

CS 209

Data Structures and Mathematical  
Foundations

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Instructor: Michael Eckmann

# Today's Topics

- Questions/Comments?
- Continue Python review
  - Searching using in
  - File input/output (File I/O)
  - split
  - Dictionaries

# python review

- Reminder of **in** operator used to search if a list contains a value
- Let's write a program that contains a function that takes in a grand prize list and a second prize list as well as a value to search and should return whether that value is in the grand prize list, the second prize list or neither list.
- The program should ask the user for their choice number, and the program should generate a list of random grand prize numbers (2 of them) and random second prize numbers (5 of them) from say 1 .. 72.

# python review

- Let's also recall how to write code that reads an input file.

# Files

- Python's file input and output
  - open function
    - Returns an object that is a file
    - Parameters: file name and an optional mode (defaults to 'r' for read)
    - Modes: 'r', 'w', 'a', 'r+', 'w+', 'a+'
    - 'r' is for opening files for reading
    - 'w' is for opening file for writing
    - 'a' is for opening file for appending
    - The + ones allow reading and writing

# Files

- Methods you can call on the returned variable (the file) from open:
  - read (reads the entire file into a string that is returned)
  - readline (reads up to a newline and returns a string)
  - write (writes the parameter to the file)
  - seek (move the file pointer to a certain byte)
  - close (closes the file after reading/writing)

# Let's write some code that reads and writes files

- Also you can read line by line from a file with for loop

```
for ____ in ____:
```

# split and re.split

- split method in str
  - mystr = “Hello, World!\nWhat a nice day.”
  - e.g.
  - listofstrs =mystr.split() # splits on whitespace
  - # and discards empty strings
  - list2 = mystr.split(“,”) # splits on comma
  - Return a list of strings
- import re
- re.split function
  - Takes in a pattern (regular expression) and a string to be split



# dictionaries

- { } with key value pairs separated by , and each key separated by a : from it's associated value
- [] vs. get
  - get is used to search if a key exists in dictionary – returns True or False
  - [] on a dictionary gets the value associated with the key inside the [], KeyError happens if not in dictionary
- Looping through a dictionary e.g.:

for word in worddict:

```
print(word, worddict[word])
```

# Word frequency

- Let's write a program utilizing split and a dictionary to determine word frequency in a file.