

**Lab 8: Functions**

**CSE 4108**

**Structured Programming I Lab**

October 2023

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**Lab Tasks**

1. **toUpper() and beyond!:**

We all know about the toupper() function from the <ctype.h> library, which converts a lowercase letter to an uppercase letter.

i. Write a function **void read\_string(char ch[], int length)** that will read the input string.

ii. Write a function **char to\_uppercase(char ch)** that will return a character in uppercase letter.

iii. Write a function **void print\_string(char ch[], int length)** that will print the whole string in uppercase.

**\*\*DON’T USE THE BUILT-IN toupper() function.**

2. **High Frequency!:**

Frequency of a character in a C character array or a string refers to the number of times a character or a letter is present in a string. Write a function to find out the frequency of the characters in a character array or string. The character array consists of lowercase letters.

**Sample Input:**

aezakmi

**Sample Output:**

a=2

e=1

i=1

k=1

m=1

z=1

3. **Pyramid Scheme:**

Write a C program that permits the user to specify a number of lines and then prints a pyramid consisting of stars. You have to write a function that takes the number of lines as a parameter. The pyramid must be centered.

**Sample Input:**

5

**Sample Output:**

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4. **Find the one!**:

You are given a 5 × 5 matrix. All the values of the matrix are zeros except one. For example,

0 0 0 0 0

0 0 0 0 0

0 1 0 0 0

0 0 0 0 0

0 0 0 0 0

The different value is always 1.

Your task is to find out the position of that value “1” inside the matrix. Write a Function that will take the matrix as a parameter and return the position of the “1”.

5. **Leap Year!:**

Write a C function that checks whether a year is a Leap year or not.

**Sample input:**

Enter a year: 2016

**Sample output:**

Yes

6. **Prime, Armstrong, Perfect Numbers:**

Write a C program to check whether a number is prime, armstrong, perfect number or not, using functions. You have to write three separate functions for this task.

For your reference:

Prime Number: <https://en.wikipedia.org/wiki/Prime_number>

Armstrong Number(Narcissistic Number!): <https://mathworld.wolfram.com/NarcissisticNumber.html>

Perfect Number: <https://mathworld.wolfram.com/PerfectNumber.html>

**Sample input:**

Input any number: 11

**Sample output:**

11 is prime number

11 is not a armstrong number

11 is not a perfect number