

W200 - Intro to Python

with an orientation towards Data Science

Week 1: Class Mechanics ... Reviewing the tools, getting to know your colleagues.

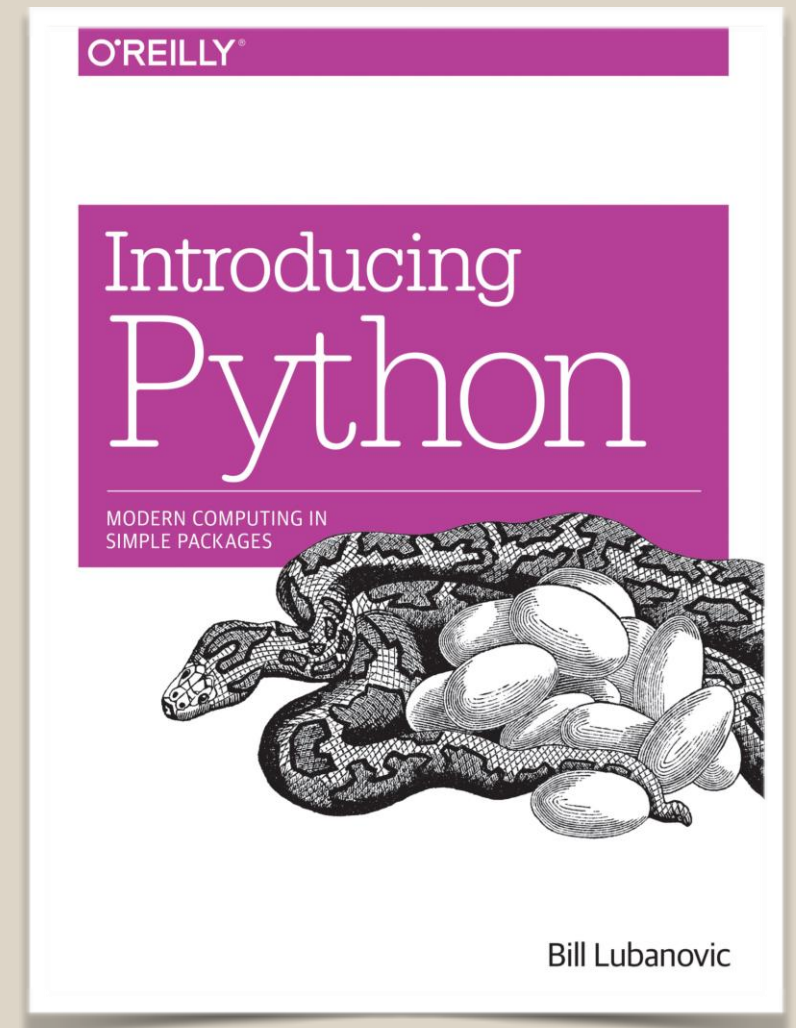
Welcome! Today's agenda:

Overview: Class Mechanics

- Introductions
- Syllabus & Schedule
 - *Vast variety of skill sets, experiences, goals so some assignments may be easy, others may be difficult. We want to ensure students of all levels establish a strong foundation for the advanced courses. Please ask questions! If you can help your fellow students, please do because your real-world experience complements our course.*
- GitHub Examples
- Shell script example
- Summary

Class Mechanics

- Complete the asynchronous parts *before* our video chats
- Readings: from study.net
- Assignments are posted by Rob Foster and Michael Berger, the TAs, after the video chat session.
- Most materials are posted to GitHub (<https://github.com>) in the UCB-INFO-PYTHON/
- You'll *pull* homework down from that site and *push* your completed work up.



Goodrich, M. T. 2013. Data Structures and Algorithms in Python. Chapter 3: Algorithm Analysis

Welcome | Grading

Homework (30%)

Project 1 object oriented, individual (20%)

Project 2 data analysis, group (20%)

Participation (10%)

Midterm (10%)

Final (10%)

Class Mechanics

- What you'll need:

