

Manual de la nave

```
In [1]: pip install ipywidgets
```

Requirement already satisfied: ipywidgets in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (7.6.5)

Requirement already satisfied: jupyterlab-widgets>=1.0.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (1.0.2)

Requirement already satisfied: widgetsnbextension~=3.5.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (3.5.2)

Requirement already satisfied: ipython>=4.0.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (8.0.1)

Requirement already satisfied: ipykernel>=4.5.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (6.8.0)

Requirement already satisfied: traitlets>=4.3.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (5.1.1)

Requirement already satisfied: ipython-genutils~=0.2.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (0.2.0)

Requirement already satisfied: nbformat>=4.2.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipywidgets) (5.1.3)

Requirement already satisfied: tornado<7.0,>=4.2 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipykernel>=4.5.1->ipywidgets) (6.1)

Requirement already satisfied: appnope in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipykernel>=4.5.1->ipywidgets) (0.1.2)

Requirement already satisfied: debugpy<2.0,>=1.0.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipykernel>=4.5.1->ipywidgets) (1.5.1)

Requirement already satisfied: matplotlib-inline<0.2.0,>=0.1.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipykernel>=4.5.1->ipywidgets) (0.1.3)

Requirement already satisfied: nest-asyncio in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipykernel>=4.5.1->ipywidgets) (1.5.4)

Requirement already satisfied: jupyter-client<8.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipykernel>=4.5.1->ipywidgets) (7.1.2)

Requirement already satisfied: stack-data in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (0.1.4)

Requirement already satisfied: decorator in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (5.1.1)

Requirement already satisfied: prompt-toolkit!=3.0.0,!<3.0.1,<3.1.0,>=2.0.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (3.0.26)

Requirement already satisfied: jedi>=0.16 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (0.18.1)

Requirement already satisfied: setuptools>=18.5 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (58.1.0)

Requirement already satisfied: pexpect>4.3 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (4.8.0)

Requirement already satisfied: pygments in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (2.11.2)

Requirement already satisfied: black in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (22.1.0)

Requirement already satisfied: backcall in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (0.2.0)

Requirement already satisfied: pickleshare in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from ipython>=4.0.0->ipywidgets) (0.7.5)

Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbformat>=4.2.0->ipywidgets) (4.4.0)

Requirement already satisfied: jupyter-core in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbformat>=4.2.0->ipywidgets) (4.9.1)

Requirement already satisfied: notebook>=4.4.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from widgetsnbextension~=3.5.0->ipywidgets) (6.4.8)

Requirement already satisfied: parso<0.9.0,>=0.8.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jedi>=0.16->ipython>=4.0.0->ipywidgets) (0.8.3)

Requirement already satisfied: pyparsing!=0.17.0,!<0.17.1,!<0.17.2,>=0.14.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets) (0.18.1)

Requirement already satisfied: attrs>=17.4.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets) (23.1.0)

sions/3.10/lib/python3.10/site-packages (from jsonschema!=2.5.0,>=2.4->nbformat>=4.2.0->ipywidgets) (21.4.0)

Requirement already satisfied: entrypoints in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jupyter-client<8.0->ipykernel>=4.5.1->ipywidgets) (0.4)

Requirement already satisfied: pyzmq>=13 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jupyter-client<8.0->ipykernel>=4.5.1->ipywidgets) (22.3.0)

Requirement already satisfied: python-dateutil>=2.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jupyter-client<8.0->ipykernel>=4.5.1->ipywidgets) (2.8.2)

Requirement already satisfied: argon2-cffi in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (21.3.0)

Requirement already satisfied: jinja2 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (3.0.3)

Requirement already satisfied: nbconvert in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (6.4.1)

Requirement already satisfied: Send2Trash>=1.8.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (1.8.0)

Requirement already satisfied: terminado>=0.8.3 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (0.13.1)

Requirement already satisfied: prometheus-client in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (0.13.1)

Requirement already satisfied: ptyprocess>=0.5 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from pexpect>4.3->ipython>=4.0.0->ipywidgets) (0.7.0)

Requirement already satisfied: wcwidth in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from prompt-toolkit!=3.0.0,!3.0.1,<3.1.0,>=2.0.0->ipython>=4.0.0->ipywidgets) (0.2.5)

