



Deep Learning Toolkit

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Outline

Environment, Code Editor

Colab, ssh, tmux

Python

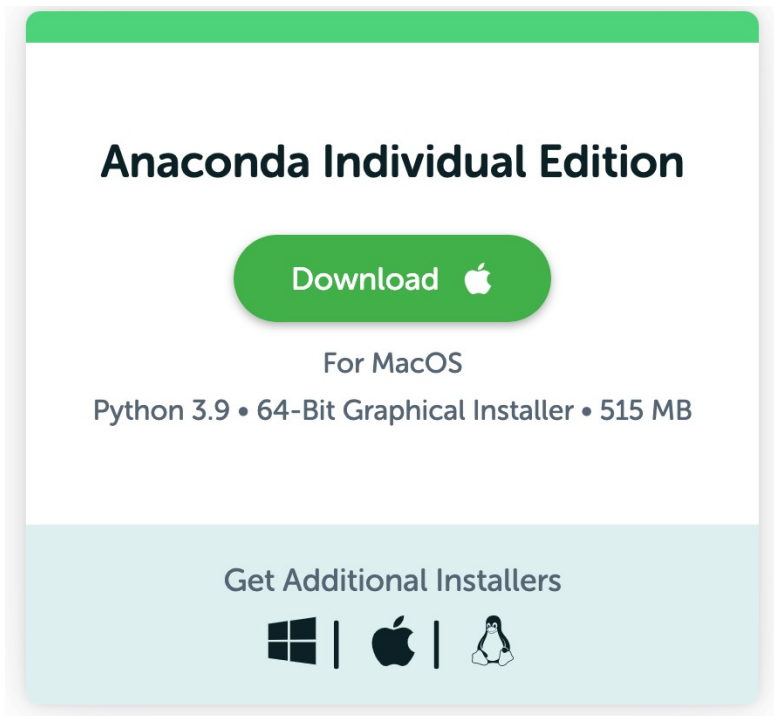
Numpy

PyTorch

(Optional) PyTorch Lightning

Container Environment

Anaconda



Container Environment

Anaconda

```
conda create --name dl_course
```

Container Environment

Anaconda

```
conda activate dl_course
```

Python package installer

`pip3 or pip`

Example:

```
pip3 install torch torchvision torchaudio
```

`conda`

Example:

```
conda install pytorch torchvision torchaudio -c  
pytorch
```

Anaconda – Machine Learning Toolkit

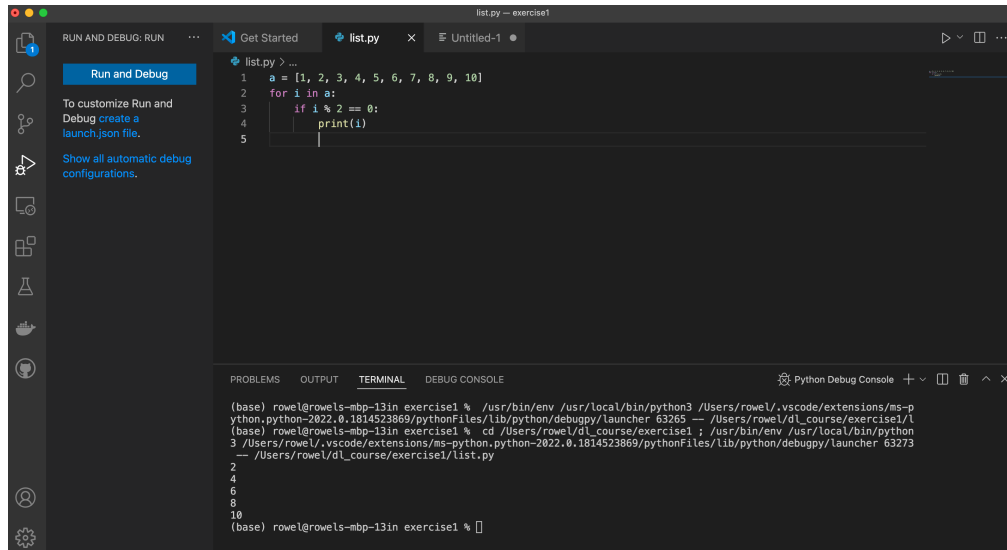
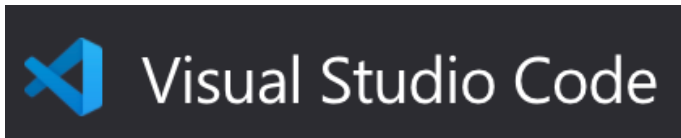


<https://www.anaconda.com/>

Code Editor

Text Editor / IDE

Visual Studio Code



✓ Recommended for its features

Other useful tools

(PC) Secure Server Login using ssh

```
ssh username@<gpu_server_ip_or_domain>
```

