

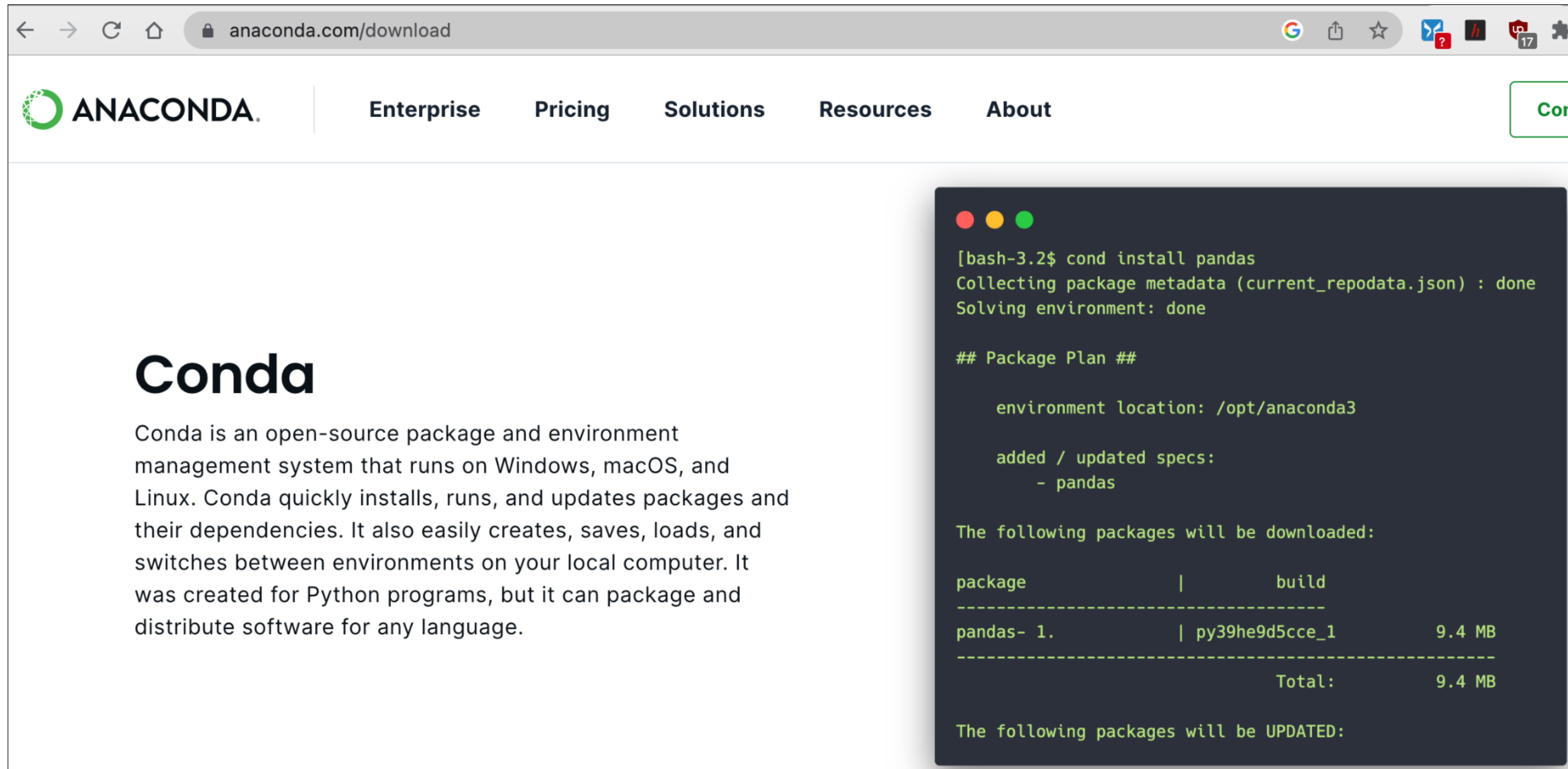


Setup and Installation of Python and Jupyter Notebooks

Setup and Installation

- Install Conda
- Download course materials
- Create environment for the course
- Initialize the environment
- Start Jupyter Notebook kernel

Conda



The screenshot shows the Anaconda website's download page. The browser's address bar displays 'anaconda.com/download'. The website's navigation bar includes links for 'Enterprise', 'Pricing', 'Solutions', 'Resources', and 'About'. The main content area features the 'Conda' logo and a descriptive paragraph about the package management system. Overlaid on the right side of the page is a terminal window with a dark background and green text, showing the command to install pandas and the resulting package plan.

