Jupyter (ipython notebook)

`Jupyter`, formely `ipython notebook`, is a web application that manages the creation and editing of a notebook that contains python code and rich text markup. These notebooks enables the communication of executable notebooks that perform calculations and document the calculations. Initially only `python` was supported, but the `Jupyter` project supports `R`, `Julian`, and many other programming languages.

Installation and documentation for `jupyter` is found at jupyter.org.

In COMP2500, `Jupyter` will be used to provide examples. `Jupyter` notebooks will also be used to provide assignments description and the assignment should be submitted using `Jupyter` notebooks.

Jupyter in Labnet

To start run, `source /opt/2500/bin/activate`.

The environment can be reset with `deactivate`.

Installing Jupyter with conda

Jupyter can be installed with `conda` by the commands:

```
% conda update conda # not really necessary
% conda install jupyter
```

Installing Jupyter with pip3

On any linux distribution with `pip3` installed, enter the following commands:

```
% pip3 install --user --upgrade pip
% pip3 install --user jupyter
% pip3 install --user --upgrade matplotlib
```

Installing Jupyter with pip3 in a Virtual Environment

On any ubuntu distribution with venv module installed, enter the following commands:

```
% python3 -m venv 2500env
% . 2500env/bin/activate
% pip3 install --upgrade pip
% pip3 install wheel
% pip3 install jupyter
% pip3 install --upgrade matplotlib
```

Jupyter (ipython notebook)

Once installed, `jupyter notebook` should be first setup with:

```
% jupyter notebook --generate-config
```

```
% jupyter notebook password
Enter password:
Verify password:
```

Complete documentation for the `notebook` sub-command is shown with:

```
% jupyter notebook --help
```

jupyter nbconvert

The `jupyter notebook` format is based on JSON, more human readable formats can be created with the `nbconvert` sub-command. Some examples:

```
# create a HTML document from the notebook
# this document can be included in another HTML file
% jupyter nbconvert --to html --template basic example.ipynb
# create a full HTML document
% jupyter nbconvert --to html --template full example.ipynb
# a pdf document is created with
% jupyter nbconvert --to pdf example.ipynb
# require an xelatex installation
```

Help on all the options is produced with:

```
% jupyter nbconvert --help
```

A python script can be created with:

```
% jupyter nbconvert --to python example.ipynb
```

Calculation/Plotting Notebooks

Jupyter is started with:

```
% jupyter notebook
```

A web browser will open a tab/page. Login using password set from above. Use the **new** button to create a new python notebook.

A sample of a notebook converted to html that performs some calculations is examples/calc.html. The source is examples/calc.ipynb.

A example of a notebook that plots sine waves is examples/plot_example.html . The source is examples/plot_example.ipynb.