Revisit Counter Problem

Prompt user to enter n values from minValue to maxValue. Count how many of each value was entered.

Use a dictionary for counters instead of a list

See 04-03-dict-of-counters.py

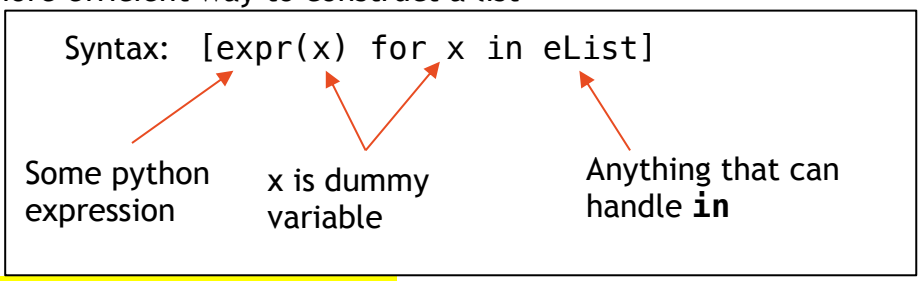
Back to computing Mode

Algorithm:
1) Make empty dictionary
2) For each data item
    If item is in dictionary
        Increment it's count
    Else
        Add item to dictionary with count = 1
3) Find maximum count
4) Find all items with the maximum count & add them to the result

See 04-02-my-stats.py

List Comprehension

A more efficient way to construct a list




```
['Z' for i in range(5)]
```
→ ['Z', 'Z', 'Z', 'Z', 'Z'] - Doesn't use i

```
[[] for i in range(5)]
```
→ [[], [], [], [], []] - Doesn't use i

```
[x for x in range(1,6)]
```
→ [1, 2, 3, 4, 5]

```
[x+x for x in range(1,6)]
```
→ [2, 4, 6, 8, 10]

```
[ch for ch in 'college']
```
→ ['c', 'o', 'l', 'l', 'e', 'g', 'e']

```
[ch + ch for ch in 'college']
```
→ ['cc', 'oo', 'll', 'll', 'ee', 'gg', 'ee']

```
[word for word in 'Brave Sir Robin ran away'.split()]
```
→ ['Brave', 'Sir', 'Robin', 'ran', 'away']

```
[x > 5 for x in range(3,8)]
```
→ [False, False, False, True, True]

Use a function

```
[min(x, 10) for x in range(8, 13)]
```
→ [8, 9, 10, 10, 10]

Add a condition

```
[x for x in range(11) if x % 2 == 0]
```
→ [0, 2, 4, 6, 8, 10]

Multiple Sources

```
s1 = 'abc'
s2 = '123'
s3 = 'qr'
```

```
[a+b for a in s1 for b in s2]
```
→ ['a1', 'a2', 'a3', 'b1', 'b2', 'b3', 'c1', 'c2', 'c3']

```
[a+b+c for a in s1 for b in s2 for c in s3]
```
→ ['a1q', 'a1r', 'a2q', 'a2r', 'a3q', 'a3r',
'b1q', 'b1r', 'b2q', 'b2r', 'b3q', 'b3r',
'c1q', 'c1r', 'c2q', 'c2r', 'c3q', 'c3r']

```
[a+b+c for a in s1 if a <= 'b' for b in s2 if b in '12' for c in s3]
```
→ ['a1q', 'a1r', 'a2q', 'a2r', 'b1q', 'b1r', 'b2q', 'b2r']

Use List Comprehension to Simplify our getMode Function

Without List Comprehension

```
modeList = []
for item, count in countDict.items():
    if count == maxCount:
        modeList.append(item)
```

With List Comprehension

```
modeList = [item for item,count in countDict.items() if count == maxCount]
```