

Docker WSL Windows Subsystem for Linux)

WSL (Windows Subsystem for Linux)
Docker

kernel Linux
www.Limitrack.com

Windows 10

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 - Docker WSL
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 - ! Linux (bandground) Linux Terminal
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WSL

WSL

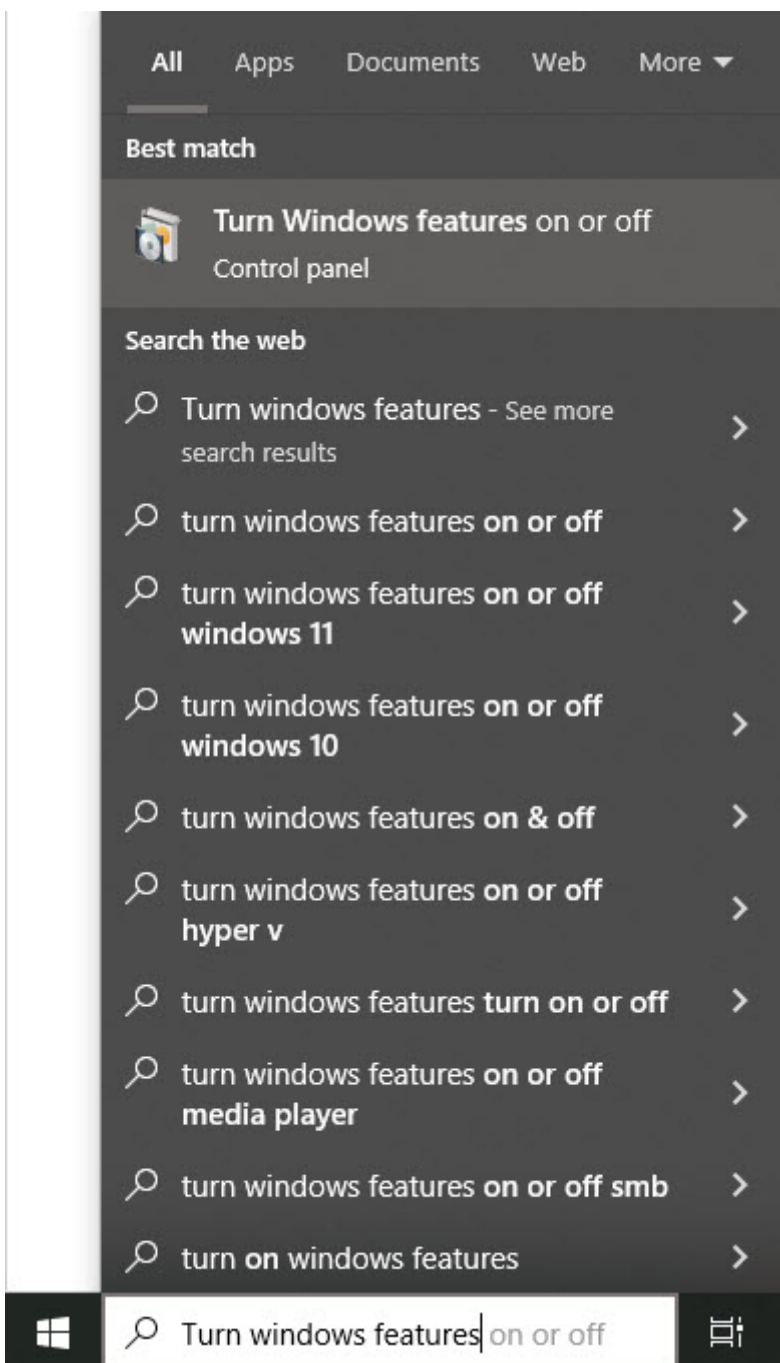
WSL

Windows

Turn Windows Features on or off

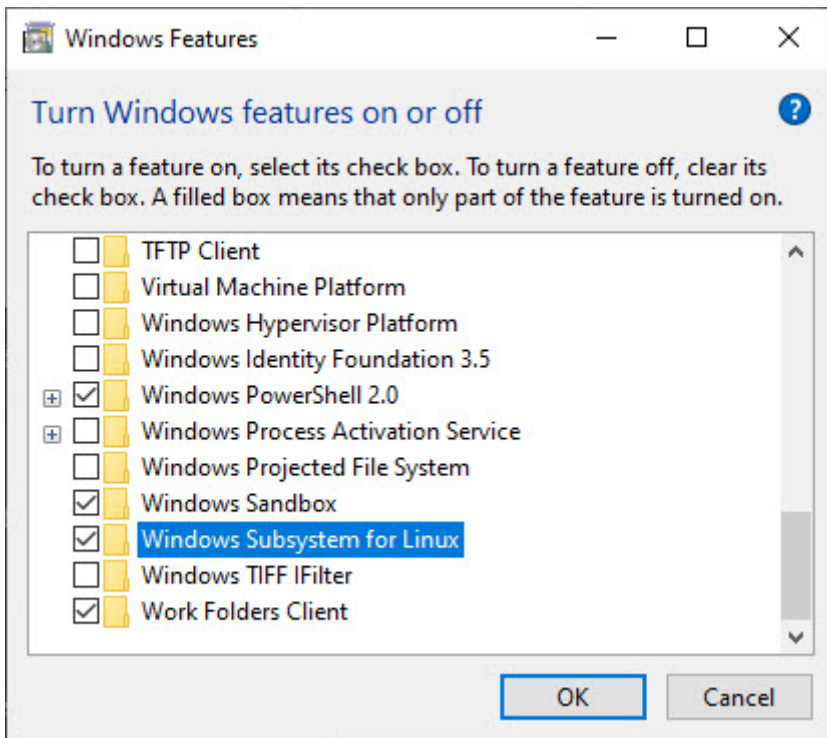
click

Windows Features



Windows Subsystem for Linux (WSL)

