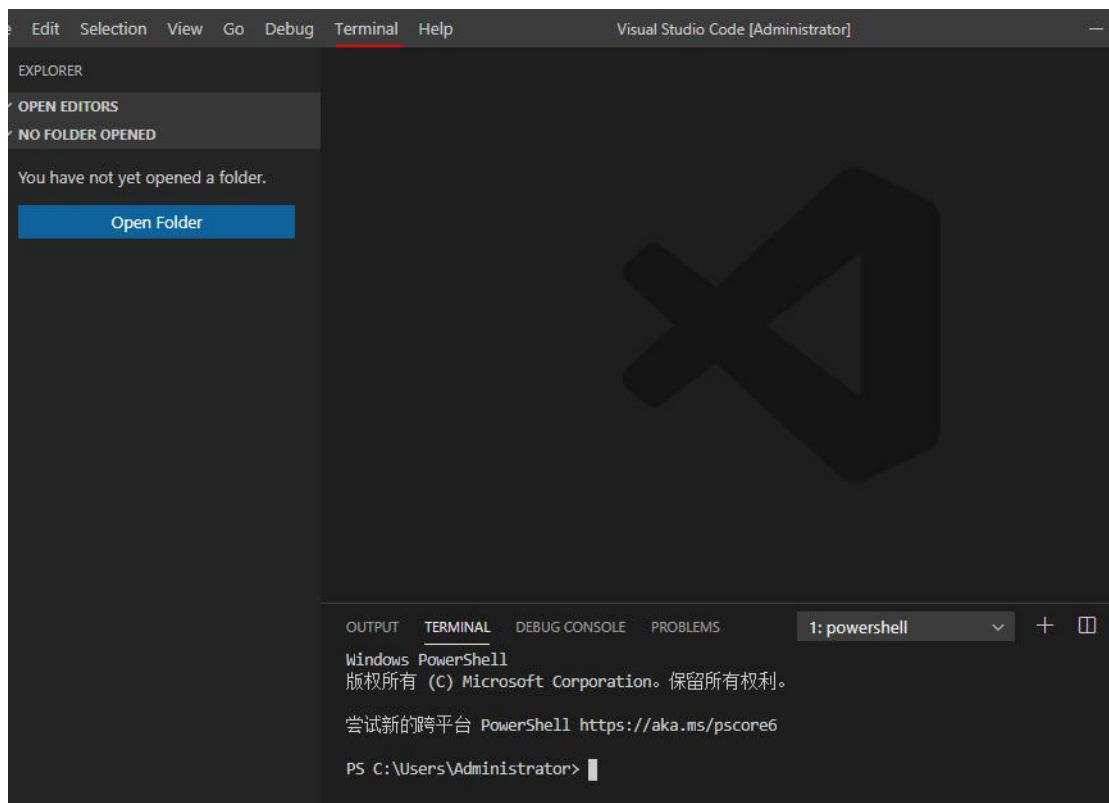
Include Autocomplete VSCode extension

This extension provides autocompletion when typing C++ #include statements. It searches the configured directories to provide suggestions, and also suggests standard headers.

