CS 145 Quiz 6 practice questions (longer than actual quiz!)

Lists

1. What is printed?

```
L = [3, 1, 4, 1, 5]
L.append(9)
L[2] = 7
print(L)
```

2. What does L.pop() return vs. what does L.remove(x) return? How do they differ?

Tuples

3. What is printed?

```
t = (1, 2, 3)
a, b, c = t
print(b, a)
```

4. Explain why this gives an error:

```
t = (1, 2, 3)
t[0] = 99
```

How can you create a **new** tuple that is like t but starts with 99?

Dictionaries

5. What is printed?

```
d = {"a": 1, "b": 2}
d["c"] = d["a"] + d.get("x", 5)
print(len(d), d["c"])
```

6. Given

```
grades = {"ann": 92, "ben": 86, "chris": 92}
```

a) What does list(grades.keys()) return?
b) How do you get a list of names with grade 92?

7. What is printed?

```
d = {}
for ch in "banana":
    d[ch] = d.get(ch, 0) + 1
print(d)
```

Sets

8. What is printed?

```
A = set([1, 2, 2, 3])
B = {3, 4}
print(len(A)
print(A & B)
print(A | B)
print(A - B)
```

9. True/False: sets keep elements in insertion order. Briefly explain.

10. Write a statement that removes x from set S **without** raising an error if x is absent.

11. Given two lists L1 and L2, write an expression that returns the list of elements that appear in **both** (no duplicates, any order).

Mixed / Concepts

12. For each structure, circle **mutable** or **immutable**:

- list mutable / immutable
- tuple mutable / immutable
- dict mutable / immutable
- set mutable / immutable

13. Which of these can be dictionary **keys**: 42, (1,2), [1,2], "hi", {1,2}? Why?

14. What is printed?

```
L = [1, 2, 3]
T = (L, 4)
L.append(5)
print(T)
```

15. Convert the list names = ["ann", "ben", "ann", "dee"] into a structure that keeps only unique names, then back to a **sorted list**.

16. Write a function word_frequencies(s) that returns a **dict** mapping each word in string s (split on whitespace) to its count.

17. What is printed?

```
L = [("a", 1), ("b", 2), ("a", 3)]
d = {}
for k, v in L:
    d[k] = d.get(k, 0) + v
print(d)
```

18. Explain the difference between:

```
L2 = L              # vs
L2 = L[:]           # vs
L2 = list(L)
```

When does modifying L2 change L?

19. Given:

```
records = [("ann", 92), ("ben", 86), ("chris", 92)]
```

Build a **dict** mapping names to grades.

20. What is printed?

```
D = {"x": [1, 2], "y": [3]}
D["x"].append(9)
print(D)
```