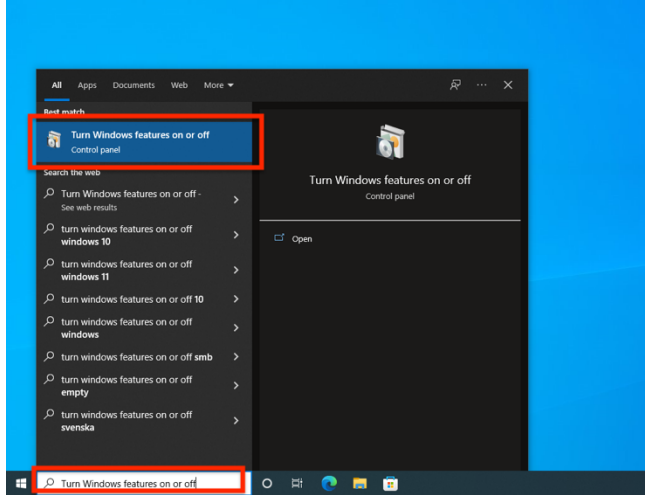


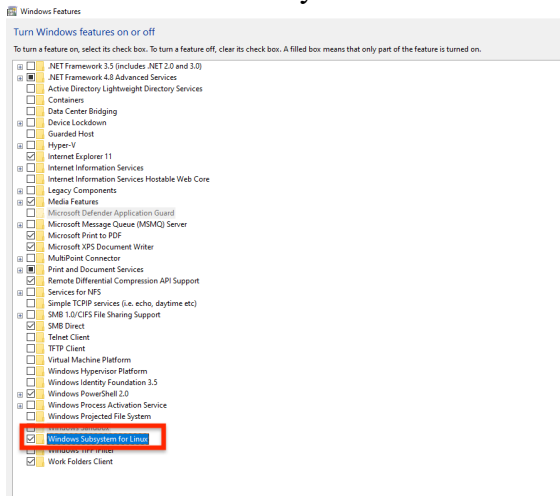
School of Computing and Information Systems
The University of Melbourne

WSL Installation and Compilation Environment Setup for Windows

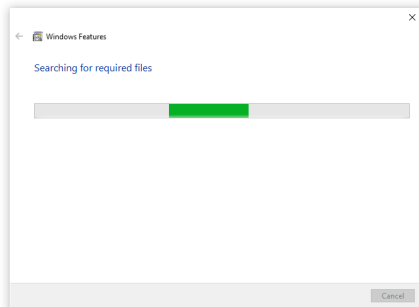
1. Search the start menu for “Turn Windows features on or off”



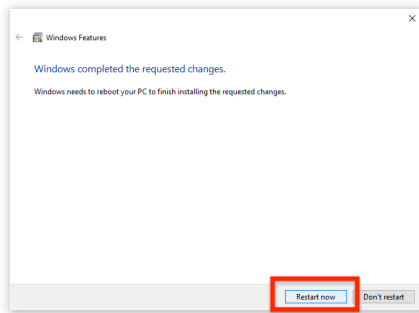
2. Select “Windows Subsystem for Linux” and click “OK”



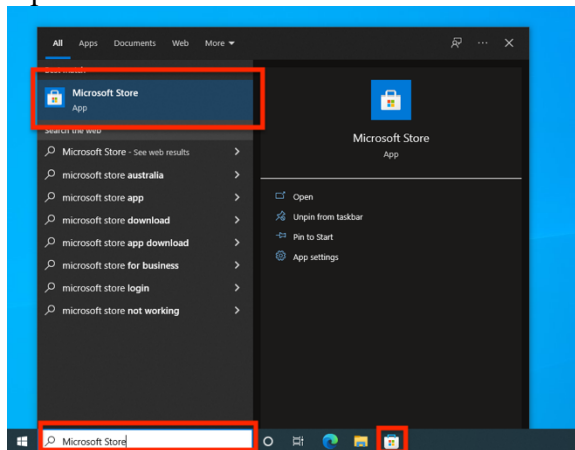
3. Wait for the changes to apply.



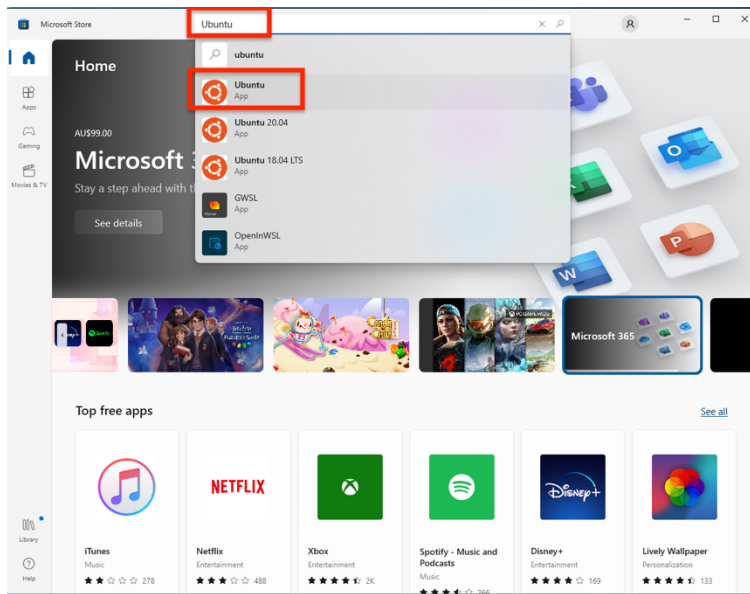
4. Restart.



