CS103 – Spring 2022- Lab 10 Exercises

Exercise Instructions

- Make a folder **Lab10** inside your **cs103sp22** folder.
- Create a new notebook inside your Lab10 folder (`lab10.ipynb`).

You have two types of questions: exercises and practice problems. The answers will be given for the exercises, and you are expected to solve the practice problems. However, feel free to seek help from your friends or TAs to solve the problems. Remember, the lab assignments are not individual, and you can get any help you want.

Grade by #correct: Exercises: 70 points

Each practice problem: 15 points

Deliverables: `lab10.ipynb`

Exercises

EXERCISE 1:

Write a function "**`listToDict`**" that takes two list "**`L1`**" and "**`L2`**" and returns a dictionary. The values of the first list will become the **keys** whereas the values of second list will hold the **values**. Assume no duplicated values in the keys.

Sample Input:

```
L1 = [1,2,3]
L2 = ['first','second','third']
```

Sample Output

```
{'1': 'first', '2': 'second', '3': 'third'}
```

EXERCISE 2:

Write a function "**`dMax`**" that takes a dictionary "**`d`**" and returns the maximum value of the dictionary. Assume the dictionary doesn't have duplicated values.

Sample Input:

```
d = {'a':2500, 'b':61874, 'c': 60, 'd': 1560}
```

Sample Output

```
61874
```

EXERCISE 3:

Write a function "**dString**" that takes a string "**s**" and returns a dictionary. The keys of the dictionary will be the characters of the string and the values will be the number of occurrence of these characters. The string may have letters, digits and symbols. You should ignore the spaces.

Sample Input:

```
s = "UAB CS BS"
```

Sample Output

```
{'U': '1', 'A': '1', 'B': '2', 'C': '1', 'S': '2'}
```

EXERCISE 4:

Write a function "**dMerge**" that takes two dictionaries "**d1**" and "**d2**" and returns another dictionary (combination of **d1** and **d2**). The function is to add values for common keys.

Sample Input

```
d1 = {'orange': 500, 'apple': 1100, 'carrot':600}
d2 = {'orange': 50, 'apple': 10,'grapes':300}
```

Sample Output

```
d3 = {'orange': 550, 'apple': 1110, 'carrot':600, 'grapes':300}
```

Practice Problems

PRACTICE PROBLEM 1:

Write a function "**dCube**" that takes an int "**n**" and returns a dictionary. The keys of the dictionary are numbers between **1** to **n** (both included) and the values are **cube** of the keys.

Sample Input

```
n = 5
```

Sample Output

```
{'1': 1, '2': 8, '3': 27, '4': 64, '5': 125}
```

PRACTICE PROBLEM 2:

Write a function "**nonRepeatings**" that takes a string "**s3**" and returns a list which only includes the **non-repeating** characters in this string.

Sample Input

```
s3 = "aaazzzdcccrttt"
```

Sample Output

```
['d', 'r']
```