

Little Alchemy!



15-112  
Lecture 2

Week 8 Tue  
Set, Dictionaries,  
Efficiency

Instructor: Pat Virtue

# Discussion

Good Will Hunting

<https://www.youtube.com/watch?v=e1DnltskkWk>

# Discussion

Why is being here at CMU better than a library card (or set of online courses)?



# Course Feedback

Thank you!

Feedback on Feedback

Recitation

Timing

- Homework window
- Context switching
- Number of deadlines

Pace/difficulty

# Announcements

## Schedule

### Pre-reading checkpoints

- Due on Mondays, 8 pm

### Tartan Community Day

- Friday holiday
- No 112 OH or Friday sections
- HW8 due **Sunday**, 8 pm

## Final Exam

### Optional

- Decide after midterm 2 and TP are graded
- If opting out, midterm average will replace final



# Debate

Which are better sets or lists?

# Lists vs Sets

## Property

## Lists

## Sets

Indexing

Iterate over

Mutable

Mutable elements

Get length

Check contents

Sort different types

Sort repeated elements

Stored in order added



“I feel the need, the need for speed”

-- Top Gun



# Poll 1

Which of these needs to visit all N elements in the list data, assuming  $N = \text{len}(\text{data})$ ?

Select ALL that apply.

- A. 

```
for x in data:  
    print(x)
```
- B. 

```
for i in range(len(data)):  
    print(x)
```
- C. 

```
if x in data:  
    print("Found it")
```
- D. 

```
x = data[i]
```
- E. 

```
x = max(data)
```
- F. None of the above

## Poll 2

Which of these needs to visit all N elements in the **set** data, assuming  $N = \text{len}(\text{data})$ ?

Select ALL that apply.

- A. 

```
for x in data:  
    print(x)
```
- B. 

```
for i in range(len(data)):  
    print(x)
```
- C. 

```
if x in data:  
    print("Found it")
```
- D. 

```
x = data[i]
```
- E. 

```
x = max(data)
```
- F. None of the above

# Discussion

Brainstorm: How can I make finding a specific student's exam more efficient?

Set lookup is \*way\* faster

# How do sets work?

## Hashtables

Dictionaries

# Dictionaries

Map keys to values

Keys are stored like sets



Efficiency