set ubuntu

- 명령어 참고 `chmod`

graphic driver

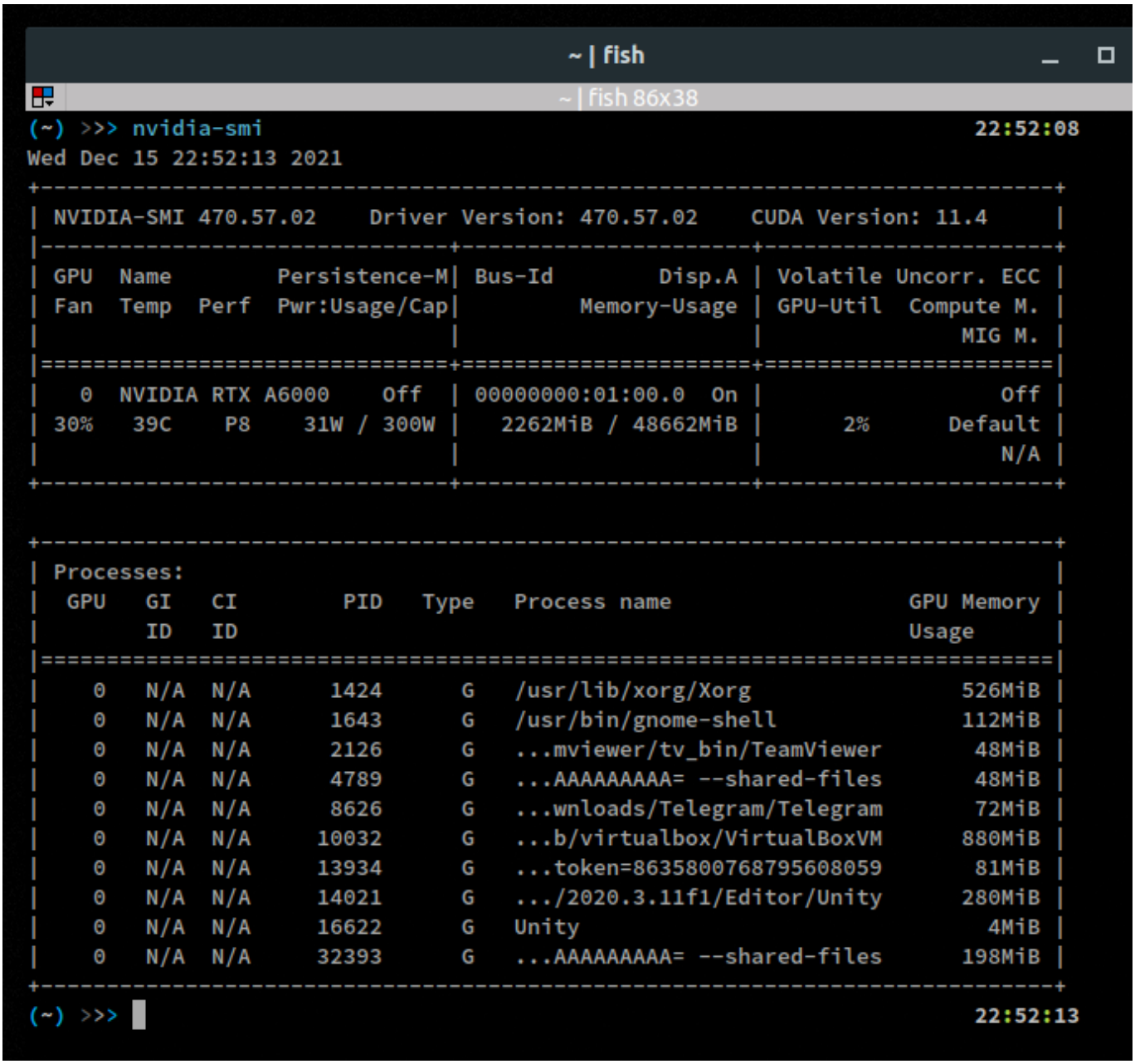
설치

```
## graphic driver

$ sudo apt-get update
$ sudo apt-get install -y build-essential curl gcc ssh git net-tools vim
$ wget https://us.download.nvidia.com/XFree86/Linux-
x86_64/470.57.02/NVIDIA-Linux-x86_64-470.57.02.run
$ chmod +x NVIDIA-Linux-x86_64-470.57.02.run
$ sudo ./NVIDIA-Linux-x86_64-470.57.02.run
```

확인

```
$ nvidia-smi
```



들

여기서 이상 없어야 통과. 안되면 다시

CUDA

- CUDA 10.2
- CUDA 11.1

CUDA Toolkit 10.2 Download

Select Target Platform

Click on the green buttons that describe your target platform. Only supported platforms will be shown.

