+ Code + Markdown

Ejercicio: crea y ejecuta tu notebook

Primero instalamos la biblioteca:

```
pip install ipywidgets
```

Python

```
Collecting ipywidgetsNote: you may need to restart the kernel to use updated packages.

WARNING: You are using pip version 21.2.4; however, version 22.0.3 is available.
You should consider upgrading via the 'C:\Users\redhojalata\AppData\Local\Programs\Python\Python310\python.exe -m pip install --upgrade pip' command.

Output exceeds the size limit. Open the full output data in a text editor

  Downloading ipywidgets-7.6.5-py2.py3-none-any.whl (121 kB)
Collecting widgetsnbextension~=3.5.0
  Downloading widgetsnbextension-3.5.2-py2.py3-none-any.whl (1.6 MB)
Collecting nbformat>=4.2.0
  Downloading nbformat-5.1.3-py3-none-any.whl (178 kB)
Collecting ipython-genutils~=0.2.0
  Downloading ipython_genutils-0.2.0-py2.py3-none-any.whl (26 kB)
Requirement already satisfied: ipython>=4.0.0 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipywidgets) (8.0.1)
Requirement already satisfied: ipykernel>=4.5.1 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipywidgets) (6.9.0)
Collecting jupyterlab-widgets>=1.0.0
  Downloading jupyterlab_widgets-1.0.2-py3-none-any.whl (243 kB)
Requirement already satisfied: traitlets>=4.3.1 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipywidgets) (5.1.1)
Requirement already satisfied: tornado<7.0,>=4.2 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipykernel>=4.5.1->ipywidgets) (6.1)
Requirement already satisfied: debugpy<2.0,>=1.0.0 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipykernel>=4.5.1->ipywidgets) (1.5.1)
Requirement already satisfied: jupyter-client<8.0 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipykernel>=4.5.1->ipywidgets) (7.1.2)
Requirement already satisfied: matplotlib-inline<0.2.0,>=0.1.0 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipykernel>=4.5.1->ipywidgets) (0.1.3)
Requirement already satisfied: nest-asyncio in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipykernel>=4.5.1->ipywidgets) (1.5.4)
Requirement already satisfied: prompt-toolkit!=3.0.0,!=3.0.1,<3.1.0,>=2.0.0 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipython>=4.0.0->ipywidgets) (3.0.27)
Requirement already satisfied: decorator in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipython>=4.0.0->ipywidgets) (5.1.1)
Requirement already satisfied: setuptools>=18.5 in c:\users\redhojalata\appdata\local\programs\python\python310\lib\site-packages (from ipython>=4.0.0->ipywidgets) (58.1.0)
Requirement already satisfied: backcall in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipython>=4.0.0->ipywidgets) (0.2.0)
Requirement already satisfied: pygments in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipython>=4.0.0->ipywidgets) (2.11.2)
Requirement already satisfied: stack-data in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipython>=4.0.0->ipywidgets) (0.1.4)
Requirement already satisfied: black in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from ipython>=4.0.0->ipywidgets) (22.1.0)
...
```

Ejercicio 2: Usar comandos avanzados

```
%pip install matplotlib
%pip install numpy
```

