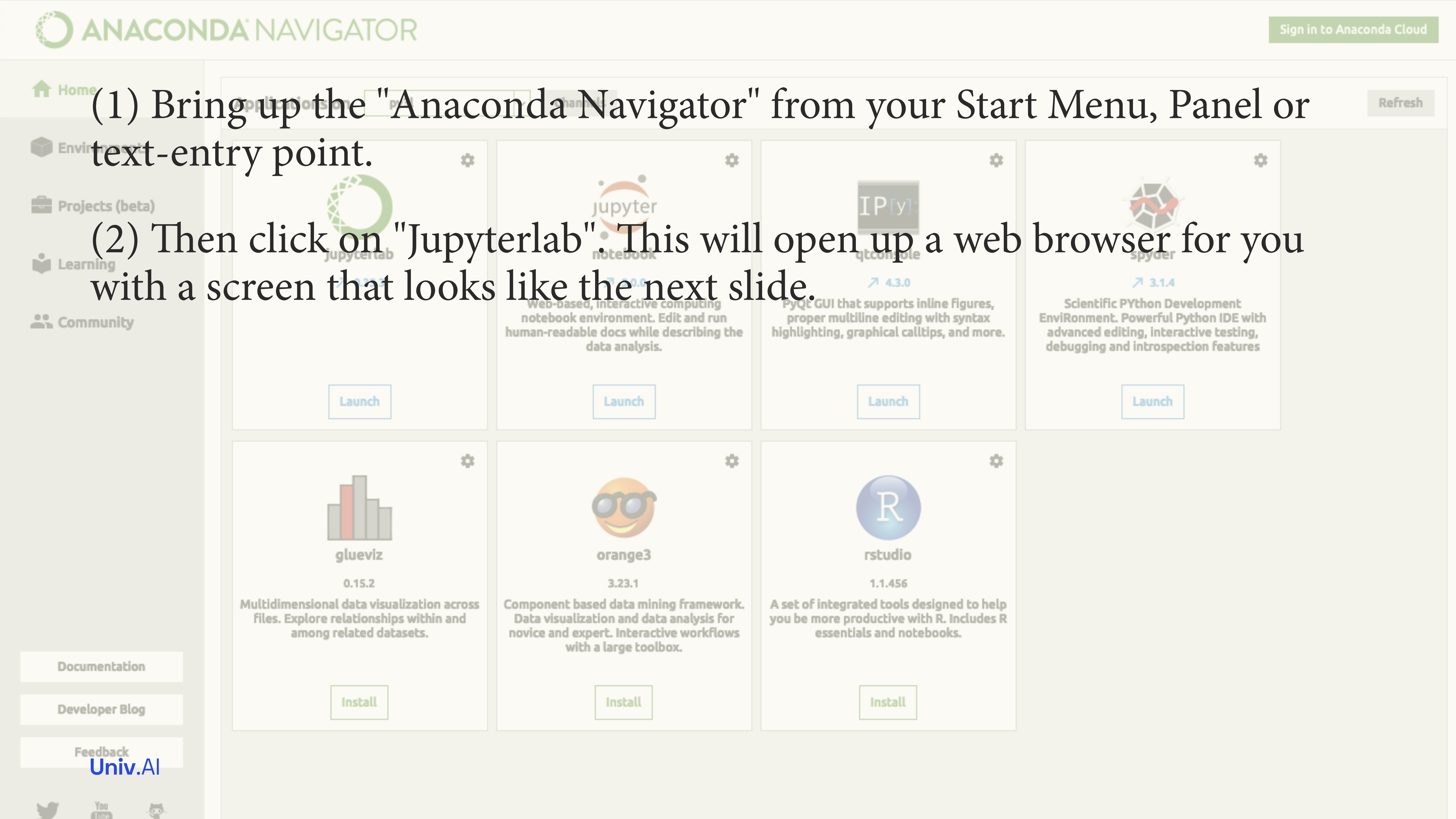
Getting Started

Univ.AI

(1) Bring up the "Anaconda Navigator" from your Start Menu, Panel or text-entry point.