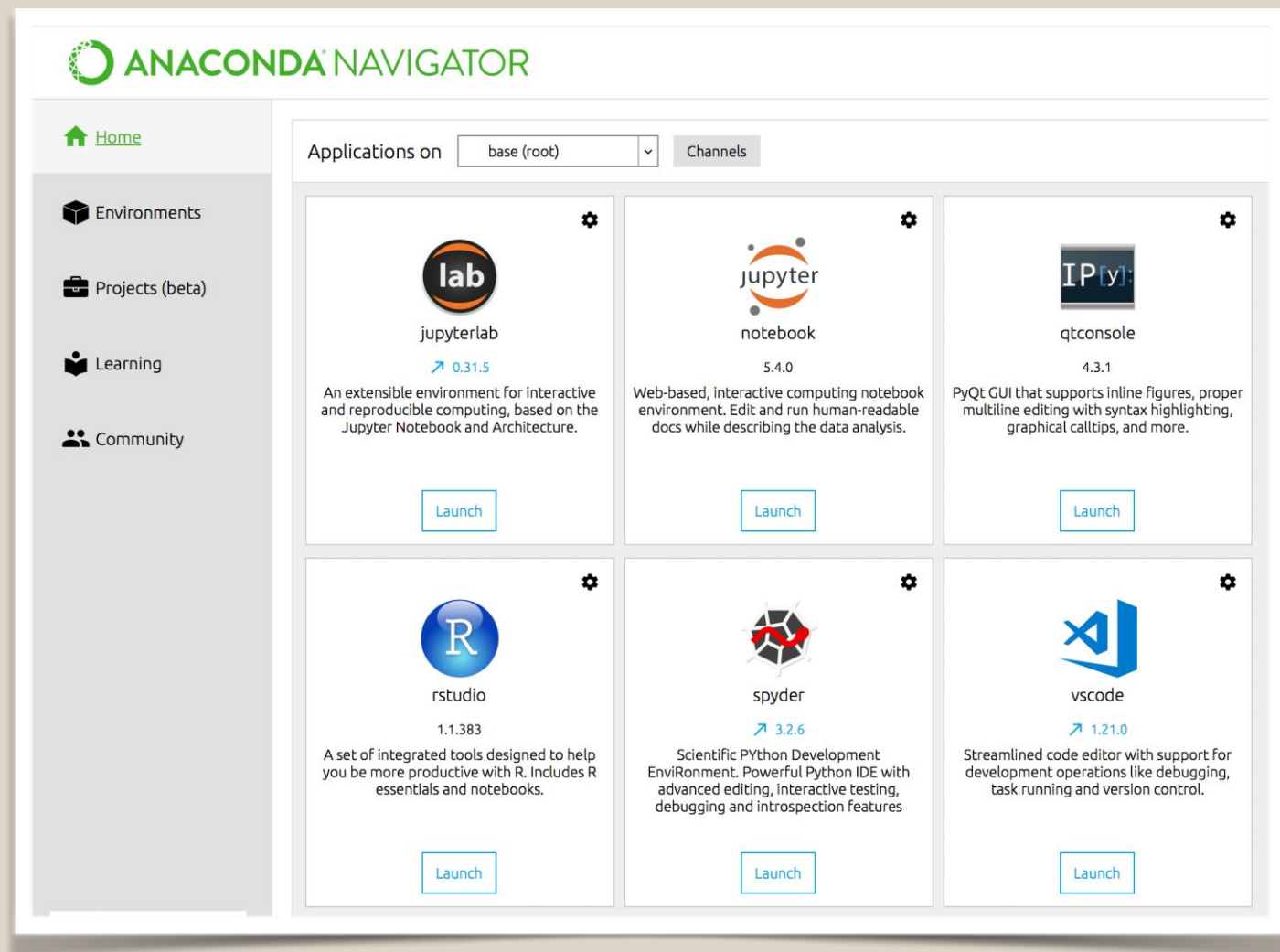
- Python3

- Anaconda

- Jupiter Notebooks

- Terminal

- Text Editor (try to avoid PyCharm, Spyder for the moment)



Class Mechanics

- During video sessions, we'll review main points, answer questions ... and then have “breakout rooms”
- Breakout rooms are video chats of smaller groups of students to work on a problem - see one, do one, teach one.
- Today we'll demonstrate some of Zoom's features
 - *Video, chat options, breakout rooms, polls*

