1. Creating and Accessing Lists:

a. How do you create an empty list in Python?

b. Create a list containing the elements: 1, 2, 3, 4, 5.

c. Access the third element of the list you created in b.

2. List Manipulation:

a. Append the number 6 to the list from question 1b.

b. Remove the element 3 from the list.

c. Replace the second element with 10.

3. List Slicing:

a. Given the list [1, 2, 3, 4, 5], extract a sub-list containing the first three elements.

b. Extract a sub-list containing the last two elements.

4. List Functions:

a. Find the length of the list [10, 20, 30, 40, 50].

b. Find the maximum and minimum values in the list [8, 3, 12, 4, 9, 2].

c. Calculate the sum of all elements in the list [1, 2, 3, 4, 5].

5. List Iteration:

a. Write a loop to print each element of the list [6, 7, 8, 9, 10] on a new line.

b. Write a loop to calculate the square of each element in the list [1, 2, 3, 4, 5] and store it in a new list.

6. List Comprehensions:

a. Using a list comprehension, create a new list containing the squares of numbers from 1 to 10.

b. Using a list comprehension, create a new list containing only the even numbers from the list [1, 2, 3, 4, 5, 6, 7, 8, 9, 10].

7. List Methods:

a. Use the count method to find how many times the number 5 appears in the list [1, 5, 2, 5, 3, 5, 4, 5].

b. Use the index method to find the index of the first occurrence of 3 in the list [1, 2, 3, 4, 3, 5, 6, 3].

8. Nested Lists:

a. Create a nested list [[1, 2], [3, 4], [5, 6]]. Access the element 4 from this list.

b. Using nested loops, print each element in the nested list on a new line.

9. List Sorting:

a. Sort the list [10, 5, 8, 2, 7] in ascending order.

b. Sort the list [10, 5, 8, 2, 7] in descending order.

10. List Operations:

a. Concatenate the lists [1, 2, 3] and [4, 5, 6].

b. Repeat the list [1, 2, 3] three times.

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