Jupyter Notebook and Jupyter Lab

Intro To Jupyter Notebook

Originated as iPython

Later supported other languages:

Juputer stands for : Julia , Python, R

Also supports Java, MATLAB, Scala ,Ruby,Octave, Js

Browser based app

Scientist’s lab notebook

Allows to record and share data that others can use

Allows combining text, code blocks, and code output in a single file.

When run the code, it generates outputs visualizations etc,...

Exports notebook to pdf or html to share

JuputerLab:

Allows access multiple Juputer notebook files,

Extends Jupyter notebook functionality

Enables working in an integrated manner. by working with juputer notebook,text editors, terminals and other text components.

Compatible with several file formats like csv, json, pdf, vega ...

Open source

Cloud IBM, Co

StandaardI python notebook Standard is used

local installation pip install jupyterlab, Anaconda dist.

Hosted version Skills network Notebook.

Getting started with Juputer Notebook

demo

Hands-on exercise 1. Check the Jupyter notebook file Getting\_started\_with\_jupyter\_notebook

Jupyter Kernels

A computational engine that executes the code contained in a Notebook file.

Exists for many languages.

When notebook is opened the a kernel assiciated will be launched

performs computation when the notebook is executed.

kernels can be installed.(languages also needs ro be installed.

)

Hands on exercise 2:

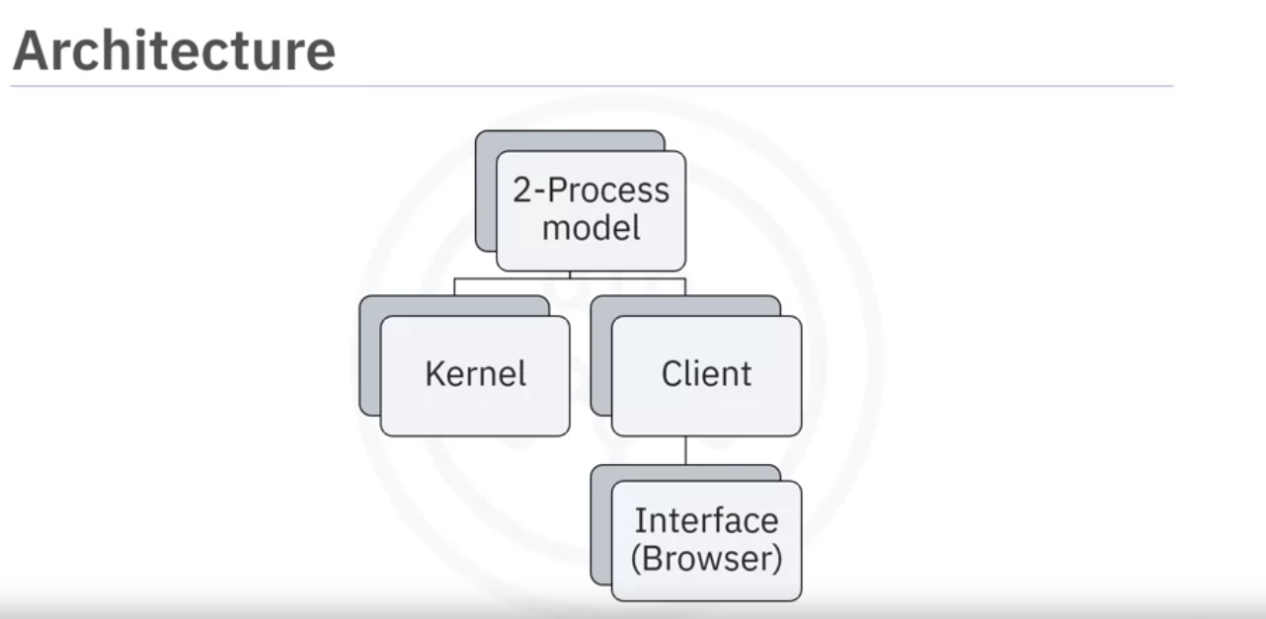
Jupyter notebook Markdowns

Jupyter Architecture

2 precess mode with kernel and a client

Client offers webinterface to allow to send the code written to the kernel.