Syllabus & Schedule

Python for Data Science: Fall 2018						All due dates are tentative and may be changed by instructors. Homework due dates are 11:59pm PST the night before live session.					
Mon	Tues	Weds	Thurs	Async Unit	Sync Week	Async to Review (Prior to Class)	Projects (20% each)	Exams (10% each)	HW Assigned (30% total)	HW Due	Notes
Sep 3	Sep 4	Sep 5	Sep 6	1	1	Introduction to Programming, the Command Line, and Source Control			unit 1		A make-up class will be scheduled for Monday class.*
Sep 6											[This is the make-up for Monday 4 pm session.]
Sep 10	Sep 11	Sep 12	Sep 13	2	2	Starting Out with Python			unit 2	unit 1	
Sep 17	Sep 18	Sep 19	Sep 20	3	3	Sequence Types and Dictionaries			unit 3	unit 2	9/17/2018 - Last day to add or drop a class
Sep 24	Sep 25	Sep 26	Sep 27	4	4	More About Control and Algorithms			unit 4	unit 3	
Oct 1	Oct 2	Oct 3	Oct 4	5	5	Functions			unit 5	unit 4	
Oct 8	Oct 9	Oct 10	Oct 11	6	6	Complexity	Project 1 Assigned		scrabble	unit 5	
Oct 15	Oct 16	Oct 17	Oct 18	7	7	Classes			unit 7	scrabble	
Oct 22	Oct 23	Oct 24	Oct 25	8	8	Object-Oriented Programming	Project 1 Final Proposal Due	Exam 1 Start	x	unit 7	
Oct 29	Oct 30	Oct 31	Nov 1	9	9	Working With Text and Binary Data		Exam 1 Due	x		
Nov 5 - 9 Fall Break & Immersion											
Nov 12	Nov 13	Nov 14	Nov 15	10	10	NumPy	Project 1 Presentations		unit 9 / HW10		A make-up class will be scheduled for Monday Class
Nov 19	Nov 20	Nov 21	Nov 22	11	11	Data Analysis With Pandas	Project 2 Assigned		unit 10 / HW11	unit 9 / HW10	A make-up class will be scheduled for the Thursday Classes
Nov 26	Nov 27	Nov 28	Nov 29	12	12	Plotting and Visualization	Project 2 Proposal Due		unit 11 / HW12	unit 10 / HW11	
Dec 3	Dec 4	Dec 5	Dec 6	13	13	Pandas Aggregation and Group Operations		Exam 2 Start	x	unit 11 / HW12	
Dec 10	Dec 11	Dec 12	Dec 13	14	14	Testing	Project 2 Presentations!	Exam 2 Due	x		Last Day of Class. bring beer Congratulations!
Last Day of Instruction - December 14											


Live Schedule: https://docs.google.com/spreadsheets/d/1sVV7-4OHZ-EDNqkMJ55OPUfz_QLJ4LZNuZl-cRaxgV0/edit?usp=sharing

Syllabus: https://docs.google.com/document/d/1_ILP7iM11IWNdtZL80-axCznLZUGz4oaVxB4FuryCH0/edit?usp=sharing




Introductions


- Give a brief intro about yourself -
 - where you live,
 - what you do,
 - why you'd like to use Data Science.
- Why MIDS?





[Pull requests](#) [Issues](#) [Marketplace](#) [Explore](#)


  




Learn Git and GitHub without any code!

Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.

[Read the guide](#) [Start a project](#)


 seabix

[Browse activity](#) [Discover repositories](#)

 You've been added to the **MIDS-INFO-W18** organization!

Here are some quick tips for a first-time organization member.


- Use the switch context button in the upper left corner of this page to switch between your personal context (**seabix**) and organizations you are a member of.
- After you switch contexts you'll see an organization-focused dashboard that lists out organization repositories and activities.

 defunkt

Discover interesting projects and people to populate your personal news feed.

Your news feed helps you keep up with recent activity on repositories you [watch](#) and people you [follow](#).


[Explore GitHub](#)

 Custom domains on GitHub Pages gain support for HTTPS

Custom domains on GitHub Pages gain support for HTTPS.


[View new broadcasts](#)


Repositories you contribute to **1**


 [MIDS-INFO-W18/BenoitRE](#) 0 ★

Your repositories **3** [New repository](#)


[All](#) [Public](#) [Private](#) [Sources](#) [Forks](#)


 [MIDS-INFO-W18/BenoitRE](#)

 [hello-world](#)

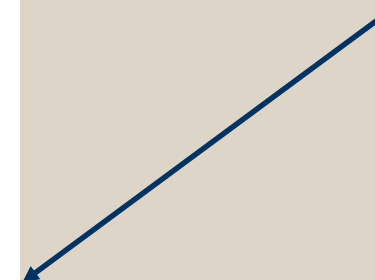
 [ucb-datasci](#)

Your teams **2**

 [MIDS-INFO-W18/instructors](#)

 [MIDS-INFO-W18/mids-w200-2018-spring](#)

Where your work
(your REPO) will
appear



GitHub ...

