CS36 Lab 4

Arrays and strings

Lessons 1 to 55

3 test runs for each question

Save you lab file as lastname_firstinitial_lab04.txt

1. separate each question with a banner with question number, short description of the question.
2. For each question you must provide output for 3 test runs (use the sample test run formatting and data already provided plus makeup the rest yourself).
3. You must use the data given in the sample test runs that are given in the question. Provide your own data whenever there is no sample run data.
4. Your test run must be exactly the same as the sample test run specifications provided.
5. You are not allowed to use any topics not covered from lesson 1 to lesson 55.

The break, continue and goto C commands are not allowed to be used with loops. A zero will be given for that question if your program contains a break, continue or goto command used with loops. The break command is allowed only as part of the switch statement.

Arrays

1. Write a program to interchange the largest and the smallest number in an array
    a. Use functions – you must have a least these functions
        i. main()
        ii. void read_array(parameters,…) – to allow user to read the elements into the array
        iii. void display_array(parameters,…) – to print the elements of the array
        iv. you can create other functions as needed
    b. **NO GLOBAL Variables**.
    c. Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter the desired size of the array: 5
Enter a number for position 0:3
Enter a number for position 1:6
Enter a number for position 2:3
Enter a number for position 3:7
Enter a number for position 4:9

The elements of the array are:
arr[0]=3 arr[1]=6 arr[2]=3 arr[3]=7 arr[4]=9


The elements of the array after the interchange are:
arr[0]=9 arr[1]=6 arr[2]=3 arr[3]=7 arr[4]=3
```

2. Write a program to find the second largest integer number using an array of numbers
    a. Use functions – you must have a least these functions
        i. main()
        ii. void read_array(parameters,…) – to allow user to read the elements into the array
        iii. void display_array(parameters,…) – to print the elements of the array
        iv. you can create other functions as needed
    b. NO GLOBAL Variables.

    c. Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter the number of elements in the array: 6

Enter the number: 10
Enter the number: 35
Enter the number: 60
Enter the number: 34
Enter the number: 20
Enter the number: 46

The numbers you entered are: 10 35 60 34 20 46
The largest of these numbers is: 60
The second largest of these numbers is: 46
```

3. write a program to find whether the array of integers contain a duplicate number
    a. Use functions – you must have a least these functions
        i. main()
        ii. void read_array(parameters,…) – to allow user to read the elements into the array
        iii. void display_array(parameters,…) – to print the elements of the array
        iv. you can create other functions as needed
    b. NO GLOBAL Variables.

    c. Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter the size of the array:6
1
2
3
3
4
5

The numbers you entered are: 1 2 3 3 4 5
Duplicate number 3 found at location 2 and 3
```

Strings(no string methods or built-in string functions like strlen(), strcmp(), strcpy, etc… for questions 4,5,6,7)

4. Write a program to read and print the text until a * is encountered. Also, count the number of characters in the text entered. Your program should read(user input) each character at a time. Do not forget to terminate your string with '\0' character.

   Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter * to end
Enter the text : Hi there*
The text is : Hi there
The count of the characters is : 8
```

5. Write a program to read a sentence which is a single string. Then count the number of words in the sentence. The program will read in a string ***not one character at a time***.

   Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter the sentence : How are you
The total count of words is : 3
```

6. Write a program to enter a text that has commas. Replace all the commas with semi colons and then display the new text with semi colons. Your program will allow the user to enter a string not a character at a time.

   Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter the text : Hello, how are you
The copied text is : Hello; how are you
```

7. Write a program to enter a text. Then enter a pattern and count the number of times the pattern is repeated in the text. Your program will read in a string not a character at a time.

   Sample test Run 1(red user input) Provide your data for test run 2 and 3.

```
Enter string : She sells sea shells on the sea shore
Enter the pattern : sea

Pattern found 2 times
```

   ***Print 'Pattern not found' if pattern is not found.