(2) Then click on "Jupyterlab". This will open up a web browser for you with a screen that looks like the next slide.



Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.

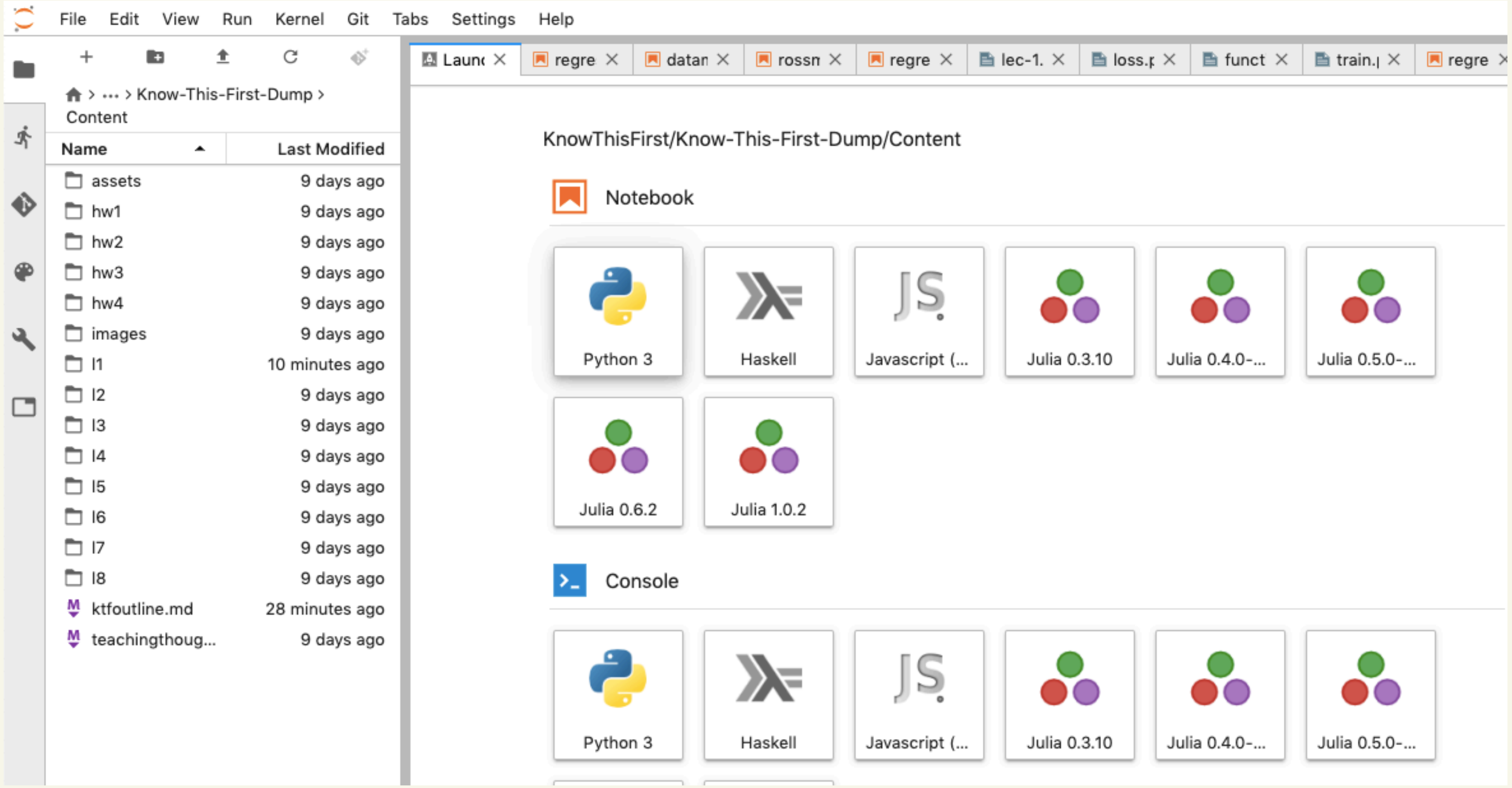
PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.

