Deep Learning Toolkit

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Outline

Environment, Code Editor

Colab, `ssh`, `tmux`

Python

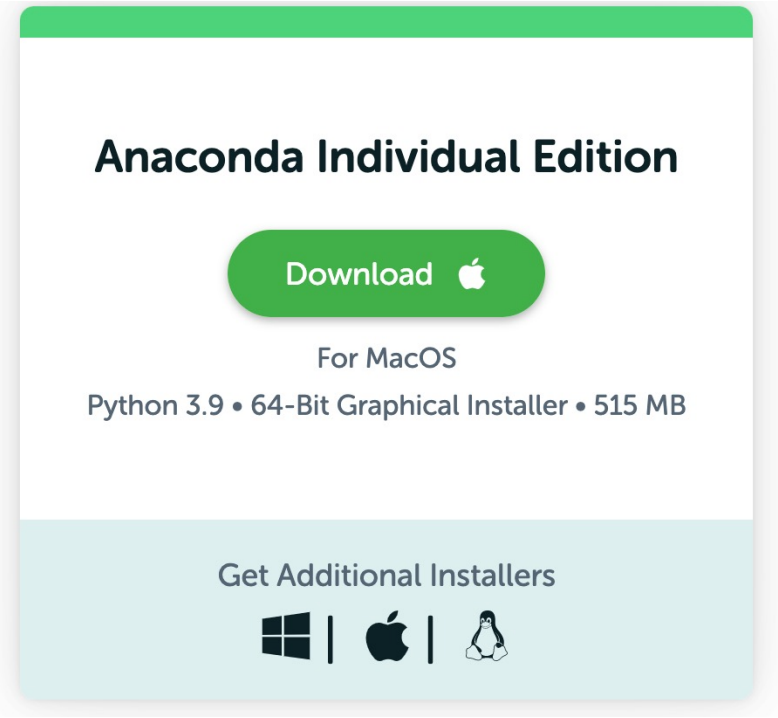
Numpy

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
```

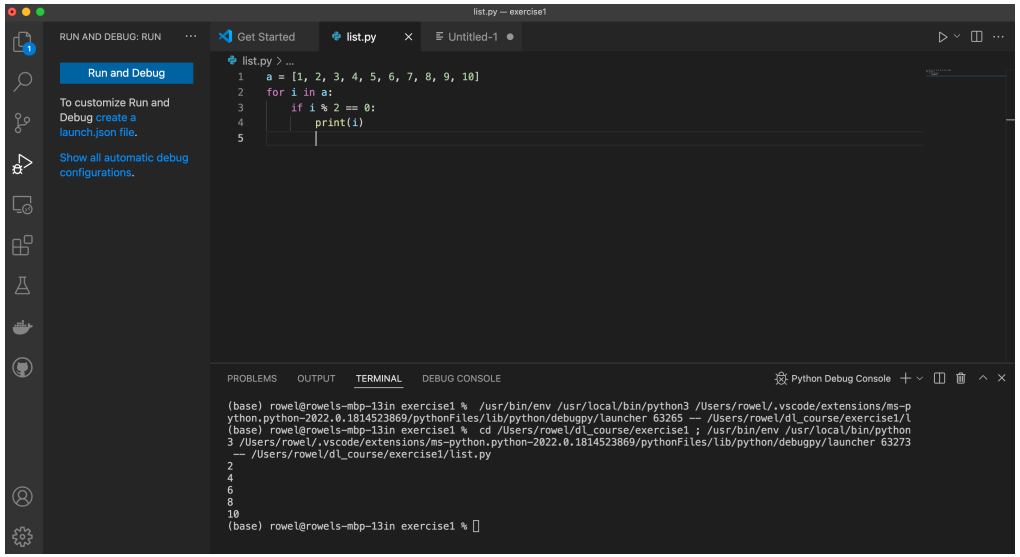
Anaconda – Machine Learning Toolkit

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>
```

