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| **Ex No: 11** | String Operations |

**AIM**

To write a C Program to perform string operations on a given paragraph for the following using built-in functions:

1. Find the total number of words.
2. Capitalize the first word of each sentence.
3. Replace a given word with another word.

**PRE-LAB QUESTIONS**

1. What is the difference between strdup and strcpy?
2. What is the difference between a string copy (strcpy) and a memory copy (memcpy)?
3. What is recursion?
4. What is the difference between printf(...) and sprintf(...)?
5. What is dynamic memory allocation

**ALGORITHM**

**Step 1:** Start  
 **Step 2:**  Initialize the string variables  
 paragraph, old, S  
 **Step 3:** Compare each character in the paragraph with tab char “\n” or space char “ ” to count no of words   
 **Step 4:** Use toupper() function to capitalize each word

**Step 5:**  Replace all the occurances of the given string (old) with the new string (S) in the paragraph using replace() function.

**PROGRAM**

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Ex 11. From a given paragraph perform the following using built-in functions:

a. Find the total number of words.

b. Capitalize the first word of each sentence.

c. Replace a given word with another word.

\*/

#include "stdio.h"

#include "string.h"

#include "ctype.h"

void replace **(**char **\*,** char **\*,** char **\*);**

int main**(**void**)** **{**

char paragraph**[**200**]** **=** "The quick brown fox\n jumps over\n the lazy dog."**;**

char old**[**10**]** **=** "The"**,** S**[**10**]** **=** "THat"**;**

char word**[**30**],** c**;**

int i **=** 0**,** j **=**0**,** count **=** 0**;**

printf**(**"\*\*\*\*\* Given paragraph \*\*\*\*\*\n"**);**

printf**(**"%s \n"**,** paragraph**);**

printf**(**"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n"**);**

**while** **(**paragraph**[**i**]** **!=** '\0'**)**

**{**

word**[**j**++]** **=** paragraph**[**i**++];**

**if** **(**paragraph**[**i**]** **==** ' ' **||** paragraph**[**i**]** **==** '\n'**)**

**{**

j **=** 0**;**

count**++;**

paragraph**[**i**+**1**]** **=** toupper**(**paragraph**[**i**+**1**]);**

**};**

**}** // end-while

printf**(**"No of words: %d \n"**,** count**);**

printf**(**"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n"**);**

printf**(**"Capitalize each word\n"**);**

printf**(**"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n"**);**

printf**(**"%s\n"**,** paragraph**);**

printf**(**"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n"**);**

printf**(**"Replace %s with %s \n\n"**,** old**,** S**);**

printf**(**"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n"**);**

replace**(**paragraph**,** old**,** S**);**

printf**(**"%s\n"**,** paragraph**);**

**return** 0**;**

**}**

void replace**(**char **\*** str**,** char **\*** s\_string**,** char **\*** r\_string**)**

**{**

//a buffer variable to do all replace things

char buffer**[**200**];**

//to store the pointer returned from strstr

char **\*** ch**;**

//first exit condition

**if(!(**ch **=** strstr**(**str**,** s\_string**)))** **return;**

//copy all the content to buffer before the first occurrence

strncpy**(**buffer**,** str**,** ch**-**str**);**

//prepare the buffer for appending by adding a null to the end of it

buffer**[**ch**-**str**]** **=** 0**;**

//append using sprintf function

sprintf**(**buffer**+(**ch **-**str**),** "%s%s"**,** r\_string**,** ch **+** strlen**(**s\_string**));**

//empty str for copying

str**[**0**]** **=** 0**;**

strcpy**(**str**,** buffer**);**

//pass recursively to replace other occurrences

**return** replace**(**str**,** s\_string**,** r\_string**);**

**}**

**OUTPUT**

\*\*\*\*\* Given paragraph \*\*\*\*\*

The quick brown fox

jumps over

the lazy dog.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No of words: 10

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Capitalize each word

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

The Quick Brown Fox

Jumps Over

The Lazy Dog.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Replace The with THat

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

THat Quick Brown Fox

Jumps Over

THat Lazy Dog.

**POST-LAB QUESTIONS**

1. Write a C program to count the number of occurrences of the word (S) in the given paragraph.

**RESULT**

Thus the C program to perform the given string operations was successfully written and executed.