Ask the server admin for access to your GPU server

(PC) Passwordless ssh

```
ssh-keygen -t rsa
```

Use of empty passphrase is ok

Other -t options: ed25519, dsa

(PC) Check generated private and public keys

```
ls ~/.ssh
```

2 files were created: public: `id_rsa.pub` and private: `id_rsa`

(Server) Install the public key

Login to server, then:

```
mkdir -p ~/.ssh
```

(PC) Install the public key in the GPU server


PC side:

```
scp .ssh/id_rsa.pub username@gpu_server:~/.ssh
```

Login to server, then:

```
cat .ssh/id_rsa.pub >> .ssh/authorized_keys
```

Or PC side, no authorized_keys exists:

```
scp .ssh/id_rsa.pub   
username@gpu_server:~/.ssh/authorized_keys
```

(PC) Try Password-less Login

```
ssh username@<gpu_server_ip_or_domain>
```

May need to change permission server side:

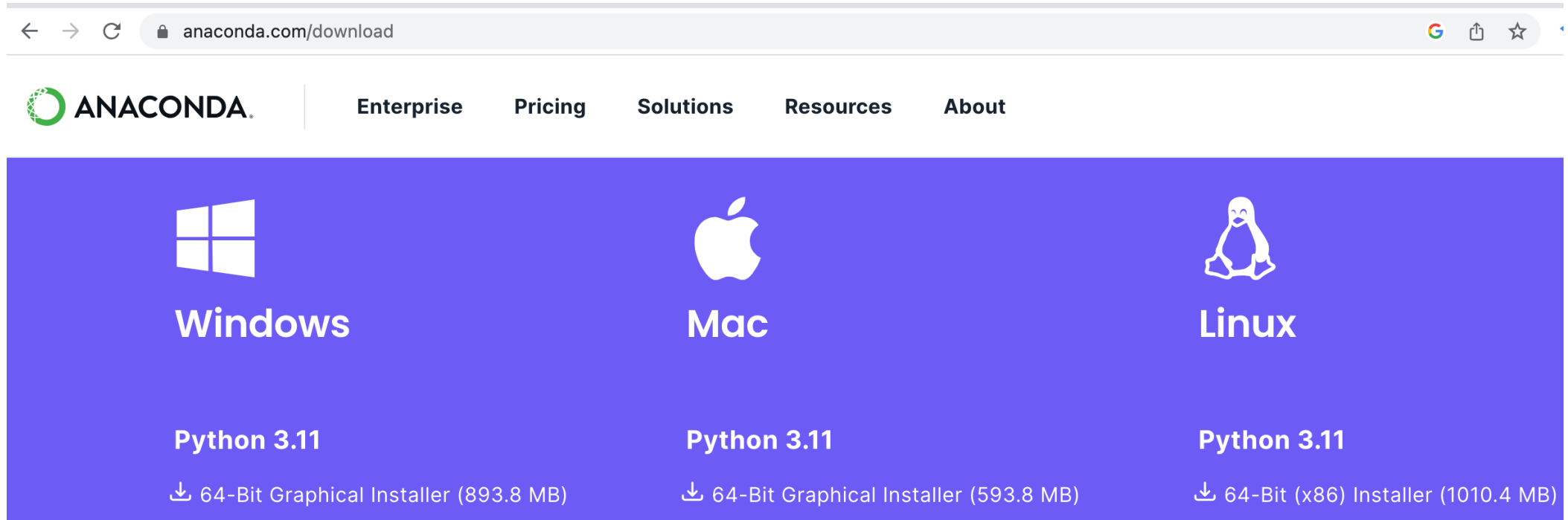
```
chmod 700 ~/.ssh
```

```
chmod 600 ~/.ssh/authorized_keys
```

