

EECS16A Lab

Welcome!



Today's Agenda

- ✕ Quick Poll
- ✕ About Us
- ✕ About Lab: Policies & Overview
- ✕ Ipython Bootcamp



Survey Time!

About Us!

TA Name - Lab TA

- ✕ Year, major
- ✕ Fun
- ✕ Facts
- ✕ Interests

Pictures

- ✗ Go to your registered section.
- ✗ Work in **groups! (breakout rooms)**
- ✗ Arrive on time! Lab presentation at start of section
- ✗ Individual lab score is binary: complete / incomplete.
- ✗ **Free 15%** of your grade!
- ✗ Question and checkoff queue at lab.eecs16a.org
- ✗ Lab is for lab
- ✗ Help your peers!
- ✗ Buffer labs? What are those!?

Semester Outline



Imaging
Module



Touchscreen
Module

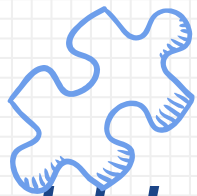


Acoustic
Positioning
Module



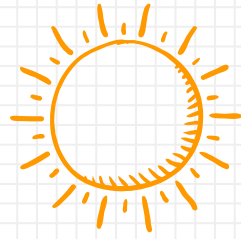
***“Lab is awesome! It inspired me
to start more personal projects.”***

-Fall '15 student



"I really enjoy lab because it's the physical manifestation of lecture. Learning about something is one thing, but actually building it is much more rewarding."

-A hands-on learner



***“Even though my lab is at 8am, I
always looks forward to going
because it's so much fun! It's like
breakfast...for your brain!”***

-Actual 16A student...not kidding

- ✗ A web-based interactive computational environment
 - ✗ Document containing an **ordered list** of input/output cells
 - ✗ Can contain code, text, mathematics, plots and rich media.
 - ✗ .ipynb filename
 - ✗ But what does this look like?

Jupyter Notebook

- ✗ **Ordered** list of input & output

Condit

```
In [ ]: # Example 1

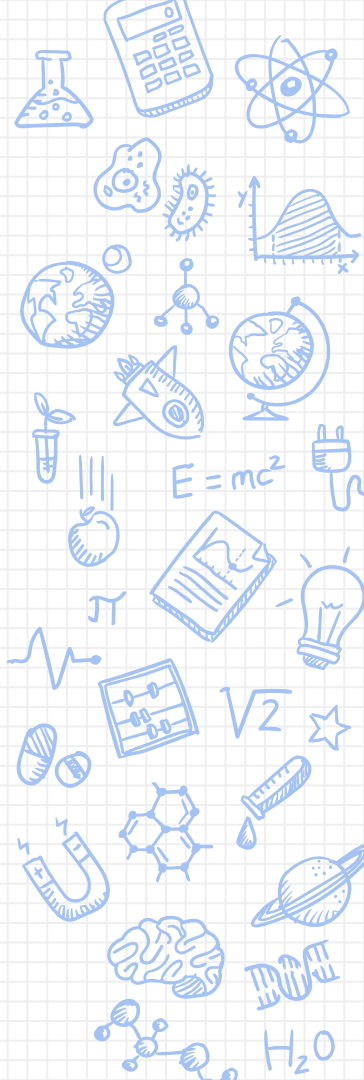
x = 16

if x > 10:
    print("x is greater than 10")
else:
    print("x is not greater than 10")
```

```
In [ ]: # Example

x = 16

if x > 10:
    print("x is greater than 10")
elif x == 10:
    print("x is equal to 10")
else:
    print("x is less than 10")
```



Jupyter Notebook

- ✗ **Ordered** list of **input & output**
- ✗ Control + Enter to run current block
- ✗ Shift + Enter to run and move forward

