Quiz 24-29: Python Dictionary

Part A — Core dictionary skills (methods + reasoning)

1) Same or different? (`copy()` vs alias)

One correct output (order may vary):

```
{'a': 99, 'b': 2, 'c': 3}
{'a': 99, 'b': 2, 'c': 3}
{'a': 1, 'b': 200}
```

2) Safe lookup without `get`

Fill in: `in`

```
if name in pets:
```

Since `"Luna"` is not a key, it prints:

```
hamster
```

3) Fix the bug (avoid `KeyError`)

```
scores = {"Amy": 3, "Ben": 5}

name = "Chloe"

if name in scores:
    print(scores[name])
else:
    print(0)
```

4) Trace the updates — final dictionary

- `"banana"` becomes `6`
- `"donut"` is added with value `3`
- `x = bag.pop("cookie")` sets `x` to `1` and removes `"cookie"`
- `del bag["apple"]` removes `"apple"`
- `bag["banana"] = x` makes `"banana"` become `1`

So it prints (order may vary):

```
{'banana': 1, 'donut': 3}
```

5) Count items (frequency dictionary)

```
items = ["pen", "pen", "pencil", "pen", "eraser"]

count = {}

for item in items:
    if item in count:
        count[item] = count[item] + 1
    else:
        count[item] = 1

print(count)
```

One correct output (order may vary):

```
{'pen': 3, 'pencil': 1, 'eraser': 1}
```

6) Filter + build (`lengths`)

```
words = ["cat", "tree", "bird", "sun", "plane"]

lengths = {}

for w in words:
    if len(w) >= 4:
        lengths[w] = len(w)
```

Final `lengths` (order may vary):

```
{'tree': 4, 'bird': 4, 'plane': 5}
```

7) Numbers to squares

```
n = 6

sq = {}

for i in range(1, n + 1):
    sq[i] = i * i
```

Final `sq` :

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36}
```

8) `keys()` , `values()` , `items()`

One correct output (order may vary):

```
['a', 'b', 'c']
[1, 2, 3]
[('a', 1), ('b', 2), ('c', 3)]
```

Part B — Dictionaries with other structures

9) Nested dictionary

Output:

```
{'hp': 15, 'mp': 0}
```

10) Shopping cart total

Fill in: `in`

```
if item in price:
```

Output:

```
3.5
```

11) Bigram counting

Fill in: `in`

```
if bg in bigrams:
```

Output (order may vary):

```
{'BA': 1, 'AN': 2, 'NA': 2}
```

12) Most common bigram (tie → alphabetical smallest)

```
bigrams = {"BA": 1, "AN": 2, "NA": 2}

best = None
best_count = -1

for bg in bigrams:
    c = bigrams[bg]
    if c > best_count:
        best_count = c
        best = bg
    elif c == best_count:
        if bg < best:
            best = bg

print(best)
```

Output:

```
AN
```

13) Build a dictionary of tuples

```
words = ["cat", "dog", "fish"]

d = {}
for w in words:
    d[w] = (w[0], w[-1])

print(d)
```

One correct output (order may vary):

```
{'cat': ('c', 't'), 'dog': ('d', 'g'), 'fish': ('f', 'h')}
```

Part C — Mini challenges (small programs)

14) Group to sets

```
pairs = [("red", 1), ("blue", 2), ("red", 3), ("red", 1), ("blue", 2)]

groups = {}

for color, num in pairs:
    if color in groups:
        groups[color].add(num)
    else:
        groups[color] = {num}

print(groups)
```

One correct output (order may vary):

```
{'red': {1, 3}, 'blue': {2}}
```

15) Simple “translator”

Fill in: `in`

```
if ch in codebook:
```

Output:

```
1 L0V3 @1
```

16) Dice histogram

```
rolls = [1, 4, 4, 6, 3, 4, 1]

hist = {}

for r in rolls:
    if r in hist:
        hist[r] = hist[r] + 1
    else:
        hist[r] = 1

for face in range(1, 7):
    if face in hist:
        print(face, hist[face])
    else:
        print(face, 0)
```

Expected output:

```
1 2
2 0
3 1
4 3
5 0
6 1
```