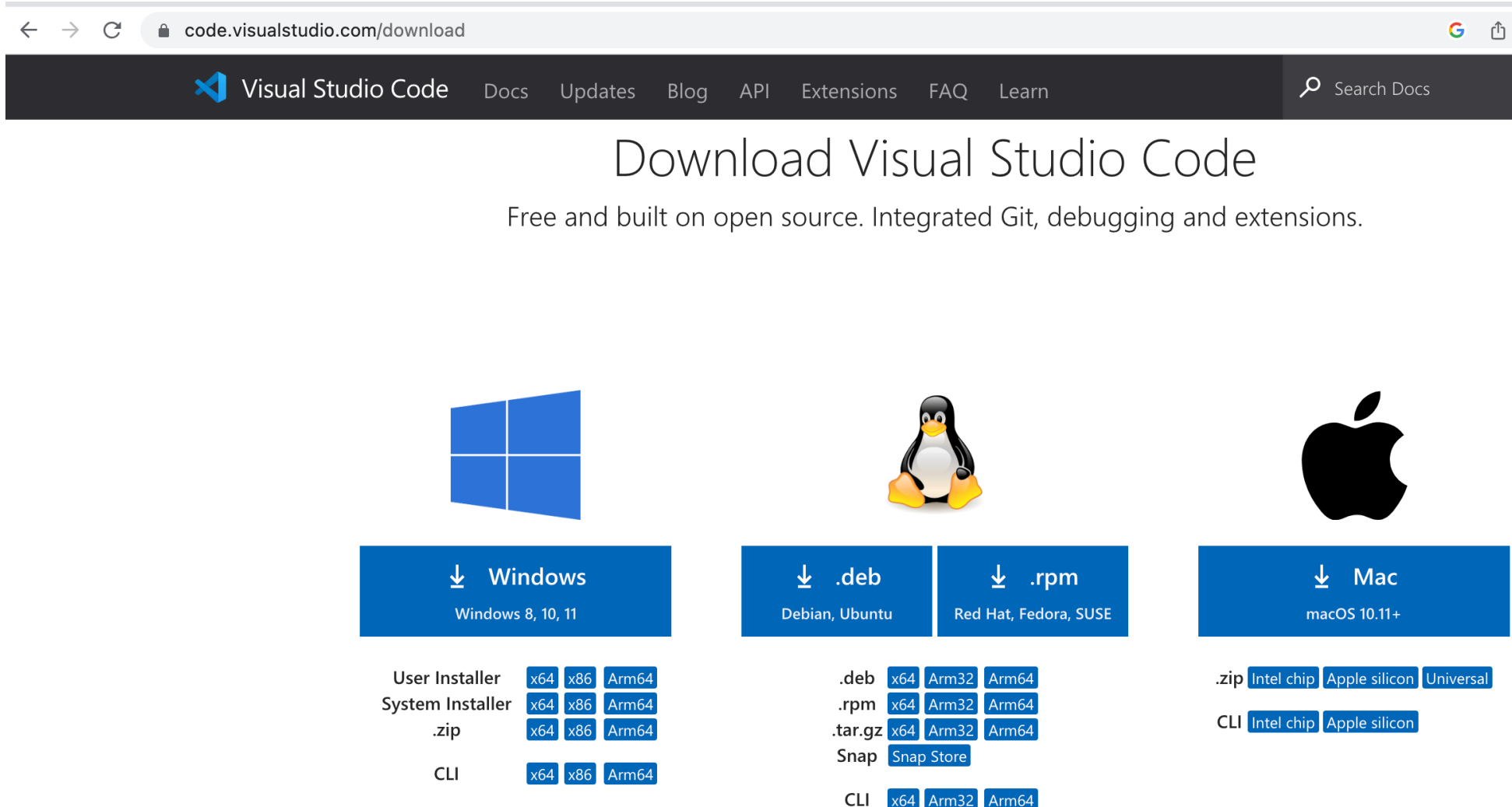

Exercises

- (Server) Download and install Anaconda
 - Setup a working environment
- (PC) Download and install VSCode
 - For python coding
- (PC) Connect VSCode to GPU Server
 - To be used later for model development, training and validation

Download and install anaconda



Download and install Visual Studio Code



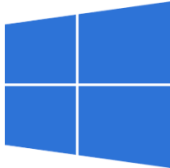
The screenshot shows the Visual Studio Code download page. At the top is a navigation bar with the Visual Studio Code logo, links to Docs, Updates, Blog, API, Extensions, FAQ, and Learn, and a search bar labeled 'Search Docs'. The main heading is 'Download Visual Studio Code' with the tagline 'Free and built on open source. Integrated Git, debugging and extensions.' Below this are three main sections for Windows, Linux, and Mac. Each section has a download button and a list of available installers and their supported architectures.

code.visualstudio.com/download

Visual Studio Code Docs Updates Blog API Extensions FAQ Learn Search Docs


Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.



