

Assignment 0

CSE471: Computer Graphics

Fall 2022

Computer Science and Engineering

Instructor: Ilwoo Lyu

Objectives

- The main purpose of this assignment is to setup your own OpenGL environment (Python)
- This is very important as you will work under your environment for all the upcoming assignments
- Please make sure your environment is setup properly

Anaconda



- "Anaconda offers the easiest way to perform Python/R data science and machine learning on a single machine. Start working with thousands of open-source packages and libraries today."
 - From the Anaconda official site
- Anaconda is a popular package manager. We will use this environment to easily manage Python packages.
- You will be able to find lots of resources from the web!

Instructions

- Follow the instructions according to your OS platform
- Configure Anaconda and Python packages (see page 7 & page 23)
- Run the provided example code (available at blackboard)
- Screenshot and upload your result to Blackboard before the deadline

Submission

- What to submit
 - A screenshot of the output of the sample code
- Where to submit
 - Blackboard
- When to submit by
 - September 14th by midnight, one week from now (no extension – start as soon as possible)

Questions?

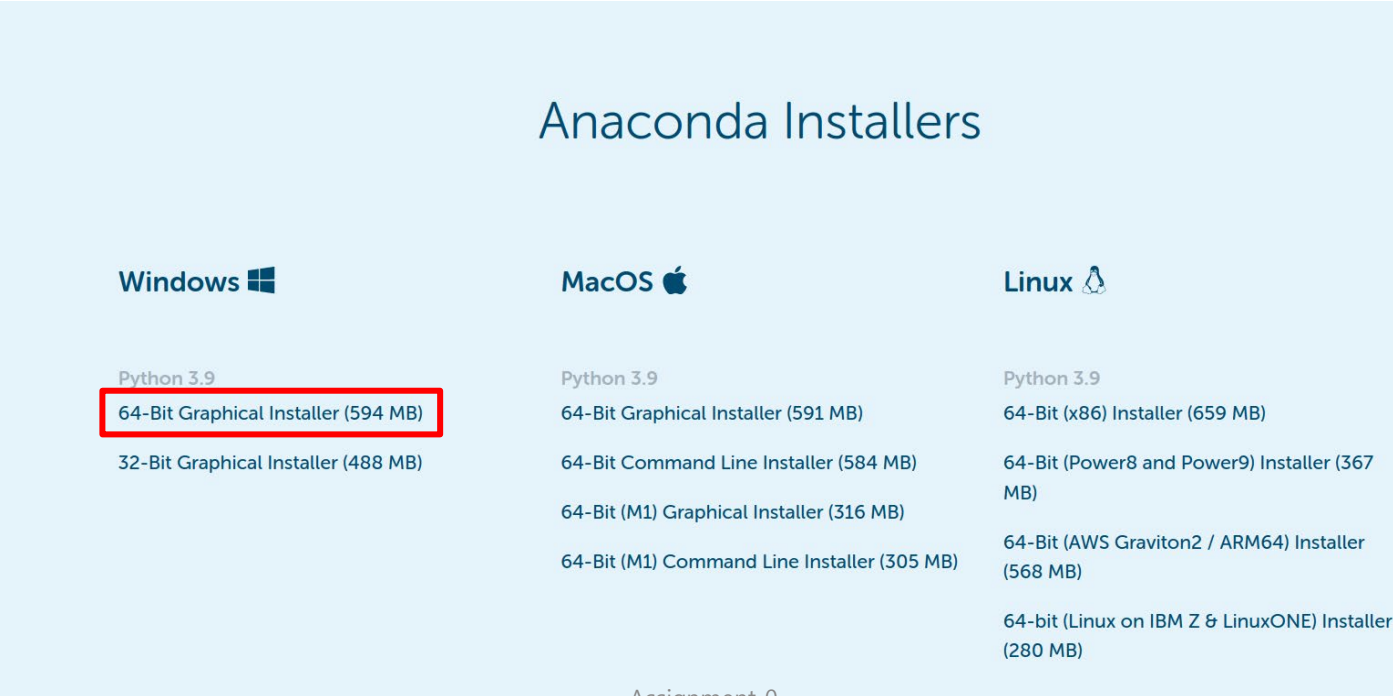
- Use Blackboard (Discussions → Course Board)
- Email/call the instructor or TAs
- TAs
 - Seungheon Han (한승헌)
 - Email: shhan@unist.ac.kr
 - Sanghoon Jung (정상훈)
 - Email: shjung98@unist.ac.kr

