Programming Fundamentals

Assignment 3

Topic: Sequences (Lists,Dictionaries)

Deadline: Sun, 26th Dec, 2021 - 11:55 PM

Upload: Slate

Total Marks: 20

Tasks to do:

Create a dictionary named as **student** with a following structure:

1. Key: roll_number
2. Value: list of following attributes:
    a. First_name - string
    b. Last_name - string
    c. is_Registered Student – Boolean
    d. CGPA - float
    e. Semester - int

Sample Example:

{‘p21-9099’ : [“John”, “Adam”, True , 3.14 , 1]}

Tasks:

1. Initialized a dictionary named **student** with 10 different students and print all records.

Example:

student =

{‘p21-9099’ : [“John”, “Adam”, True , 3.14 , 2],‘p21-9100’ : [“Ahmad”, “Raza”, True , 3.14 , 1],‘p21-9101’ : [“Ali”, “Khan”, True , 2.14 , 2],..}

2. Write the following functions:
    a. Add_Student
    b. Search_Student
    c. Update_Student
    d. Delete_Student
    e. Get_Students

Let’s explain the functions in detail**.**

A) Add_Student

- This function will take two parameters,first parameter will be dictionary that contain all students following the above structure and second parameter will be a dictionary that contains new student information accordingly. The function should add it to the dictionary. The function should return the dictionary that contain all students.

B) Search_Student

- This function will take two parameters, The dictionary(that contain all students) and student name for whom we are searching. The function should return the dictionary that contains the information about that student if exist else return empty dictionary. For example if the above dictionary(**student)** and name(**“Ahmad Raza”**) is given as input to the function,it should simply return

  {‘p21-9100’ : [“Ahmad”, “Raza”, True , 3.14 , 1]}.

C) Update_Student

- This function will take two parameters,first parameter will be dictionary that contain all students and second parameter will be a list that have rollnumber at zero index,name of information that has to be updated and the value by which the information should be replaced. The function should update the student if exist else add it. The function should return the dictionary that contain all students. For example if the above dictionary(**student)** and list [“p21-9100”,”CGPA”,3.88] is given as input to the function,it should simply return

  {‘p21-9099’ : [“John”, “Adam”, True , 3.14 , 2],‘p21-9100’ : [“Ahmad”, “Raza”, True , 3.88 , 1],‘p21-9101’ : [“Ali”, “Khan”, True , 2.14 , 2],..}

D) Delete_Student

- This function will take two parameters dictionary(that contain all students) and student name whom we want to delete. The function should delete the student from dictionary that contain students and return the dictionary.

E) Get_Students

- This function will take dictionary that contain students as parameter. The function should return a nested list that contain three lists, The first list should contain name of those student who have same CGPA, The second should contain the names of those student who have same semester and the third list should be composed of students who have either CGPA,semester or both in common. For example if the above dictionary(**student)** is given as input to the function,it should simply return [[‘John Adam’,’Ahmad Raza’],[‘John Adam’,’Ali khan’],[‘John Adam’,’Ahmad Raza’,’Ali khan’]]

Instructions:

- Task 1 code should be past in provided A3T1.py file.
- Task 2, Every code should be past in the specific order provided in A3T2.py file.
- Upload both A3T1.py and A3T2.py file.

Note:

- Zero credit will be given to those who create functions with name other then the given.
- Zero credit will be given to those who use build in libraries or functions.