Scientific PYthon Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features

Multidimensional data visualization across files. Explore relationships within and among related datasets.

Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.

A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.



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Name	Last Modified
assets	9 days ago
hw1	9 days ago
hw2	9 days ago
hw3	9 days ago
hw4	9 days ago
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l2	9 days ago
l3	9 days ago
l4	9 days ago
l5	9 days ago
l6	9 days ago
l7	9 days ago
l8	9 days ago
ktfoutline.md	28 minutes ago
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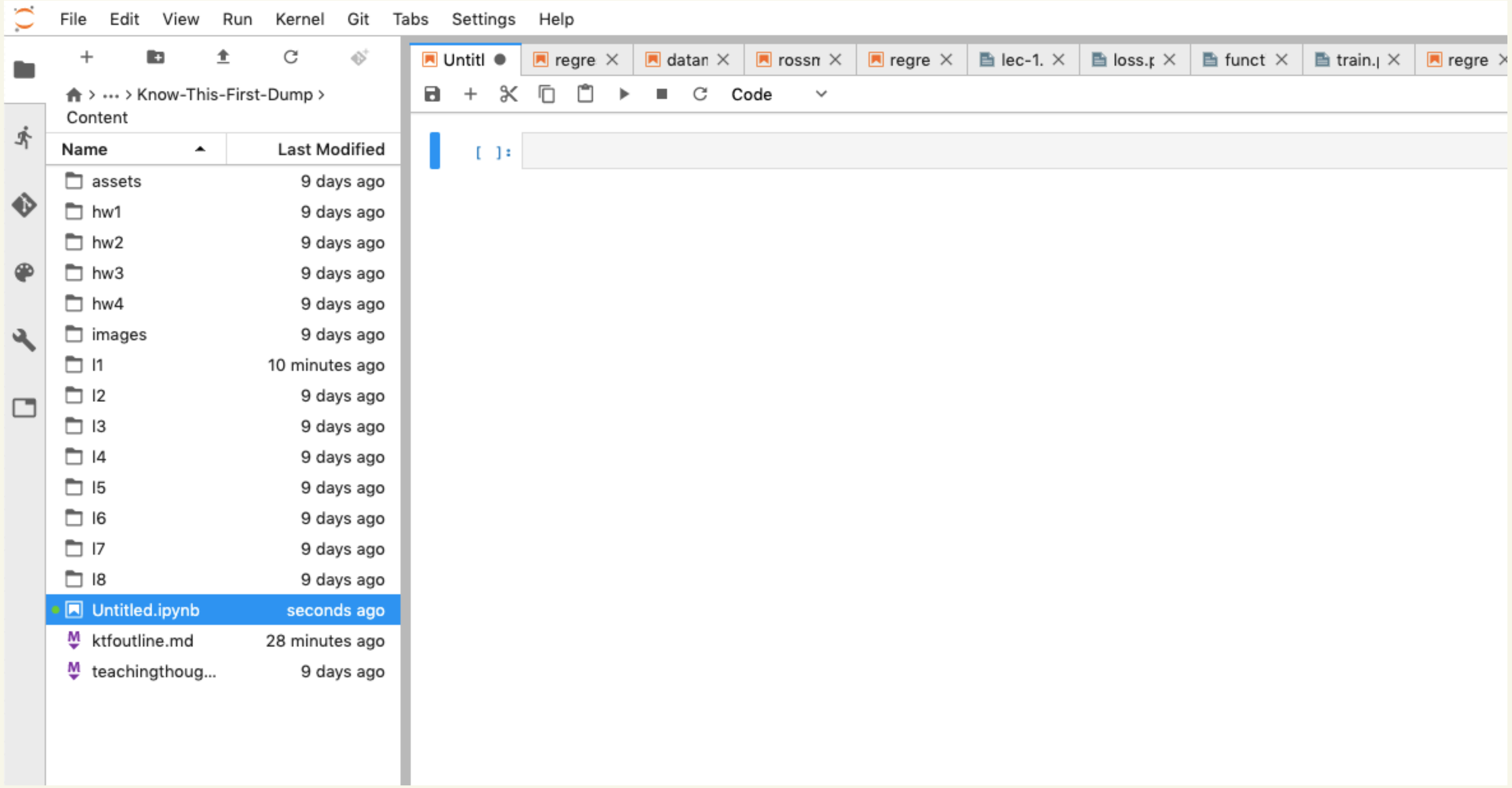
This screen is called the **Launcher**. Click on "Python 3". This launches a "kernel" or python process, and connects a new document window, called a **Jupyter Notebook** to this process.