Windows Users

Credit: Sanghoon Jung




Download the installer

Goto <https://www.anaconda.com/products/distribution#Downloads>

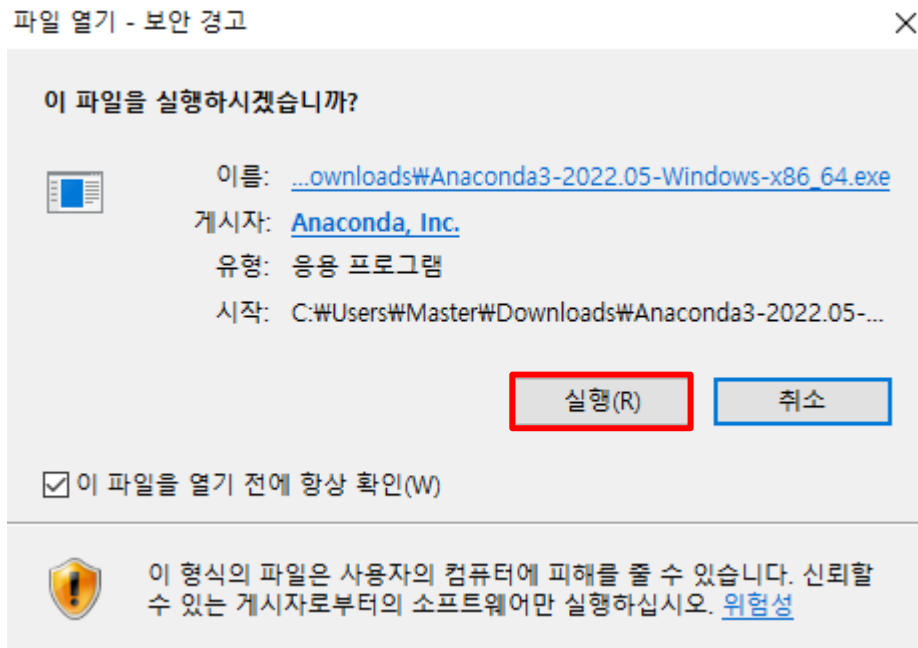


The screenshot displays the 'Anaconda Installers' page. It is organized into three columns for Windows, MacOS, and Linux. Each column lists installers for Python 3.9. In the Windows column, the '64-Bit Graphical Installer (594 MB)' is highlighted with a red rectangle. The MacOS column lists a 64-bit graphical installer (591 MB), a 64-bit command line installer (584 MB), a 64-bit M1 graphical installer (316 MB), and a 64-bit M1 command line installer (305 MB). The Linux column lists a 64-bit x86 installer (659 MB), a 64-bit installer for Power8 and Power9 (367 MB), a 64-bit installer for AWS Graviton2 / ARM64 (568 MB), and a 64-bit installer for Linux on IBM Z & LinuxONE (280 MB).