OK



restart Windows 1

WSL

Windows Terminal

Command Prompt

Windows Powershell

Windows

WSL

Terminal

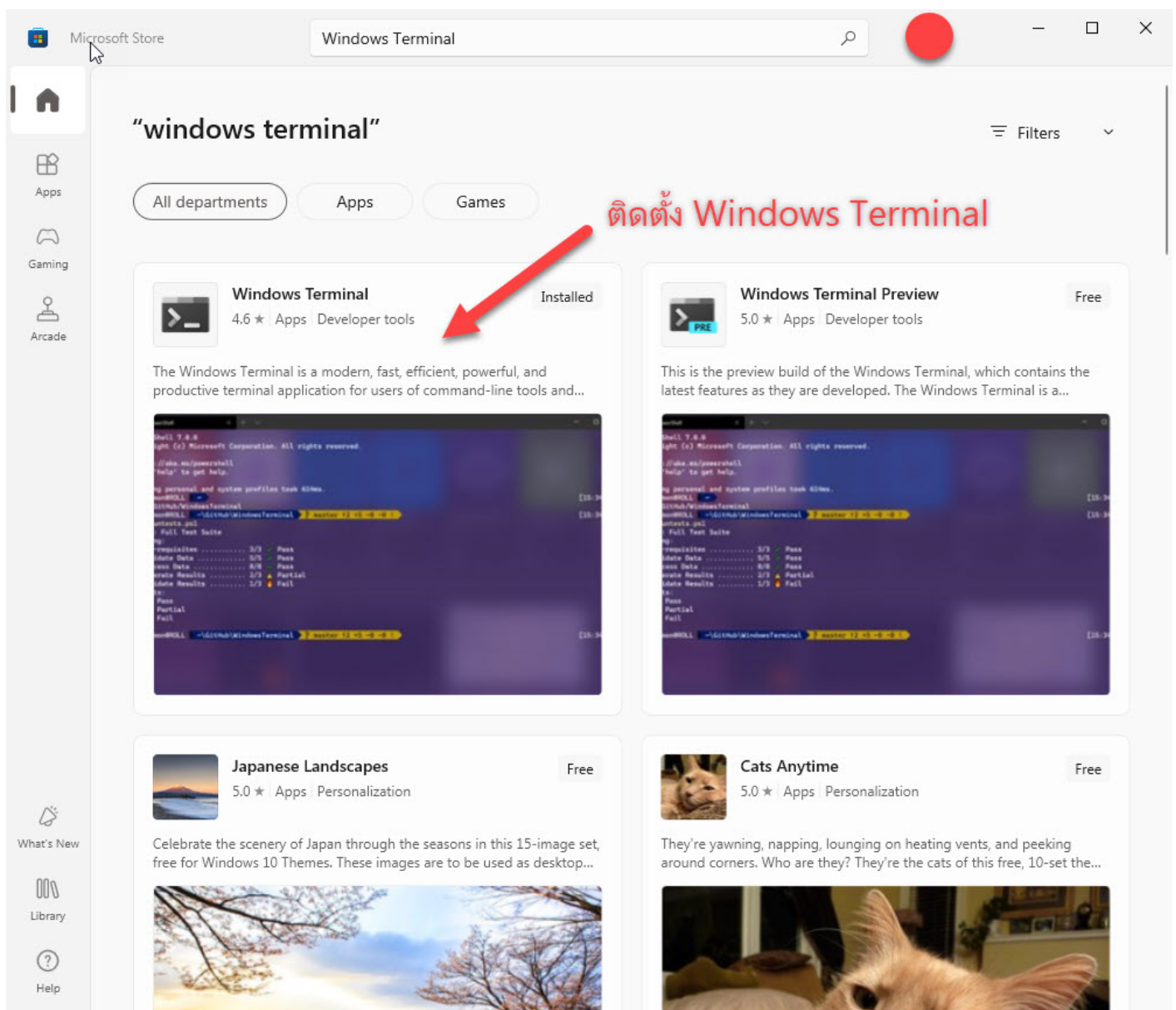
WSL

(2024)

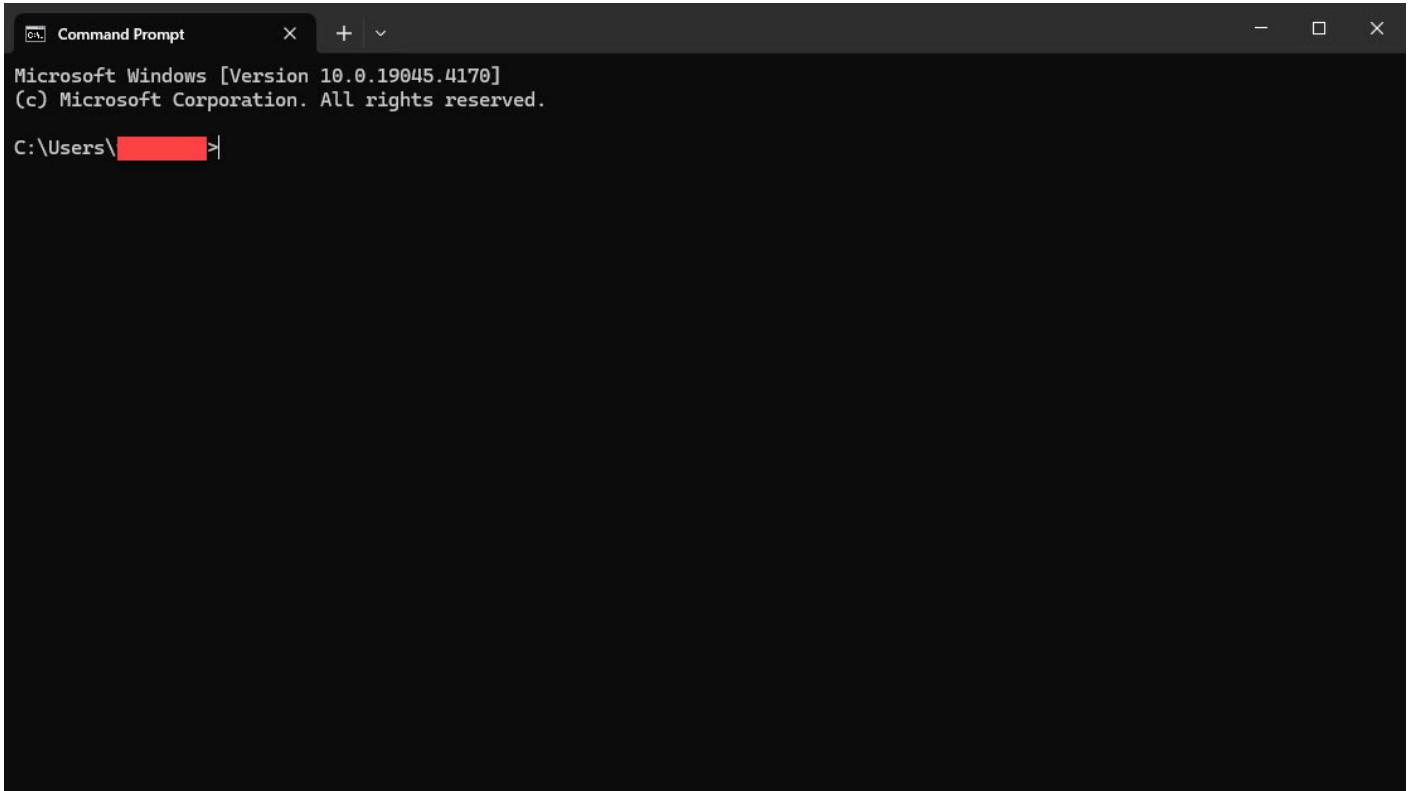
Windows Terminal

Microsoft Store

Windows Terminal ()