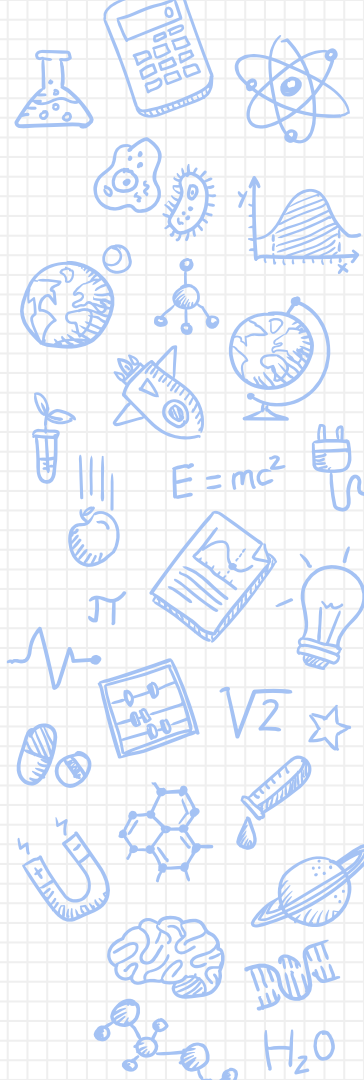
Conditional

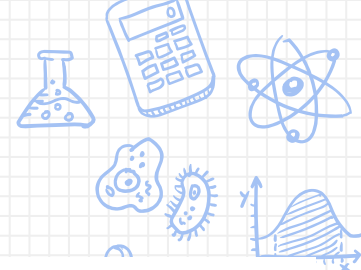
```
In [1]: # Example 1:
x = 16
if x > 20: #
    print('i
else:
    print('i
if condition
```

```
In [2]: # Example 2:
x = 16
if x > 20: #
    print('f
elif x > 10
    print('f
else:
    print('N
first if con
```

Loop-Contr

```
In [3]: # Example 3:
i = 0
while i < 5:
    print('i
    i += 1 #
i: 0
i: 1
i: 2
i: 3
i: 4
```





Jupyter Notebook

✗ **Ordered** list of
input & output

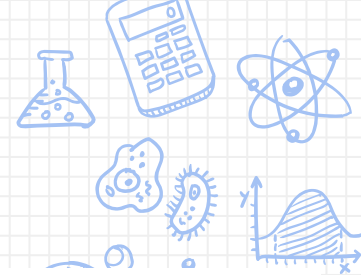
✗ *Order matters!*

```
In [ ]: a = True
```

```
In [ ]: if a:  
        print("hello")  
else:  
        print("goodbye")
```

```
In [ ]: a = False
```





Jupyter Notebook

- ✗ **Ordered** list of input & output
- ✗ *Order matters!*

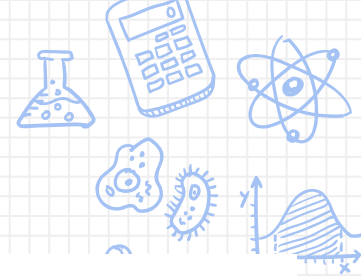
```
In [1]: a = True
```

```
In [2]: if a:  
        print("hello")  
else:  
        print("goodbye")
```

hello

```
In [3]: a = False
```





Jupyter Notebook

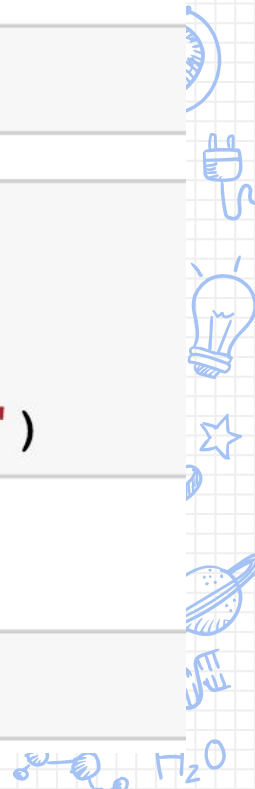
- ✗ **Ordered** list of input & output
- ✗ *Order matters!*

```
In [1]: a = True
```

```
In [4]: if a:  
        print("hello")  
else:  
        print("goodbye")
```

goodbye

```
In [3]: a = False
```



- # Loop-
- ```
In [*]: # Exam

i = 0
while
 i
```
- Unlike w

Unlike w

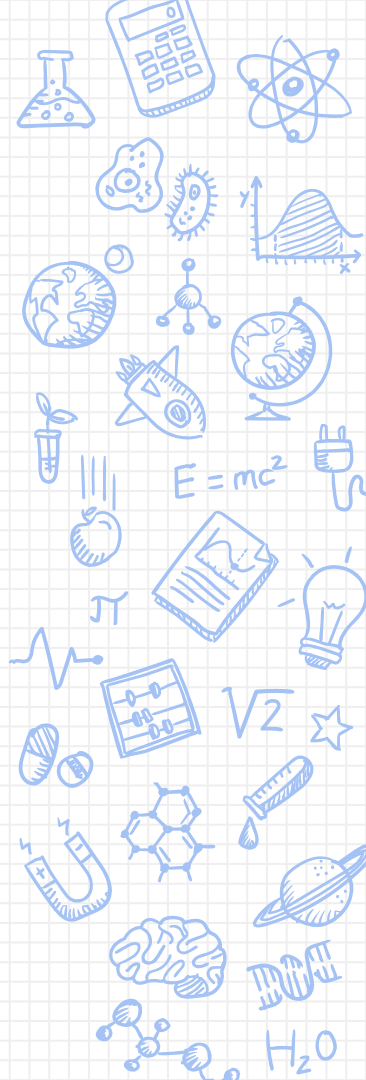
# Jupyter Notebook

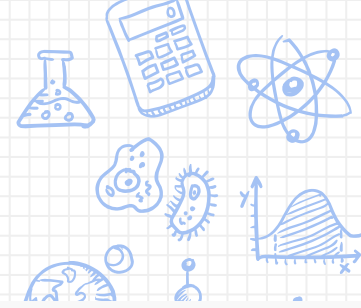
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- ✗ Text/Markdown
- ✗ Shift+Enter to run and format

