This is the readme file for the jupyter notebooks for PHYS 231 Winter 2022. The notebooks are meant to implement Python skills into the physics materials from Classical Mechanics. It is assumed that the student will have little previous knowledge and/or experience with Python. There is a folder with Charlotte's notebooks, a folder with Matter & Interactions labs, and a notebook with current notebooks we plan to use.

Below are the notebooks we plan to use with names in order of use through the course format:

No	Notebook name	Prior knowledge	Key material
1	A&N_example_notebook.ipynb	install Python and have Jupyter notebook activated on your screen (see download Jupyter document in folder)	remember if you have done this before, if not try to understand what is going on. if you have seen it just make sure you remember what you previously did.
2	python_plotting&basics_tutorial.ipynb	make sure you have everything installed, get used to Python	several ways to plot functions in python, how to label plots, basic for and while loops, random number generators, and conditionals.
3	euler-cromer_method.ipynb	basic plotting skills from previous notebook, as well as some knowledge of kinematics & Newtonian mechanics	you will learn how to numerically approximate using the Euler-Cromer method by reviewing previously written code and creating your own.
4	terminal_velocity_notebook.ipynb	know plotting skills and class materials such as Reynolds number, and dimensionalization. knowledge of	learn how to implement the drag coefficient, and integrate in Python

		analytical integration is required	
5	numerical_solutions_notebook.ipynb	be used to plotting and python and have some experience integrating in Python	learn how to do numerical integration in Python and plot/interpret results
6	3_body_system_nb.ipynb	plotting and integration techniques should be familiar, differential equations should have been covered by now	learn how to plot in 3D, use ODE methods to figure out differences between the 2-body and three-body problems
7	rocket_notebook.ipynb	Plotting and labeling plots, scipy integration, dimensionalizing variables, ODE/IVP solving.	Rocket fuel emission using ODE methods. Sympy integration and some more complicated math/plotting.

Other files:

- Sources-all sources for the notebooks

- Jupyter notebook download- tutorial on how to download Jupyter notebook onto your own laptop. (coming soon)

- Python Labs from old Classy terms, specifically 3 and 4 may be useful (Jupyter version of 3 is currently in Matter and Interactions folder)

- Jupyter notebook of vpython Lagrangian from Jay's class

- Charlotte's Notebooks