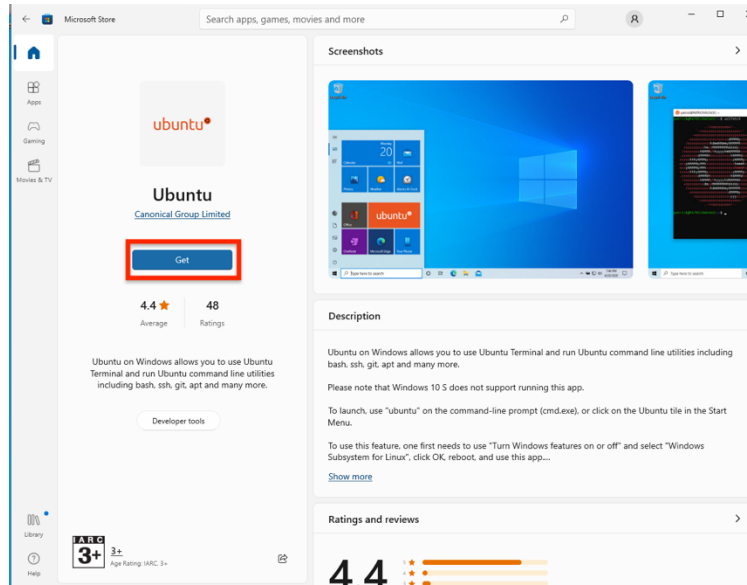
5. Open the Microsoft Store.



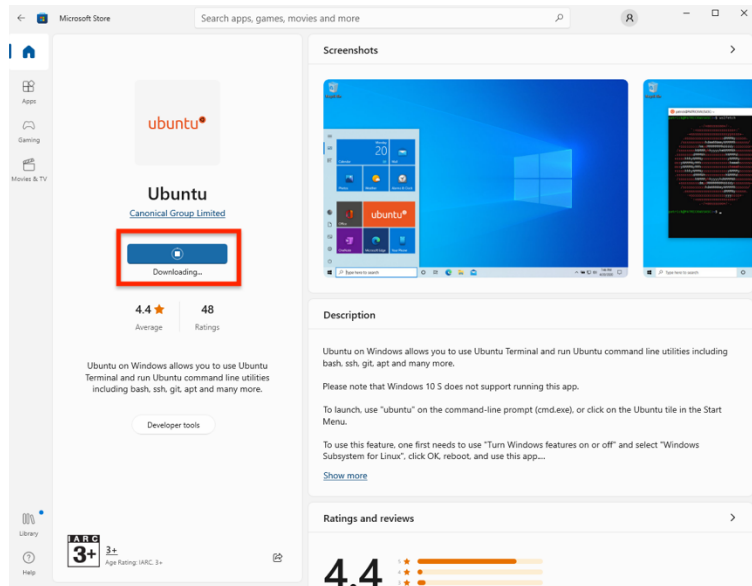
6. Search for "Ubuntu"



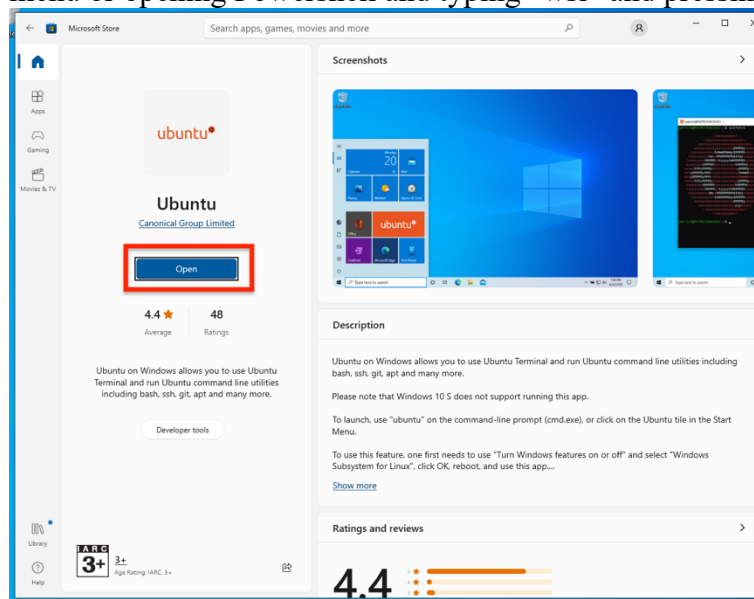
7. Click “Get”