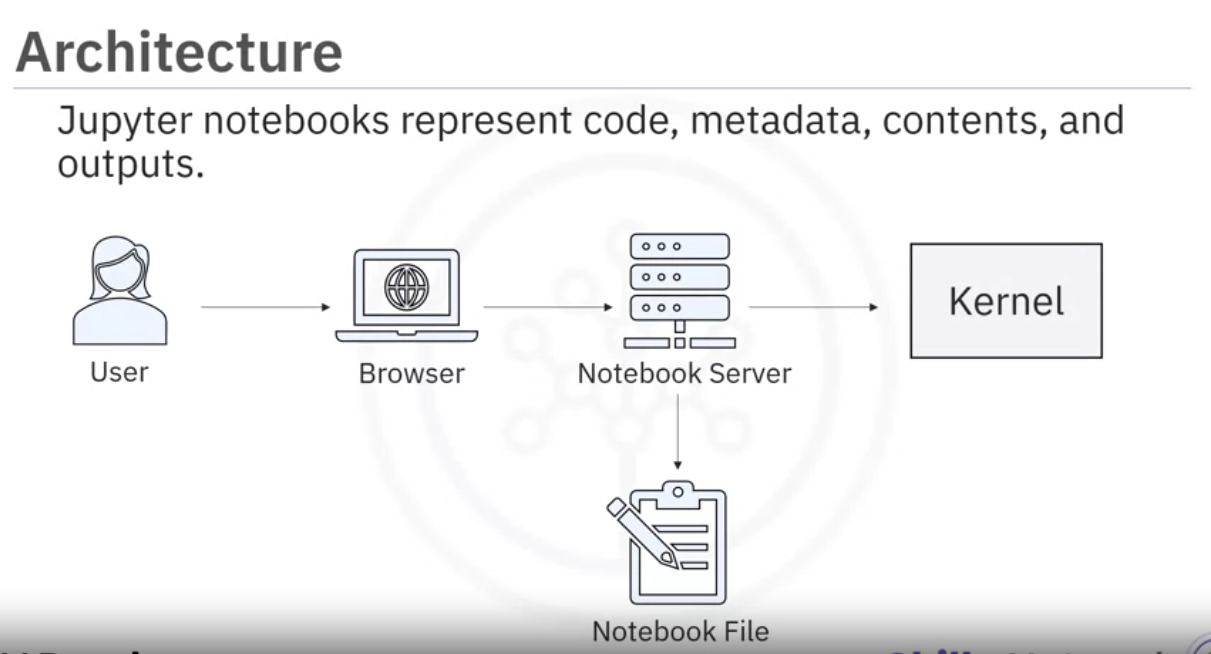
Kernel executes the code and returns result to the client to display.

