CSE 104L: Programming Lab Training 10

Q1. Write a structure to store book information like **accession number**, **name of the author**, **book title**, and also use a **flag** to know whether the book is issued or not.
Create the following functions:

a. Write a function to display book information according to accession number
b. Write a function to add a new book
c. Write a function to display all the books in the library of a particular author
d. Write a function to display the number of books of a particular title
e. Write a function to display the total number of books in the library. Also display the number of books that are issued and that not yet issued.
f. Write a function to Issue a book.

Don't create any global variable.

Q2. Write a structure to store the **name**, **account number**, and **balance** of customers (**more than 10**) and store their information.

a. Write a function to print the names of all the customers having balance **less than ₹ 2,000**.
b. Write a function to add **₹ 1,000** in the balance of all the customers having more than **₹ 10,000** in their balance and then print the incremented value of their balance

Q3. Write a program that can be used to implement card games. The description is as follows:

a. Each card is represented by Structure with two members (face of the card and suit of the card)

b. fillDeck function initializes the card array in order with "Ace" through "King" of each suit ("Hearts", "Club", "Spade", "Diamond")

c. shuffle function with randomly shuffle the deck (use random number generation for shuffling). The function loops through the 52 cards. For each card, a number between 0 and 51 is picked randomly. Next, the current card and the randomly selected card are swapped in the array. A total of 52 swaps are made in a single pass of the entire array, and the array of cards is shuffled!

d. deal function will print all the cards in the shuffled deck.

Q4. Define a structure named census with the following three members:

a. A character array city[] to store names
b. A long integer to store population of the city
c. A float number to store the literacy level

Write a program to do the following:

a. To sort and display the list based on literacy level
b. To sort and display the list based on population

Q5. Given a value of *n*, create a dynamic 2-D array which contains *n* rows and variable column dimension. The number of columns in row will increase by one till *n*.
The first row will have one column, second row will have two columns and similarly nth row will have n columns. You also need to fill the cells of the array with natural numbers in increasing order.
Following output is expected for *n=3* and *n=5*

```
0
1  2
3  4  5
```

```
0
1     2
3     4     5
6     7     8     9
10    11    12    13    14
```

Q6. Write a C program that allocates dynamic memory required for ***n*** strings, each with ***m*** length. (Each string is of different length, allocate memory accordingly).

Q7. Implement Creation, Insertion and Modification operations on any data structure of your choice that is allocated through dynamic memory

Q8. There exists a file numbers.txt, which contain positive and negative numbers. Write a program to read the file numbers.txt and write positive numbers and negative numbers in separate files positive.txt and negative.txt respectively.

Q9. Write a C program to find the first occurrence of a word in a file, and print the position of that word.

For example,
file.txt contains

I am a B Tech first year student at LNMIIT Jaipur.
Mathematics is my favorite subject.
Programming with files is entertaining..

Output:
Enter file path: ./file.txt
Enter word to search in file: subject
'subject' found at line: 2, col: 28