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l7	9 days ago
l8	9 days ago
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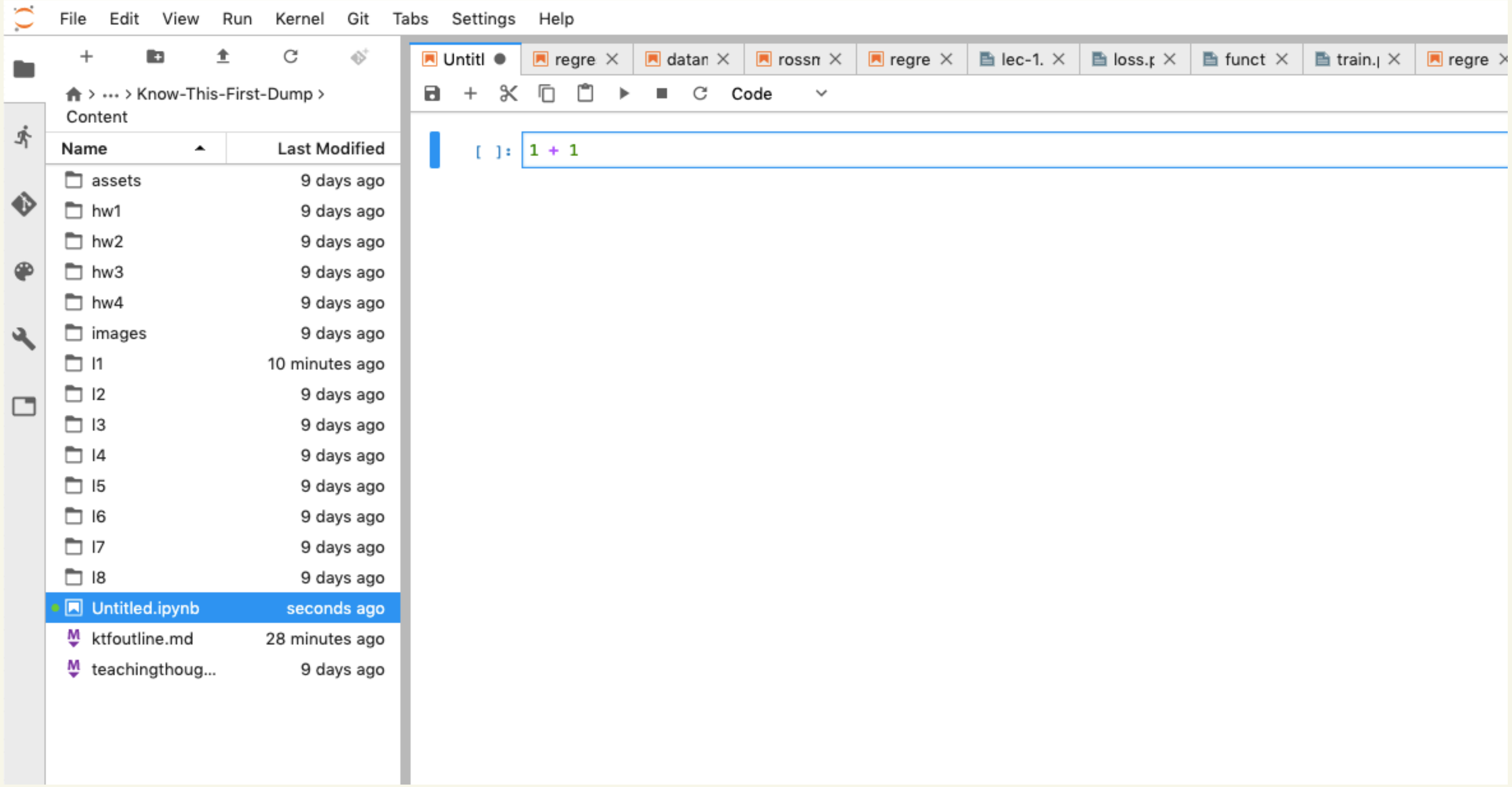
You can now type in text boxes in the Jupyter Notebook, called **cells** in this new window. The left side is a file manager and is likely showing your home folder. This notebook is called `Untitled.ipynb`.