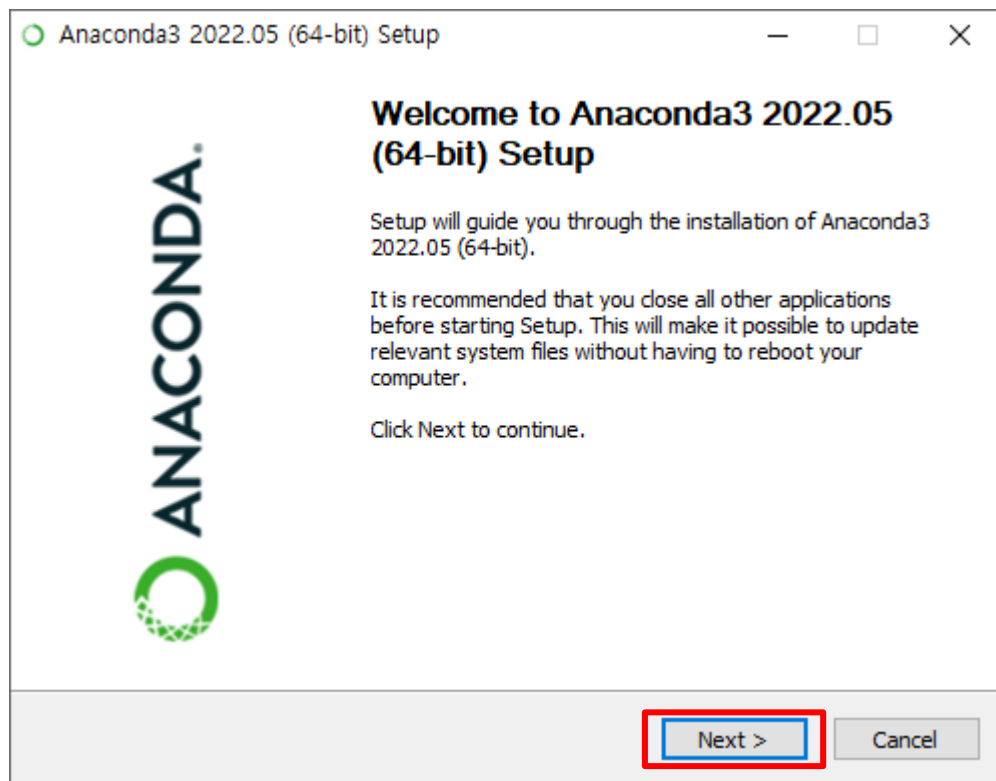
Anaconda Installers

Windows 	MacOS 	Linux 
Python 3.9	Python 3.9	Python 3.9
64-Bit Graphical Installer (594 MB)	64-Bit Graphical Installer (591 MB)	64-Bit (x86) Installer (659 MB)
32-Bit Graphical Installer (488 MB)	64-Bit Command Line Installer (584 MB)	64-Bit (Power8 and Power9) Installer (367 MB)
	64-Bit (M1) Graphical Installer (316 MB)	64-Bit (AWS Graviton2 / ARM64) Installer (568 MB)
	64-Bit (M1) Command Line Installer (305 MB)	64-bit (Linux on IBM Z & LinuxONE) Installer (280 MB)