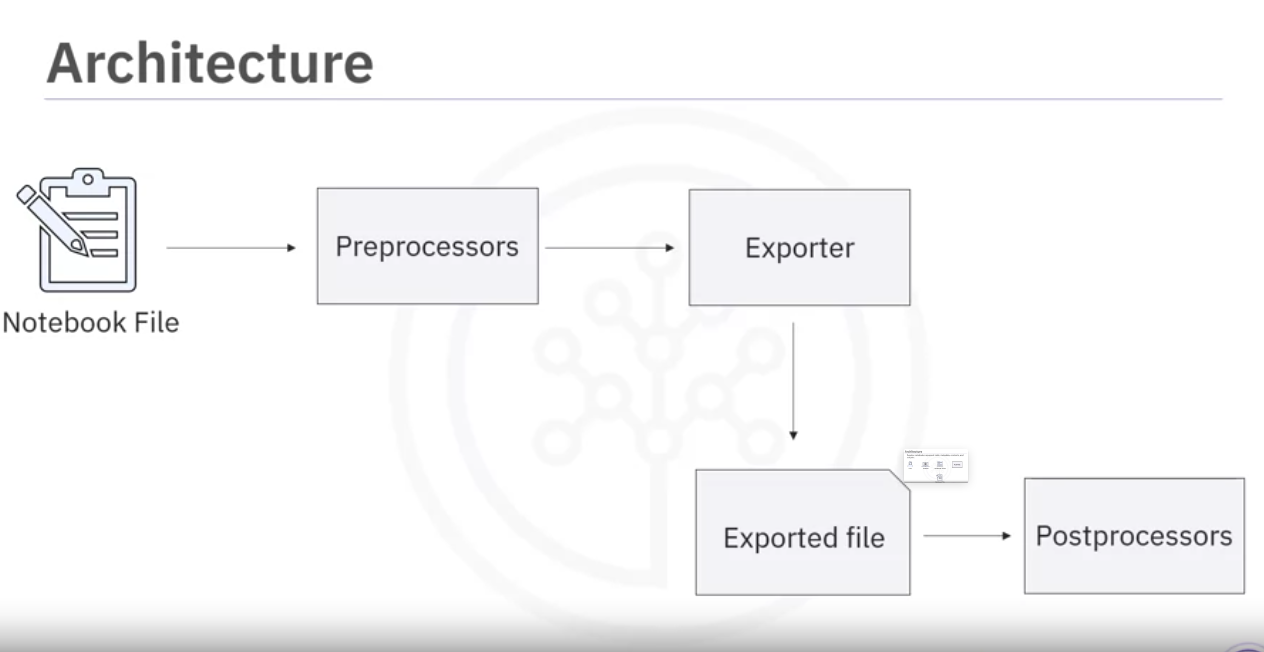


Jupyter notebooks represent code, metadata, contents and outputs

User --> Browser --> Notebook Server --> Notebook File(json file with ipynb file)

Notebook server



Exportingfiles

Additional Anaconda Jupyter Environments:

Computational notebooks combine code, computational output, explanatory text, and multimedia resources in a single document.

Jupyter Notebook

JupyterLab

vs code

JuputerLab:

An open source , web based app

Enables code creation, interactive visualizations, text, and equations

Included pre-installed libs

- Numpy, pandas, Matplotlib

Anaconda

Free, open-source distributor for py and R

has 1500+ libs

Free to install

Free community support

Installes new packages without a CLI(Anaconda Navigator)

VS Code:

Free, open-source code editor for operations like debugging and task running

SupportsL

multiple languages

syntax highlighting

auto-indentation

popular

Addition cloud based jupyter envs

Juputer Lite

Google colab

JupyterLite:

Lighweight. Built from JupyterLab

No need for a dedicated server

can deploy as static webpahe

Graphics and visualizations

Support for Altair, plotly, ipywidgets

Includes JupyterLab’s latest improvements and features

link: <https://jupyter.org/try-jupyter/lab/>

Colab:

sahring easy

can clone projects

scikit-learn, matplotlib are pre-installed.

Reading:

<https://author-ide.skills.network/render?token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJtZF9pbnN0cnVjdGlvbnNfdXJsIjoiaHR0cHM6Ly9jZi1jb3Vyc2VzLWRhdGEuczMudXMuY2xvdWQtb2JqZWN0LXN0b3JhZ2UuYXBwZG9tYWluLmNsb3VkL0lCTURldmVsb3BlclNraWxsc05ldHdvcmstRFMwMTA1RU4tU2tpbGxzTmV0d29yay9sYWJzL01vZHVsZTIvSW5zdGFsbGF0aW9uJTIwbWFya2Rvd25zL0FuYWNvbmRhJTIwRG93bmxvYWQlMjBhbmQlMjBJbnN0YWxsYXRpb24vQW5hY29uZGFfRG93bmxvYWRfSW5zdGFsbGF0aW9uLm1kIiwidG9vbF90eXBlIjoiaW5zdHJ1Y3Rpb25hbC1sYWIiLCJhZG1pbiI6ZmFsc2UsImlhdCI6MTY4MTIwODc3MH0.n_YlFNBxwpwaYlDbYkxvkdhJuqNnZu0D1FU5_8MnTD0>

reading:

<https://author-ide.skills.network/render?token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJtZF9pbnN0cnVjdGlvbnNfdXJsIjoiaHR0cHM6Ly9jZi1jb3Vyc2VzLWRhdGEuczMudXMuY2xvdWQtb2JqZWN0LXN0b3JhZ2UuYXBwZG9tYWluLmNsb3VkL0lCTURldmVsb3BlclNraWxsc05ldHdvcmstRFMwMTA1RU4tU2tpbGxzTmV0d29yay9sYWJzL01vZHVsZTJfQ291cnNlcmEvSnVweXRlck5vdGVib29rb25JbnRlcm5ldC5tZCIsInRvb2xfdHlwZSI6Imluc3RydWN0aW9uYWwtbGFiIiwiYWRtaW4iOmZhbHNlLCJpYXQiOjE2NzI4ODM4OTl9.BTqrDktHSVnpacffWEHzYFFzqW2cgJWXl0plUsADexA>