

MY470 Computer Programming

Anaconda, Jupyter, and GitHub

Week 1 Lab, MT 2017

IDEs

- Integrated development environment
- A software application that facilitates computer programming and software development
 - Text editor with syntax highlighting, auto completion and smart indentation
 - Shell with syntax highlighting
 - Popular libraries
 - (Debugger)

Anaconda

- Freemium open-source cross-platform distribution of the Python and R programming languages
 - *conda* – package management system
 - *git, pandas, scikit-learn, nltk*, etc. – packages for data science
 - Anaconda Navigator – graphical user interface
 - Jupyter Notebook – web app for creating and sharing code

Installing Anaconda

- Go to <https://www.continuum.io/downloads>
(<https://www.continuum.io/downloads>)
- Select your OS
- **Download Python 3.6 version**
- Follow instructions

Jupyter

- Open-source web application for creating and sharing documents with:
 - Live code
 - Equations
 - Visualizations
 - Explanatory text
- Supports more than 40 programming languages, including Python and R
- Notebook files have *.ipynb* extension and can be easily shared, e.g. on GitHub

Launching Jupyter

- Launch Anaconda Navigator and click on Jupyter Notebook icon

or

- Open Terminal/cmd and type:

```
> jupyter notebook
```

Using Jupyter

- New → Notebook: Python 3
- Insert → Insert Cell Below
- Cell → Cell Type →
 - Markdown
 - MY 473/573 Managing and Visualizing Data
 - Cheatsheets, for example: <https://github.com/adam-p/markdown-here/wiki/Markdown-Cheatsheet>
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 - Code

The `print` Function in Python

```
In [1]: print('The')  
        print('The', 'winning', 'number', 'is', 7, '.')  
        print('The winning number is ' + str(7) + '.')
```

The

The winning number is 7 .

The winning number is 7.

Using Jupyter for Slides

- Install RISE

```
> conda install -c damianavila82 rise
```

- Restart Jupyter
- View → Cell Toolbar → Slideshow to determine slideshow flow
- Click on Enter/Exit Live Reveal Slideshow

Shutting Down Jupyter

- Do not forget to Command+S / CTRL+S !
- Jupyter is a server and closing the browser window will not shut it down
- To shut down:
 - File → Close and Halt
 - Notebook Dashboard → Select notebook → Shutdown
 - Terminal → CTRL+C → y

Alternative Python Workflow

- Use another IDE

or

- Use text editor (e.g. Atom) to create .py files
- Run files in Terminal/cmd

```
> cd Path/to/file  
> python filename.py
```

GitHub

- Code hosting platform for version control and collaboration
- Based on Git
 - Version control system for tracking changes in computer files and coordinating work on those files among multiple people
 - Created in 2005 by Linus Torvalds
- Largest host of source code in the world

GitHub Lingo

- Repository – a space for a project/assignment
- Clone – a copy of the repository that lives on your computer
- Branch – a paralel version of the repository
- Commit – save changes with a short description
- Pull request – ask changes to be merged
- Merge – incorporate changes (then delete branch)

Getting Started with GitHub

- Create personal account on GitHub
- Go to <https://education.github.com/> (<https://education.github.com/>) and get the Student Developer Pack for some cool freebies
- Syllabus and lectures can be found at <http://github.com/lse-my470/lectures> (<http://github.com/lse-my470/lectures>)
 - View them online or even better, download/clone them and use Jupyter to annotate them
- E-mails with links to assignments will be sent in due course
 - Answers to assignments will be available at <https://github.com/lse-my470/answers-to-assignments> (<https://github.com/lse-my470/answers-to-assignments>)

Submitting Assignments on GitHub (Web Version)

1. Accept invitation to assignment. This will automatically create a new repository with your username.
2. **Clone/download** the repository (GitHub web interface)
3. Make changes in downloaded files and/or create new files (Jupyter)
4. Upload and **commit** new and/or changed files **directly to the master branch**. Do this before the deadline (GitHub web interface)
5. We will automatically download all assignment repositories at 12:00 noon every Friday
6. We will comment and mark your assignment directly in the main file you submitted. Wait for a new commit from us to view our feedback.

Resources

- [Python documentation \(http://docs.python.org/3/\)](http://docs.python.org/3/)
- [Python Wikibook \(https://en.wikibooks.org/wiki/Python_Programming\)](https://en.wikibooks.org/wiki/Python_Programming)
- Google
- [Stack Overflow \(https://stackoverflow.com/\)](https://stackoverflow.com/)

Give credit when copying code or solutions!

Week 1 Assignment

- Write a simple program in a Jupyter notebook and submit it on GitHub
- E-mail with link to assignment will be sent by end of today