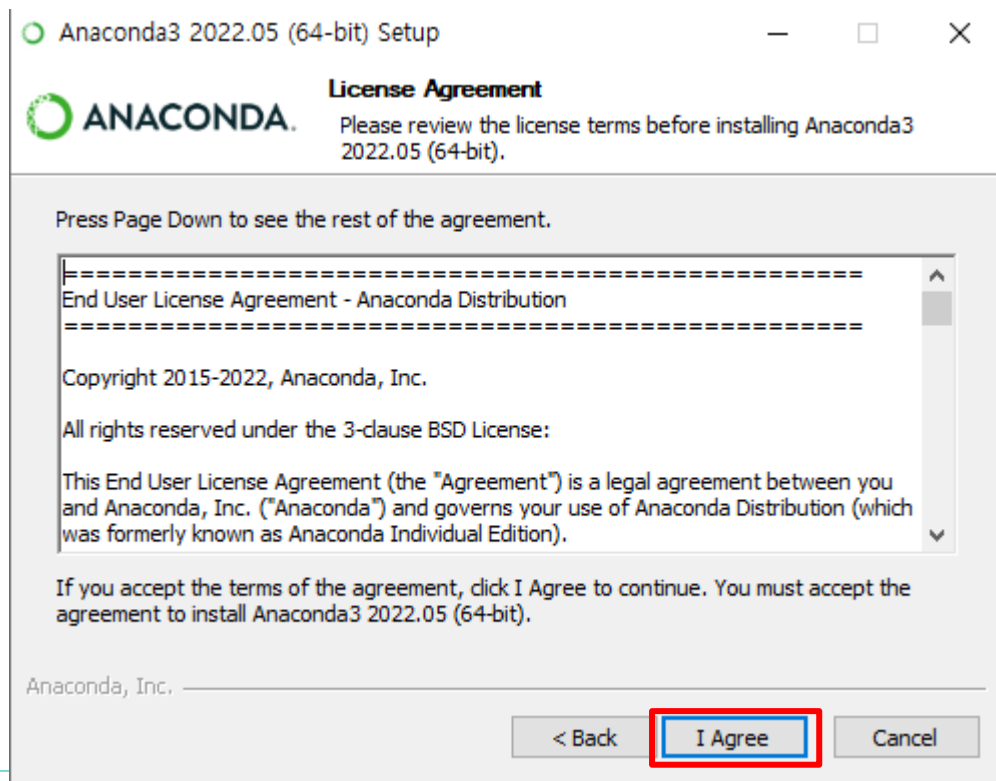
Run the installer



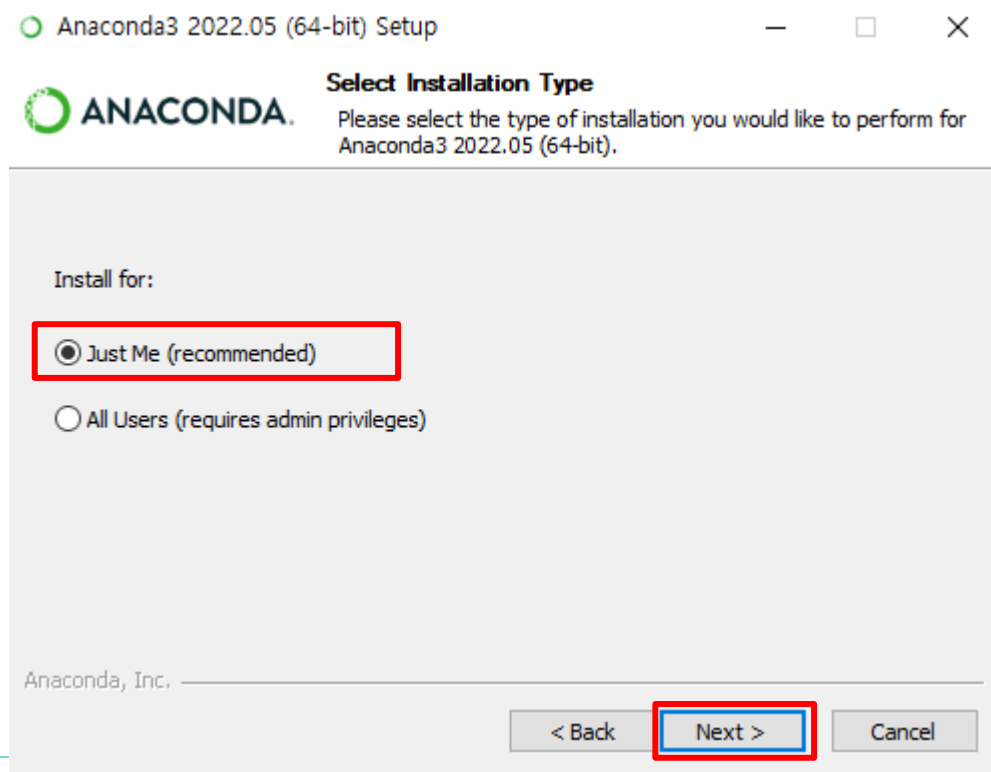
Run the installer



Run the installer

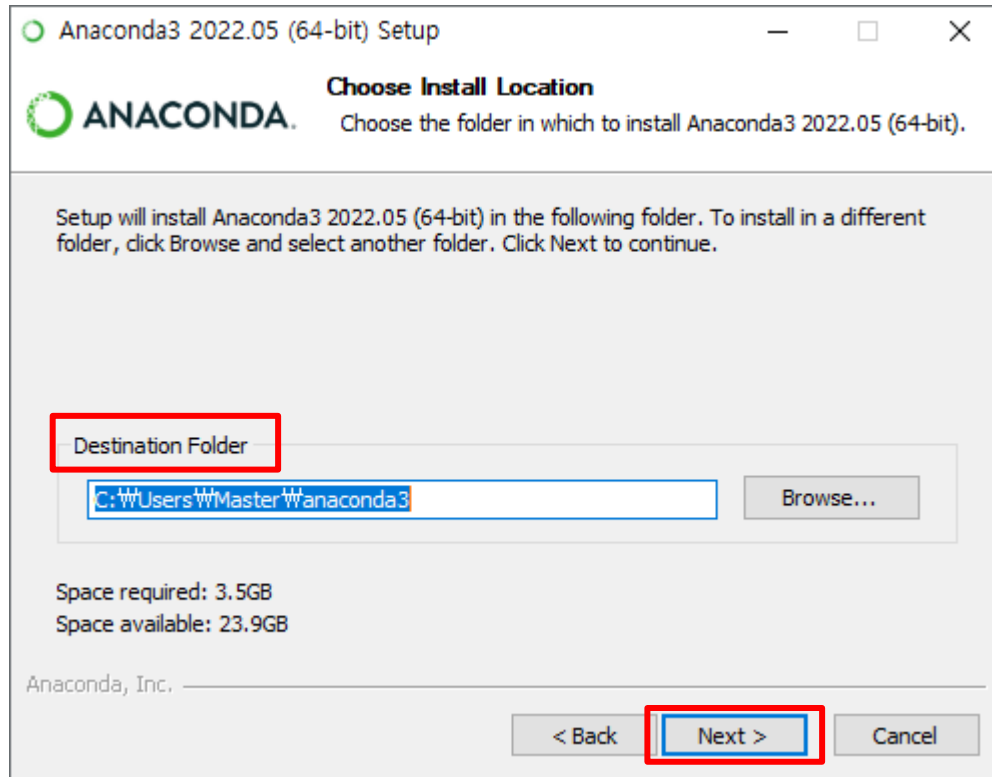


