**Section A: List**

**Q1. Write a Python program to remove all duplicates from a list without using the set() function.**  
**Input:** [1, 2, 2, 3, 4, 4, 5]  
**Output:** [1, 2, 3, 4, 5]

python

CopyEdit

lst = [1, 2, 2, 3, 4, 4, 5]

unique\_list = []

for item in lst:

if item not in unique\_list:

unique\_list.append(item)

print(unique\_list)

**Q2. Given a list of integers, write a program to find the second highest unique number.**  
**Input:** [12, 5, 9, 21, 21, 3]  
**Output:** 12

python

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lst = [12, 5, 9, 21, 21, 3]

unique\_nums = list(set(lst))

unique\_nums.sort(reverse=True)

print(unique\_nums[1])

**Q3. Rotate a list to the right by k positions.**  
**Input:** List = [1, 2, 3, 4, 5], k = 2  
**Output:** [4, 5, 1, 2, 3]

python

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lst = [1, 2, 3, 4, 5]

k = 2

k = k % len(lst) # To handle k > length

rotated = lst[-k:] + lst[:-k]

print(rotated)

**Section B: Tuple**

**Q4. Write a Python program to multiply the elements of each tuple in a list of tuples and return a new list.**  
**Input:** [(2, 4), (3, 5), (4, 6)]  
**Output:** [8, 15, 24]

python

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lst = [(2, 4), (3, 5), (4, 6)]

result = [a \* b for a, b in lst]

print(result)

**Q5. Given a tuple of integers, write a program to count how many times each element occurs.**  
**Input:** (1, 2, 2, 3, 1, 4, 2)  
**Output:** {1: 2, 2: 3, 3: 1, 4: 1}

python

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tpl = (1, 2, 2, 3, 1, 4, 2)

count\_dict = {}

for item in tpl:

count\_dict[item] = count\_dict.get(item, 0) + 1

print(count\_dict)

**Section C: Dictionary**

**Q6. Write a Python program to count the frequency of each character in a string using a dictionary.**  
**Input:** 'banana'  
**Output:** {'b': 1, 'a': 3, 'n': 2}

python

CopyEdit

s = 'banana'

freq = {}

for ch in s:

freq[ch] = freq.get(ch, 0) + 1

print(freq)

**Q7. Merge two dictionaries such that common keys have their values summed.**  
**Input:** {'apple': 10, 'banana': 5}, {'banana': 3, 'orange': 7}  
**Output:** {'apple': 10, 'banana': 8, 'orange': 7}

python

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d1 = {'apple': 10, 'banana': 5}

d2 = {'banana': 3, 'orange': 7}

merged = d1.copy()

for key, value in d2.items():

merged[key] = merged.get(key, 0) + value

print(merged)

**Q8. Given a dictionary of student names and their marks, print the name(s) of the student(s) with the highest marks.**  
**Input:** {'Alice': 85, 'Bob': 92, 'Carol': 92}  
**Output:** ['Bob', 'Carol']

python

CopyEdit

students = {'Alice': 85, 'Bob': 92, 'Carol': 92}

max\_mark = max(students.values())

top\_students = [name for name, mark in students.items() if mark == max\_mark]

print(top\_students)

**Section D: Set**

**Q9. Write a Python program to find all common elements among three lists using set operations.**  
**Input:** [1, 2, 3], [2, 3, 4], [3, 2, 5]  
**Output:** {2, 3}

python

CopyEdit

a = [1, 2, 3]

b = [2, 3, 4]

c = [3, 2, 5]

common = set(a) & set(b) & set(c)

print(common)

**Q10. From a sentence entered by the user, extract and display all unique words using a set.**  
**Input:** 'this is a test this is fun'  
**Output:** {'this', 'is', 'a', 'test', 'fun'}

python

CopyEdit

sentence = 'this is a test this is fun'

words = sentence.split()

unique\_words = set(words)

print(unique\_words)