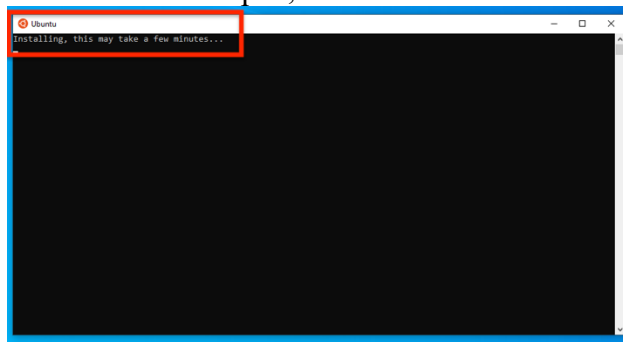
8. Wait for it to download



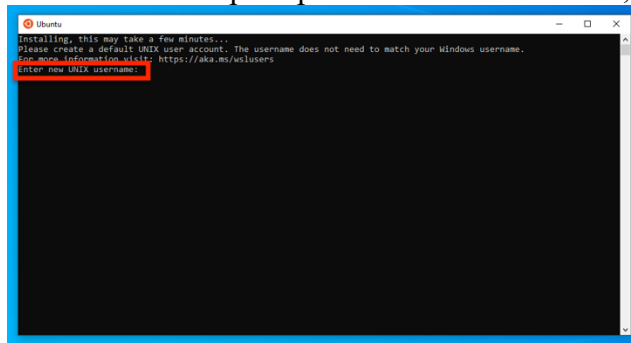
9. Click “Open” when it is finished. Note, you can now find Ubuntu by searching the Start menu or opening Powershell and typing “wsl” and pressing Enter.



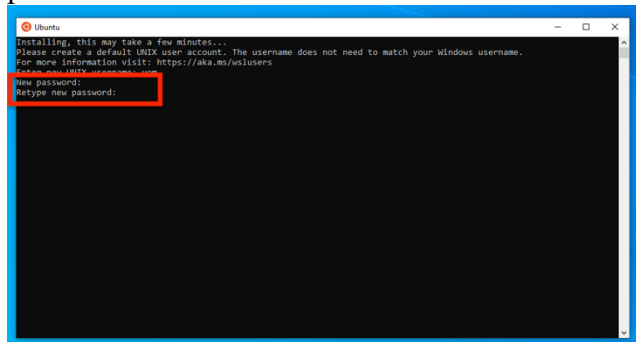
10. When Ubuntu is open, wait for the installation to complete.



11. You will then be prompted to create a username, type in a username and press Enter.



12. You will then be prompted to create a password by typing in a password and pressing enter (you will have to retype the same password twice). Note, the password will be hidden as you type. Use something easy to remember, e.g., your Unimelb username and password.



```
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: uon
New password:
Retype new password:
password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Fri Feb 18 16:19:26 AEDT 2022

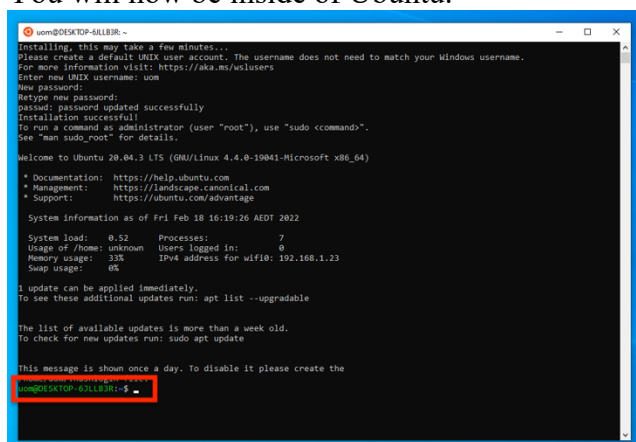
System load:  0.52   Processes:    7
Usage of /home: unknown   Users logged in:  0
Memory usage: 33%   IPV4 address for wifio: 192.168.1.23
Swap usage:   0%

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

This message is shown once a day. To disable it please create the
newpassword@DESKTOP-SILLB3R:~$
```