Windows Termial

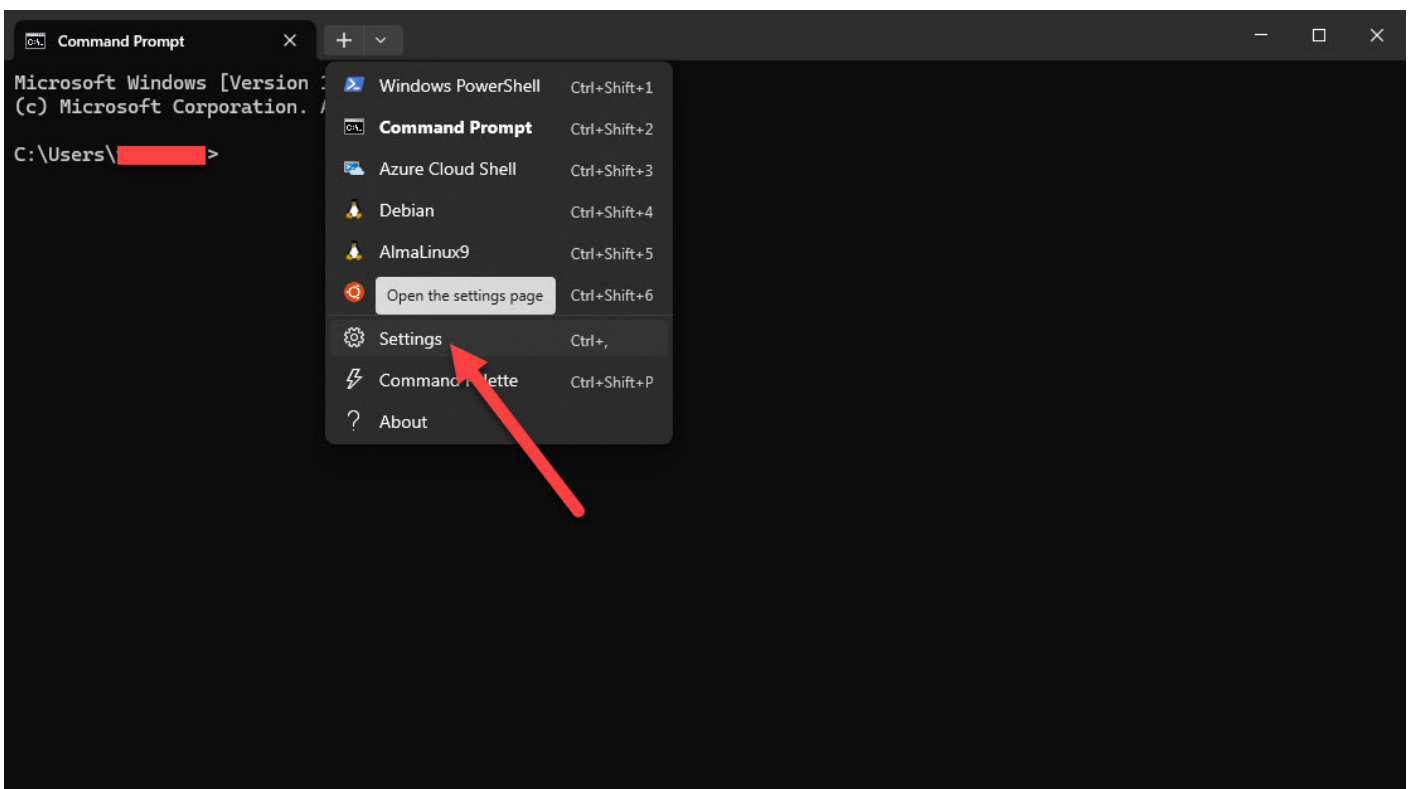


Windows Terminal

wsl.exe

Windows Terminal

Settings ()



WSL

WSL

Windows Terminal

WSL

```
wsl -v
```

```
C:\Users\ [redacted] >wsl -v
WSL version: 2.1.5.0
Kernel version: 5.15.146.1-2
WSLg version: 1.0.60
MSRDC version: 1.2.5105
Direct3D version: 1.611.1-81528511
DXCore version: 10.0.25131.1002-220531-1700.rs-onecore-base2-hyp
Windows version: 10.0.19045.4170
```

WSL

WSL version 2.1.5.0

(04/2024)

WSL

WSL

```
wsl --update
```

```
C:\Users\ [redacted] >wsl --update
Checking for updates.
The most recent version of Windows Subsystem for Linux is already installed.
```

WSL

WSL

Linux WSL

Linux distro

WSL

```
wsl -l -o
```

```
C:\Users\>wsl -l -o
```

```
The following is a list of valid distributions that can be installed.  
Install using 'wsl.exe --install <Distro>'.
```

| NAME | FRIENDLY NAME |
|-------------------------------------|-------------------------------------|
| Ubuntu | Ubuntu |
| Debian | Debian GNU/Linux |
| kali-linux | Kali Linux Rolling |
| Ubuntu-18.04 | Ubuntu 18.04 LTS |
| Ubuntu-20.04 | Ubuntu 20.04 LTS |
| Ubuntu-22.04 | Ubuntu 22.04 LTS |
| OracleLinux_7_9 | Oracle Linux 7.9 |
| OracleLinux_8_7 | Oracle Linux 8.7 |
| OracleLinux_9_1 | Oracle Linux 9.1 |
| openSUSE-Leap-15.5 | openSUSE Leap 15.5 |
| SUSE-Linux-Enterprise-Server-15-SP4 | SUSE Linux Enterprise Server 15 SP4 |
| SUSE-Linux-Enterprise-15-SP5 | SUSE Linux Enterprise 15 SP5 |
| openSUSE-Tumbleweed | openSUSE Tumbleweed |

