UNIVERSITY OF ENGINEERING AND TECHNOLOGY PESHAWAR, JALOZAI CAMPUS

Lab 2: Familiarization with the Mechanism of compound data types

Lab Title: EE-271 "OOP & Data Structures Lab"

Note: Using the internet is encouraging for finding relevant code and modifying it for the problem at hand.

Date: Monday, October 16, 2023 Time: 10 min/ Task

Lab Report Work

1. Make a list that contains the student name, the last four digits of the registration number as an integer, the CGPA as a float, and a list that contains GPA of all semesters. **(Nested List)**
2. Consider the following structure and observe.

   Fd= { 'one': 'aik', , 'three': 'teen', 'ten' : 'das', 'fifteen' : 'pandra'}

   - Print Fd
   - Use key method and print the list of keys.

Lab practice

List:

1. Make a list of 5 any integers.
2. Make a list that contains the student's name, the last four digits of the registration number as an integer, CGPA as a float, and a list that contains the GPA of all semesters. **(Nested List)**
3. In the above list print the student's CGPA. **(Index)**
4. Print the list elements using the while loop and use the length function. **(len)**
5. Access the list of all semester GPAs using negative indexing.
6. Make a list of the first 20 integers using the range function.
7. Make a list of odd integers from 20 to 40 using the range function.
8. Consider the student list.

   Student = [Ibrahim, Husain, Irfan, Ayub, Usman]

   Use **in** and **not in** operators to ensure that the student is in the list or not.
9. Print all the student lists in task 8 using the for loop.
10. Observe what is print, what is the first thing print, what the last thing print. Consider task 8 for the student list.

    Student [1:3] and student [2:4]

Tuple:

1. Make a tuple containing first five letters of English. (**definition)**
2. Use the index to access the third and last element.

Dictionary:

1. Consider the following structure and observe.

   Fd= { ‘one’: ‘aik’, , ‘three’: ‘teen’, ‘ten’ : ‘das’, ‘fifteen’ : ‘pandra’}

   - Bracket type
   - Print Fd
   - Fd[‘one’]
   - Fd[‘ten’]
   - del Fd[‘three’] and then print Fd.
   - Len(Fd).
   - Use the key method and print the list of keys.
   - Use the value function to print the list of values.
   - Observe the output of Fd.items().
   - Observe the output Fd.has_key(‘one) and Fd.has_key(‘two’) and think where such type of output will help and required.
   - To copy the dictionary, one may use one of the following. Verify by printing copy and alias.
     - copy = Fd.copy()
     - alias = Fd
     - Now let alias[‘three’] = ‘3’, now print alias and observe the result.
     - Also let copy[‘three’] = ‘3’, now print copy and observe the result.

Encouraging

1. This will be appreciated, and this is an indicator for strong coding skills.

```
['spam!', 1, ['Brie', 'Roquefort', 'Pol le Veq'], [1, 2, 3]]
```

As an exercise, write a loop that traverses the previous list and prints the length of each element. What happens if you send an integer to `len`*?*

2. Download the Result CSV and Pima Indians Diabetes Database from the GitHub link below.

   https://github.com/irshadarif/Pythonic-OOP/tree/main/Data_Set_CSV

- Read the CSV as a list.
- Read this CSV as a list of dictionaries.
- Also calculate the mean and standard deviation. Calculation of all statistical perimeter will be a plus.

Recommended reading

1. Read from pages 81 to 112 from “How to think like a computer scientist” “learning with python” by Allen Downey.
2. Also watch the youtube lecture from this playlist (From 34 to 44). https://www.youtube.com/watch?v=UjeNA_JtXME&list=PLlRFEj9H3Oj7Bp8-DfGpfAfDBiblRfl5p