Type 1+1 in the text box and hit "Shift-Enter" or mouse-press the "Play icon" on the toolbar at the top.



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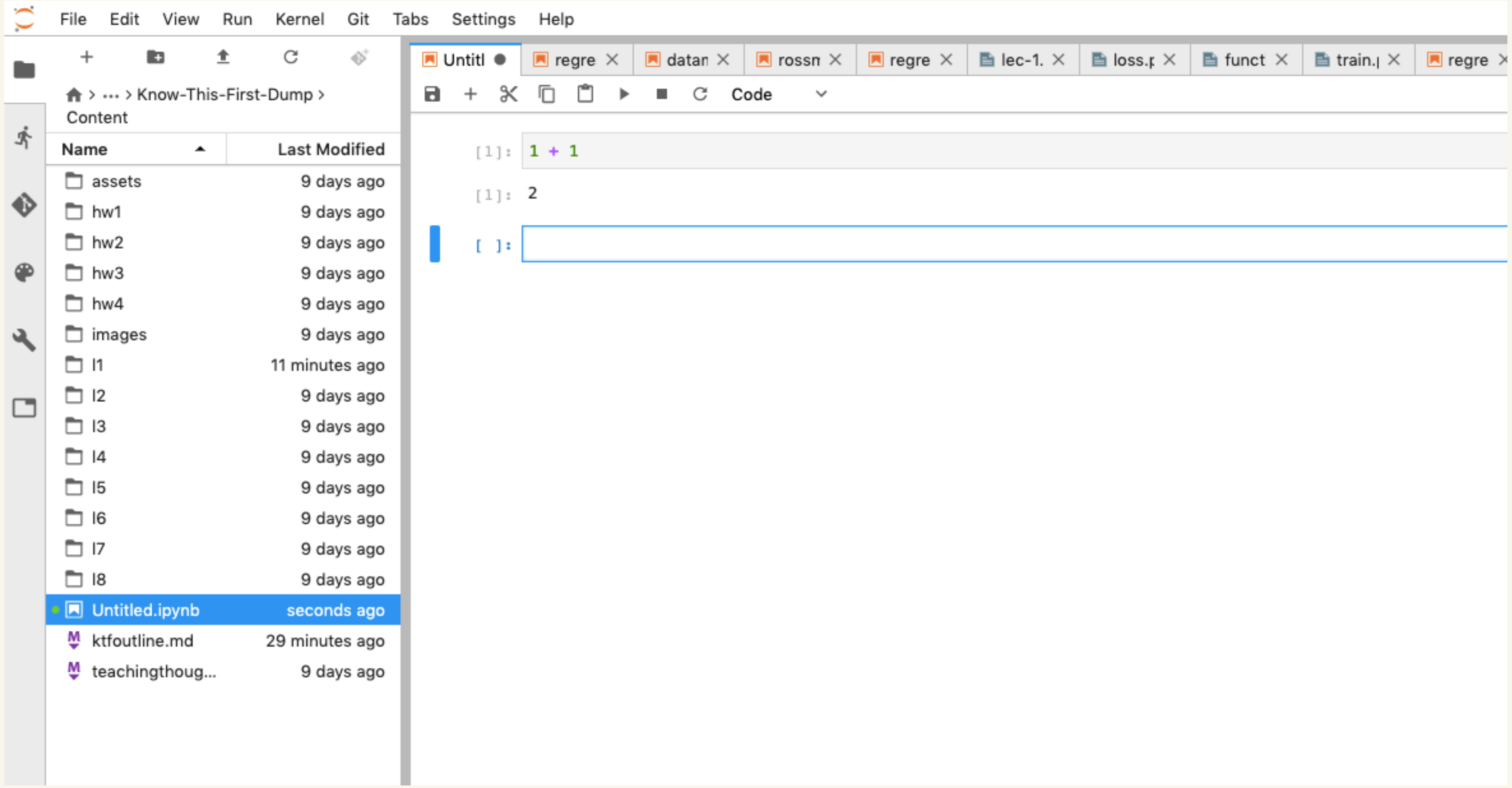
```
[ ]: 1 + 1
```