13. You will now be inside of Ubuntu.



```
newpassword@DESKTOP-SILLB3R:~$
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: uon
New password:
Retype new password:
password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64)

 * Documentation:  https://help.ubuntu.com
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 * Support:       https://ubuntu.com/advantage

System information as of Fri Feb 18 16:19:26 AEDT 2022

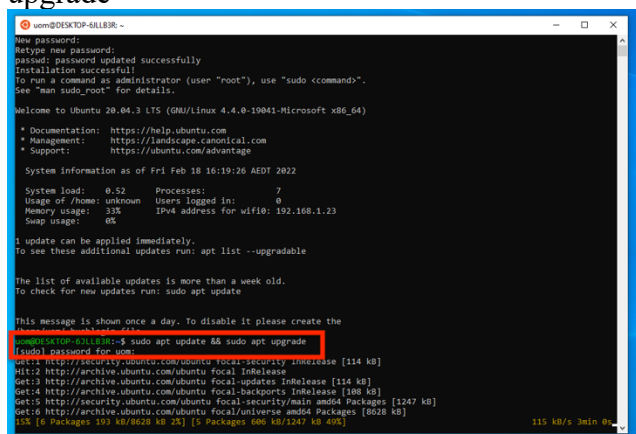
System load:  0.52   Processes:    7
Usage of /home: unknown   Users logged in:  0
Memory usage: 33%   IPV4 address for wifio: 192.168.1.23
Swap usage:   0%

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

This message is shown once a day. To disable it please create the
newpassword@DESKTOP-SILLB3R:~$
```

14. Update everything inside Ubuntu by typing the command: `sudo apt update && sudo apt upgrade`



```
newpassword@DESKTOP-SILLB3R:~$
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: uon
New password:
Retype new password:
password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64)

 * Documentation:  https://help.ubuntu.com
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System information as of Fri Feb 18 16:19:26 AEDT 2022

System load:  0.52   Processes:    7
Usage of /home: unknown   Users logged in:  0
Memory usage: 33%   IPV4 address for wifio: 192.168.1.23
Swap usage:   0%

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

This message is shown once a day. To disable it please create the
newpassword@DESKTOP-SILLB3R:~$ sudo apt update && sudo apt upgrade
[sudo] password for uon:
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal InRelease [114 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease [109 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1247 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8028 kB]
115 kB/s 3min 0s
```

[illegible]

```

root@vsm:~/DESKTOP-18139R ~#
Setting up python3-distutils (1:20.04.37) ...
Setting up netplan (0.10.3)ubuntu20.04.15 ...
Setting up systemd-timesyncd (245.4-ubuntu15) ...
Setting up ubuntu-release-upgrader-core (1:20.04.37) ...
Setting up python3-apt (2.0.0-ubuntu10.10) ...
Setting up snapd (2.54.3-20.04.1) ...
Installing new version of config file /etc/apparmor.d/usr-lib/snapd.snap-confine.real ...
Installing new version of config file /etc/profile.d/apps-bin-path.sh ...
Setting up systemd-sysv (245.4-ubuntu15) ...
Setting up cloud-init (21.4-ubuntu20-04.1) ...
Installing new version of config file /etc/cloud/cloud.cfg ...
Installing new version of config file /etc/cloud/templates/hosts.alpine.tmpl ...
Installing new version of config file /etc/cloud/templates/hosts.debian.tmpl ...
Installing new version of config file /etc/cloud/templates/hosts.fedora.tmpl ...
Installing new version of config file /etc/cloud/templates/hosts.gentoo.tmpl ...
Created symlink /etc/cron.daily/cloud-init-cleanup.target wants /usr/lib/systemd/system/cloud-init-hotplugd.socket.
Setting up libnss-systemd:amd64 (245.4-ubuntu20.04.15) ...
Setting up update-manager-core (1:20.04.10.10) ...
Setting up libapp-systemd:amd64 (245.4-ubuntu15) ...
Setting up polycrypt (0.180-2ubuntu2) ...
Setting up udiskie2 (2.8.4-ubuntu2) ...
Setting up update-notifier-common (3.192.10.10) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
Processing triggers for rsyslog (8.2004.1-ubuntu1.1) ...
invoke-rc.d: could not determine current runlevel
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for doc (12.12.6ubuntu2.1) ...
Processing triggers for install-info (6.7.8-dfsg-2.5) ...
Processing triggers for mime-support (3.6ubuntu1) ...
Processing triggers for ca-certificates (20210119-20.04.2) ...
Updating certificates in /etc/ssl/certs.
0 added, 0 removed, done.
Running hooks in /etc/ca-certificates/update.d:
done.
Processing triggers for
root@vsm:~/DESKTOP-18139R ~# sudo apt install build-essential -y