Operating System	Windows, **Linux**, Mac OSX
Architecture	**x86_64**, ppc64le
Distribution	Fedora, OpenSUSE, RHEL, CentOS, SLES, **Ubuntu**
Version	**18.04**, 16.04
Installer Type	**runfile (local)**, deb (local), deb (network), cluster (local)

Download Installers for Linux Ubuntu 18.04 x86_64

The base installer is available for download below.
There are 2 patches available. These patches require the base installer to be installed first.

Base Installer

Installation Instructions:

```
$ wget https://developer.download.nvidia.com/compute/cuda/10.2/Prod/local_installers/cuda_10.2.89_440.33.01_linux.run
$ sudo sh cuda_10.2.89_440.33.01_linux.run
```

Patch 1 (Released Aug 26, 2020) Download (121.5 MB)

This patch fixes an issue in the cuBLAS library bundled in CUDA 10.2 which caused silent corruption of data in uncommon edge cases.

Patch 2 (Released Nov 17, 2020) Download (121.5 MB)

This patch fixes an issue in cuBLAS library batched GEMM APIs which caused silent corruption of data in uncommon cases with large batch counts in mixed precision and fast math.

CUDA Toolkit 11.1.0

Please Note: Due to an incompatibility issue, we advise users to defer updating to Linux Kernel 5.9+ until mid-November when an NVIDIA Linux GPU driver update with Kernel 5.9+ support is expected to be available.

Select Target Platform

Click on the green buttons that describe your target platform. Only supported platforms will be shown. By downloading and using the software, you agree to fully comply with the terms and conditions of the CUDA EULA.

Operating System	**Linux**, Windows
Architecture	**x86_64**, ppc64le, sbsa
Distribution	CentOS, Debian, Fedora, OpenSUSE, RHEL, SLES, **Ubuntu**, WSL-Ubuntu
Version	**20.04**, 18.04, 16.04
Installer Type	**runfile (local)**, deb (local), deb (network)

Download Installer for Linux Ubuntu 20.04 x86_64

The base installer is available for download below.

Base Installer

Installation Instructions:

```
$ wget https://developer.download.nvidia.com/compute/cuda/11.1.0/local_installers/cuda_11.1.0_455.23.05_linux.run
$ sudo sh cuda_11.1.0_455.23.05_linux.run
```

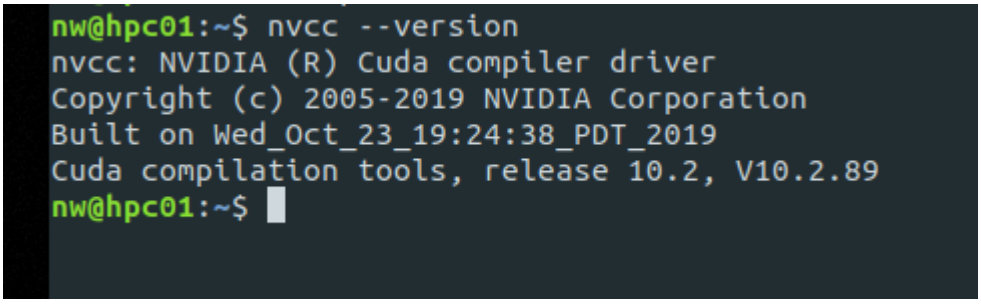
```
# cuda install
$ sudo apt-get update
$ wget
https://developer.download.nvidia.com/compute/cuda/11.1.0/local_installers/
cuda_11.1.0_455.23.05_linux.run
$ sudo sh ./cuda_11.1.0_455.23.05_linux.run
```

- CUDA 버전에 맞춰서 경로지정 `10.2`

```
# ~/.bashrc
export PATH=/usr/local/bin:$PATH
export PATH=/usr/local/cuda-10.2/bin${PATH:+:${PATH}}
export LD_LIBRARY_PATH=/usr/local/cuda-
10.2/lib64:${LD_LIBRARY_PATH:+:${LD_LIBRARY_PATH}}
```

```
source ~/.bashrc
nvcc --version
```

완료된 모습



PyTorch

```
# install torch
$ sudo apt-get update
$ pip3 install torch==1.8.0+cu111 torchvision==0.9.0+cu111
torchaudio==0.8.0 -f https://download.pytorch.org/whl/torch_stable.html
```

(optional)

dotnet

```
# dotnet
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https
$ sudo apt-get update
$ sudo apt-get install -y dotnet-sdk-6.0
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https
$ sudo apt-get update
$ sudo apt-get install -y aspnetcore-runtime-6.0
```

다시 # Home main 으로