Announcements

• Read for next time Chap. 12
• Reading Quiz on Blackboard
  – Due before class next time
• Assignment 3 out today
• Lab 4
  – More on making decisions, using parameters
Creating a list

• Given a list of numbers, create a second list of every number squared.

```python
nums = [8, 3, 5, 4, 1]
sqnums = []
for v in nums:
    sqnums.append(v*v)
print sqnums
```

```python
[64, 9, 25, 16, 1]
```
List Comprehension

• Take advantage of patterns, make a new list based on per element calculations of another list

• Format:

\[ \langle \text{expression with variable} \rangle \text{ for } \langle \text{variable} \rangle \text{ in } \langle \text{old list} \rangle \]

• Example:

\[ \text{nums} = [8, 3, 5, 4, 1] \]
\[ \text{sqnums} = [v^2 \text{ for } v \text{ in } \text{nums}] \]
Examples of List Comprehensions

[v for v in nums]
[2 for v in nums]
[v*2 for v in nums]
Creating a list with just the even numbers

```python
nums = [8, 3, 5, 4, 1]
evennums = []
for v in nums:
    if v % 2 == 0:
        evennums.append(v)
print evennums

[8, 4]
```
List Comprehension with Filtering

- Create list and use “if” to filter out elements to the list
- Format:
  
  \[
  \text{[<expression with variable> for <variable> in <old list> if <filter with variable>]}
  \]

- Example:

  \[
  \text{nums = [8, 3, 5, 4, 1]}
  \]

  \[
  \text{evennums = [v for v in nums if if v%2==0]}
  \]
More on List Comprehensions

• Do examples of list comprehensions

• Problem:
• Given a list of strings, return the longest string. If there are more than one of that length, return the first such one.
• [‘kiwi’, ‘plum’, ‘orange’, ‘lemon’, ‘banana’]