↓ Windows
Windows 8, 10, 11


User Installer	x64	x86	Arm64
System Installer	x64	x86	Arm64
.zip	x64	x86	Arm64
CLI	x64	x86	Arm64



↓ .deb
Debian, Ubuntu

↓ .rpm
Red Hat, Fedora, SUSE

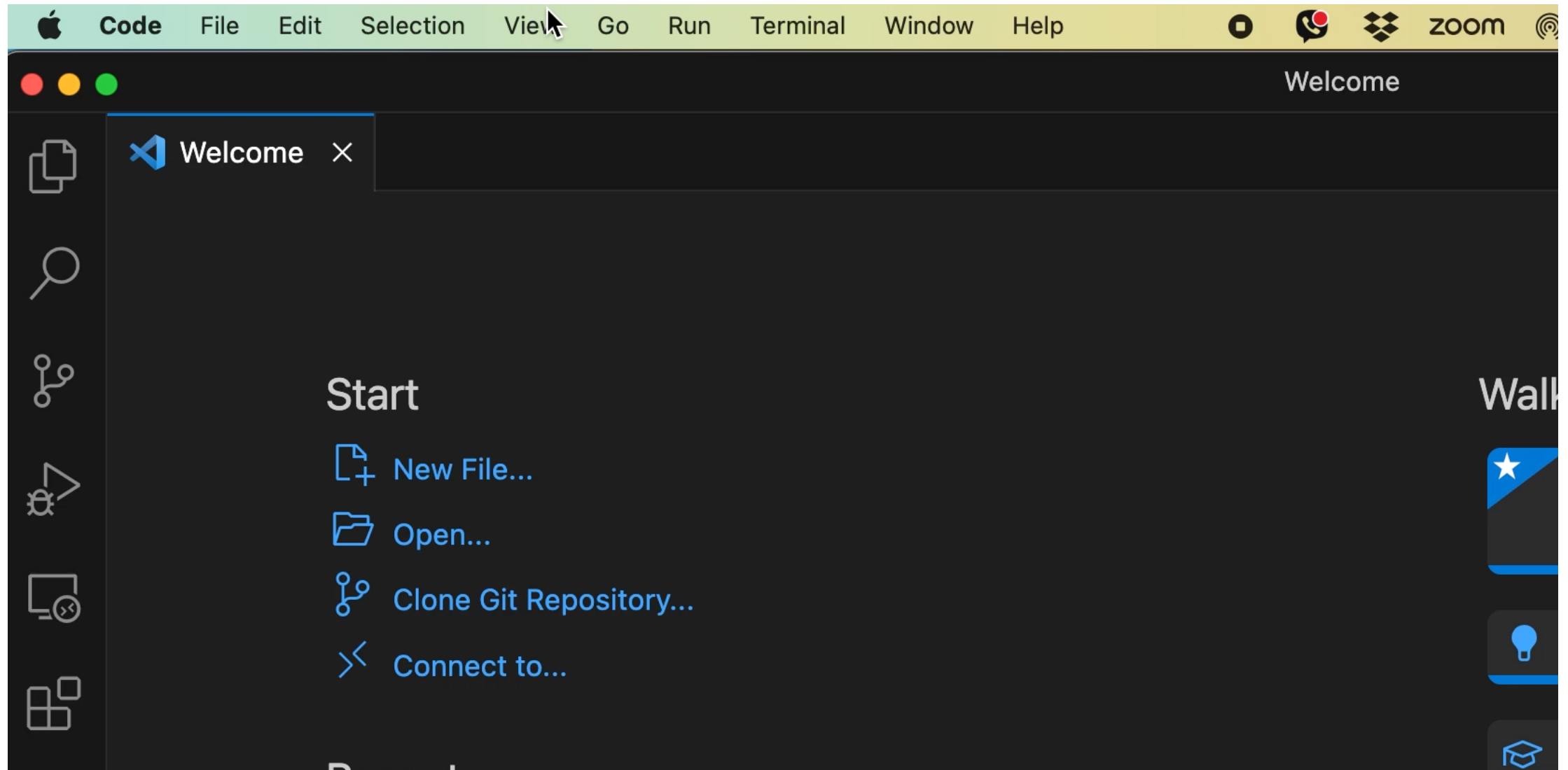
.deb	x64	Arm32	Arm64
.rpm	x64	Arm32	Arm64
.tar.gz	x64	Arm32	Arm64
Snap	Snap Store		
CLI	x64	Arm32	Arm64



↓ Mac
macOS 10.11+

.zip	Intel chip	Apple silicon	Universal
CLI	Intel chip	Apple silicon	

Connect VSCode to Server



(Server) Long running model training

Login to server, then start a `tmux` session:

```
tmux
```

`Ctl-B` then `D`: to logout from `tmux` session

To return to session 0:

```
tmux a -t 0
```

Can add multiple sessions with `tmux`

Reference

<https://code.visualstudio.com/>

<https://www.anaconda.com/>

<https://www.python.org/>

Exercise

- Activate VSCode on your PC
- Connect VSCode to your GPU server using passwordless `ssh`
- Clone the github repo for this course on your GPU server and open it in your PC's VSCode:

```
cd <workspace>
```

```
git clone https://github.com/roatienza/Deep-Learning-Experiments
```

```
cd Deep-Learning-Experiments
```

End