- File sharing and version-control site.
- In a nutshell ...
<https://github.com>

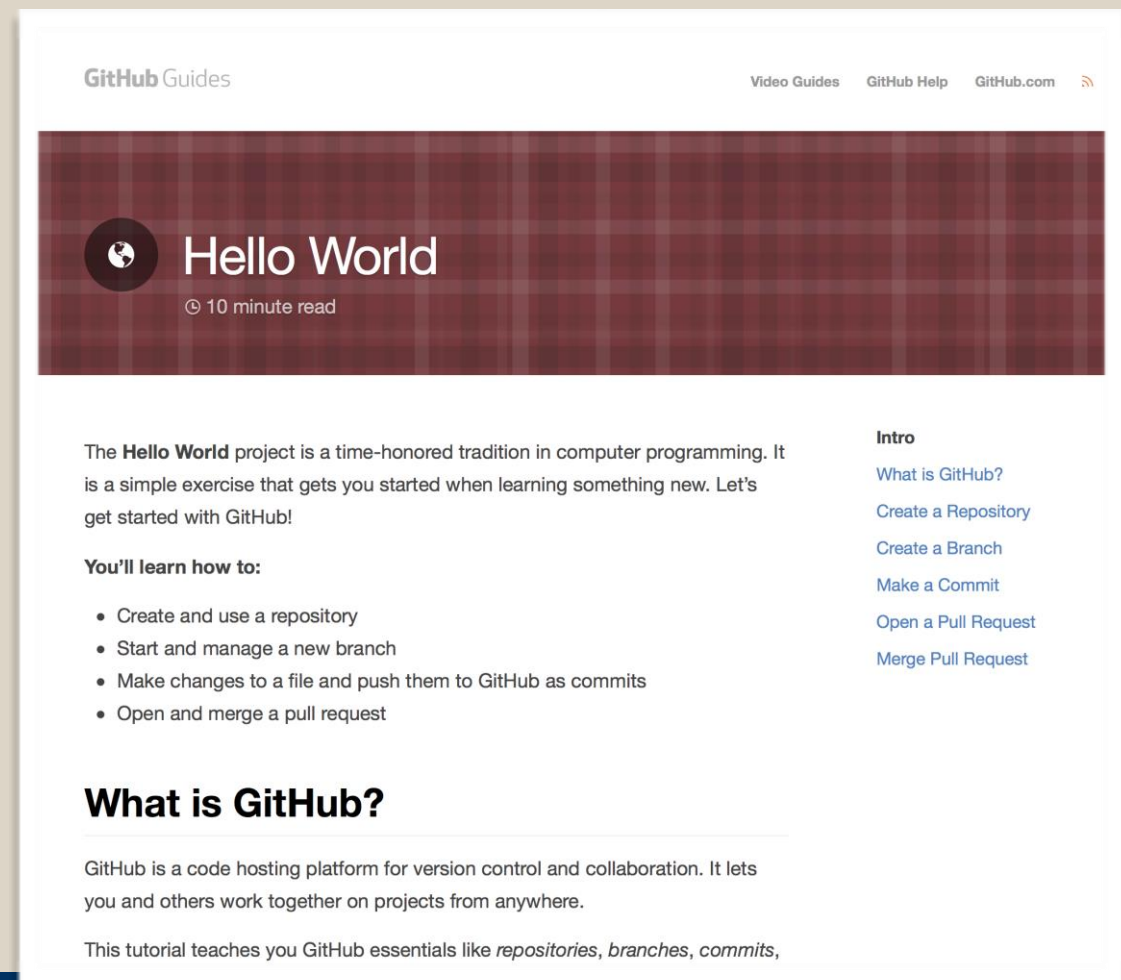
Learn Git and GitHub without any code!

Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.