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hw4	9 days ago
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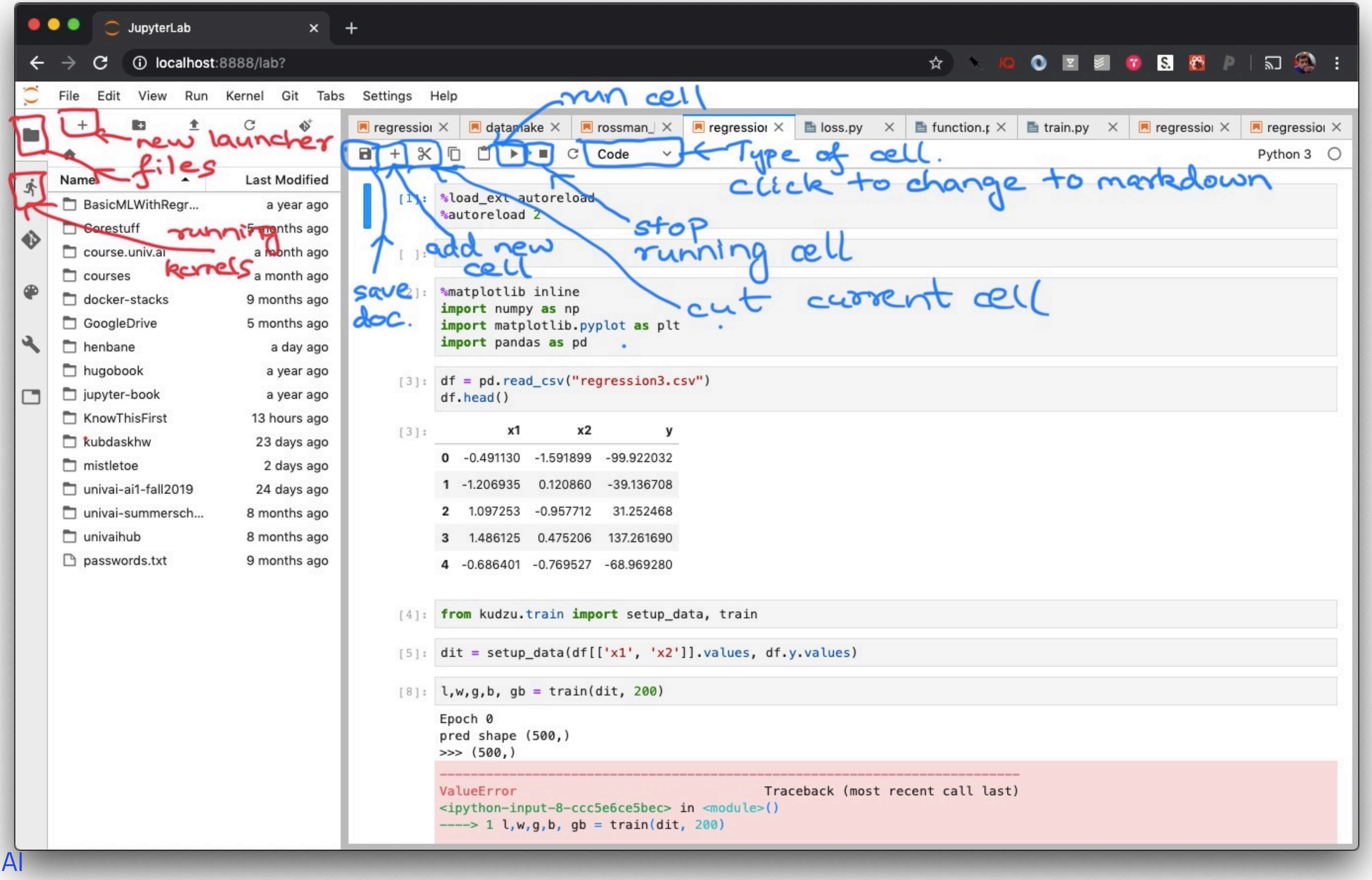
l6	9 days ago
l7	9 days ago
l8	9 days ago
Untitled.ipynb	seconds ago
ktfoutline.md	29 minutes ago
teachingthoug...	9 days ago

```
[1]: 1 + 1

[1]: 2

[ ]:
```

