PSG College of Technology

Department of Applied Mathematics and Computational Sciences

Python - Laboratory

**Problem Sheet - Basics**

1. Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included). The numbers obtained should be printed in a comma-separated sequence on a single line.
2. ["www.zframez.com", "www.wikipedia.org", "www.asp.net", "www.abcd.in"]

Write a python program to print website suffixes (com, org, net, in) from this list. Input the list, don’t initialize.

1. Write a program that computes the value of a+aa+aaa+aaaa with a given digit as the value of a.

Suppose the following input is supplied to the program:

9

Then the output should be:

11106

1. Read a given string, change the character at a given index and then print the modified string.

**Input Format**   
The first line contains a string, S.   
The next line contains an integer i, denoting the index location and a character separated by a space.

**Sample Input**

abracadabra

5 k

**Sample Output**

abrackdabra

1. Write a function that tests if a number is prime. Test it by writing out all prime numbers less than 50.
2. With a given integral number n, write a program to generate a dictionary that contains (i, i\*i) such that is an integral number between 1 and n (both included). and then the program should print the dictionary.

Suppose the following input is supplied to the program:

8

Then, the output should be:

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}

1. Determine if a sentence is a pangram.

Example of pangram: [The quick brown fox jumps over the lazy dog](https://en.wikipedia.org/wiki/The_quick_brown_fox_jumps_over_the_lazy_dog)

1. Implement run-length encoding and decoding.

A hypothetical scan line, with B representing a black pixel and W representing white, might read as follows:

WWWWWWWWWWWWBWWWWWWWWWWWWBBBWWWWWWWWWWWWWWWWWWWWWWWWBWWWWWWWWWWWWWW

With a run-length encoding (RLE) data compression algorithm applied to the above hypothetical scan line; it can be rendered as follows:

12W1B12W3B24W1B14W

1. Calculate the centered average of an array of integers.
2. Given an array of ints, return True if the array contains a 2 next to a 2 somewhere.

has22([1, 2, 2]) → True  
has22([1, 2, 1, 2]) → False  
has22([2, 1, 2]) → False

1. Consider an n-digit number. Square it and add the right n digits to the left n or n-1 digits. If the resultant sum is equal to the original number, then it is a Keprekar number. 9 satisfies this property, since 92=81 and 8+1=9 itself. Similarly 2972=88209 and 88+297=297. Write a Python program to check whether a number is Keprekar or not.