Run the installer

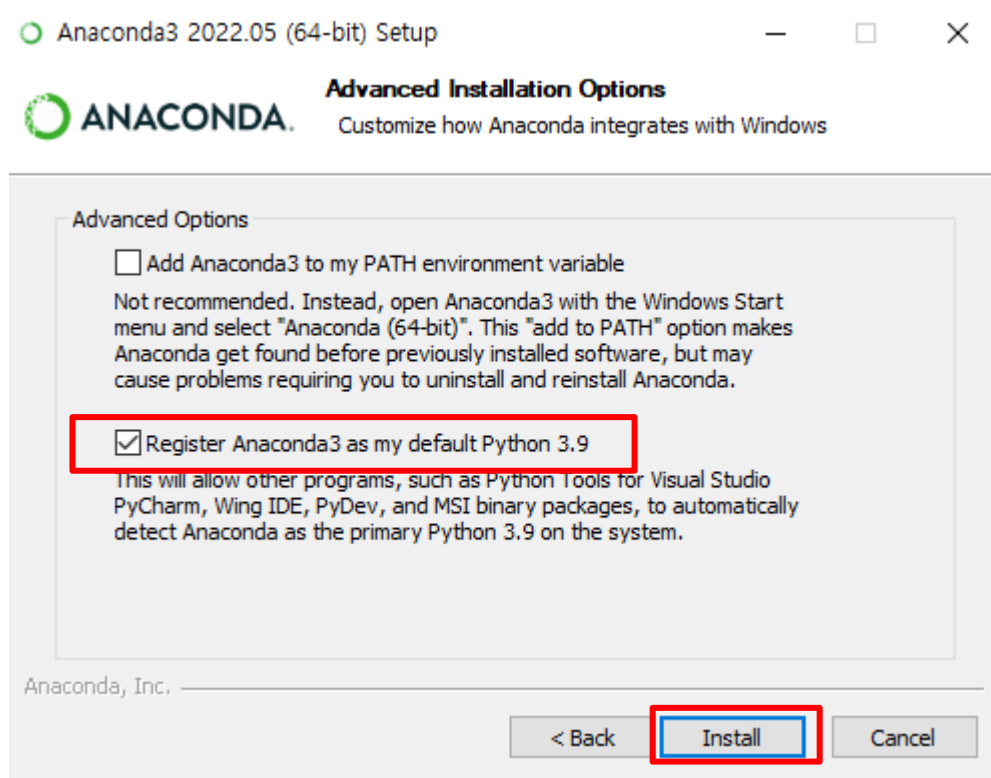


Run the installer

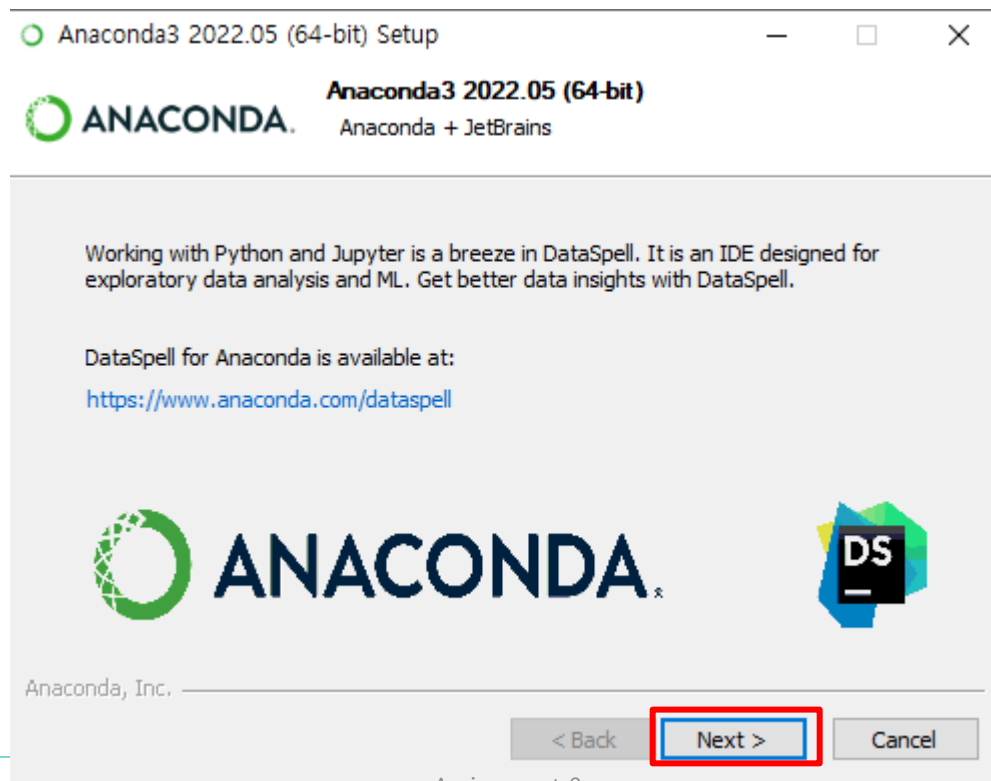
Default Folder
(automatically selected)
is recommended.



