Plan for 11/9 and 11/11

● **Reviewing Concepts for test**
  - Loops: index and by element
  - Strings, Lists, Sets, Dictionaries
  - List Comprehensions

● **Lab and assignment concepts**
  - While loops, Global Variables, Computer-aided Game Play
  - Image processing, RGB, simulation/random, CSV files
Reminder of APT quiz

● **How to solve it: APT Quiz style**
  - Looking at problems from last time
  - Goals in time-driven APT-solving

● **CountUp**
  - Ideas

● **Maker**
  - Ideas

● **Anonymous**
Looping by index or by element

- **Strings and lists: use either**
  - `range(len(x))` for index, can get element

- **Sets and Dictionaries: element only**
  - Loop over `d` or `d.keys()` for dictionary
  - The keys are a set, so similar to set loop

- **Which is best when choice? It depends!**
  - Can you get element from index?
  - Can you get index from element?
Questions

Unpacking a list comprehension

\[ [f(x) \text{ for } x \text{ in } \text{foo if condition with } x] \]
\[ [w \text{ for } w \text{ in } \text{words if } w.\text{endswith('e')}] \]
\[ [(w, \text{words.count}(w)) \text{ for } w \text{ in } \text{set(words)}] \]

> Always possible to use a loop

```python
build = []
for x in foo:
    if condition with x:
        build.append(f(x))
```

```python
build = []
for w in set(words):
    build.append((w, words.count(w)))
```
Set Concepts

- **Set union, intersection, difference**
  - $s$.intersection(t) is the same as $s \& t$
  - $s$.union(t) is the same as $s \mid t$
  - $s$.difference(t) is the same as $s - t$

- **Sets aren't in order during iteration**
  - Convert to list, create from list
  - Sets are really, really efficient for add/search
Questions