LAB ASSIGNMENTS
PYTHON PROGRAMMING LAB
MCA 1st Year 1st Semester, 2022
Subject Code: MCAP1112

Day 3

Write Python scripts to:

1. Given a list of tuples, each containing name, age, and profession, generate strings of English sentences as "Name is X years old and works as Y." for each one.

   Sample Input: [('Adnan', 25, "Programmer"), ("Swati", 27, 'DBA'), ('Anand', 26, "Tester")]

   Output: Adnan is 25 years old and works as Programmer.

   Swati is 27 years old and works as DBA.

   Anand is 26 years old and works as Tester.

2. Convert a Linux (UNIX) file permission in octal format into a string format.

   [The permissions are split into three sets of three permissions: read, write, and execute for the owner, group, and others. Each of the three values can be expressed as an octal number summing each permission, with 4 corresponding to read, 2 to write, and 1 to execute. Or, it can be written with a string using the letters r, w, and x or - when the permission is not granted]

Sample input	Sample output
755	rwxr-xr-x
750	rwxr-x---
642	rw-r---w-

3. Given a non-empty dictionary, create a list of tuples where each tuple is a key, value pair of the dictionary.
4. Find maximum and minimum k elements in a Tuple.
5. Create a list of tuples from given list of numbers, with number and its square in each tuple.

   Sample Input: [2, 5, 1, 4] Output: [(2, 4), (5, 25), (1, 1), (4, 16)

6. Extract unique values from a dictionary.
7. Append dictionary keys and values (in order), all keys before all values.

   Sample Input: {1: "Jan", 2: "Feb", 3: "Mar"}

   Output : [1, 2, 3, 'Jan', 'Feb', 'Mar']

8. Sort the items of a dictionary (i) by keys, (ii) by values
9. Remove all duplicates words from a given sentence.
10. Use a dictionary to count the frequency of letters in an input string. Only letters should be counted, not blank spaces, numbers, or punctuation. Upper case should be considered the same as lower case.

    Sample Input: This is a sentence.

    Output: {'t': 2, 'h': 1, 'i': 2, 's': 3, 'a': 1, 'e': 3, 'n': 2, 'c': 1}

11. Use a dictionary to count the frequency of words in an input string. Only words should be counted, not blank spaces, numbers, or punctuation. Upper case should be considered the same as lower case.

Sample Input: Fear leads to anger; Anger leads to hatred; Hatred leads to conflict; Conflict leads to suffering.

Output: {'fear': 1, 'leads': 4, 'to': 4, 'anger': 2, 'hatred': 2, 'conflict': 2, 'suffering': 1}

12. Given a list of filenames, generate a new list to rename all the files with extension 'cpp' to the extension 'h'.

Sample Input: ["program.c", "stdio.cpp", "sample.cpp", "a.out", "math.cpp", "cpp.out"]

Output: ['program.c', 'stdio.h', 'sample.h', 'a.out', 'math.h', 'cpp.out']

13. Given a dictionary, which contains domain names as keys, and a list of users as values, generate a list that contains complete email addresses.

Sample input

{"gmail.com": ["paul.buchheit", "sanjeev.singh", "kevin.fox"], "yahoo.com": ["jerry.yang", "david.filo"], "hotmail.com": ["sabeer.bhatia"]}

Sample output

['paul.buchheit@gmail.com','sanjeev.singh@gmail.com','kevin.fox@gmail.com', 'jerry.yang@yahoo.com', 'david.filo@yahoo.com', 'sabeer.bhatia@hotmail.com']

14. Given a dictionary, which contains group names with the list of users (Users can belong to multiple groups), create a dictionary with the users as keys and a list of their groups as values.

Sample input

{"local":["admin", "Ananya"],"public":["admin", "Zahir"], "administrator":["admin"] }

Sample output

{'admin': ['local', 'public', 'administrator'], 'Ananya': ['local'], 'Zahir': ['public']}

15. Given a dictionary with grocery items and their price, update the dictionary with an added item of total price of all of the groceries in the dictionary.

Sample input

{"apples": 100.50,"bananas": 40, "oranges": 150, "bread": 12.50, "milk": 23.50, "eggs": 39}

Sample output

{'apples': 100.5, 'bananas': 40, 'oranges': 150, 'bread': 12.5, 'milk': 23.5, 'eggs': 39, 'total': 365.5}

16. Given a dictionary that contains a student's roll, name and a list of marks,

(i) Update the dictionary with an added item of the total of the student's marks.

Sample Input: {"roll": 5, "Name": "Ananya", "marks": [79, 88, 92]}

Output: {'roll': 5, 'Name': 'Ananya', 'marks': [79, 88, 92], 'total': 259}

(ii) Update the dictionary with an added entry of the total of the student's marks in the list.

Sample Input: {"roll": 5, "Name": "Ananya", "marks": [79, 88, 92]}

Output: {'roll': 5, 'Name': 'Ananya', 'marks': [79, 88, 92, 259]}

(iii) Update the dictionary with the list replaced by the total marks of the student

Sample Input: {"roll": 5, "Name": "Ananya", "marks": [79, 88, 92]}

Output: {'roll': 5, 'Name': 'Ananya', 'marks': 259}