PDS Lab Section 8

Lab Day 09 – June 22, 2021

The top two lines of your programs must contain the following information:
//Roll No.: <Type in your roll no.>
//Name: <Type in your name>

You have to give names to your C files in the recommended format and upload them in Moodle. Please read the instructions given below.

Indent your program appropriately. Document your programs meaningfully using appropriately named variables and sufficient amount of comments. There will be marks for documentation and indentation .

1. Write the following text editor program in C. In the main() function, define a global array of 100 string pointers and name it as **sptr**. Write the following functions. Assume that all input to the program is only lower case characters.

a) **main:** In an infinite loop, display a menu and prompt the user to enter a choice(1--6). Based on the user choice (1--6), call the appropriate function (1→create(), 2→lengthStat(), …, 6→searchReplace()) described in the following. Terminate, when the user enters '0'.
b) **create**: First ask the user how many words (< 100) to enter. Read up to 100 words of various lengths from the keyboard one at a time, dynamically allocate just enough memory for each word entered, and store it so that the next element of sptr points to it [Note that each element of **sptr** is a string pointer]. The entered words therefore get sequentially placed in **sptr.** Display all the words that have been entered by the user.
c) **lengthStat**: Display the number of words that are of lengths: between 1-- 2 letters, between 3 -- 5 letters, and larger than 5 letters.
d) **letterStat**: Find and display the number of occurrences of the vowels ('a' to 'u') by considering all the words together.
e) **search:** Read a word from the user and check if the word is present in **sptr**. If present, display the sequence number in **sptr** at which it is present. If it is present multiple times, display each occurrence and the sequence number in **sptr** at which the word is present. **[5]**
f) **removeDuplicate**: Find all duplicate words, deallocate the duplicates, and display the updated list of words.
g) **searchReplace**: Read a word from the user and check if the word is present in **sptr**. Prompt the user to enter the new word. Replace (deallocate old word and allocate the new word) the word with the new word. If a word being searched is present at multiple locations, replace only the first occurrence. Display the updated list of words.

Name your C program file as LD08_1_<roll_no>.c. **[40 Marks]**

2. Write a C program with the following functions:
   a) **main:** Dynamically allocate a two dimensional integer array whose dimensions would be input by the user. Fill the array with randomly generated numbers between 0 and 100, i.e. [0,100]. Display the array in a properly formatted form. Call the function **findMinMax** with the 2D array as a parameter.
   b) **findMinMax:** Find the smallest and the largest of all the numbers present in the array and display them along with the row and column numbers at which they are present.

Name your C program file as LD08_2_<roll_no>.c. **[10 Marks]**

Submit your .c files in Moodle against the assignment submission link for Lab Day 9.