Ubuntu-20.04

```
wsl --install Ubuntu-20.04
```



```
C:\Users\[redacted]>wsl --install Ubuntu-20.04
Installing: Ubuntu 20.04 LTS
Ubuntu 20.04 LTS has been installed.
Launching Ubuntu 20.04 LTS...
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: [redacted]
New password:
Retype new password:
passwd: 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 20.04.6 LTS (GNU/Linux 5.15.146.1-microsoft-standard-WSL2 x86_64)

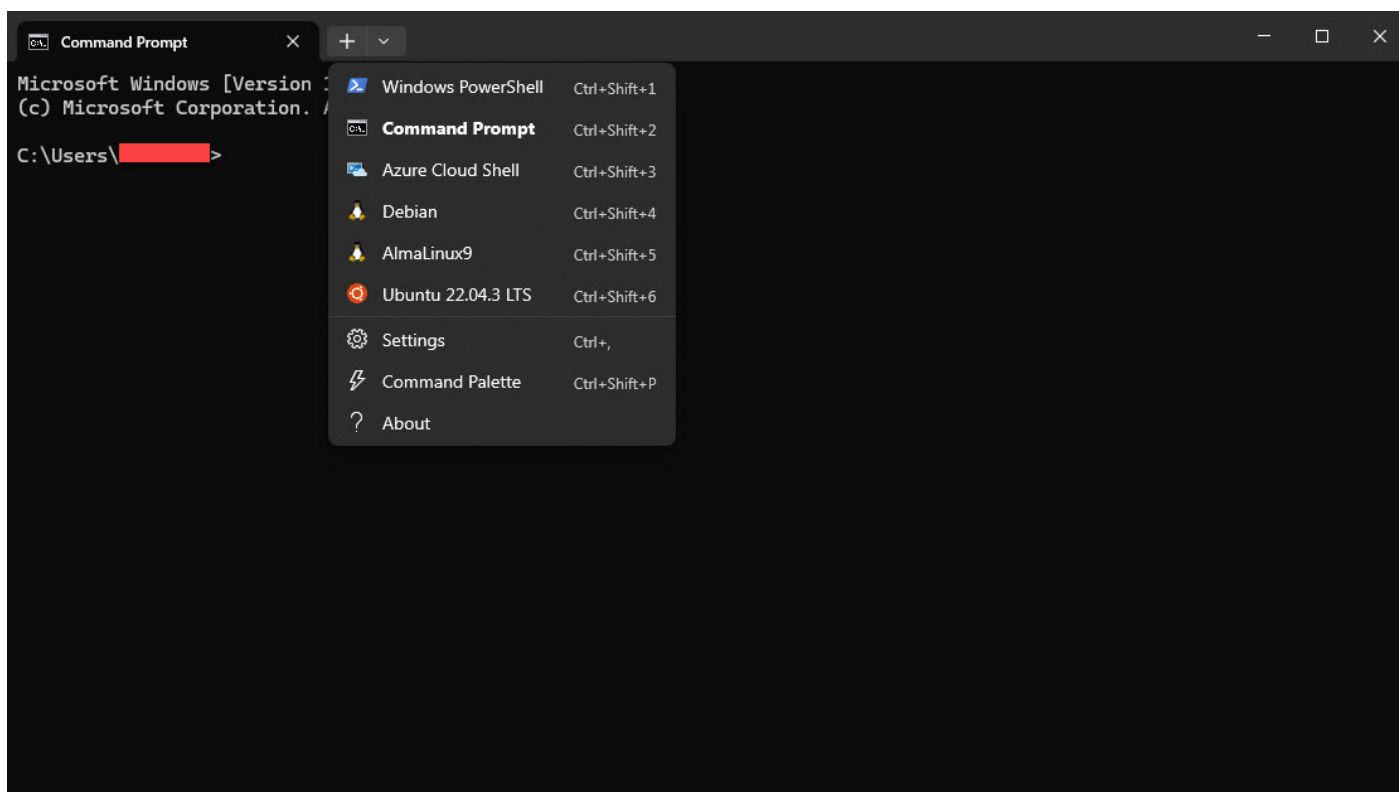
- * Documentation: <https://help.ubuntu.com>
- * Management: <https://landscape.canonical.com>
- * Support: <https://ubuntu.com/advantage>

System information as of Tue Apr 2 15:44:46 +07 2024

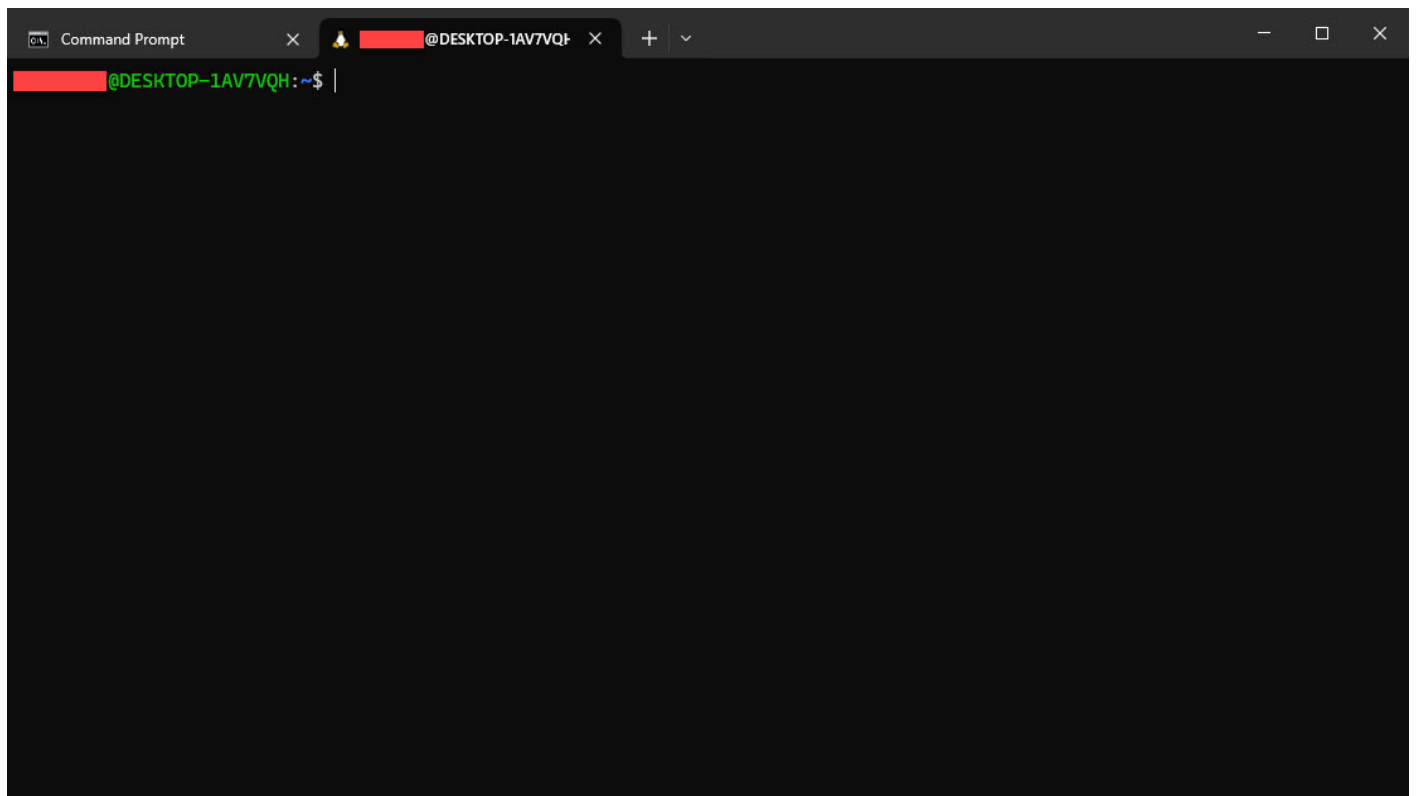
| | | | |
|---------------|-------------------|------------------------|------------|
| System load: | 0.04 | Processes: | 77 |
| Usage of /: | 0.1% of 1006.85GB | Users logged in: | 0 |
| Memory usage: | 3% | IPv4 address for eth0: | [redacted] |
| Swap usage: | 0% | | |

Linux ()

Terminal +



Linux distro



bash linux

WSL 2

| | | | | | |
|-----------|-------|---------|-----------|---------|----|
| WSL | 1-2 | (| 04/2024) | WSL | 1 |
| Microsoft | WSL 2 | feature | | WSL 1 (| WS |
| Linux | WSL | WSL 1 | WSL 2 | | |

