Documenting Your Code

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What is documentation?

- Documentation is the text commentary in a computer program that describes how it works
- Can include any/all of the following:
  - Variable definitions/units
  - General usage information - options, constants
  - Program flow descriptions

Why is documentation important?

- Helps future users (others or a future self) understand how the program works
    - Determine how to use the program
    - Allows for future modifications without having to rewrite everything
- For this course you'll have to comply with the Astrodynamic Programming Standard

What is the standard for documentation?

- Format - function documentation and inline documentation
- Example - example provided in astro library
- Python uses # or """ (triple double quote) for comments

Module Documentation Block

```
"""Module name

Extended description of the module

Notes
-----
    This is an example of an indented section. It's like any other section,
    but the body is indented to help it stand out from surrounding text.

If a section is indented, then a section break is created by
resuming unindented text.

Attributes
----------
module_level_variable1 : int
    Descrption of the variable

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"""
```

Function Documentation Block

```
r"""A one line description of the function

This function will take two inputs and find the sum.
The inputs can be either scalars or numpy arrays of the same size.

Parameters
----------
a : any int or float
    First input
b : any int or float
    Another input

Returns
-------
out : same as input
    Sum of a and b.

Notes
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Both inputs should be the same size

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Examples
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An example of how to use the function

>>> a = [1, 2, 3]
>>> b = [2, 3, 4]
>>> out = add_two_inputs(a, b)
```

Documentation Standards

- Documentation Block at beginning of every function and module
  - Inputs and Outputs
  - Example usage
  - Coupling of other functions
- Inline documentation
  - General comments on why you're doing something (not what) - we can just read the code
    - Bad - `sum = a + b # we add two numbers`
    - Good - `sum = a + b # need to sum to get an average later on`
  - Use whitespace to make to code readable