

ChEn 263 - Exam 1 Review7 Feb 2019

* Prayer / Quiz / AmA

* Exam 1 cover sheet

* Questions about format.

* Questions? - Functions, Arrays, Plotting, loops ^{when use} while v. for, import dataI. Review game.

* Suppose I have a numpy array:

$$x = \text{np.array}([0, 2, 4, 6, 8, 10])$$

0 1 2 3 4 5

what will

$$y = x[2:5]$$

have in it?

A: $y = \text{np.array}([4, 6, 8])$

* classify the equations as a system/single equation,
algebraic/differential, linear/non-linear, coupled/uncoupled

$$3x + 2y = 7$$

$$4x - 7y = \cos(\pi/3)$$

A: system, algebraic, linear, coupled.

* The variables x & y will be what data type?

$x = 2$

$y = \text{"hello world"}$

A: $x = \text{integer}$, $y = \text{character / string}$.

* Describe in your own words how integers are stored in computer memory.

A: Integers are stored in one or more bytes as binary numbers.

* What is the difference between volatile memory & non-volatile memory?

The contents of
A: ^volatile memory (RAM) disappear when the power is off.

* Suppose 'data' is a ^{2D} numpy array, whose first column is the x-value; whose 2nd column is the y-value I want to plot. How do I get the two columns out?

rows
 ↓ ↙ columns
 A: $x = \text{data}[:, 0]$
 $y = \text{data}[:, 1]$

* What is the syntax for making a basic plot in python?

A: `plt.plot(x, y)`

* Suppose you want to import a csv file into python.
what command would you use?

A: `np.loadtxt("filename.csv", delimiter=',')`

* How do you call a function in Excel?

A: `= function-name (argument)`

* How do you define a function in Excel?

A: you can't. Trick question.

* Suppose you want to evaluate the summation

Formula:
$$\sum_{i=1}^{200} 3i - 2i^2$$

Do you need a loop?

A: yes. You need a loop for repeated operations, like sums.

* Does this define a list, tuple or array?

```
x = (0, 1, 2)
```

A: tuple

* what are the values in the array from this expression:

```
x = np.empty(5)
i = 0
while (i < 5):
    x[i] = 3 * i
    i += 1
```

A: `x = np.array([0, 3, 6, 9, 12])`

* Find the bug in the snippet of code. what type of bug is it?

```
def set_a():
    a = 5

set_a()
print(a)
```

A: 'a' is a local variable, so it can't print(a).

This is an execution error.

* what error can happen in while loops that cannot happen in a for loop?

A: Infinite loop.

* what is the bug in this code? what type is it?

```
y = add_two_nums(5,3)
```

```
def add_two_nums(a, b):
```

```
    return(a + b)
```

A: The function is called before it is defined. This is an execution error.

* 1 hr is how many seconds?

3600s

* 1 kg is how many lbm?

2.204 lbm.