Python

```
Collecting matplotlib
  Downloading matplotlib-3.5.1-cp310-cp310-win_amd64.whl (7.2 MB)
Collecting pillow>=6.2.0
  Downloading Pillow-9.0.1-cp310-cp310-win_amd64.whl (3.2 MB)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from matplotlib) (2.8.2)
Requirement already satisfied: packaging>=20.0 in c:\users\redhojalata\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (21.3)
Collecting fonttools>=4.22.0
  Downloading fonttools-4.29.1-py3-none-any.whl (895 kB)
Collecting kiwisolver>=1.0.1
  Downloading kiwisolver-1.3.2-cp310-cp310-win_amd64.whl (52 kB)
Collecting cycler>=0.10
  Downloading cycler-0.11.0-py3-none-any.whl (6.4 kB)
Collecting numpy>=1.17
  Downloading numpy-1.22.2-cp310-cp310-win_amd64.whl (14.7 MB)
Requirement already satisfied: pyparsing>=2.2.1 in c:\users\redhojalata\appdata\local\programs\python\python310\lib\site-packages (from matplotlib) (3.0.7)
Requirement already satisfied: six>=1.5 in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from python-dateutil>=2.7->matplotlib) (1.16.0)
Installing collected packages: pillow, numpy, kiwisolver, fonttools, cycler, matplotlib
Successfully installed cycler-0.11.0 fonttools-4.29.1 kiwisolver-1.3.2 matplotlib-3.5.1 numpy-1.22.2 pillow-9.0.1
Note: you may need to restart the kernel to use updated packages.

WARNING: You are using pip version 21.2.4; however, version 22.0.3 is available.
You should consider upgrading via the 'C:\Users\redhojalata\AppData\Local\Programs\Python\Python310\python.exe -m pip install --upgrade pip' command.

Requirement already satisfied: numpy in c:\users\redhojalata\appdata\local\programs\python\python310\lib\site-packages (1.22.2)
Note: you may need to restart the kernel to use updated packages.

WARNING: You are using pip version 21.2.4; however, version 22.0.3 is available.
You should consider upgrading via the 'C:\Users\redhojalata\AppData\Local\Programs\Python\Python310\python.exe -m pip install --upgrade pip' command.
```

```
Requirement already satisfied: executing in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from stack-data->ipython>=4.0.0->ipywidgets) (0.8.2)
Requirement already satisfied: asttokens in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from stack-data->ipython>=4.0.0->ipywidgets) (2.0.5)
Requirement already satisfied: pure-eval in c:\users\redhojalata\appdata\roaming\python\python310\site-packages (from stack-data->ipython>=4.0.0->ipywidgets) (0.2.2)
Installing collected packages: pyrsistent, attrs, pyparsing, pycparser, jsonschema, ipython-genutils, webencodings, packaging, nbformat, MarkupSafe, cffi, testpath, pywinpty, pandocfilters, nbclient, mistune, jupyterlab-pygments,
jinja2, defusedxml, bleach, argon2-cffi-bindings, terminado, Send2Trash, prometheus-client, nbconvert, argon2-cffi, notebook, widgetsnbextension, jupyterlab-widgets, ipywidgets
Successfully installed MarkupSafe-2.0.1 Send2Trash-1.8.0 argon2-cffi-21.3.0 argon2-cffi-bindings-21.2.0 attrs-21.4.0 bleach-4.1.0 cffi-1.15.0 defusedxml-0.7.1 ipython-genutils-0.2.0 ipywidgets-7.6.5 jinja2-3.0.3 jsonschema-4.4.0
jupyterlab-pygments-0.1.2 jupyterlab-widgets-1.0.2 mistune-0.8.4 nbclient-0.5.10 nbconvert-6.4.1 nbformat-5.1.3 notebook-6.4.8 packaging-21.3 pandocfilters-1.5.0 prometheus-client-0.13.1 pycparser-2.21 pyparsing-3.0.7 pyrsistent-
0.18.1 pywinpty-2.0.2 terminado-0.13.1 testpath-0.5.0 webencodings-0.5.1 widgetsnbextension-3.5.2
```

```
import ipywidgets as widgets

ignition = widgets.ToggleButton(
    value=False,
    description='Iniciar Launch',
    button_style='success',
    tooltip='Engage your Launch',
    icon='rocket'
)

output = widgets.Output()

display(ignition, output)

def on_value_change(change):
    with output:
        if change['new'] == True:
            print("Nave Iniciada!")
        else:
            print("Nave Detenida")

ignition.observe(on_value_change, names='value')
```

Python

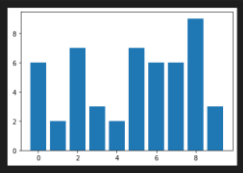
Niveles de Oxígeno

Muestra diez minutos de niveles de oxígeno en tu nave.

```
import numpy as np
import matplotlib.pyplot as plt
data = np.random.default_rng(12345)
oxy_nums = data.integers(low=0, high=10, size=10)

plt.bar(range(len(oxy_nums)), oxy_nums)
plt.show()
```

[1] ✓ 7.2s Python



Velocidad de la nave

Muestra los segundos necesarios para pasar de 0 a 11200 metros por segundo, dada la aceleración de la nave en metros por segundo.

```
endVelocity = 11200
startVelocity = 0
acceleration = 9.8

time = (endVelocity - startVelocity) / acceleration
print("Tiempo para alcanzar la velocidad deseada = ", time)
```

[2] ✓ 0.1s Python

```
Tiempo para alcanzar la velocidad deseada =  1142.8571428571427
```

Curso Propedútico de Python para Launch X - Innovacción Virtual.

Material desarrollado con base en los contenidos de MSLearn y la metáfora de LaunchX, traducción e implementación por: Fernanda Ochoa - Learning Producer de LaunchX.

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