```
C:\Users\[redacted]>wsl -l -v
NAME                STATE      VERSION
* Debian            Stopped   1
  AlmaLinux9        Stopped   1
  Ubuntu-22.04       Stopped   2
```

WSL version 2 (default)

```
wsl --set-default-version 2
```

```
C:\Users\[redacted]>wsl --set-default-version 2
For information on key differences with WSL 2 please visit https://aka.ms/wsl2
The operation completed successfully.
```

Debian WSL 2

```
wsl --set-version Debian 2
```

```
C:\Users\[REDACTED]>wsl -l -v
NAME                STATE              VERSION
* Debian             Stopped            1
AlmaLinux9           Stopped            1
Ubuntu-22.04         Stopped            2

C:\Users\tanakorn>wsl --set-version Debian 2
For information on key differences with WSL 2 please visit https://aka.ms/wsl2
Conversion in progress, this may take a few minutes.
The operation completed successfully.

C:\Users\[REDACTED]>wsl -l -v
NAME                STATE              VERSION
* Debian             Stopped            2
AlmaLinux9           Stopped            1
Ubuntu-22.04         Stopped            2
```

systemd

systemd

systemd Linux (WSL)

systemd

?

- systemd daemon Linux background Services Windows
- application Linux Apache , Nginx , MySQL , PostgreSQL ,
- WSL systemd Microsoft WSL systemd version :

3 systemd WSL

1. systemd WSL version 2 (Windows 22H2)
2. systemd Auto /etc/wsl.conf ()
3. WSL systemd (systemd Auto Windows restart ,

1. WSL 2

<http://docs.limitrack.com/books/wsl-windows-subsystem-for-linux/page/wsl-lxF>

2. systemd Auto

Ubuntu 22.04 systemd Auto

Windows Terminal Ubuntu 22.04

bash shell Ubuntu 22.04

```
sudo nano /etc/wsl.conf
```

```
Command Prompt x tanakorn@DESKTOP-1AV7VQH x + v
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 5.15.146.1-microsoft-standard-WSL2 x86_64)

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

This message is shown once a day. To disable it please create the
/home/[redacted]/.hushlogin file.
tanakorn@DESKTOP-1AV7VQH:~$ sudo nano /etc/wsl.conf
[sudo] password for [redacted]:
```

2

```
[boot]
systemd=true
```

```
Command Prompt x tanakorn@DESKTOP-1AV7VQH x + v
GNU nano 6.2 /etc/wsl.conf
[boot]
systemd=true

[ Read 2 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  M-U Undo
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line M-E Redo
```

save & exit (Ctrl+X Y)

3.

WSL

systemd

Windows Terminal (Powershell)

WSL

```
wsl --shutdown
```

```
C:\Users\>wsl --shutdown

C:\Users\>wsl -l -v
NAME                STATE      VERSION
* Debian            Stopped   2
Ubuntu-20.04        Stopped   2
AlmaLinux9          Stopped   1
Ubuntu-22.04        Stopped   2
```

Linux

Linux systemd Auto ()

```
sudo systemctl list-units --type=service --state=running
```

```
@DESKTOP-1AV7VQH:~$ sudo systemctl list-units --type=service --state=running
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
console-getty.service             loaded active running Console Getty
containerd.service                loaded active running containerd container runtime
cron.service                       loaded active running Regular background program processing daemon
dbus.service                      loaded active running D-Bus System Message Bus
docker.service                    loaded active running Docker Application Container Engine
getty@tty1.service                loaded active running Getty on tty1
glances.service                   loaded active running Glances
networkd-dispatcher.service        loaded active running Dispatcher daemon for systemd-networkd
nginx.service                     loaded active running A high performance web server and a reverse proxy server
rsyslog.service                   loaded active running System Logging Service
snap.ubuntu-desktop-installer.subiquity-server.service loaded active running Service for snap application ubuntu-desktop-installer.subiquity-server
snapd.service                     loaded active running Snap Daemon
systemd-journald.service           loaded active running Journal Service
systemd-logind.service             loaded active running User Login Management
systemd-resolved.service           loaded active running Network Name Resolution
systemd-udevd.service              loaded active running Rule-based Manager for Device Events and Files
unattended-upgrades.service        loaded active running Unattended Upgrades Shutdown
user@1000.service                  loaded active running User Manager for UID 1000

