

NENG 685
Pre-flight #1

Fall 2018
Due Oct. 2, 2017 @ 1700

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On Pre-flights:

- If you work with anyone else, document what you worked on together.

Do not write in the table to the right.

Problem	Points	Score
1	5	
2	5	
3	5	
4	5	
5	10	
6	5	
Total:	35	

1. (5 points) Describe the basic variable types available in Python.

Literal \rightarrow python provides a special syntax to directly create them.
 precise \rightarrow All variables of a precise type represent one thing, and only one thing, e.g. integers
 imprecise \rightarrow 64-bit approximations of real numbers e.g. floating
 special \rightarrow variables whose values are built into, e.g. None

2. (a) (2 points) What does the variable None mean in Python?

No value given or no behavior defined. It means the same as NULL in other programming languages. This is where the code stops working

- (b) (3 points) What is an example of how to use the None built-in variable?

When performing an action that may or may not work based on the inputs. If the user inputs something that will not fulfill the stated criteria, the None function can lead to an output to inform them of such an error.

3. State the solution to the following in Python 2 and, if different, Python 3:

(a) (1 point) $10\%3$ | modulus

(b) (1 point) $11//6$ | truncation division

(c) (1 point) $4**3$ 6^4 exponent

(d) (1 point) $12/5$ Python 2: 2 \rightarrow no fraction
 Python 3: 2.4

(e) (1 point) $6 != 5$ True not equal to

4. (a) (2 points) What is the default encoding of strings in Python?

Unicode in Python 3
ASCII in Python 2

(b) (1 point) What is the starting index number in Python?

0 for left to right
-1 for right to left

(c) (1 point) How do you reference the last element of a string?

Using negative indexing -1 to reference the last number in the string

(d) (1 point) How do you concatenate strings?

Using the addition operator, also using the multiplication operator
as multiplication represents multiple additions

5. (a) (2 points) Define the meaning of module in Python.

The in-memory representation of all python code in a file

(b) (2 points) Define the meaning of package in Python and list what elements are required to make it a package.

A collection of modules in the same directory. Can include modules written in coding languages other than Python, known as extension modules. Must contain a file named `__init__.py`

(c) (2 points) Name at least 3 ways to import a function from a module in Python.

1) Import, then use the attribute access operator (`.`)
2) `from <module> import <var>`
3) Aliasing import

- (d) (2 points) What 2 items are required to make packages visible in Python?

*A File named `--init--.py` in the directory
Other files in the directory ending in `.py`*

- (e) (2 points) Label the following directory structure as packages, subpackages, or modules:

```

pyScripts/Package
-- __init___.py Module
-- physics.py Module
-- BasicCalcs/ Subpackage
-- --__init___.py module
-- --morephysics.py module
-- --evenmorephysics.py module
-- AdvancedCalcs/
-- --readme.txt
-- --advancedphysics.py

```

*→ unreachable, as it
does not have
a `--init--.py` module*

6. (a) (1 point) Why are you taking this class?

*To understand modelling to assist in my understanding
of nuclear issues, and how to apply it to achieve greater understanding*

- (b) (2 points) Is there a specific, non-grade related outcome you would like?

*shake off the programming cobwebs in my head and
understand the language more → I did not take much programming but need
to remember what I did learn*

- (c) (2 points) What is one concept that you found difficult in the reading?

*Slicing indices was confusing to me, just unfamiliar with
700 indexing as I have had little programming experience*