```

16. Double check that gcc is correctly installed by typing the command: `gcc --version`

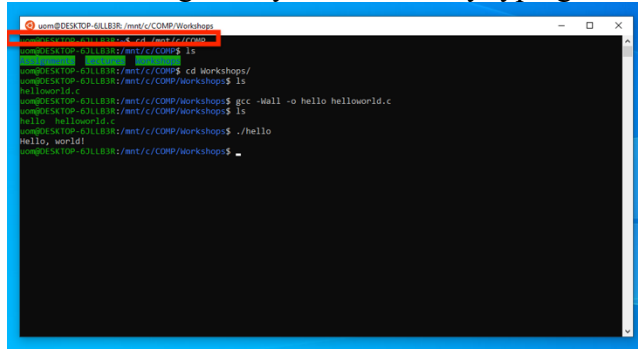
```

i5om@DESKTOP-5LL8J8R:~$
Setting up libatomic1:amd64 (10.3.0-1ubuntu1-20.04) ...
Setting up libldexp1 (1.19-7ubuntu1) ...
Setting up libubsan1:amd64 (10.3.0-1ubuntu1-20.04) ...
Setting up libcrypt-dev:amd64 (1:4.4.18-1ubuntu1) ...
Setting up libstdc++6:amd64 (9.2.0-11) ...
Setting up libbinutils:amd64 (2.34-6ubuntu1.3) ...
Setting up libc-dev-bin (2.31-0ubuntu1.2) ...
Setting up libalgorithm-diffutils-perl (0.84-4) ...
Setting up libbci1.0:amd64 (10.3.0-1ubuntu1-20.04) ...
Setting up libubsan1:amd64 (10.3.0-1ubuntu1-20.04) ...
Setting up libitm1:amd64 (10.3.0-1ubuntu1-20.04) ...
Setting up gcc-9-base:amd64 (9.3.0-17ubuntu1-20.04) ...
Setting up libalgorithm-merge-perl (0.68-3) ...
Setting up libubsan1:amd64 (10.3.0-1ubuntu1-20.04) ...
Setting up libc6:amd64 (2.34-6ubuntu1.3) ...
Setting up libasan5:amd64 (9.3.0-17ubuntu1-20.04) ...
Setting up cpp-9 (9.3.0-17ubuntu1-20.04) ...
Setting up libc-dev:amd64 (2.31-0ubuntu1.2) ...
Setting up binutils-x86_64-linux-gnu (2.34-6ubuntu1.3) ...
Setting up binutils (2.34-6ubuntu1.3) ...
Setting up pkg-dev (1.19-7ubuntu1) ...
Setting up libgcc-9-dev:amd64 (9.3.0-17ubuntu1-20.04) ...
Setting up cpp (4.9.3.0-1ubuntu2) ...
Setting up gcc-9 (9.3.0-17ubuntu1-20.04) ...
Setting up libstdc++9-dev:amd64 (9.3.0-17ubuntu1-20.04) ...
Setting up gcc (4.9.3.0-1ubuntu2) ...
Setting up g++ (9.3.0-17ubuntu1-20.04) ...
Setting up g++ (4.9.3.0-1ubuntu2) ...
update-alternatives: using /usr/bin/g++ to provide /usr/bin/c++ (c++) in auto mode
Setting up build-essential (12.9ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
Setting up i5om (9.3.0-17ubuntu1-20.04) ...
i5om@DESKTOP-5LL8J8R:~$
i5om@DESKTOP-5LL8J8R:~$ gcc -v
gcc (Ubuntu 9.3.0-17ubuntu1-20.04) 9.3.0
Copyright (C) 2019 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.
i5om@DESKTOP-5LL8J8R:~$

```

If you are shown the version of gcc and not an error, continue.

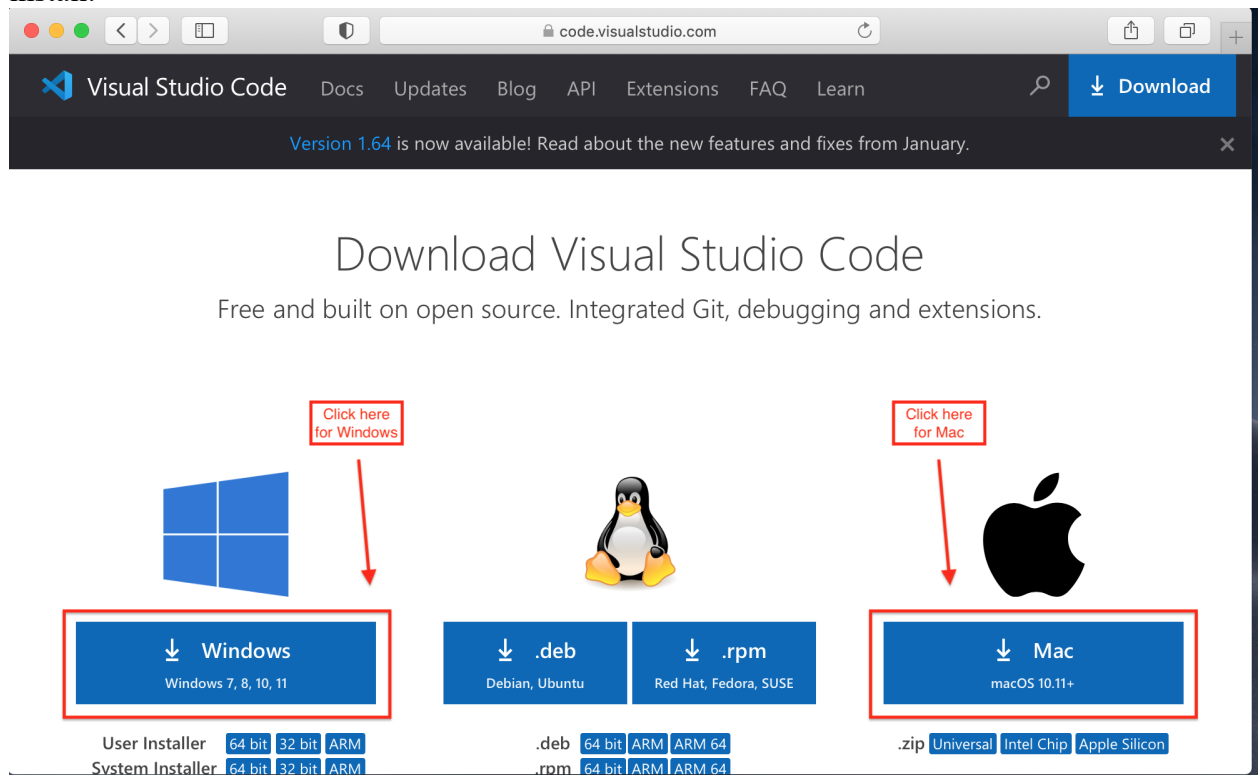
17. You can navigate to your C drive by typing the command: `cd /mnt/c`