The answer 2 is printed out. A new cell appears at the bottom. By default the cells are in Code mode. These can be changed to `Markdown` mode in the toolbar to enter text. The next slide shows some buttons and what they do.



Name	Last Modified
BasicMLWithRegr...	a year ago
Corestuff	5 months ago
course.univ.ai	a month ago
courses	a month ago
docker-stacks	9 months ago
GoogleDrive	5 months ago
henbane	a day ago
hugobook	a year ago
jupyter-book	a year ago
KnowThisFirst	13 hours ago
kubdaskhw	23 days ago
mistletoe	2 days ago
univai-ai1-fall2019	24 days ago
univai-summersch...	8 months ago
univaihub	8 months ago
passwords.txt	9 months ago

```
[1]: %load_ext autoreload
     %autoreload 2
```

```
[ ]:
```

```
[2]: %matplotlib inline
     import numpy as np
     import matplotlib.pyplot as plt
     import pandas as pd
```

```
[3]: df = pd.read_csv("regression3.csv")
     df.head()
```

[3]:

	x1	x2	y
0	-0.491130	-1.591899	-99.922032
1	-1.206935	0.120860	-39.136708
2	1.097253	-0.957712	31.252468
3	1.486125	0.475206	137.261690
4	-0.686401	-0.769527	-68.969280

```
[4]: from kudzu.train import setup_data, train
```

```
[5]: dit = setup_data(df[['x1', 'x2']].values, df.y.values)
```

```
[8]: l,w,g,b, gb = train(dit, 200)
```

```
Epoch 0
pred shape (500,)
>>> (500,)
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-8-ccc5e6ce5bec> in <module>()
----> 1 l,w,g,b, gb = train(dit, 200)
```