Conda

Conda is an open-source package and environment management system that runs on Windows, macOS, and Linux. Conda quickly installs, runs, and updates packages and their dependencies. It also easily creates, saves, loads, and switches between environments on your local computer. It was created for Python programs, but it can package and distribute software for any language.

```
[bash-3.2$ cond install pandas
Collecting package metadata (current_repodata.json) : done
Solving environment: done

## Package Plan ##

      environment location: /opt/anaconda3

      added / updated specs:
        - pandas

The following packages will be downloaded:

package | build | size
-----|-----|-----
pandas- 1. | py39he9d5cce_1 | 9.4 MB
-----|-----|-----
Total: | | 9.4 MB

The following packages will be UPDATED:
```

Conda: create environment

- Download the course repository
- Open a terminal (or use the anaconda prompt) and create a python environment for this course from the [environment.yml](#) file in the repository
- [Change directories](#) to the [root for the course](#) materials you just downloaded

```
(base) /Users/summer$ cd blackhat_2024
```

- Run the following to [create](#) a [conda environment](#) based on the [yml](#) file

```
(base) /.../blackhat_2024$ conda env create -f environment.yml
```

- This created a conda environment called gtk-blackhat

Conda: environment.yml

```
1  name: gtk-python
2  channels:
3    - defaults
4  dependencies:
5    - python=3.11
6    - pandas
7    - matplotlib
8    - seaborn
9    - jupyter
```

Conda: activate environment



```
(base) /.../blackhat_2024$
```

Note: The name of the current environment for this window is in parens.

- Initialize/activate the **gtk-blackhat** environment

```
(base) /.../blackhat_2024$ conda activate gtk-blackhat
```

- Now the **environment** for this window is **gtk-blackhat** which contains Python 3 along with some third party libraries

```
(gtk-blackhat) /.../blackhat_2024$
```

Conda: list environments

If you forgot what you named your environments you can list them

```
(base) /.../blackhat_2024$ conda env list

# conda environments:
#
base      *  /Users/summer/opt/anaconda3
env_py3    /Volumes/ext200/opt/anaconda3/envs/env_py3
gtk-python /Volumes/ext200/opt/anaconda3/envs/gtk-python
nlpBase    /Volumes/ext200/opt/anaconda3/envs/nlpBase
pymc_env   /Volumes/ext200/opt/anaconda3/envs/pymc_env
```

Conda: deactivate environment

deactivate the **gtk-blackhat** environment

```
(gtk-blackhat) /.../blackhat_2024$ conda deactivate
```

Now the environment is **base**

```
(base) /.../blackhat_2024$
```


Using Jupyter Notebook

Jupyter: start server

Activate the **gtk-blackhat** environment again if you deactivated on the last slide

```
(base) /.../blackhat_2024$ conda activate gtk-blackhat
```