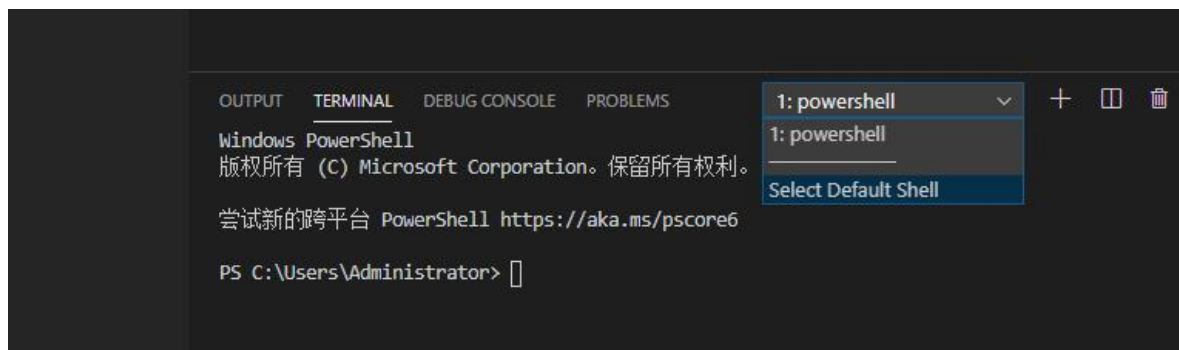


9.3 配置 Visual Studio Code 默认终端

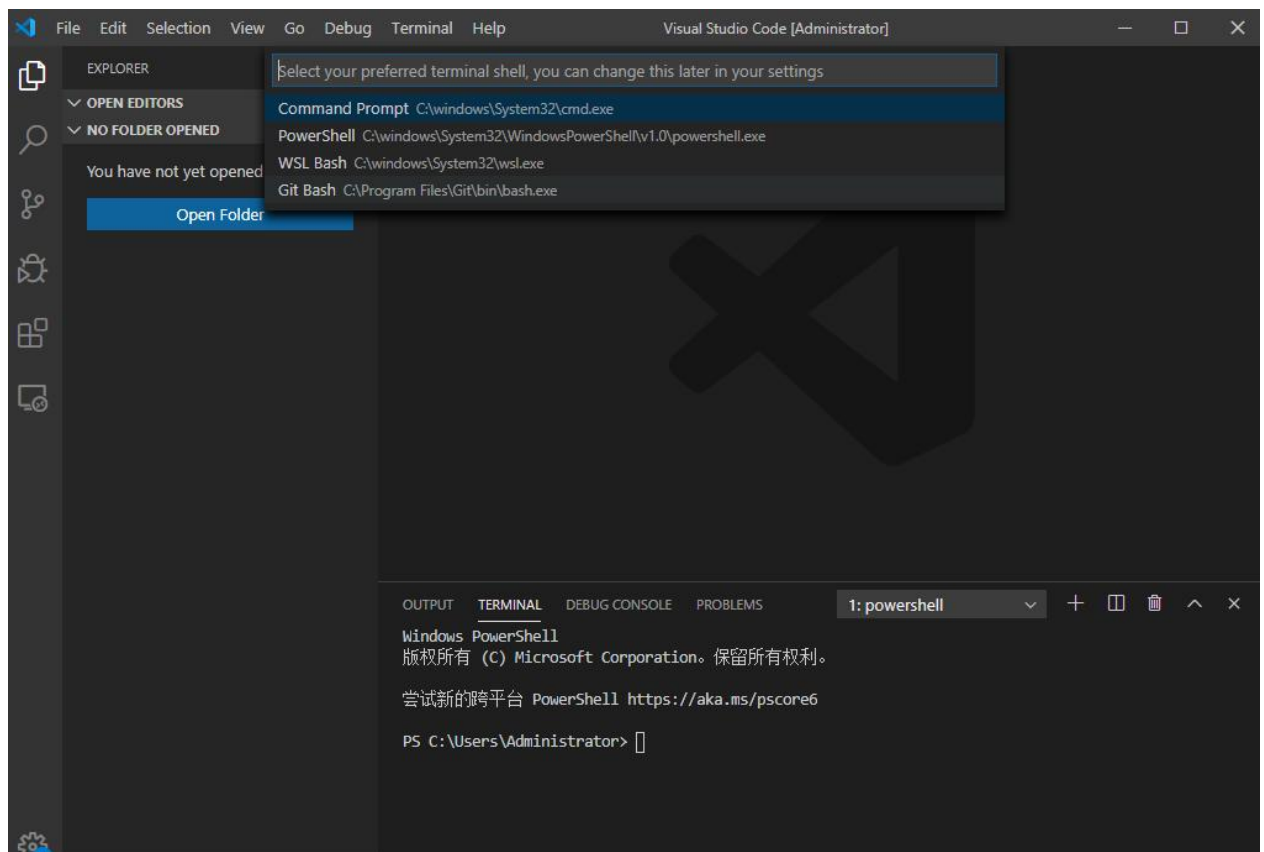
9.3.1.配置 git bash 为默认终端，点击 [Terminal](#) -> New Terminal



9.3.2 点击下拉框，选择 Select Default Shell



9.3.3.弹出下拉框，选择选项 Git bash



9.3.4 配置完成，重启 VS CODE,点击 Terminal -> New Terminal，查看是否配置成功

