

Assignment

Question 1

Complete the details of the program given below at appropriate places (see the comment parts of the program). Remove the comment parts in the program you write. After completion of the function **reverse**, the first string is written in reverse order. After completion of the function **check_char**, if flag=1 then the input character is present in the second string; otherwise flag=0.

```
#include<stdio.h>
//Write the prototype of the functions here
int main()
{
    int flag=0;
    int c;
    char p[]="Hellow world";
    char *q="MTH409: C program";

    //Print the first string here
    reverse(p);
    //Print the first string here
    //Read a character from the keyboard into variable c
    flag=check_char(q,c);
    if(flag==0)
    {
        printf("The character %c is not present in \"%s\\n\",c,q);
    }
    else
    {
        printf("The character %c is present in \"%s\\n\",c,q);
    }

    return 0;
}
//Write details of function reverse here
//Write details of function check_char here
```

Test data and expected output:

```
First string is :Hellow world
First string after function call is :dlrow wolleH
Enter the search character:9
The character 9 is present in "MTH409: C program"
```

```
First string is :Hellow world
First string after function call is :dlrow wolleH
Enter the search character:c
The character c is not present in "MTH409: C program"
```

Question 2

Assignment

Write a program `frequency.c` which reads a string (a sequence of characters) of length `N` and outputs the character and corresponding frequency count for each distinct character in the string in descending order of frequency. If there are multiple characters with same frequency, print them in the lexicographical order of the character.

Assume the maximum length of the input string is 100 and the input characters are from the set of uppercase letters (A to Z).

Sample input 2: 15 SHIRUCAFE~~C~~OFFEE

Sample output 2:

```
E 3
F 3
C 2
A 1
H 1
I 1
O 1
R 1
S 1
U 1
```

Question 3

write a program that will take as input a string and output a string with characters in the opposite case. For example if "I am Srijan" is the input string, the output should be "i AM sRIJAN"

Question 4

Assignment

Write a program `lexic.c` to sort a given sequence of two-character strings lexicographically (dictionary sorted order). Assume the maximum number of strings is 100 and the input characters are from the set of uppercase alphabets (A to Z).

Hint: Is a single comparison enough ?

Input format:

```
N                \\ number of two-character strings
<string 1>
<string 2>
...
<string n>
```

Sample input:

```
5
CC
BA
KA
AB
CS
```

Sample output:

```
AB
BA
CC
CS
KA
```

Question 5

Write a program `substring.c` which reads two strings of equal length, `L`, and outputs the size of the largest common substring.

Assume the maximum length of an input string is 30 and the input characters are from the set of uppercase letters (A to Z).

Input format:

```
< L > // length of the strings
< string 1 of length L >
< string 2 of length L >
```

Sample input 1: 7

```
ABDCEFG
CDEFGAB
```

Sample output 1: 3

Sample input 2: 10

```
XYZABDCEFG
CDEFGABXYZ
```

Sample output 2: 3

Question 6

Write a recursive function to print the reverse of a given string.