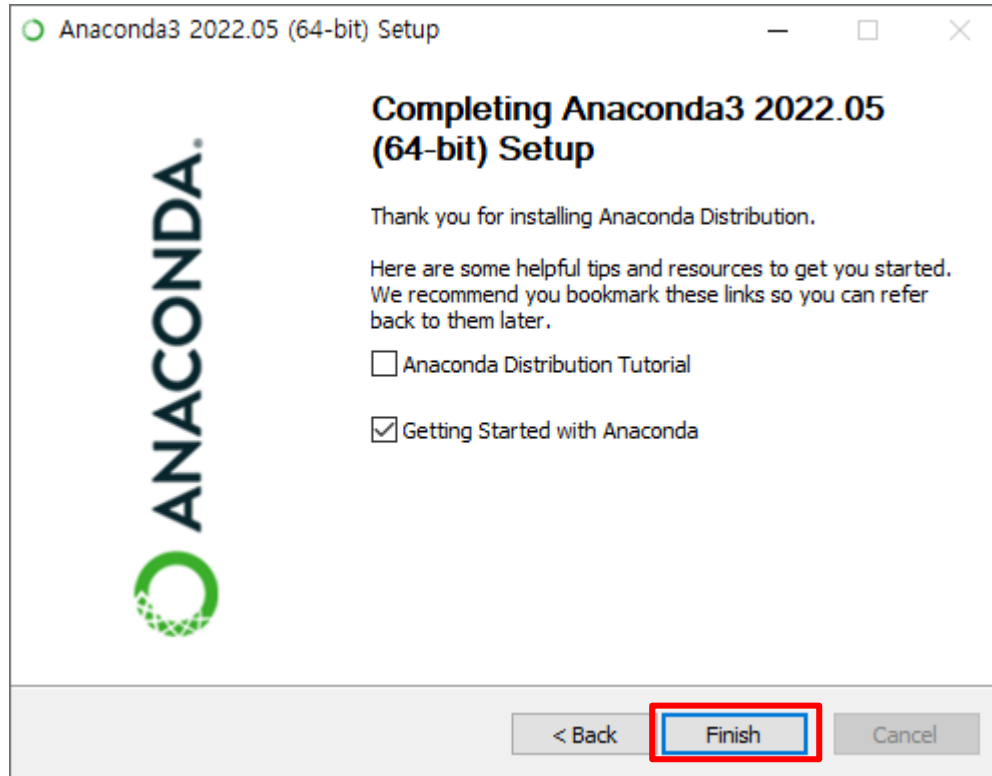
Run the installer



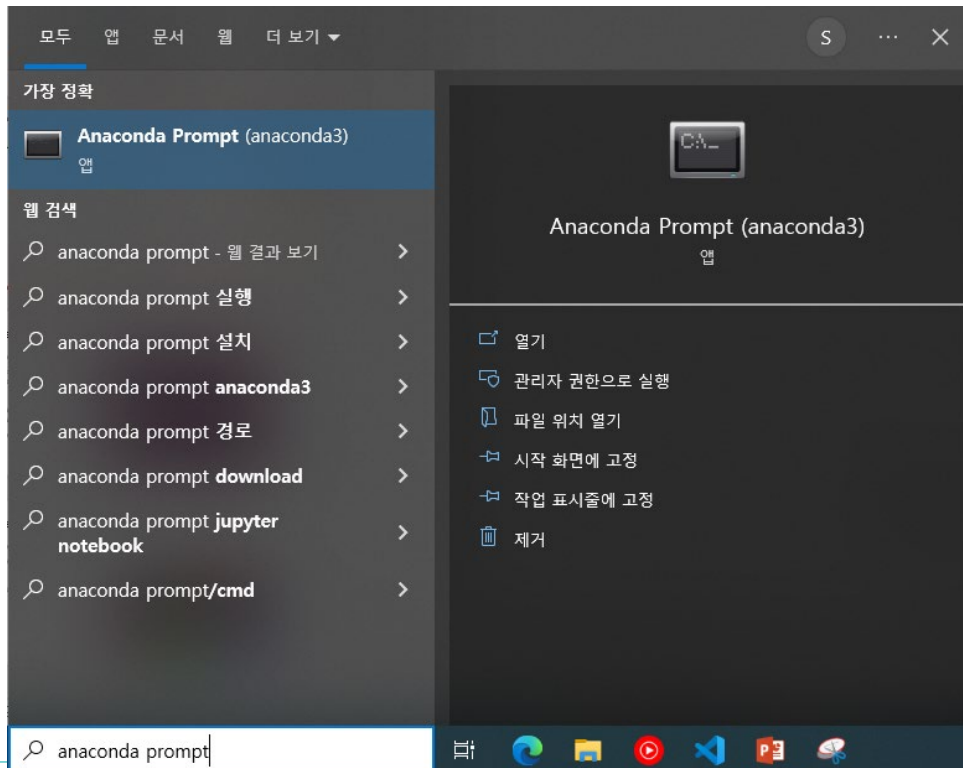
Run the installer



Run the installer



Make new conda environment



Search For "Anaconda Prompt" in Windows Search bar (bottom left) and Run.

Result:

Anaconda Prompt (anaconda3)

```
(base) C:\Users\Master>
```

Make new conda environment

Anaconda Prompt (anaconda3) - conda create -n cg python=3.8

```
(base) C:\Users\WMaster>conda create -n cg python=3.8
Collecting package metadata (current_repodata.json): done
Solving environment: done
```

```
==> WARNING: A newer version of conda exists. <==
  current version: 4.12.0
  latest version: 4.14.0
```

1. conda create -n cg python=3.8

The following NEW packages will be INSTALLED:

ca-certificates	pkgs/main/win-64::ca-certificates-2022.07.19-haa95532_0
certifi	pkgs/main/win-64::certifi-2022.6.15-py38haa95532_0
openssl	pkgs/main/win-64::openssl-1.1.1q-h2bfff1b_0
pip	pkgs/main/win-64::pip-22.1.2-py38haa95532_0
python	pkgs/main/win-64::python-3.8.13-h6244533_0
