Programming review

DS110, Fall 2022

~Open a new Colab notebook before we begin~

Tell me something about...

- lists

Tell me something about...

- lists
- functions

Tell me something about...

- lists
- functions
- dictionaries

Tell me something about...

- lists
- functions
- dictionaries
- DataFrames

Tell me something about...

- lists
- functions
- dictionaries
- DataFrames
- good code style

Spot the bug

- What is wrong with this code? How do we fix it?

```
mylist = ['A', 'B', '1']

def contains_number(mylist):
  for item in mylist:
    if item.isdigit():
      return True # number found
    else:
      return False
```

Reading code with map and lambda

- What does the following code do, without running it?
- Can you rewrite it as a list comprehension?

```
list(map(lambda s: s.lower(), mylist))
```

Process

- How do you write code?
  - In what order do you write and run the code?
  - How do you debug?

Iteration and numpy

- Fill an 11 x 11 array with the multiplication table for 0 through 10, so for example table[2][3] = 6. Print the table. (Hint: you can initialize the table with np.zeros().)

Dictionaries and strings

- Write a function animalhasher() that
  - Takes a single comma-separated string as input (“panda,lion,bear,bear”)
  - Creates a dictionary that stores how often each string appears in the sequence
  - For every value over 1, creates a “plural” key with “s” appended that returns the same value (“bears”: 2)
  - Returns this dictionary

Functions and lists (and sets?)

- Write a function unique() that returns True if every element in its list argument is unique - no duplicates. (Otherwise, it returns False.)