Tuple and Set Assignment

Tuple Questions

Basic (Concept & Syntax)

1. Create a tuple containing five colors. Print the second and fourth color.
2. Create a tuple with a single element. Verify its type is `tuple`.
3. Convert the list `["apple", "banana", "cherry"]` into a tuple.
4. Concatenate two tuples `(1, 2, 3)` and `(4, 5, 6)` into one tuple.
5. Check whether `"python"` exists in the tuple `("java", "python", "c++")`.

Medium

1. Given `nums = (10, 20, 30, 40)`, unpack them into four variables and print each.
2. Find the index of the first occurrence of `5` in `(1, 5, 7, 5, 9)`.
3. Given `t = ("a", "b", "c", "d", "e")`, slice the tuple to get `("b", "c", "d")`.
4. Count how many times `2` appears in `(2, 4, 2, 6, 2, 8)`.
5. Merge two tuples and sort them into a new tuple.

Challenging

1. Write a program to remove an element from a tuple (without directly modifying it).
2. Given `t = (("a", 1), ("b", 2), ("c", 3))`, convert it into a dictionary.
3. Swap two tuples:

   `t1 = (1, 2)` and `t2 = (3, 4)` → after swap `t1 = (3, 4)`, `t2 = (1, 2)`.
4. Reverse a tuple without using slicing.
5. Create a tuple from user input where values are comma-separated.

Set Questions

Basic (Concept & Syntax)

1. Create a set with the values `{1, 2, 3, 4, 5}` and print it.
2. Create an empty set and verify its type.
3. Add an element `"python"` to a set.
4. Remove an element from a set using both `.remove()` and `.discard()` and observe the difference.
5. Check if `10` exists in `{5, 10, 15, 20}`.

Medium

1. Find the union of `{1, 2, 3}` and `{3, 4, 5}`.
2. Find the intersection of `{10, 20, 30}` and `{20, 40, 60}`.
3. Find the difference between `{1, 2, 3, 4}` and `{3, 4, 5, 6}`.
4. Create a set from a string and print it.
5. Remove duplicates from a list using a set.

Challenging

1. Given two sets, check if one is a subset of the other.
2. Write a program to find elements that are in either of two sets but not in both.
3. Use set comprehension to create a set of squares from 1 to 10.
4. Given a sentence, find all unique words using a set.
5. Write a program that checks if two strings are anagrams using sets.

Mixed Tuple & Set Challenges

1. Create a tuple of numbers, convert it to a set, and then back to a tuple.
2. Given a list with duplicates, convert it to a tuple with only unique values.
3. Given `t = (1, 2, 3, 2, 4, 1)`, find all unique elements and store them in a set.

4. Store 5 tuples (name, age) in a set and display all people older than 25.
5. Find common elements between two tuples using sets.