LOAD = Reflects whether the unit definition was properly loaded.
ACTIVE = The high-level unit activation state, i.e. generalization of SUB.
SUB = The low-level unit activation state, values depend on unit type.
18 loaded units listed.
@DESKTOP-1AV7VQH:~$
```

application system daemon web server , file server , database serv

Docker WSL

Docker WSL

Docker WSL

Docker WSL

1. WSL
2. systemd
3. Docker
4. docker

1. WSL

[WSL](#)

2. systemd

[systemd](#)

3. Docker

<https://docs.docker.com/engine/install/ubuntu/>

4. docker

docker

docker

error

```
Ubuntu:~$ docker run hello-world
docker: Got permission denied while trying to connect to the Docker daemon socket at
unix:///var/run/docker.sock: Post "http://%2Fvar%2Frun%2Fdocker.sock/v1.24/containers/create": dial unix /var/run/docker.sock: connect: permission denied.
See 'docker run --help'.
```

```
sudo usermod -aG docker $USER
```

```
██████████@DESKTOP-1AV7VQH:~$ sudo usermod -aG docker $USER  
[sudo] password for ██████████:
```

```
██████████@DESKTOP-1AV7VQH:~$ sudo docker ps
```

| CONTAINER ID | IMAGE | COMMAND | CREATED | STATUS | PORTS | NAMES |
|--------------|-------|---------|---------|--------|-------|-------|
|--------------|-------|---------|---------|--------|-------|-------|

| | | | | | | |
|--|--------|-----|--|--|--|--|
| | docker | WSL | | | | |
|--|--------|-----|--|--|--|--|

www.Limitrack.com

WSL

backgrour

WSL

(background)

systemd

(Auto Run)

Windows

WSL background Auto Run

!

Linux

Linux Terminal

systemd WSL

Linux Terminal

Linux

systemd

Linux

Linux

Stopped

```
C:\Users\[redacted]>wsl -l -v
NAME                STATE      VERSION
* Debian            Stopped    2
Ubuntu-20.04        Stopped    2
AlmaLinux9           Stopped    1
Ubuntu-22.04        Stopped    2
```

Trick

!

Linux (WSL)

(Stopped)

tmux

Linux

1. tmux

```
$ sudo apt install tmux
```

2. tmux 1 session (tmux background)

```
$ nano ~/.bashrc
```

3 .bashrc

```
if ! tmux ls > /dev/null 2>&1; then
    tmux new -d > /dev/null 2>&1
```


```
GNU nano 6.2 /home/██████████/.bashrc *
```

```
# Alias definitions.
# You may want to put all your additions into a separate file like
# ~/.bash_aliases, instead of adding them here directly.
# See /usr/share/doc/bash-doc/examples in the bash-doc package.

if [ -f ~/.bash_aliases ]; then
    . ~/.bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
    if [ -f /usr/share/bash-completion/bash_completion ]; then
        . /usr/share/bash-completion/bash_completion
    elif [ -f /etc/bash_completion ]; then
        . /etc/bash_completion
    fi
fi

if ! tmux ls > /dev/null 2>&1; then
    tmux new -d > /dev/null 2>&1
fi
```



```
^G Help      ^O Write Out ^W Where Is  ^K Cut      ^T Execute  ^C Location ^M-U Undo
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify  ^/_ Go To Line ^M-E Redo
```

Ctrl+X Y Enter save

3. Linux tmux session

```
$ tmux ls
```

```
@DESKTOP-1AV7VQH:~$ tmux ls
0: 1 windows (created Sun Apr  7 13:57:43 2024)
@DESKTOP-1AV7VQH:~$
```

| | | | |
|------|------------|-----------|-------|
| tmux | background | 1 session | Linux |
|------|------------|-----------|-------|

Linux (Stopped) Linux Terminal

4. Linux Terminal Windows Terminal

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4170]
(c) Microsoft Corporation. All rights reserved.

C:\Users\[redacted]>wsl -l -v
  NAME                STATE      VERSION
*  Debian              Running    2
   Ubuntu-20.04        Running    2
   AlmaLinux9          Running    1
   Ubuntu-22.04        Running    2

C:\Users\[redacted]>
```