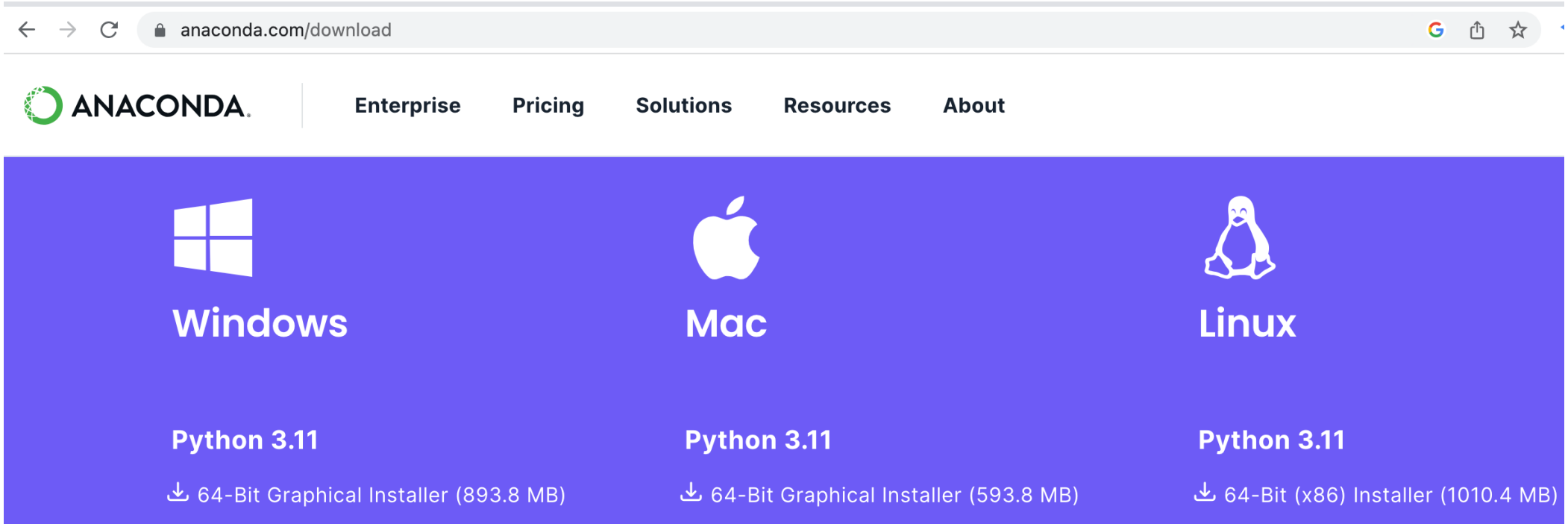
May need to change permission server side:

```
chmod 700 ~/.ssh
chmod 600 ~/.ssh/authorized_keys
```

