**Python Coding Challenge**

Topic: List, Tuple, Dictionary, Set | Total Questions: 10 | Time: 60 minutes

Section A: List (3 Questions):

Section B: Tuple (2 Questions):

Section C: Dictionary (3 Questions):

Section D: Set (2 Questions):

Q1. Write a Python program to remove all duplicates from a list without using the set() function.

Input Example: [1, 2, 2, 3, 4, 4, 5]

Output: [1, 2, 3, 4, 5]

Input\_List = [1, 2, 2, 3, 4, 4, 5]

Unique\_List = []

for item in Input\_List:

if item not in Unique\_List:

Unique\_List.append(item)

print("Output:",Unique\_List)



Q2. Given a list of integers, write a program to find the second highest unique number.

Input Example: [12, 5, 9, 21, 21, 3]

Output: 12

Int\_list = [12, 5, 9, 21, 21, 3]

unique\_list = []

for number in Int\_list:

if number not in unique\_list:

unique\_list.append(number)

unique\_list.sort(reverse=True)

if len(unique\_list)>=2:

print("Output:",unique\_list[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]

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

k = 2

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

print(rotated)



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]

input\_list = [(2, 4), (3, 5), (4, 6)]

output = []

for a,b in input\_list:

output.append(a\*b)

print("Output",output)



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}

input\_tuple = (1, 2, 2, 3, 1, 4, 2)

count\_dict = {}

for num in input\_tuple:

if num in count\_dict:

count\_dict[num]=count\_dict[num]+1

else:

count\_dict[num]=1

print("Output:",count\_dict)



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}

input\_new = 'banana'

count\_freq\_dict = {}

for letter in input\_new:

if letter in count\_freq\_dict:

count\_freq\_dict[letter] = count\_freq\_dict[letter]+1

else:

count\_freq\_dict[letter] = 1

print("Output:",count\_freq\_dict)



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}

dict\_1 = {'apple': 10, 'banana': 5}

dict\_2 = {'banana': 3, 'orange': 7}

dict\_result = {}

for key in dict\_1:

dict\_result[key] = dict\_1[key]

for key in dict\_2:

if key in dict\_result:

dict\_result[key] += dict\_2[key]

else:

dict\_result[key] = dict\_2[key]

print(dict\_result)



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']

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

highest = max(marks.values())

toppers = []

for name in marks:

if marks[name] == highest:

toppers.append(name)

print(toppers)



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}

list1 = [1, 2, 3]

list2 = [2, 3, 4]

list3 = [3, 2, 5]

set1 = set(list1)

set2 = set(list2)

set3 = set(list3)

common = set1&set2&set3

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'}

sentence = 'this is a test this is fun'

words = sentence.split()

unique\_words = set(words)

print(unique\_words)