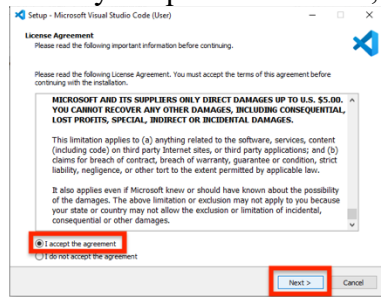
```
user@DESKTOP-6311B3R: /mnt/c/COMP/Workshops$ cd /mnt/c/COMP
user@DESKTOP-6311B3R: /mnt/c/COMP$ ls
Workshops
user@DESKTOP-6311B3R: /mnt/c/COMP$ cd Workshops/
user@DESKTOP-6311B3R: /mnt/c/COMP/Workshops$ ls
hello.c
user@DESKTOP-6311B3R: /mnt/c/COMP/Workshops$ gcc -Wall -o hello helloworld.c
user@DESKTOP-6311B3R: /mnt/c/COMP/Workshops$ ls
hello
user@DESKTOP-6311B3R: /mnt/c/COMP/Workshops$ ./hello
Hello, world!
```

Note, in this example, we navigate to our COMP folder in the C drive. Next, we use the command “ls” to show what is in the current folder. Next, use the “cd” command again to navigate to the Workshops folder where we can see a Hello World C program prepared earlier. We compile this program with the “gcc” command into an executable called “hello”. We can then see it exists in the folder. We then run the program with “./hello” and the computer talks. Writing C programs can be done in VSCode as presented in the VSCode setup guide.

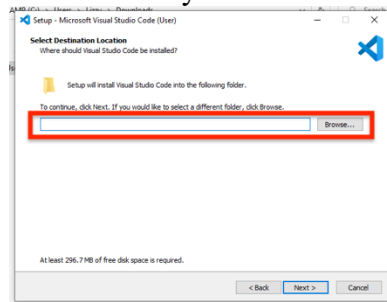
18. You will need to download VSCode and link it to WSL before continuing with the VSCode setup. Download VSCode from <https://code.visualstudio.com/download> and install.



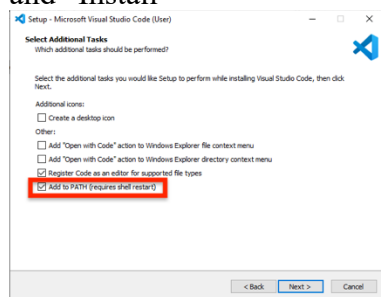
19. When you open the installer, you will be asked to read and accept a License Agreement.



20. Select where you would like to install VSCode

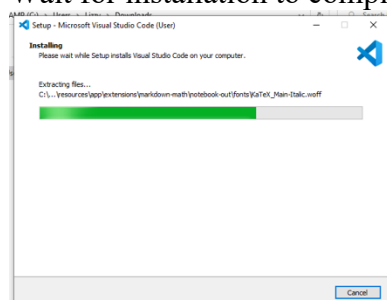


21. Ensure you select “Add to PATH” this will allow you to type the command “code .” when you are in Ubuntu to open VSCode inside the current folder. Then click “Next” and “Install”

