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’]
counts = [1, 5, 2, 11]
```

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
```

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

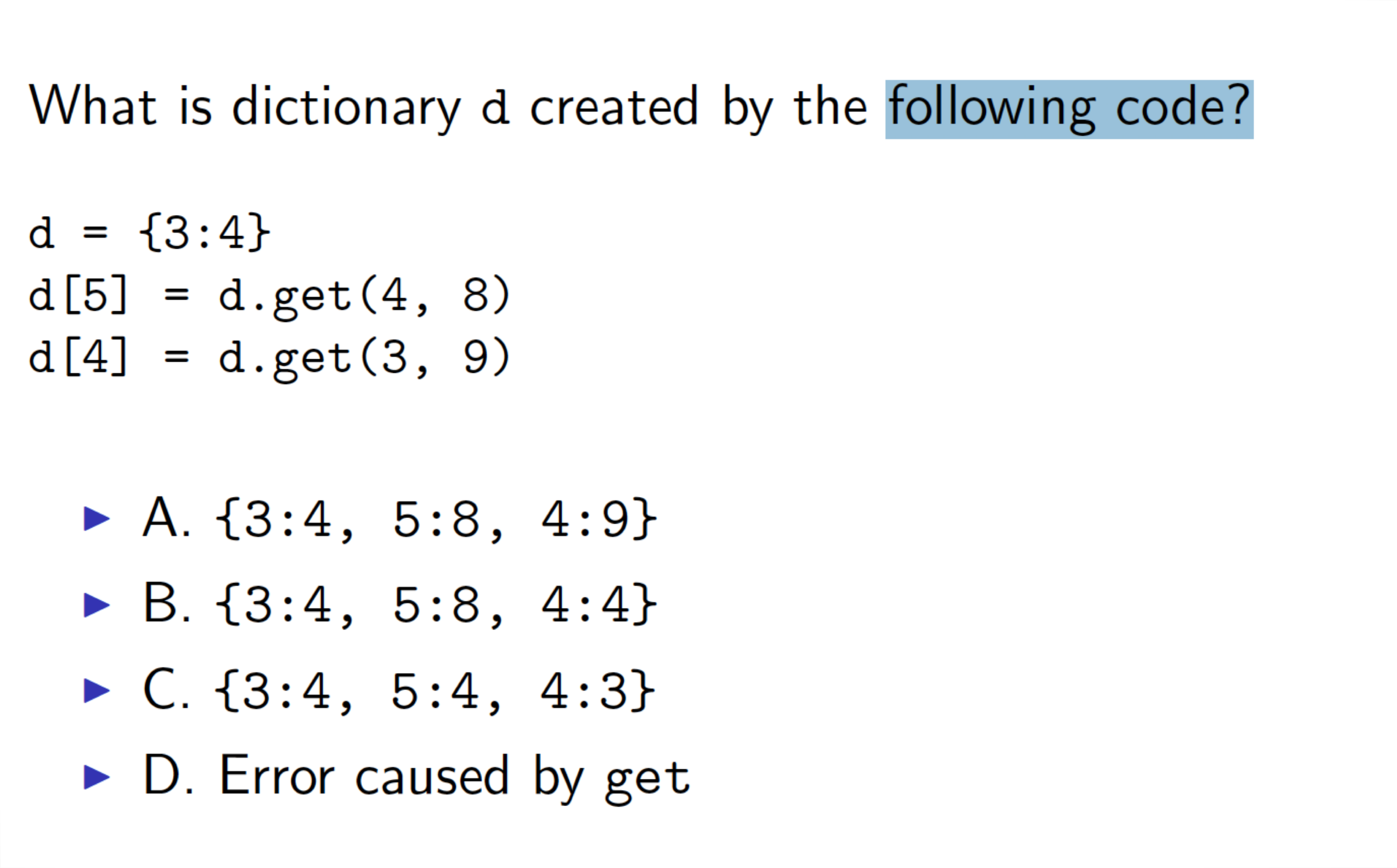