setuptools	pkgs/main/win-64::setuptools-63.4.1-py38haa95532_0
sqlite	pkgs/main/win-64::sqlite-3.39.2-h2bfff1b_0
vc	pkgs/main/win-64::vc-14.2-h21ff451_1
vs2015_runtime	pkgs/main/win-64::vs2015_runtime-14.27.29016-h5e58377_2
wheel	pkgs/main/noarch::wheel-0.37.1-pyhd3eb1b0_0
wincertstore	pkgs/main/win-64::wincertstore-0.2-py38haa95532_2

Proceed ([y]/n)? y

2. Enter “y”

Make new conda environment

Anaconda Prompt (anaconda3)

```
done
##
## To activate this environment, use
##
##     $ conda activate cg
##
## To deactivate an active environment, use
##
##     $ conda deactivate
##
(base) C:\Users\Master>conda activate cg
(cg) C:\Users\Master>
```

3. conda activate cg

Environment mark will be changed into “(cg)”

Make sure to activate the environment before starting your project.

Setup conda environment

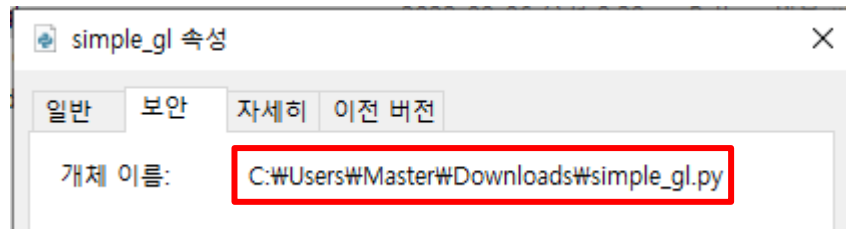
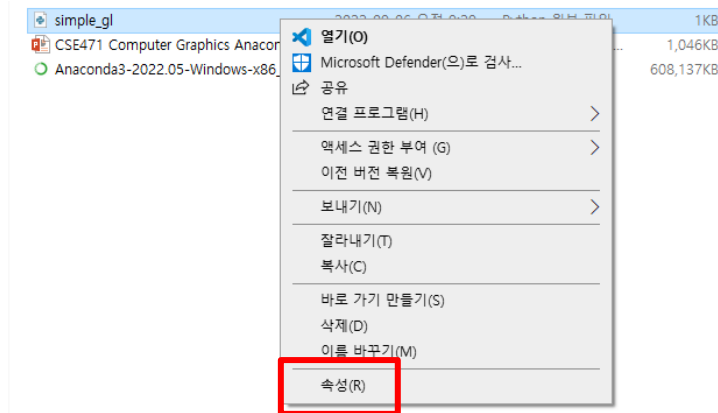
1. conda activate cg
(change into your environment)
2. conda install numpy pyopengl pyopengl-accelerate freeglut
3. Enter "y"
4. pip list
(Check the installed python packages)

