

PYTHON PROGRAMMING ASSIGNMENT SET 02

Ferdowsi University of Mashhad

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Lectures Given By: Prof. Masoud Mazloom - ma.mazloom@ferdowsi.um.ac.ir

Teaching Assistants:

- Hossein Jabari – hosseinjabari96@gmail.com
- Zahra Ghamari – zahra.ghamari.ghalibaf@gmail.com

Submission Deadline: April 8, 2022, 00:00 _____

Part 1:

- 1- Generate a random number $x \in \{1, 2, \dots, 100\}$.
- 2- Use for and range to iterate over numbers smaller than x.
- 3- Use if and the remainder operator (%) to print all even numbers below x.
- 4- Use the input command to get input max_x.
- 5- Do the first step to generate a random number $x \in \{1, 2, \dots, \text{max_x}\}$.
- 6- Repeat steps until you generate 10 even numbers.
- 7- Report the sum of generated numbers.

Part 2:

- 1- Write a Python program to change Sara's salary to 300 in the following dictionary.

```
sample_dict = {'cus1': {'name': 'Hasan', 'occupation': 'baker', 'salary': 7500},  
'cus2': {'name': 'Hossein', 'occupation': 'butcher', 'salary': 8000},  
'cus3': {'name': 'Sara', 'occupation': 'farmer', 'salary': 50}}
```

- 2- Write a function that accept a dictionary as a parameter and return a dictionary where the keys are values from the input dictionary and the values are lists of keys from the input dictionary. For example,
input: { "key1" : "value1", "key2" : "value2", "key3" : "value1" }
output: { "value1" : ["key1", "key3"], "value2" : ["key2"] }

3- Write a function that determines and displays the number of unique characters in a string entered by the user. For example, Hello, World! has 10 unique characters while zzz has only one unique character.(Use only dictionary)

4- Write a function that asks the user to enter a text and return him a dictionary whose keys are the words of the text entered and the values are the reverse of the words that make up the text. Example for the text T = "Python is easy", the program must return the dictionary:
d = {'Python': 'nohtyp', 'is': 'si', 'easy': 'ysae'}

5- Given a dictionary d whose key values are lists. Write a function that transforms the dictionary d by sorting the lists. Example for the dictionary:
d = {'a1': [21, 17, 22, 3], 'a2': [11, 15, 8, 13], 'a3': [7, 13, 2, 11], 'a4': [22, 14, 7, 9]}
The program should return the dictionary:
d = {'a1': [3, 17, 21, 22], 'a2': [8, 11, 13, 15], 'a3': [2, 7, 11, 13], 'a4': [7, 9, 14, 22]}

6- Write a function that asks the user to enter ten integers of their choice and return them a dictionary whose keys are the integers entered and whose values are the lists of divisors of the numbers entered. Example if the user enters the numbers: 2, 7, 11, 5, 3, 4, 9, 14 the program returns the dictionary:
d = {2: [1, 2], 7: [1, 7], 14: [1, 2, 7, 14], 9: [1, 3, 9], 11: [1, 11], 5: [1, 5], 3: [1, 3], 4: [1, 2, 4]}