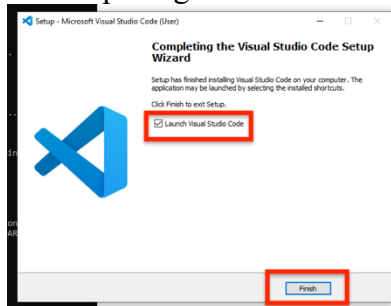


Note, if you installed VSCode without this option, you can open VSCode, open Command Palette (ctrl+shift+P) search and select “Add to PATH”

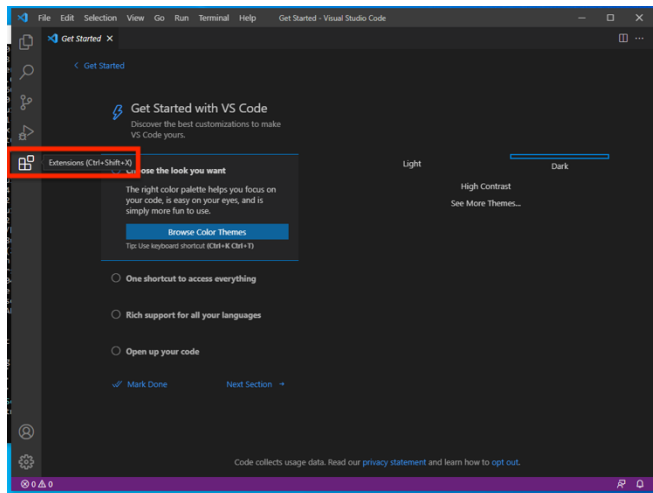
22. Wait for installation to complete.



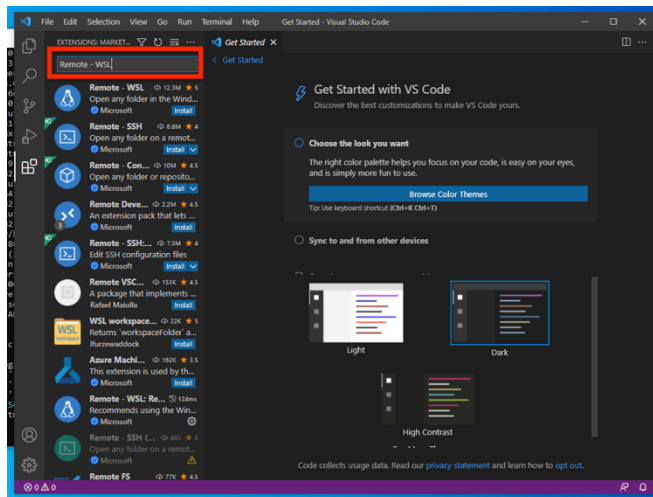
23. You can open VSCode when it is finished. Note, you may also open VSCode from the Start Menu or from Ubuntu by typing the command “code .” – This will require a closing and reopening Ubuntu.



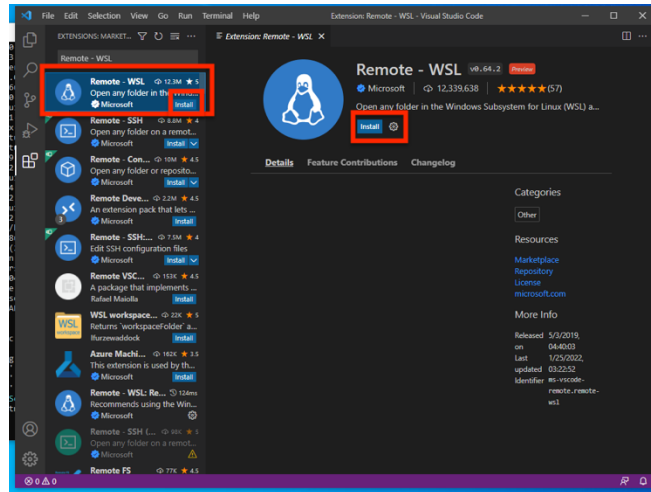
24. Go to “Extensions”



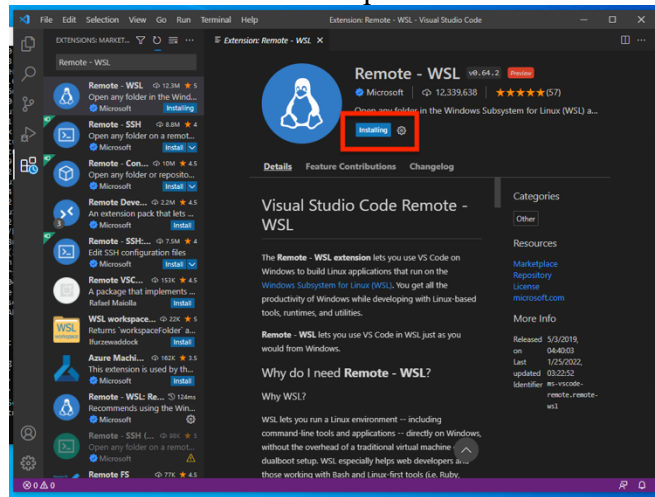
25. Search “Remote – WSL”