Requirement already satisfied: click>=8.0.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from black->ipython>=4.0.0->ipywidgets) (8.0.3)

Requirement already satisfied: platformdirs>=2 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from black->ipython>=4.0.0->ipywidgets) (2.4.1)

Requirement already satisfied: mypy-extensions>=0.4.3 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from black->ipython>=4.0.0->ipywidgets) (0.4.3)

Requirement already satisfied: tomli>=1.1.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from black->ipython>=4.0.0->ipywidgets) (2.0.0)

Requirement already satisfied: pathspec>=0.9.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from black->ipython>=4.0.0->ipywidgets) (0.9.0)

Requirement already satisfied: asttokens in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from stack-data->ipython>=4.0.0->ipywidgets) (2.0.5)

Requirement already satisfied: pure-eval in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from stack-data->ipython>=4.0.0->ipywidgets) (0.2.2)

Requirement already satisfied: executing in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from stack-data->ipython>=4.0.0->ipywidgets) (0.8.2)

Requirement already satisfied: six>=1.5 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from python-dateutil>=2.1->jupyter-client<8.0->ipykernel>=4.5.1->ipywidgets) (1.16.0)

Requirement already satisfied: argon2-cffi-bindings in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from argon2-cffi->notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (21.2.0)

Requirement already satisfied: MarkupSafe>=2.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from jinja2->notebook>=4.4.1->widgetsnbextension~3.5.0->ipywidgets) (2.0.1)

Requirement already satisfied: testpath in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (0.5.0)

Requirement already satisfied: jupyterlab-pygments in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (0.1.2)

Requirement already satisfied: mistune<2,>=0.8.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (0.8.4)

Requirement already satisfied: defusedxml in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (0.7.1)

Requirement already satisfied: bleach in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (4.1.0)

Requirement already satisfied: pandocfilters>=1.4.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (1.5.0)

Requirement already satisfied: nbclient<0.6.0,>=0.5.0 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (0.5.10)

Requirement already satisfied: cffi>=1.0.1 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from argon2-cffi-bindings->argon2-cffi->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (1.15.0)

Requirement already satisfied: packaging in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (21.3)

Requirement already satisfied: webencodings in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (0.5.1)

Requirement already satisfied: pycparser in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from cffi>=1.0.1->argon2-cffi-bindings->argon2-cffi->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (2.21)

Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in /Library/Frameworks/Python.framework/Versions/3.10/lib/python3.10/site-packages (from packaging->bleach->nbconvert->notebook>=4.4.1->widgetsnbextension~=3.5.0->ipywidgets) (3.0.7)

Note: you may need to restart the kernel to use updated packages.

```
In [1]: 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')
```

```
ToggleButton(value=False, button_style='success', description='Iniciar Launch', icon='rocket', tooltip='Engage...
Output()
```

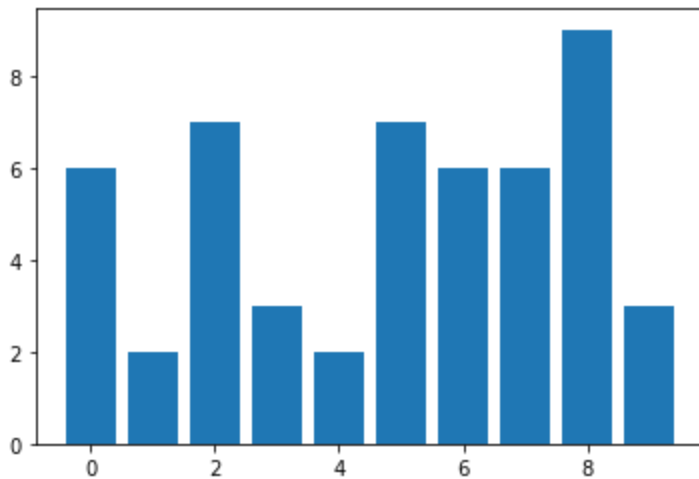
!pip install matplotlib !pip install numpy

Niveles de Oxígeno

Muestra diez minutos de niveles de oxígeno en tu nave.

```
In [5]: 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()
```



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.

```
In [6]: endVelocity = 11200
startVelocity = 0
acceleration = 9.8

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

Tiempo para alcanzar la velocidad deseada = 1142.8571428571427
```

```
In [ ]:
```