

**DSCI 510: Principles of Programming for Data Science**  
**Spring 2024**  
**Lab Assignment 3**  
**Due: 2nd Feb 2024**

**Q1) Count Vowels. [10 points]**

Write a code to count the number of vowels in a string.

Function: count\_vowels

Argument: (str) sentence

Return: (int) count

Note - Make sure you consider upper and lower cases of the vowels. No need to consider other types of input.

**Q2) Check for palindrome. [10 points]**

A palindrome is a word or phrase that reads the same both ways, forward and backward.

Write a program to check whether the given string is palindrome or not.

Function: check\_palindrome

Argument: (str) word

Return: (bool) True or False

**Q3) E-Mail ID Filter: [10 points]**

Every day we receive a lot of spam emails. We want to write a program that will allow us to count the spam and valid email addresses in our inbox.

Assume all of the valid email addresses are associated with USC domains - **usc.edu** and **isi.edu**

Email ids from **any other domain are spam email addresses.**

Your task is to identify how many spam and valid email addresses are present in the given list of email

IDs.

Function: email\_filter

Argument: (list) inbox\_emails

Return: (int) valid\_email\_count, (int) spam\_email\_count

Example:

Input - [ "xyz@usc.edu", "qwerty@yahoo.com", "example@isi.edu", "test@gmail.com", "dsci510@usc.edu" ]

The above list contains 3 valid email ids and 2 spam email ids

Output - 3,2

Hint - Use the built-in `split()` function to extract the domain