How is lab07 going?

A. Done!
B. On track to finish.
C. Having some trouble
D. Struggling.
E. Don't know how to begin.

Dictionaries (contd)

Concept Test

Which of the following is best suited for a dictionary instead of a list?

A. The order in which people finish a race.
B. The ingredients necessary for a recipe
C. The names of world countries and their capital cities
D. 50 random integers

Another example

- Let's say we're bird-watching, and we want to keep track of the number of each type of bird we've seen

kind	count
`falcon`	1
`owl`	5
`hawk`	2
`eagle`	11

- One approach: parallel lists
- The element `kinds[i]` corresponds with `counts[i]`

```
kinds = ['falcon', 'owl', 'hawk', 'eagle', 'crow']
counts = [1, 5, 2, 11, 1]
```

Concep Test:

```
def new_sighting(kinds, counts, sighting):
    '''Add new sightings to parallel list
       kinds, counts'''
    if sighting not in kinds:
        kinds.append(sighting)

        _____

    else:
     ind = kinds.index(sighting)
     counts[ind]+=1
```

counts[ind] = counts[ind] + 1

What code should go in place of the missing code?

A. `counts.append(0)`

B. `counts.append(1)`

C. `counts.append(kind)`

D. No code necessary there

Dictionaries vs. Parallel Lists

```
bird_dict=
{'falcon': 1, 'owl': 5, 'hawk': 2, 'eagle': 11}
```

- Rewrite the new_sighting function
- Compared to parallel lists:
  - Only one dict (not two)
  - No call to index that might search the whole list

Adding to dictionaries

- Keys must be immutable
- Values can be mutable or immutable
- Use d[k] = v to add key k with value v to dictionary d
  - If k is already present, its value is overwritten
- To copy all key/value pairs from another dictionary, use the `update` method

Getting Values from Dictionaries

- Use d[k] to obtain the value associated with key k of dictionary d
- If k does not exist, this causes an error
- The get method is similar, except it returns None instead of giving an error when the key does not exist
- If a second parameter v is provided, get returns v instead of None when the key is not found

Concept Test

What is dictionary d created by the following code?

```
d = {3:4}
d[5] = d.get(4, 8)
d[4] = d.get(3, 9)
```

- A. {3:4, 5:8, 4:9}
- B. {3:4, 5:8, 4:4}
- C. {3:4, 5:4, 4:3}
- D. Error caused by get

Concept Test

What is dictionary d created by the following code?

```
d = {1:5}
d[2] = d.get(1, 6)
d[4] = d.get(3, 7)
```

- A. {1:5, 2:5, 4:7}
- B. {1:5, 2:6, 4:7}
- C. {1:5, 2:1, 4:2}
- D. Error caused by get