Lab Session 04: Recursion and Dictionaries

Q1[2mks]. Define a recursive function that returns the list of factors of a given number
Sample input: 30
Sample output: [1,2,3,5,6,10,15,30]

Q2 [2mks]. Define a recursive function that can receive an integral number and reverse its digits and computes their sum.
Sample input: 15937
Sample output: reversed number: 73951
digit's sum: 25

Q3 [Mandatory: 1mk]. Define a recursive function that acts as the power function i.e it receives two integral numbers x and y and returns x^y
Sample input: (2,3)
Sample output: 8

Q4.1 [2mks] Write a Python program to combine two dictionaries by adding values for common keys.
Sample input:
grade_1 = {"Id_1": 100, "Id_2": 75, "Id_3":300}
grade_2 = {"Id_1": 300, "Id_2": 50, "Id_4":400, "Id_5":150}
Sample output: {"Id_1": 400, "Id_2": 125, "Id_4": 400, "Id_3": 300, "Id_5":150}

Q4.2. [2mks] Write a Python program to find the highest 3 values in a dictionary (e.g in Q4.1).

Q4.3. [2mks] Write a Python program to determine how many values exceed a certain number and print all the key/value pairs in the dictionary line by line, indicating which one is passed or not.
Sample input: =
grade = {"Id_1": 400, "Id_2": 125, "Id_4": 400, "Id_3": 300, "Id_5":150}
success score = 200
Sample output:
Id_1: 400 passed
Id_2: 125 not passed
Id_3: 300 passed
Id_4: 400 passed
Id_5: 150 not passed

Q5. [2mks] Write a program to compute the frequency of the words from the input. The output should output after sorting the key alphanumerically.
Sample input: This is just example
Sample output: {t:2, h:1, i:2, s:3, j:1, u:1, e:2, x:1, a:1, m:1, p:1, l:l}

Good hunting