Linux Running

Linux Terminal

application & service

systemd

background

Auto Run

WSI

Windows

1

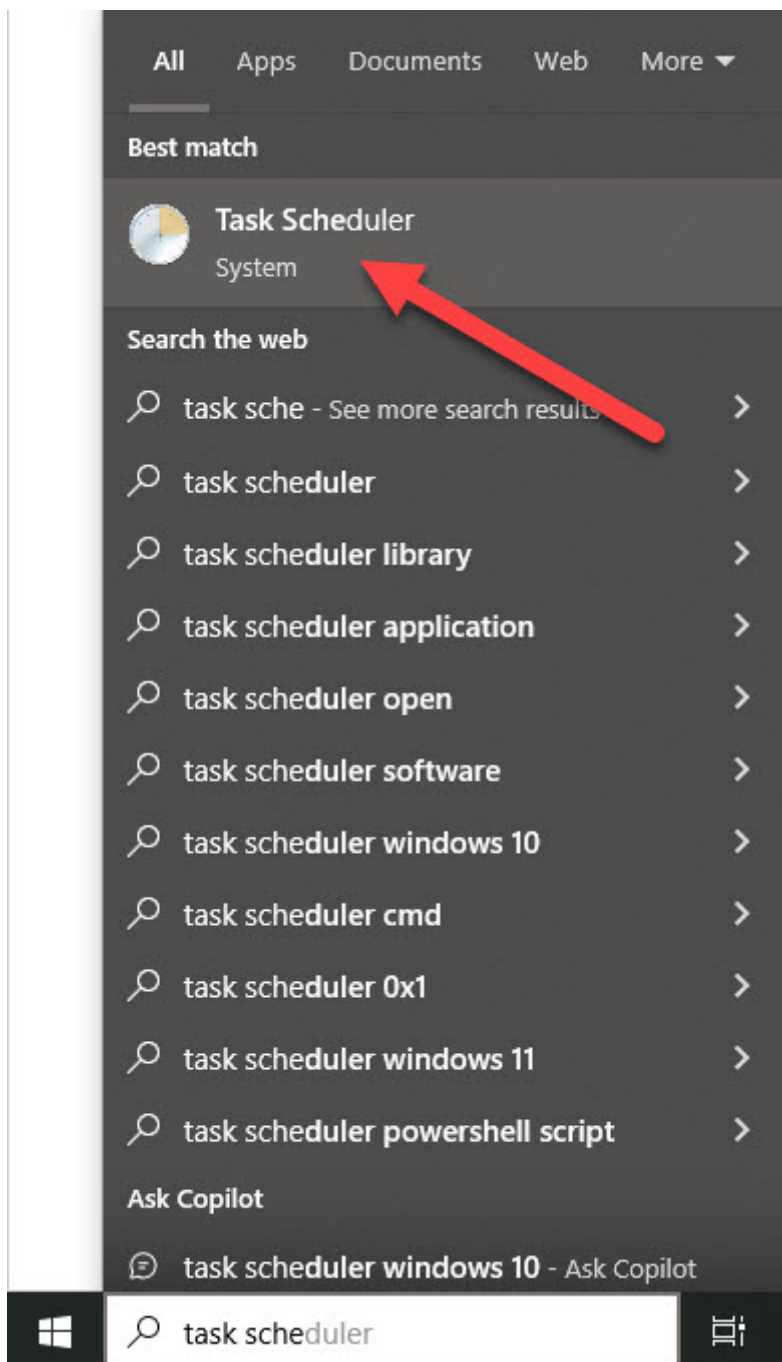
Linux Terminal

wsl

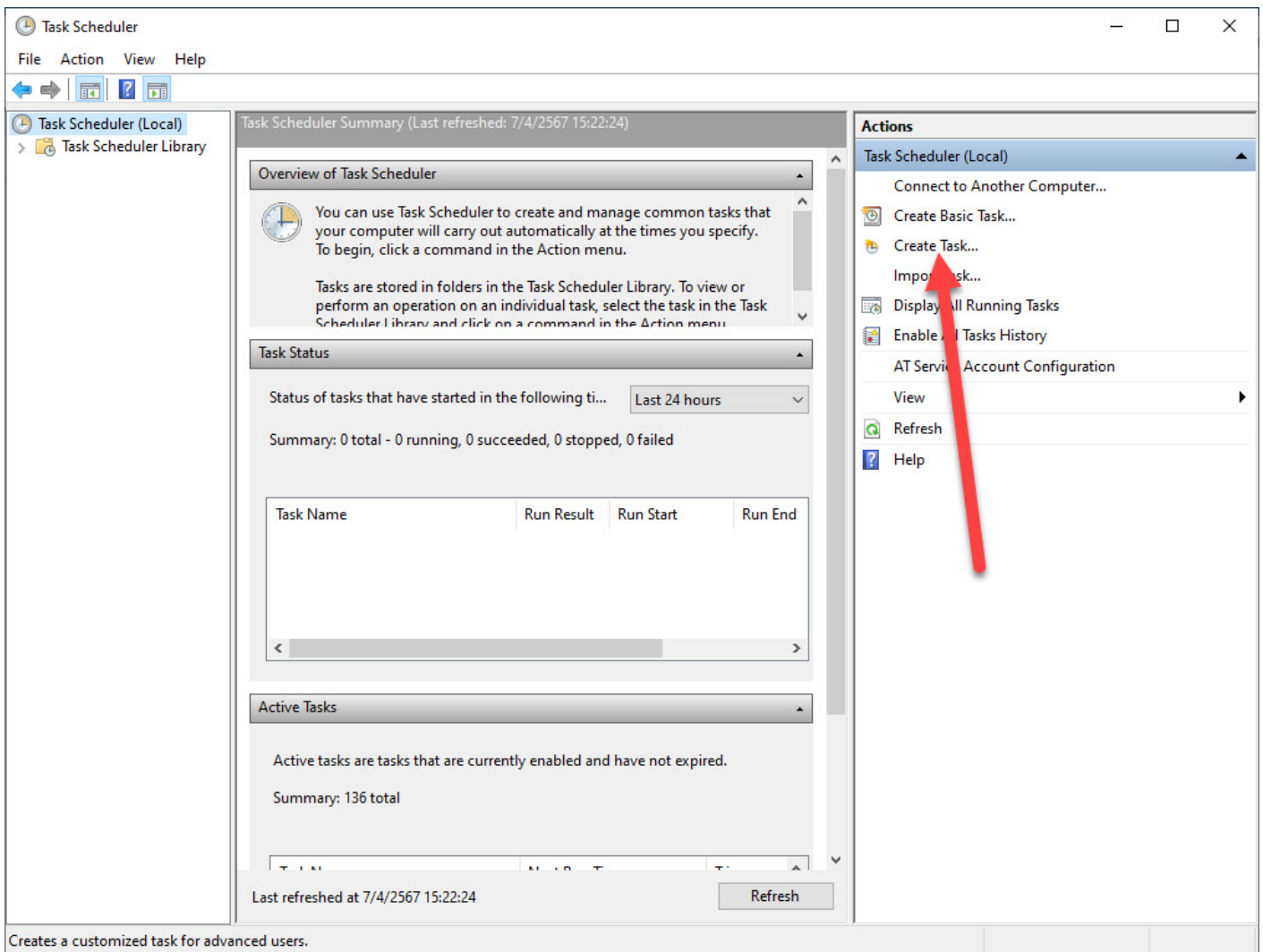
(auto start)

Task Schedule

Task Schedule



2. Create Task Job



3. General

Create Task

General Triggers Actions Conditions Settings

Name: wsl-auto-run

Location: \

Author: DESKTOP-1AV7VQH\...

Description:

Security options

When running the task, use the following user account:
DESKTOP-1AV7VQH\... Change User or Group...

☐ Run when user is logged on

☒ Run whether user is logged on or not

☒ Do not store password. The task will only have access to local computer resources.