Adding to dictionaries

- 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

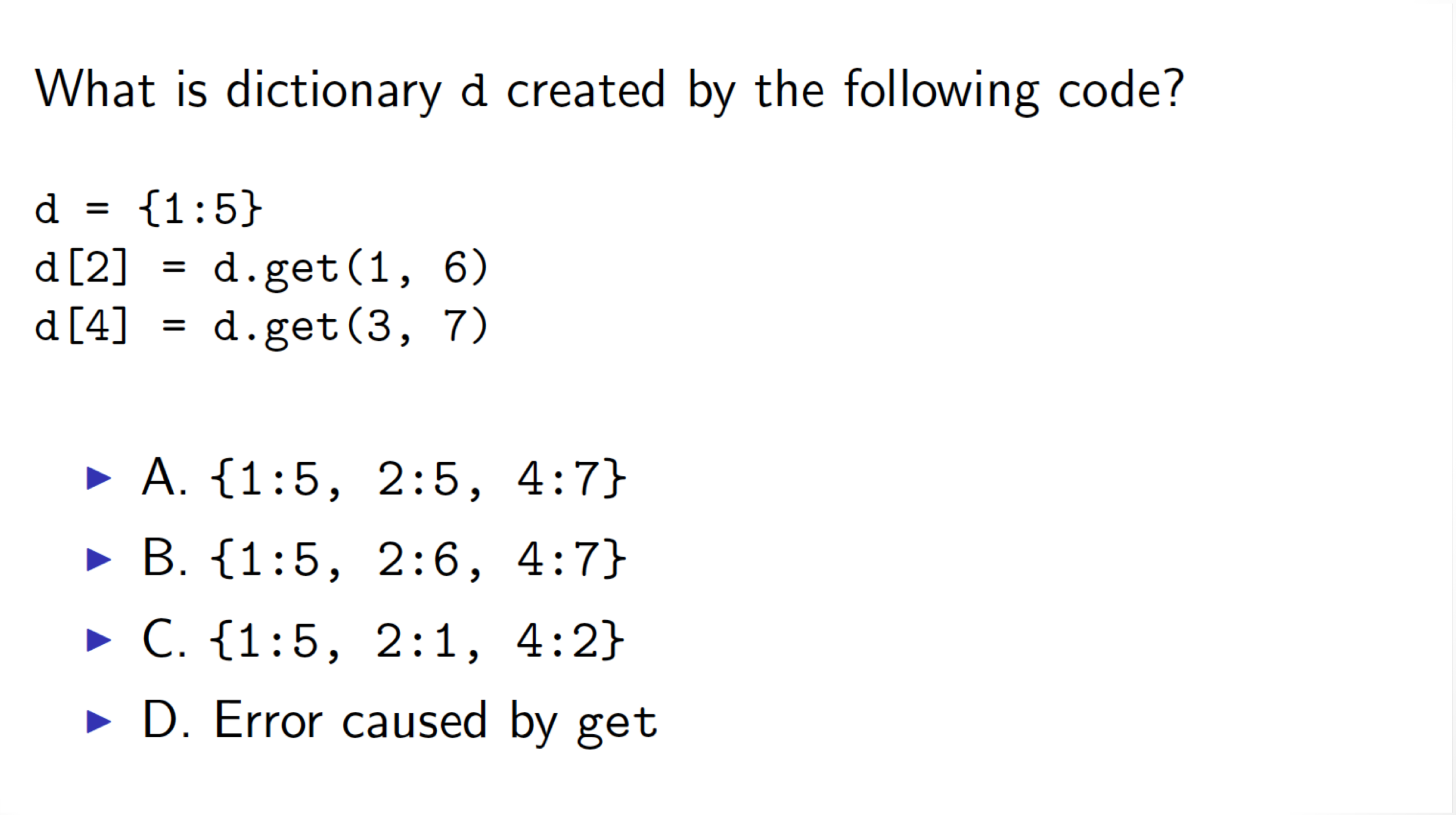


What is dictionary `d` created by the following code?

```
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`