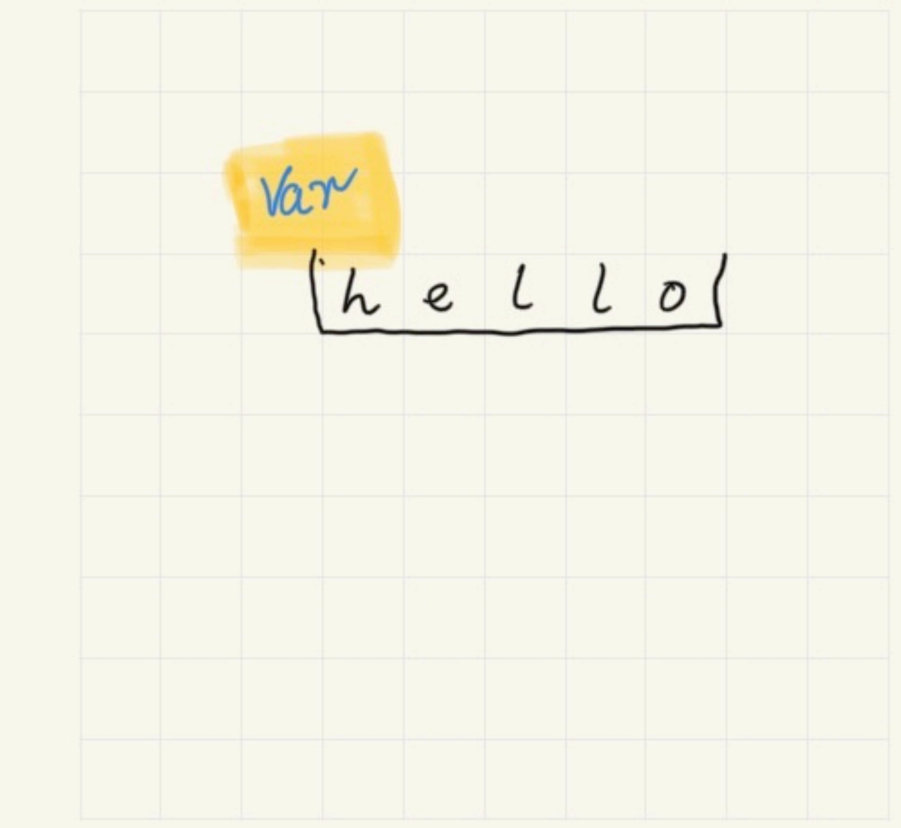
Python as a calculator

Operator	Description	Example
$+$	adds values on either side	$1.2 + 2 = 3.2$
$-$	subtracts the right value from the left	$1.2 - 0.2 = 1.0$
$\star$	multiplies values on either side	$1.2 * 2 = 2.4$
$/$	divides the left value by the right	$4/2 = 2.0$
$\%$	divides the left value by the right and returns the remainder	$4\%3 = 1$
$\star\star$	exponentiate the left value by the right	$3 \star \star 2 = 9$
$//$	divides the left value by the right and removes the decimal part	$3//2 = 1$

Variables

Variables are labels for values.

```
Var = "hello"
```



Memory

Python values have **types**, such as integer, boolean, string, floating-point(real).

Input:

```
var1 = 7
var2 = 7.01
var3 = "Hello World"
var4 = True
print(type(var1), type(var2))
print(type(var3), type(var4))
```

Output:

```
<class 'int'>, <class 'float'>
<class 'str'>, <class 'bool'>
```

Conditionals

Operator	Description	Example
$==$	checks if values on either side are equal	$1 == 2$ is False
$! =$	checks if values on either side are unequal	$1! = 2$ is True
$>$	checks if left value is greater	$1 > 2$ is False
$<$	checks if left value is smaller	$1 < 2$ is True
$\geq$	checks if left value is greater or equal	$2 \geq 2$ is True
$\leq$	checks if left value is smaller or equal	$1 \leq 2$ is True

Using conditionals: Python's colon-indent

```
var1 = 5
var2 = 10

if var1 == var2: # colon followed by an indented next line
    print("The values are equal")
elif (var1 < var2): # conditional can be inside brackets
    print("First variable is lesser than the second variable")
else: # when nothing matches, do this. we keep the colon-indent
    print("Second variable is lesser than the first variable")
```