## # Table of Contents

```
* \[Overview\](#overview)
* \[Python\](#python)
 * \[Control Flow\](#ctrl)
 * \[List Comprehension\](#lst)
* \[NumPy\](#numpy)
 * \[Arrays\](#arrays)
 * \[Slicing\](#slice)
 * \[Useful Functions\](#funcs)
* \[Miscellaneous Functions\](#misc)
* \[Questions\](#qs)
```






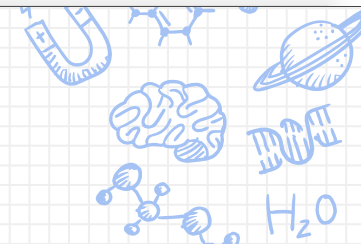
# Running Jupyter Online

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- ✗ You can run Jupyter notebooks online using DataHub, without needing to install anything locally
- ✗ The DataHub link for each lab is on the course website
- ✗ Login with your CalNet credentials (berkeley.edu email)

 jupyterhub

Sign in with Calnet ID



# Running Jupyter Online

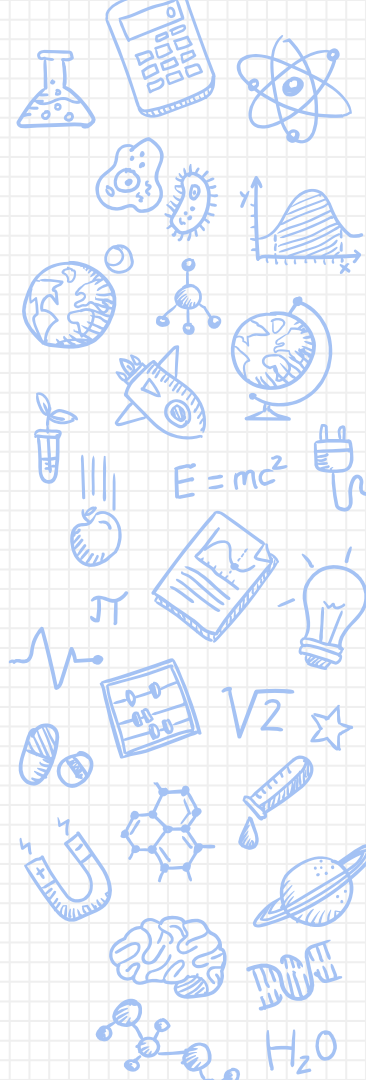
- ✗ Select the corresponding lab folder in the directory
- ✗ Click on the .ipynb file to launch the notebook in another tab
- ✗ P.S. Remember to hit logout to make sure your work is saved to the cloud

The top screenshot shows the JupyterHub file browser interface. It displays the directory structure for 'eeecs16a-lab' / 'eeecs16a\_python\_bootcamp'. The files listed are 'eeecs16a\_python\_bootcamp.ipynb' (41.1 kB, 12 minutes ago) and 'autograder.py' (3.61 kB, 15 minutes ago). The bottom screenshot shows the 'EECS 16A Python Bootcamp' notebook interface. It includes a 'Table of Contents' section with links to 'Install Test', 'Overview', 'Questions', 'Python', 'Control Flow', 'List Comprehension', 'NumPy', 'Arrays', 'Slicing', 'Useful Functions', 'Miscellaneous Functions', and 'Questions'. The 'Install Test' section is currently active, displaying the text: 'Well done! It looks like you have managed to install any necessary packages and open up an IPython notebook! Now we just want to make sure that everything installed correctly. Click on the block of code below (it's just some about what it does... we'll start counting that next tab) and press the Run button.'

# IPython Bootcamp

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- ✗ Review Python
  - ✗ List comprehension
  - ✗ Numpy functions: `np.linspace`, `np.eye`
  - ✗ Numpy objects: arrays, matrices
  - ✗ All the tools you will need for future labs



- ✗ No graded check-off for IPython Bootcamp
- ✗ Work on IPython Bootcamp
- ✗ Follow the directions linked at bottom of the lab
  - ✗ Fill out google form
  - ✗ Submit checkoff request on lab queue (one per group)
- ✗ In checkoff:
  - ✗ Introduce yourself: **Name, major, year, hobbies**
  - ✗ Open the IPython bootcamp
  - ✗ Demonstrate how to run a code block
  - ✗ Find this presentation on the website