Assignment-17 (String Basics In C Language)

1. Write a program to calculate the length of the string. (without using built-in method)

#include<stdio.h>

int main()

{

char str[50];

int i;

printf("Enter string: ");

gets(str);

for(i = 0; str[i]; i++);

printf("Length of %s is %d.", str, i);

return 0;

}

2. Write a program to count the occurrence of a given character in a given string.

#include<stdio.h>

#include<string.h>

int main()

{

char str[50], ch;

int i, count = 0;

printf("Enter a string: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

printf("Enter character whose number of occurrences in string is to be checked: ");

scanf("%c", &ch);

for(i = 0; str[i]; i++)

if(str[i] == ch)

count++;

printf("%c occurs %d times in %s.", ch, count, str);

return 0;

}

3. Write a program to count vowels in a given string

#include<stdio.h>

#include<string.h>

#include<stdlib.h>

int vowelsCountInString(char []);

int vowelsCountInString(char str[])

{

int vowels\_count = 0, i;

for(i = 0; str[i]; i++)

if(str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] == 'o' || str[i] == 'u' || str[i] == 'A' || str[i] == 'E' || str[i] == 'I' || str[i] == 'O' || str[i] == 'U')

vowels\_count++;

return vowels\_count;

}

int main()

{

char str[50], ch;

int i, count = 0;

printf("Enter a string: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

printf("Number of vowels in %s are %d.", str, vowelsCountInString(str));

return 0;

}

4. Write a program to convert a given string into uppercase

#include<stdio.h>

#include<string.h>

int main()

{

char str[50];

int i;

printf("Enter a string to convert in upper case: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

for(i = 0; str[i]; i++)

if(str[i] >= 97 && str[i] <= 122)

str[i] = str[i] - 32;

printf("String in upper case is %s", str);

return 0;

}

5. Write a program to convert a given string into lowercase

#include<stdio.h>

#include<string.h>

int main()

{

char str[50];

int i;

printf("Enter a string to convert in lower case: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

for(i = 0; str[i]; i++)

if(str[i] >= 65 && str[i] <= 90)

str[i] = str[i] + 32;

printf("String in lower case is %s", str);

return 0;

}

6. Write a program to reverse a string.

#include<stdio.h>

#include<string.h>

int main()

{

char str[50];

int i, str\_length = 0, last\_num;

printf("Enter a string to reverse: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

for(i = 0; str[i]; i++)

str\_length++;

last\_num = str\_length - 1;

for(i = 0; i < str\_length / 2; i++)

{

str[i] = str[i] + str[last\_num];

str[last\_num] = str[i] - str[last\_num];

str[i] = str[i] - str[last\_num];

last\_num--;

}

printf("String after reversing is %s", str);

return 0;

}

7. Write a program in C to count the total number of alphabets, digits and special characters in a string.

#include<stdio.h>

#include<string.h>

int main()

{

char str[50], alphabetsCount = 0, digitsCount = 0, specialCharsCount = 0;

int i;

printf("Enter a string to check how many alphabets, digits and special characters are present in it: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

for(i = 0; str[i]; i++)

{

if(str[i] >= 65 && str[i] <= 90 || str[i] >= 97 && str[i] <= 122)

alphabetsCount++;

else if(str[i] >= 48 && str[i] <= 57)

digitsCount++;

else

specialCharsCount++;

}

printf("Number of alphabets in %s are %d.\n", str, alphabetsCount);

printf("Number of digits in %s are %d.\n", str, digitsCount);

printf("Number of special characters in %s are %d.\n", str, specialCharsCount);

return 0;

}

8. Write a program in C to copy one string to another string.

#include<stdio.h>

#include<string.h>

int main()

{

char str1[50], str2[50];

printf("Enter a string to be stored in first string: ");

fgets(str1, 49, stdin);

str1[strlen(str1) - 1] = '\0';

strcpy(str2, str1);

printf("After copying string 1 to string 2, string 2 is now %s.", str2);

return 0;

}

9. Write a C program to sort a string array in ascending order.

#include<stdio.h>

#include<string.h>

void merge(char [], int, int, int);

void mergeSort(char [], int, int);

void merge(char arr[], int lowIndex, int midIndex, int highIndex)

{

int i = lowIndex, k = 0, j = midIndex + 1, c[highIndex - lowIndex + 1];

while(i <= midIndex && j <= highIndex)

{

if(arr[i] < arr[j])

{

c[k] = arr[i];

i++;

k++;

}

else

{

c[k] = arr[j];

j++;

k++;

}

}

while(i <= midIndex)

{

c[k] = arr[i];

i++;

k++;

}

while(j <= highIndex)

{

c[k] = arr[j];

j++;

k++;

}

for(i = 0, j = lowIndex; i < k; i++, j++)

{

arr[j] = c[i];

}

}

void mergeSort(char arr[], int lowIndex, int highIndex)

{

if(lowIndex < highIndex)

{

int midIndex = (lowIndex + highIndex) / 2;

mergeSort(arr, lowIndex, midIndex);

mergeSort(arr, midIndex + 1, highIndex);

merge(arr, lowIndex, midIndex, highIndex);

}

}

int main()

{

char str[50];

printf("Enter a string to sort in ascending order: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

printf("String before sorting is %s.\n", str);

mergeSort(str, 0, strlen(str) - 1);

printf("String after sorting is %s.", str);

return 0;

}

10. Write a program in C to Find the Frequency of Characters.

#include<stdio.h>

#include<string.h>

int main()

{

char str[50], uniqueElements[50];

int i, k, CharsFrequency[256] = {0};

printf("Enter a string to find the frequency of all the characters in it: ");

fgets(str, 49, stdin);

str[strlen(str) - 1] = '\0';

for(i = 0, k = 0; str[i]; i++)

{

if(CharsFrequency[str[i]] == 0)

{

uniqueElements[k] = str[i];

k++;

}

CharsFrequency[str[i]] += 1;

}

for(i = 0; i < k; i++)

{

printf("Frequency of %c in %s is %d.\n", uniqueElements[i], str, CharsFrequency[uniqueElements[i]]);

}

return 0;

}