☐ Run with highest privileges

☐ Hidden

Configure for: Windows 10

OK Cancel

4. Triggers New

General Triggers Actions Conditions Settings

When you create a task, you can specify the conditions that will trigger the task.

New Trigger ✕

Begin the task: At startup ▼

Settings

No additional settings required.

Advanced settings

☐ Delay task for: 15 minutes ▼☐ Repeat task every: 1 hour ▼ for a duration of: 1 day ▼☐ Stop all running tasks at end of repetition duration☐ Stop task if it runs longer than: 3 days ▼☐ Activate: 7/ 4/ 2567 ▼ 15:27:30 ▼ ☐ Synchronize across time zones☐ Expire: 7/ 4/ 2568 ▼ 15:27:30 ▼ ☐ Synchronize across time zones☒ Enabled

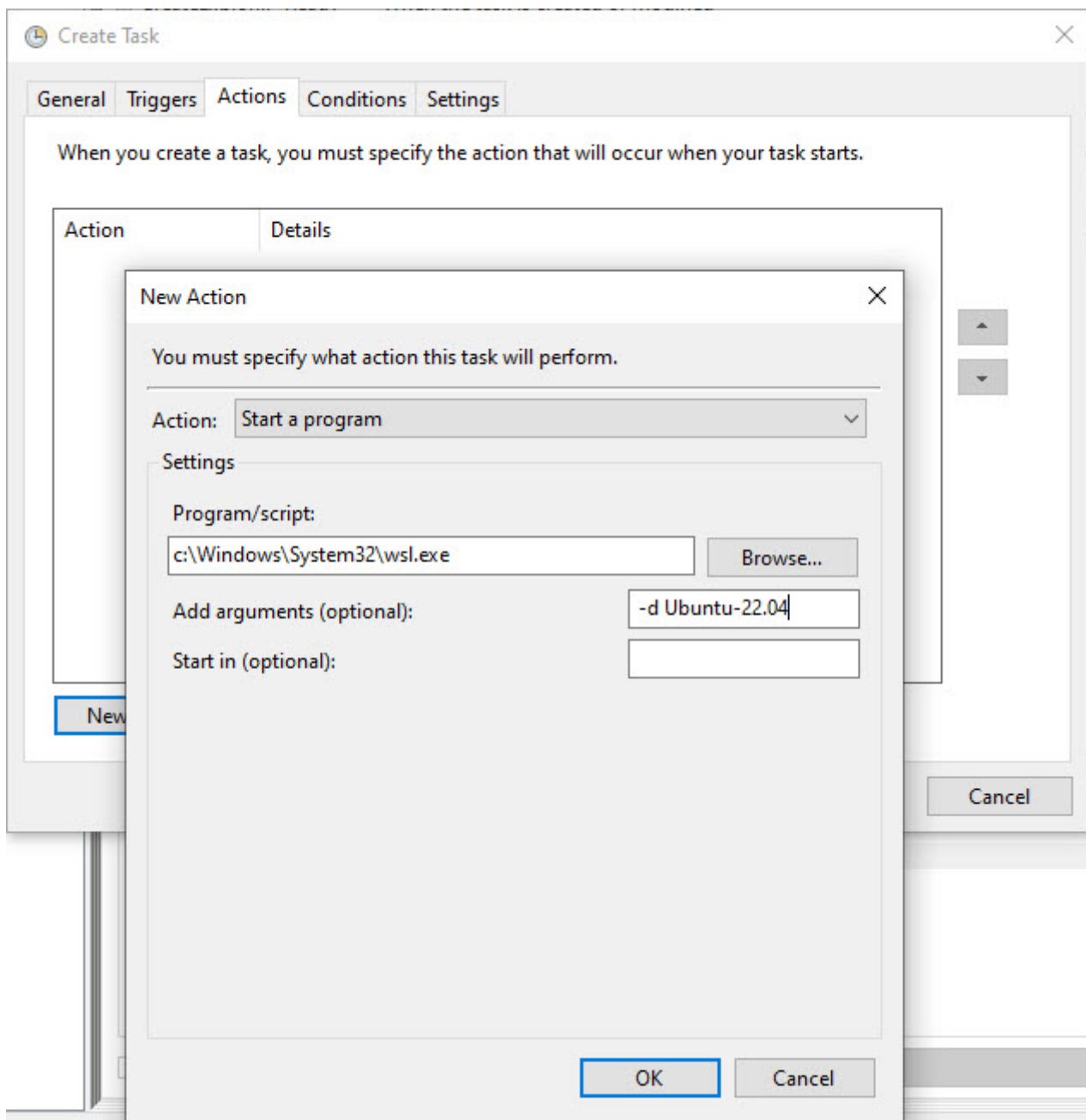
OK

Cancel

5. Action New Linux distro

```
C: \Windows\system32\wsl.exe -d Ubuntu-22.04
```

```
wsl.exe -d Ubuntu-22.04
```



6. Conditions

Create Task

General Triggers Actions Conditions Settings

Specify the conditions that, along with the trigger, determine whether the task should run. The task will not run if any condition specified here is not true.

Idle

☐ Start the task only if the computer is idle for: 10 minutes

Wait for idle for: 1 hour

☒ Stop if the computer ceases to be idle

☐ Restart if the idle state resumes

Power

☐ Start the task only if the computer is on AC power

☒ Stop if the computer switches to battery power

☐ Wake the computer to run this task

Network

☐ Start only if the following network connection is available:

Any connection

OK Cancel

7. Settings

Create Task

General

Triggers

Actions

Conditions

Settings

Specify additional settings that affect the behavior of the task.

☒ Allow task to be run on demand
☒ Run task as soon as possible after a scheduled start is missed

☐ If the task fails, restart every:

1 minute

Attempt to restart up to:

3

times

☐ Stop the task if it runs longer than:

3 days

☒ If the running task does not end when requested, force it to stop

☐ If the task is not scheduled to run again, delete it after:

30 days

If the task is already running, then the following rule applies:

Do not start a new instance

OK

Cancel

OK

8. restart Windows Windows Linux Ubuntu-22.04 Au

```
C:\Users\>wsl -l -v
NAME          STATE      VERSION
* Debian      Stopped    2
Ubuntu-20.04  Stopped    2
AlmaLinux9     Stopped    1
Ubuntu-22.04  Running    2
```

application & service systemd