26. Click “Install”

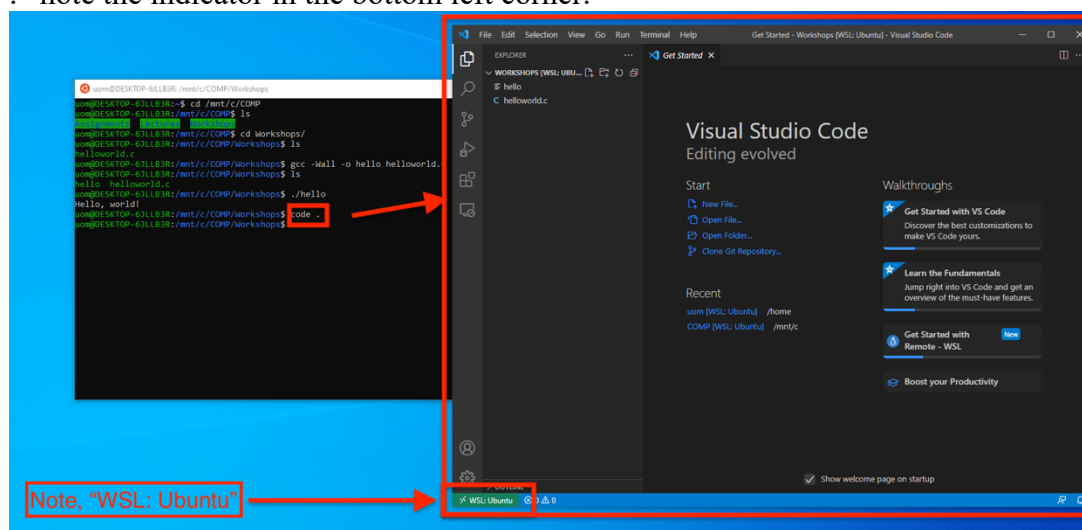


27. Wait for installation to complete.

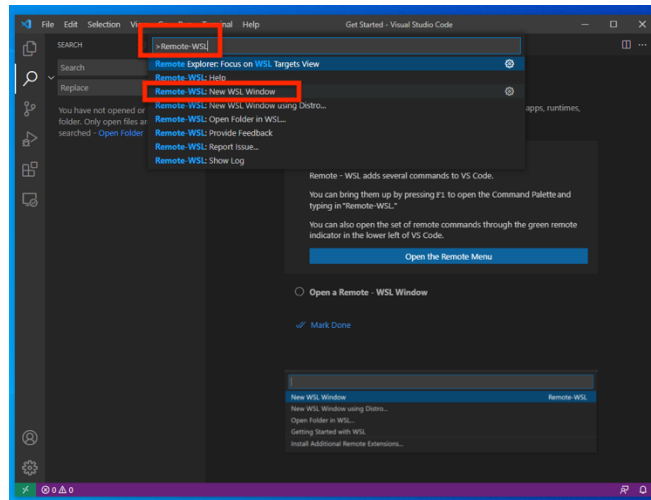


28. Now you can develop code within VSCode using the following methods.

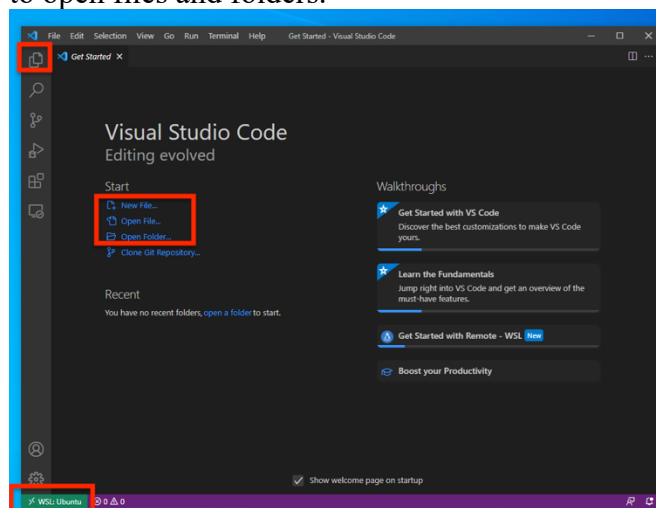
29. You can open VSCode within Ubuntu by opening Ubuntu and typing the command “code .” note the indicator in the bottom left corner.



30. Alternatively, you can open from VSCode. Press F1 and select “Remote-WSL: New Window”



31. Note the indicator in the bottom left corner. You can use the Explorer tab or File menu in the top left to open folders graphically. The “Get Started” tab also offers further methods to open files and folders.



32. Follow the instructions on VSCode installation, setup and debugging to start coding.