MAKE SCHOOL

Intro to Quantitative Literacy

QL 1.1

Course Learning Outcomes

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By the end of this course, you should be able to...

1. Develop capacities of quantitative reasoning to interpret, analyze, apply, and explain data (information) presented in mathematical forms.
2. Recognize and evaluate assumptions in estimation, modeling, and data analysis.
3. Calculate mathematical problems and communicate quantitative evidence in support of an argument.
4. Apply quantitative reasoning skills using data analysis, probability, and statistics through examples related to current world debates, inquiries, and problems.
5. Gain and act with confidence to work through problems using quantitative reasoning.

Agenda

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- Learning Outcomes
- Intro to QL
- Install Jupyter Notebook
- Explore Jupyter Notebook
- Titanic Dataset

Learning Outcomes

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By the end of today, you should be able to...

1. Install Jupyter Notebook for use in this class
2. Familiarize yourself with Jupyter Notebook and how to use it
3. Manipulate some data using Python functions

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Intro to QL

Discovering Data

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Download and explore this Titanic dataset:

make.sc/ql-titanic

Variables description

1. **(5 min)** Review the dataset on your own and get familiar with it.
2. **(5 min)** In groups of 3, discuss what type of information we can obtain from this dataset.

Intro to QL

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When we work with data, we want to represent our findings in a **simple, informative way**

For example:

- What is the distribution of juniors in terms of age at Make School?
  - How many of you are between 18-25, how many between 25-30, how many older than 30?
- What is the average salary of a Software Engineer in the US?
- What range of IQ scores do 67% of people fall into?

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Install Jupyter Notebook

Install

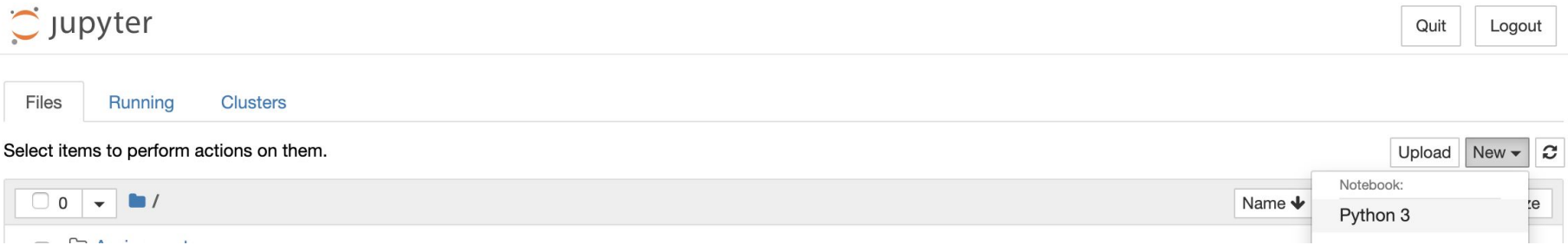
We will use Jupyter notebook as our class's primary tool. You can write/run Python in it, in addition to Markdown text. They can coexist together in this platform!

Installation Steps:

1. Go to: https://jupyter.org/install
2. Follow the instructions in **"Installing Jupyter Notebook with pip"**
3. Create a new QL folder, and then run the following commands to open Jupyter Lab in a browser (http://localhost:8890/tree):
   a. `mkdir ql`
   b. `cd ql`
   c. `jupyter notebook`