Read the guide

Start a project

Please complete the 10-minute
“Read the guide” from GitHub



The screenshot shows the GitHub Guides page for the 'Hello World' tutorial. The page has a dark red header with a globe icon and the title 'Hello World'. Below the header, it says '© 10 minute read'. The main content area is white and contains the following sections:

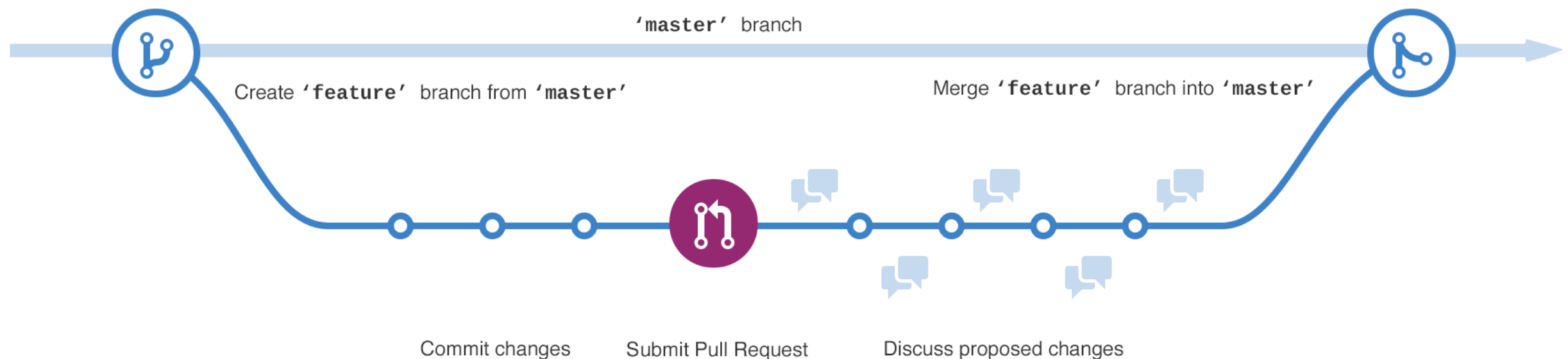
- Intro**
 - [What is GitHub?](#)
 - [Create a Repository](#)
 - [Create a Branch](#)
 - [Make a Commit](#)
 - [Open a Pull Request](#)
 - [Merge Pull Request](#)
- You'll learn how to:**
 - Create and use a repository
 - Start and manage a new branch
 - Make changes to a file and push them to GitHub as commits
 - Open and merge a pull request
- What is GitHub?**

GitHub is a code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere.

This tutorial teaches you GitHub essentials like *repositories*, *branches*, *commits*,

How GitHub works

When you create a repository, there's a "master" of your files, e.g., TomJonesREPO/SUBMISSIONS/week1.py



<https://guides.github.com/activities/hello-world/>

Create and edit your file (e.g., week1.py) on your local computer - e.g., <c:///w200/TomJonesREPO/SUBMISSIONS/week1.py>

When you're ready to push your file (upstream) it to GitHub you'll issue a command to add your file to git and then upload your file.

How GitHub works

Students – work on the master locally ... and then push to the master on the server.

[If you're already experienced with GitHub, note that we won't be using branches in this class.]

Before merging, we add a message (e.g., "File Updated by Tom's Group").

- There are several ways to communicate with GitHub - using a terminal window and command line, a Desktop Application, or configure your text editor (such as Atom) to integrate pull/push, commits For this course and others in the program, we rely on the command line.

Example of command line

Create a “Hello, World!” page

Get started in an empty working directory (for example, work, if you downloaded the file from the previous step) and create an empty directory named “hello”, then create a `hello.html` file in it with the following contents.

RUN:

```
mkdir hello
cd hello
touch hello.html
```

FILE: *HELLO.HTML*

```
Hello, World!
```

Add the page to the repository

Now let's add the “Hello, World” page to the repository.

RUN:

```
git add hello.html
git commit -m "First Commit"
```

You will see ...