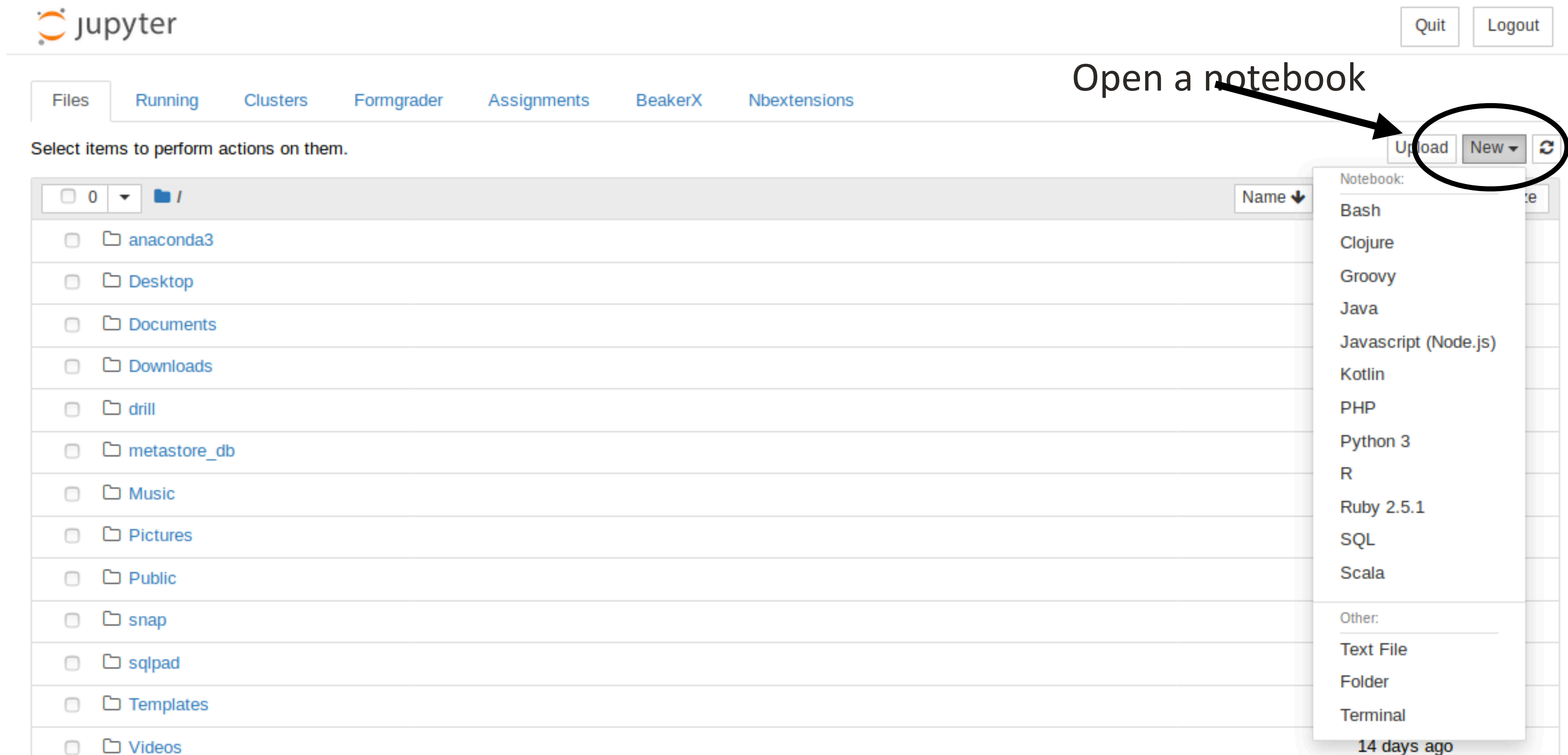
Start a Jupyter Notebook server by typing the following

```
(gtk-blackhat) /.../blackhat_2024$ jupyter notebook
```

Once it is started, you will see a link to the notebook that will look something like

```
http://localhost:8888/?token=09ees....
```

Using Jupyter Notebook



The screenshot shows the JupyterLab web interface. At the top left is the Jupyter logo. At the top right are 'Quit' and 'Logout' buttons. Below the logo is a navigation bar with tabs: 'Files' (active), 'Running', 'Clusters', 'Formgrader', 'Assignments', 'BeakerX', and 'Nbextensions'. Below the navigation bar is a message: 'Select items to perform actions on them.' Below this is a file browser showing a list of folders: 'anaconda3', 'Desktop', 'Documents', 'Downloads', 'drill', 'metastore_db', 'Music', 'Pictures', 'Public', 'snap', 'sqlpad', 'Templates', and 'Videos'. On the right side of the file browser, there are three buttons: 'Upload', 'New', and a refresh icon. The 'New' button is circled in red, and a black arrow points to it from the text 'Open a notebook'. A dropdown menu is open from the 'New' button, showing a list of notebook kernels: 'Bash', 'Clojure', 'Groovy', 'Java', 'Javascript (Node.js)', 'Kotlin', 'PHP', 'Python 3', 'R', 'Ruby 2.5.1', 'SQL', and 'Scala'. Below this list is a section labeled 'Other:' with options: 'Text File', 'Folder', and 'Terminal'. At the bottom of the dropdown menu, it says '14 days ago'.

Open a notebook

Quit Logout

Files Running Clusters Formgrader Assignments BeakerX Nbextensions

Select items to perform actions on them.

0 /

anaconda3 Desktop Documents Downloads drill metastore_db Music Pictures Public snap sqlpad Templates Videos

Upload New Refresh

Notebook:

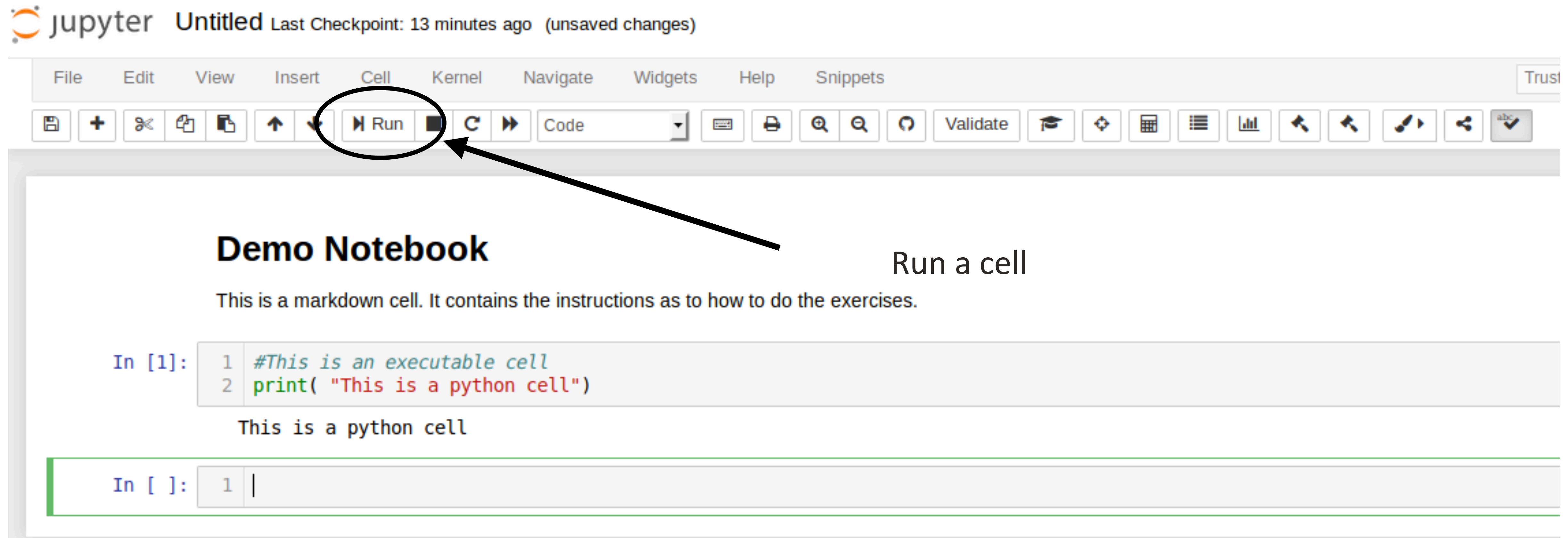
- Bash
- Clojure
- Groovy
- Java
- Javascript (Node.js)
- Kotlin
- PHP
- Python 3
- R
- Ruby 2.5.1
- SQL
- Scala

Other:

- Text File
- Folder
- Terminal

14 days ago

Using Jupyter Notebook



The screenshot shows the Jupyter Notebook interface. At the top, the title bar reads "jupyter Untitled Last Checkpoint: 13 minutes ago (unsaved changes)". Below this is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Navigate, Widgets, Help, and Snippets. A toolbar contains various icons, including a "Run" button (a play icon) which is circled in black. A black arrow points from the text "Run a cell" to this "Run" button. The notebook content area displays a markdown cell titled "Demo Notebook" with the text "This is a markdown cell. It contains the instructions as to how to do the exercises." Below this is a code cell labeled "In [1]:" containing two lines of Python code:

```
1 #This is an executable cell
2 print( "This is a python cell")
```

 The output of the code cell is "This is a python cell". At the bottom, there is an empty code cell labeled "In []:" with a cursor in the first line.

jupyter Untitled Last Checkpoint: 13 minutes ago (unsaved changes)

File Edit View Insert Cell Kernel Navigate Widgets Help Snippets Trust

Run a cell

Demo Notebook

This is a markdown cell. It contains the instructions as to how to do the exercises.

In [1]:

```
1 #This is an executable cell
2 print( "This is a python cell")
```

This is a python cell

In []:

```
1 |
```

Using Jupyter Notebook

The screenshot shows the Jupyter Notebook interface. At the top, the header includes the Jupyter logo, the text "jupyter", and "Untitled" followed by "Last Checkpoint: 18 minutes ago (unsaved changes)". On the right, there is a Python logo and a "Logout" button. Below the header is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Navigate, Widgets, Help, and Snippets. To the right of the menu bar are "Trusted" and "Python 3" indicators. A toolbar below the menu bar contains various icons for file operations, execution, and viewing. A black circle highlights the "Variable Inspector" icon (a calculator-like symbol), with an arrow pointing to it from the text "Variable Explorer" below. The main area of the notebook is titled "Demo Notebook" and contains a markdown cell with the text "This is a markdown cell. It contains the instructions as to how to do the exercises." followed by two code cells. The first code cell, labeled "In [1]:", contains the following code:

```
1 #This is an executable cell
2 print( "This is a python cell")
```

Below the code is the output "This is a python cell". The second code cell, labeled "In [2]:", contains the code:

```
1 x = [4,5,6]
```

On the right side of the notebook, the "Variable Inspector" panel is open, showing a table with the following data:

X	Name	Type	Size	Value
x	x	list	88	[4, 5, 6]

Questions?