Setup

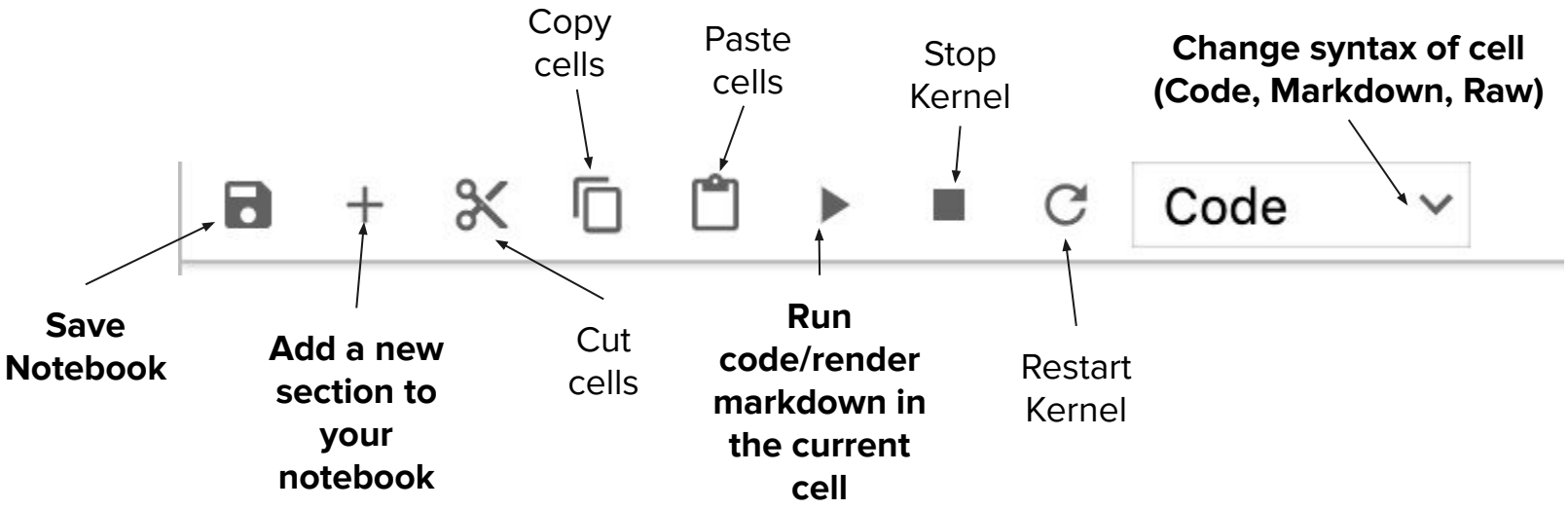
Once you navigate to http://localhost:8890/tree, you should see something that looks like the following:



Click on the **New** dropdown menu, and select **Python 3** for your notebook. This will bring you to a Notebook you can now work in!

Create a new Notebook + Toolbar

In your new Notebook, you'll first want to get familiar with your toolbar:



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Exploring Jupyter Notebook

Adding Python Code

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Write down a `sum` function in your new Jupyter Notebook and print the result for two given numbers:

```
def sum_f(a,b):
    return a + b
print(sum_f(2,3))
```

Once you write this, hit the button to run the code and see your output

Write Some Markdown

Create a new cell above your code cell that you just wrote. Write a description of your function in markdown text in this new cell

Add an image

Add an image into your notebook.

You need to link it just like you would in HTML:

```
<img src="svm_3.png"
width="300" height="300">
```

10 min break

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Use some Data!

Titanic - Average Passenger Age

 # Starter code:

```
import pandas as pd

# read in the CSV
df = pd.read_csv('path/to/titanic.csv')
# create a list of Age values,
# not including N/A values
ls_age = df['Age'].dropna()
```

What was the average age of passengers on the Titanic?

We'll use Pandas to help us read in the CSV, then we'll create a list of ages. From there, you will need to find the average value of those ages

You can assume the values in the list are all positive integers

Titanic - Gender Percentage

 # Starter code:

```
import pandas as pd

# read in the CSV
df = pd.read_csv('path/to/titanic.csv')
# create a list of gender values
ls_gender = df['Sex']
```

What percentage of passengers on the Titanic were female?

Similar to last time, we will provide you with a list of values. You now need to find the percentage based on the list of gender values

You can assume the values in the list are either the strings ‘male’ or ‘female’