RESULT:

```
$ git add hello.html
$ git commit -m "First Commit"
[master (root-commit) 911e8c9] First Commit
1 files changed, 1 insertions(+), 0 deletions(-)
create mode 100644 hello.html
```

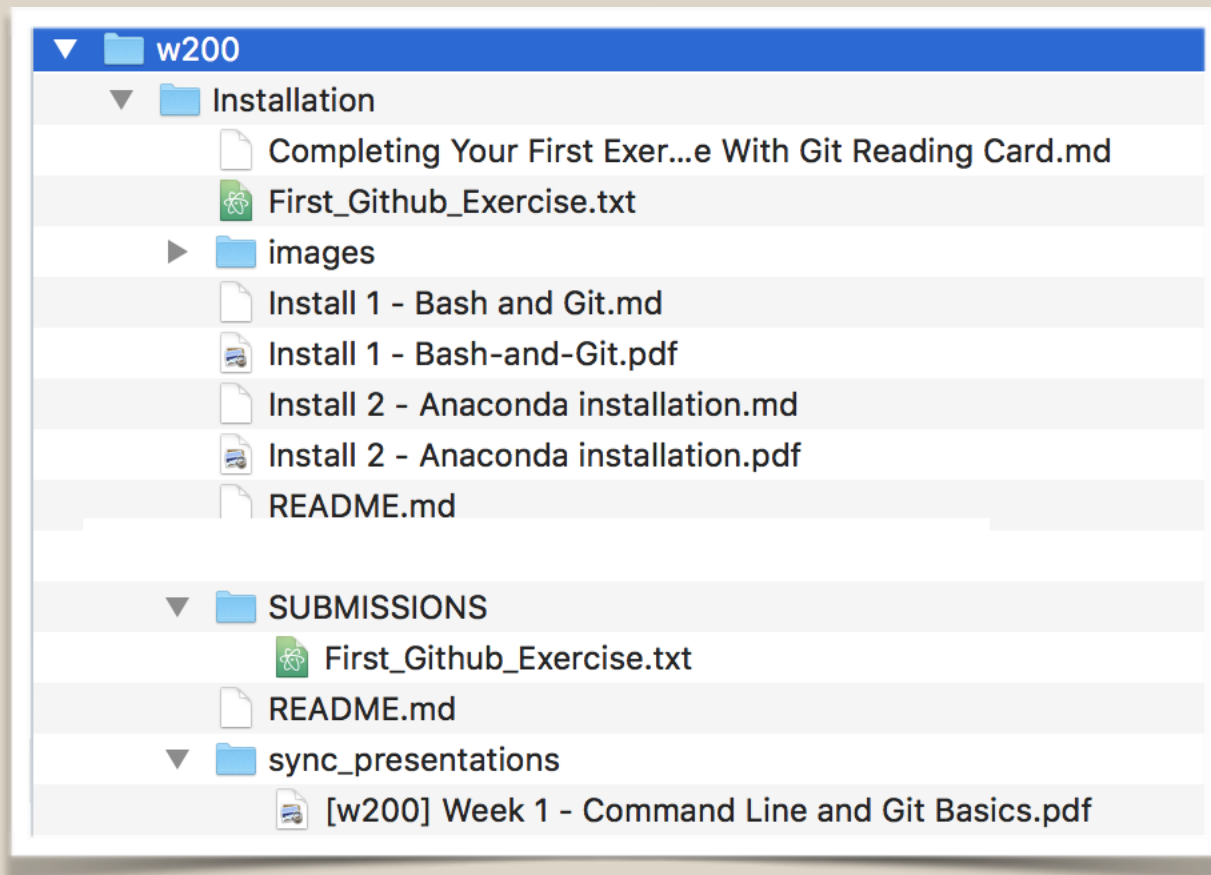
GitHub for class - what to expect

- You'll make a repository (firstnameLastnameREPO)
- Enable GitHub and your computer to communicate to share files (.git)
- Use GitHub to download the exercise and push your completed exercise back up in your SUBMISSIONS folder.
- GitHub records the time of the upload and the message you attach to the upload ...

```
/Users/tom/w200/
```

```
/Users/tom/w200/firstnameLastnameREPO/
```

```
/Users/tom/w200/firstnameLastnameREPO/SUBMISSIONS/
```

Example of what will be
downloaded to your
computer

In the assignment, you'll download the
`assignments_upstream_fall18` directory.


And you'll create your own `SUBMISSIONS` folder on your hard drive.

Note – you will see this folder titled “firstnameLastnameREPO” locally,
unlike above

*Here's the
assignment to
guide you.*

<https://github.com/MIDS-INFO-W18/Installation/blob/master/Completing%20Your%20First%20Exercise%20With%20Git%20Reading%20Card.md>

This organization Search Pull requests Issues Marketp



UCB-INFO-PYTHON

Repositories 478 **People** 418 **Teams** 29 **Projects** 0

Search repositories...