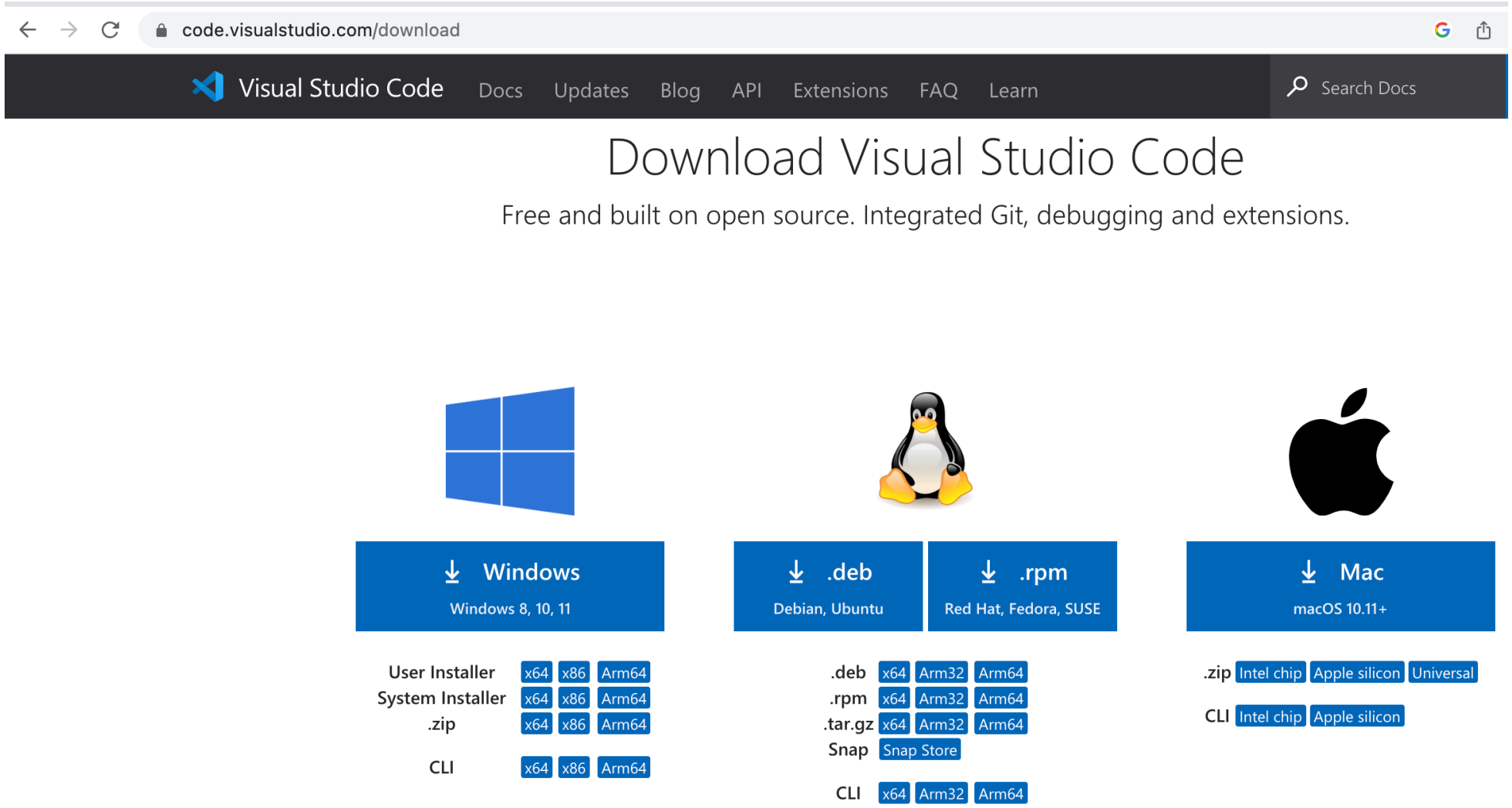
Exercises

- (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

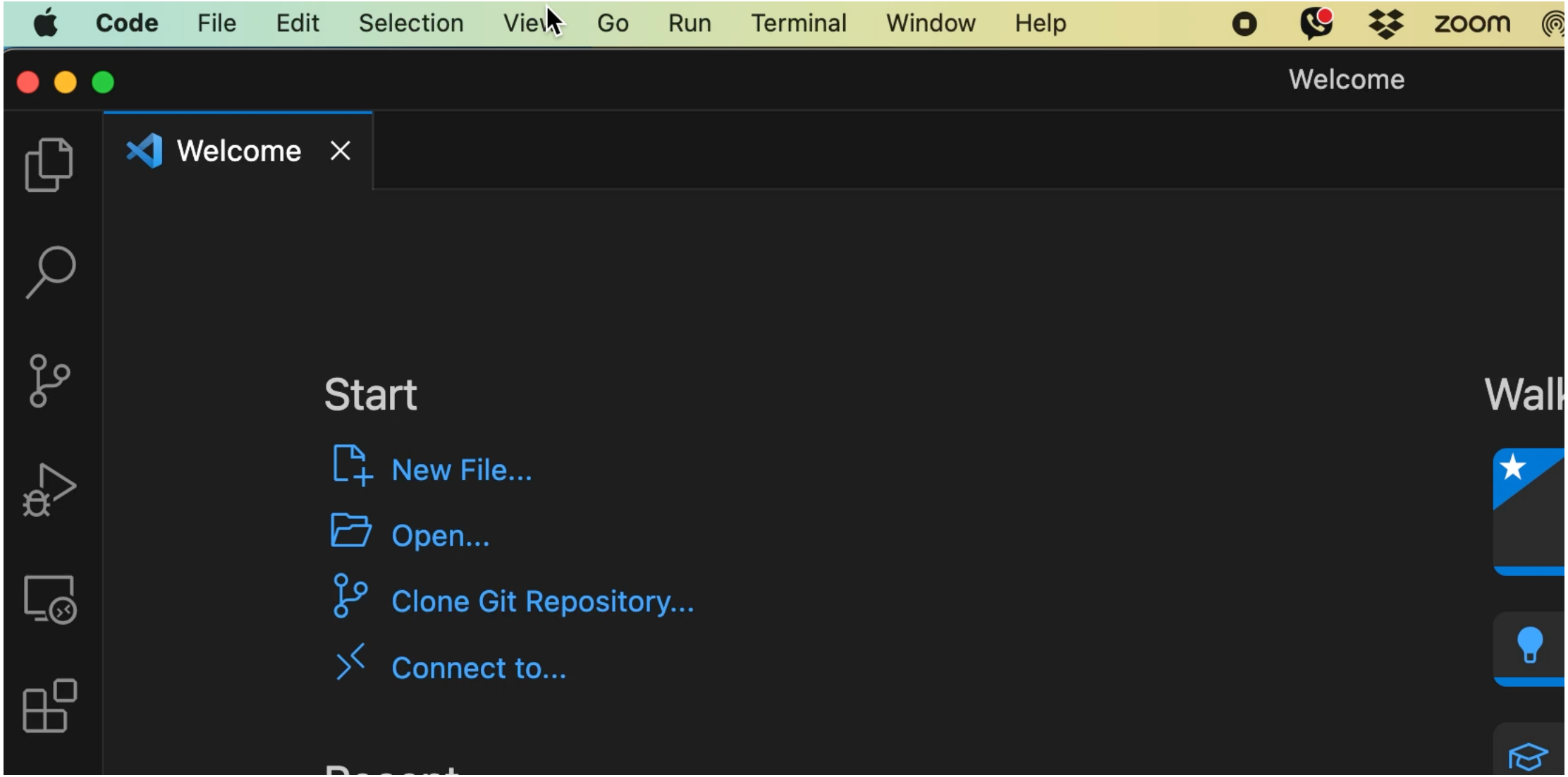
Download and install anaconda



Download and install Visual Studio Code



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