

Program 2 - Student Database

Date Modified: 3/5/2024

Due Date: iLearn

Program Details

In this programming project you will write a Python program that will act as a student database for TN Tech. This program will use dictionaries to store student T-numbers that are linked to the rest of the student information (other dictionaries). These users will be stored as dictionaries in a dictionary. The program should be able to view, add, remove, and modify users. You will be using a menu to choose what action you want to execute. Your program will need to handle errors and not crash if something was "unexpected".

This program will use all that we have learned this semester along with the newly learned dictionaries. This program will help us understand how to manipulate dictionaries and how data is passed around in memory.

Functions

Your program should use functions to modularize code. There are several required functions listed below:

```
def addStudent(student_dict):
    # make this function add a student to the "database"
    # this function will only add a student if there is no student associated with
    the new T-number

def modifyStudent(student_dict):
    # make this function modify an existing student in the "database"
    # this function is roughly the same as addStudent() except the check for the
    T-number is the opposite. we can only modify if the T-number already exists

def viewStudents(student_dict):
    # make this function list all of the students in the "database"
    # this should be organized in a nice and neat way
    # do not just print the dictionary, traverse through both the inner and outer
    dictionaries and print each item on a new line, like my example

def removeStudent(student_dict):
    # make this function remove a student, given the T-number
    # this function should only remove a student if the T-number exists

def menu():
    # this function prints a menu of options that a user can choose from.
    # you should have options for:
    # list students
    # add student
    # modify student
    # remove student
    # quit
```

```
def main():
    # provided starter data
    student_data={"T123":{"NAME":"Travis Lee", "USERNAME":"tlee",
"MAJOR":"CSC"},"T124":{"NAME":"Jeremy Potts", "USERNAME":"jpotts",
"MAJOR":"CHEM"}}

    <While True here>
        # call menu() to print options
        # use input() to get user input
        # use an if / elif block to decide which other function to call
        # NOTE: remember that dictionaries are passed by alias/reference
```

Requirements

1. Your Python program should contain a comment block with your name, the assignment title, and the due date of the program.
2. Your program should use functions to modularize the code.
3. Your program should be able to view items, add items, modify existing items, and remove items to/from the dictionary.
4. Your program should have all of the required functions in the code block in the section above completed and operational.
5. Your program should use well-chosen variable names, even for parameters, and good names for functions.
6. Your program should be well organized and should have comments throughout the code that explain what chunks or lines of code do.
7. Submit your Python file as a zip.

All of the above requirements are important for helping you grow as a computer scientist and software engineer. This program will help you understand Python dictionaries and how Python handles mutable objects in memory. Along with dictionaries, you will gain an even deeper understanding of creating functions and utilizing loops to do repetitive tasks.

Sample Output

TN Tech University Student Database

Please make a selection:

1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit

Selection: 1

T123

NAME - Travis Lee

USERNAME - tlee

MAJOR - CSC

T124

NAME - Jeremy Potts

USERNAME - jpotts

MAJOR - CHEM

TN Tech University Student Database

Please make a selection:

1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit

Selection: 2

Enter new user ID number: T125

Enter new user NAME field: Maple

Enter new user USERNAME field: mlee

Enter new user MAJOR field: BIO

TN Tech University Student Database

Please make a selection:

1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit

Selection: 1

T123

NAME - Travis Lee

USERNAME - tlee

MAJOR - CSC

T124

NAME - Jeremy Potts
USERNAME - jpotts
MAJOR - CHEM

T125

NAME - Maple
USERNAME - mlee
MAJOR - BIO

TN Tech University Student Database

Please make a selection:

1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit

Selection: 4

Enter new user ID number: T125
Enter new user NAME field: Maple Lee
Enter new user USERNAME field: mlee
Enter new user MAJOR field: BIO

TN Tech University Student Database

Please make a selection:

1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit

Selection: 1

T123

NAME - Travis Lee
USERNAME - tlee
MAJOR - CSC

T124

NAME - Jeremy Potts
USERNAME - jpotts
MAJOR - CHEM

T125

NAME - Maple Lee
USERNAME - mlee
MAJOR - BIO

```
TN Tech University Student Database
Please make a selection:
1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit
Selection: 3
Please specify ID of student to remove: T124
Student Removed!
TN Tech University Student Database
Please make a selection:
1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit
Selection: 1

T123
*****
NAME   - Travis Lee
USERNAME - tlee
MAJOR   - CSC

T125
*****
NAME   - Maple Lee
USERNAME - mlee
MAJOR   - BIO

TN Tech University Student Database
Please make a selection:
1. View all current students
2. Enter new student data
3. Remove student data
4. Modify student data
5. Quit
Selection: 5
```