Anaconda Prompt (anaconda3) - conda install numpy pyopengl pyopengl-accelerate freeglut

```
done
(cg) C:\Users\Master>pip list
Package            Version
-----
certifi            2022.6.15
mkl-fft            1.3.1
mkl-random         1.2.2
mkl-service        2.4.0
numpy              1.23.1
pip               22.1.2
PyOpenGL           3.1.1a1
PyOpenGL-accelerate 3.1.3b1
setuptools         63.4.1
six               1.16.0
wheel             0.37.1
wincertstore       0.2
(cg) C:\Users\Master>
```

Simple Test

1. Download "simple_gl.py" file.
2. Right Click the file and click "properties".
3. Click the second tab and copy the path of the file.



Simple Test

1. Open Conda Prompt
2. conda activate cg
(activate environment)
3. python \$copied_path

```
(cg) C:\Users\Master>python C:\Users\Master\Downloads\simple_gl.py
```

4. All Done!



Linux & Mac Users

Credit: Seungheon Han

Download the installer

Goto <https://www.anaconda.com/products/distribution#Downloads>



The screenshot shows the Anaconda Installers page with the following content:

Anaconda Installers

Windows 	MacOS 	Linux 
Python 3.9 64-Bit Graphical Installer (594 MB) 32-Bit Graphical Installer (488 MB)	Python 3.9 64-Bit Graphical Installer (591 MB) 64-Bit Command Line Installer (584 MB) 64-Bit (M1) Graphical Installer (316 MB) 64-Bit (M1) Command Line Installer (305 MB)	Python 3.9 64-Bit (x86) Installer (659 MB) 64-Bit (Power8 and Power9) Installer (367 MB) 64-Bit (AWS Graviton2 / ARM64) Installer (568 MB) 64-bit (Linux on IBM Z & LinuxONE) Installer (280 MB)

Run the installer

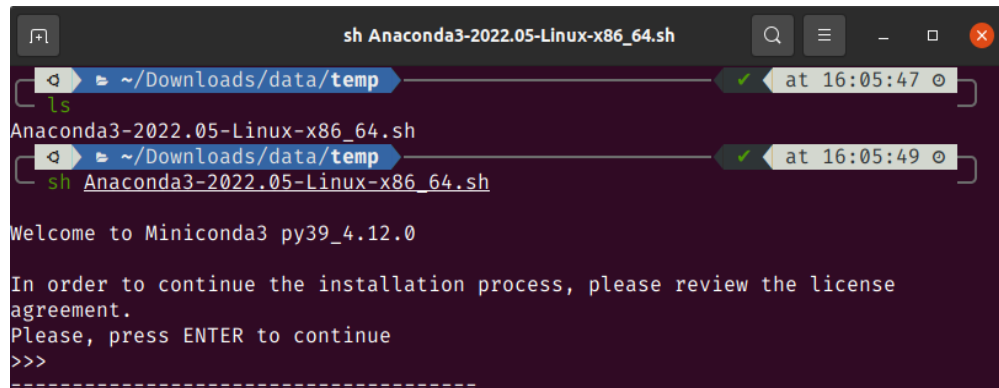
sh <downloaded-installer>.sh

1. Accept the Licence Agreement
2. Install anaconda to the location you want
3. Enter yes to initialize anaconda (or run “conda init” after installation)
4. Installation finished!

Restart your terminal to activate conda

If it does not work, add conda to PATH

```
export PATH="/path/to/anaconda3/bin:$PATH"
```



```
sh Anaconda3-2022.05-Linux-x86_64.sh
ls
Anaconda3-2022.05-Linux-x86_64.sh
sh Anaconda3-2022.05-Linux-x86_64.sh

Welcome to Miniconda3 py39_4.12.0

In order to continue the installation process, please review the license
agreement.
Please, press ENTER to continue
>>>
```

Make new conda environment

`conda create -n cg python=3.8`

to create conda environment
named “cg”

You can activate this environment
with

`conda activate cg`

```
~/Downloads/data/temp
conda create -n cg python=3.8
Collecting package metadata (current_repodata.json): done
Solving environment: done

==> WARNING: A newer version of conda exists. <==
current version: 4.12.0
latest version: 4.14.0

Proceed ([y]/n)? y

Downloading and Extracting Packages
pip-22.1.2          | 2.5 MB | ##### | 100%
python-3.8.13       | 18.8 MB | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use
#
#     $ conda activate cg
#
# To deactivate an active environment, use
#
#     $ conda deactivate
```

Setup conda environment

```
conda activate cg
```

```
conda install numpy pyopengl pyopengl-accelerate freeglut
```

All done!

