Exercises 02

List, Tuple, Dictionary, Set, String, Function, iteration, recursion, Exception Handling, and Files

3350

List

Exercise 01

- The following is a list of 10 students ages:

```
ages = [19, 22, 19, 24, 20, 25, 26, 24, 25, 24]
```

1. Sort the list and find the min and max age. (50)
2. Add the min age and the max age again to the list.(50)
3. Find the median age (one middle item or two middle items divided by two).(100)
4. Find the average age (sum of all items divided by their number).(100)
5. Find the range of the ages (max minus min).(50)
6. Compare the value of (min - average) and (max - average), use abs() method.(100)

Tuple

Exercise 02

1. Create an empty tuple (50)
2. Create a tuple containing names of your sisters and your brothers, separately (imaginary siblings are fine) (100)
3. Join brothers and sisters tuples and assign it to siblings (100)
4. How many siblings do you have? (50)
5. Modify the siblings tuple and add the name of your father and mother and assign it to family_members (100)

Dictionary

Exercise 03

1. Create a student dictionary and add first_name, last_name, gender, age, skills, country, city and address as keys for the dictionary (100)
2. Get the length of the student dictionary (50)
3. Get the value of skills and check the data type, it should be a list (50)
4. Modify the skills values by adding one or two skills (100)
5. Get the dictionary keys as a list (100)
6. Get the dictionary values as a list (100)
7. Change the dictionary to a list of tuples using items() method (50)
8. Delete one of the items in the dictionary(50)
9. Delete one of the dictionaries(50)

Set

Exercise 04

1. Find the length of the set it_companies (50)
2. Add 'Twitter' to it_companies (50)
3. Insert multiple IT companies at once to the set it_companies (100)
4. Remove one of the companies from the set it_companies(50)
5. What is the difference between remove and discard (100)

it_companies = {'Facebook', 'Google', 'Microsoft', 'Apple', 'IBM', 'Oracle', 'Amazon'}

Set

Exercise 05 (Search!)

- (I am a teacher and I love to inspire and teach people.) How many unique words have been used in the sentence?

  Use the split methods and set to get the unique words.

String

Exercise 06

- Write a function to Count the number of characters (characters frequency) in a string and print the result as a dictionary!

- Example: input: 'Filoger' , output: {'f': 1, 'i': 1, 'l': 1, 'o': 1, 'g': 1, 'e': 1, 'r': 1}

Function

Exercise 07

- Write a Python function to print the odd numbers from a given list.

- Sample List : [1, 2, 3, 4, 5, 6, 7, 8, 9], Expected Result : [1, 3, 5, 7, 9]

Function

Exercise 08

- Write a Python function to sort a given list of dictionaries (employees) using Lambda. (Sort by age, then for same ages, sort by name)

employees = [{"name": "Sanaz", "age": 14}, {"name": "AmirHossein", "age": 18}, {"name": "Azam", "age": 14}, {"name": "Zahra", "age": 16}, {"name": "Shayan", "age": 18}, {"name": "Zahra", "age": 17}]

- `output: [{"name": "Azam", "age": 14}, {"name": "Sanaz", "age": 14}, {"name": "Zahra", "age": 16}, {"name": "Zahra", "age": 17}, {"name": "AmirHossein", "age": 18}, {"name": "Shayan", "age": 18}]`

Iteration and recursion

Exercise 09

- Write a Python function to calculate first n numbers of Fibonacci sequence. (n is function input)

points:

- Use recursion to solve the question!

- `input: 7, output: 0 1 1 2 3 5 8`

Exception Handling

Exercise 10

- print the type of error and handle that. (Use specific and General Exception)

```
dict = {'Python': 2, 'DIP': 7, 'DL': 8}
print (dict['CV'])
```

Exception Handling

Exercise 11

- print the type of error and handle that. (Use specific and General Exception)

```
code = '45145GT'
int(code)
```

Files

Exercise 12

- Create a txt file (name: Ex_01_Files.txt) and save the following list in the file! (save each element in the new line!)

Points:

- Before reading file, check the file existence!
- Close the file, finally!

[1, 7, 'test', 'apple', 'banana', 'cherry', 785, 19, 'Python', 78.0, True, 7854.15]

Files

Exercise 13

- Read the Ex_01_Files.txt and save and print the numbers and strings in to separated list!

Points:

- Before reading file, check the file existence!
- Close the file, finally!
- Handle FileNotFoundError error!