ThomDreP... Private

Syllabus

UCB-INFO-PYTHON / Course-Syllabus

<> Code ! Issues 0 🔗 Pull requests 0

Your fun stuff...

github-playground Private

Python ★ 1 🍴 16 Updated 14 hours ago

<https://github.com/UCB-INFO-PYTHON/github-playground>

BenoitREPO Private

test

Updated a day ago

Your "Repo"

UCB-INFO-PYTHON / assignments_upstream_fall18

Updated 11 hours ago

The assignments upload ...

<> Code

! Issues 0

🔗 Pull requests 0

📁 Projects 0

📖 Wi

A place to share resources for the fall W200 cohort

🔄 1 commit

🔗 1 branch

Branch: master ▼

New pull request



gunnarklee Created basic readme



README.md

Created basic readme



README.md

assignments_upstream_fall18

A place to share resources for the fall W200 cohort

Shell scripts

- If you've never made a script ... a brief demo (Mac/Linux):

1

```
#!/bin/sh
# a comment
echo Bonjour # a comment in French
echo "欢迎"
```

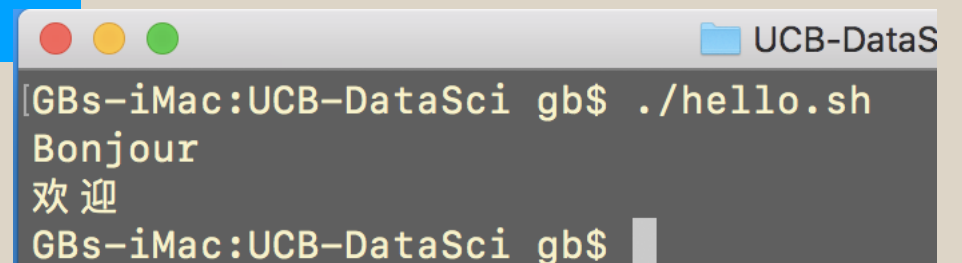
Text Editor

```
1  #!/bin/sh
2  # a comment
3  echo Bonjour # a comment in French
4  echo "欢迎"
```

2

```
$ chmod 755 hello.sh
$ ./hello.sh
```

Output



A terminal window titled "UCB-DataS" showing the execution of the script. The prompt is "GBs-iMac:UCB-DataSci gb\$". The command entered is "./hello.sh". The output is "Bonjour" followed by "欢迎" on the next line. The prompt returns to "GBs-iMac:UCB-DataSci gb\$".

```
GBs-iMac:UCB-DataSci gb$ ./hello.sh
Bonjour
欢迎
GBs-iMac:UCB-DataSci gb$
```

- Windows users will need to save as ".bat" and do not need to include #!/bin/sh. Some commands will be slightly different – Google is your friend to troubleshoot! Double click on the .bat file to run it.

Summary

- Part 1 – First 8 weeks - Data Analysis

Unit 1 | Introduction, Command Line, and Source Control

Unit 2 | Starting Out with Python

Unit 3 | Sequence Types and Dictionaries

Unit 4 | More about Control and Algorithms

Unit 5 | Functions

Unit 6 | Complexity

Unit 7 | Classes

Unit 8 | Object Oriented Programming

Summary

- Part 2 - Last 7 weeks - Data Analysis

Unit 9 | Working with text and binary files

Unit 10 | NumPy

Unit 11 | Data Analysis with Pandas

Unit 12 | Plotting & Visualization

Unit 13 | Pandas aggregations & groups

Unit 14 | Projects

Summary - Resources

Course Schedule

Homeworks & Assignments

- <https://github.com/UCB-INFO-PYTHON/Installation>
- https://github.com/UCB-INFO-PYTHON/assignments_upstream_fall18

Google Group List

- <https://groups.google.com/forum/#!forum/w200-python-2018-summer>

Slack Channels [for students]

- ucbischool.slack.com
- channel #w200-python
- *In your browser:*
 - <https://ucbischool.slack.com/messages/C5AL99BU6/>

Help? Use Slack to ask each other questions and to provide answers (but please don't share code); search the net (StackOverflow is pretty good); Email the instruction team - send your code for a check, too. Office hours are available, too.

Enjoy the course

- Thanks for attending today. Best wishes!
- If you get stuck after an hour or so, please reach out.

