

Assignment No.:	5
Title:	To perform string Operations
Subject:	Data Structures Laboratory.
Class:	S.Y. 13 (BTech) C.S.E
Roll No.:	2215055 (MITU21BT1T0010)
Assessment (Marks):	
Signature and Date of Assessment:	

Experiment No.:— 5

* Experiment Title:— Implement C++ program for string operations.

* Objectives:-

- To understand the use of string.
- To understand string operations.

* Problem statement:- Write a C++ program for string operations. Write the following functions:-
frequency(): that determines the frequency of occurrence of particular character in the string.
delete(): that accepts two integers to specify position of characters to be deleted.
 The function computes new string that is except the deleted characters.

charDelete(): that accepts a character c. The function returns the string with all occurrences of c removed.
palindrome(): to check whether given string is palindrome or not.

* Outcomes:-

- Understanding the use of string.
- Understanding string operations.

g++ compiler on Ubuntu 15.04 (64bit)



* Algorithm (Frequency of Character)

- 1) Define a string.
 - 2) Define an array freq with the same size of the string.
 - 3) Two loops will be used to count the frequency of each character. Outer loop will be used to select a character and initialize element at corresponding index in array freq with 0.
 - 4) Inner loop will compare the selected character with rest of the characters present in the string.
 - 5) If a match found, increment element in freq by 1 and set the duplicates of selected character by '0' to mark them as visited.
 - 6) Finally, display the character and their corresponding frequencies by iterating through the array freq.
- ### * Algorithm (Deletion of character)
- 1) Initialise :- index = 0
ip_ind = 0
 - 2) Construct count array from mask - str. The count array would be:-
(We can use a Boolean array here instead of an int count array because we don't need a count we need to know only if the character is present in a mask string).

$\text{Count}['a'] = 1$
 $\text{Count}['k'] = 1$
 $\text{Count}['m'] = 1$
 $\text{Count}['s'] = 1$

- 3) Process each character in the input string and if the count of that character is 0, then only add the character to the resultant string.

String $s = "tet\backslashtringing" // 'g' has been removed because 's' was present in mask_s, but we have got two extra characters "ng".$

```
ip_ind = 11
index = 9
put a '\0' at the end of the string?
```

* Algorithm (Palindrome)

- 1) Split the word into an array, saving it into a variable.
- 2) Reverse the array.
- 3) Put it back together.
- 4) Compare the initial string ~~to~~ to the reversed one.

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* Conclusion :- Thus, we implemented string operation.

* Questions

→ What is String?
→ It is a sequence of characters, either as a literal constant or as some kind of variable for eg:- String c = "Name";

2) What are inbuilt functions of string?
→ Inbuilt functions in a string are some set of functions which work on string operations.
For eg:- BIT, BOOL, COPY, EDIT, LEFT, LENGTH, LOW etc.

```
**/ 

#include <iostream>
#include<cstring>
using namespace std;

class stringg
{
public:
int i;
void frequency(string);
void delete1(string);
void chardel(string);
void palindrome(string);
};

void stringg::frequency(string arr){

char ch;
cout<<"Enter the character for which you want to count frequency: "<<endl;
cin>>ch;

int count=0;
for(i=0;arr[i]!='\0';i++)
{
    if(ch==arr[i])
    {
        count=count+1;
    }
}
```

```
    }
}

cout<<"frequency of character "<<ch <<"is= "<<count<<endl;
```

```
void stringg::deletel(string arr)
{
    int j,k,flag=0;
    cout<<"enter the two position at which you want to delete character: "<<endl;
    cin>>j>>k;
    for(i=j-1;arr[i]!='\0';i++)
    {
        arr[i]=arr[i+1];
    }
    for(i=k-2;arr[i]!='\0';i++)
    {
        arr[i]=arr[i+2];
    }
}

cout<<"the edited string is= "<<endl;
for(i=0;arr[i]!='\0';i++)
{
    cout<<arr[i];
}
```

```
}

void string::chardel(string arr)
{
    char ch,arr1[8];
    int j,len=0;
    cout<<"enter character to be deleted: ";
    cin>>ch;
    for(int i=0;arr[i]!='\0';i++)
    {
        len++;
    }
    for(i=j=0;i<len;i++)
    {
        if(arr[i]!=ch)
        {
            arr1[j++]=arr[i];
        }
    }
    arr1[j]='\0';
    cout<<"the edited string is=";
    for (int k=0;arr1[k]!='\0';k++)
    {
        cout<<arr1[k];
    }
}
```

```
void stringg::palindrome(string arr)
{
    int i,j,count=0,k,flag=0;
    for(i=0;arr[i]!='\0';i++)
    {
        count=count+1;
    }
    int a=count/2;
    for(i=0,j=count-1;i<=a;i++,j--)
    {
        if(arr[i]!=arr[j])
        {
            cout<<"it is not a palindrome"<<endl;
            break;
        }
    }
    if(j==i)
    {
        cout<<"it is palindrome"<<endl;
    }
}
int main()
{
    int y,choice;
    stringg s;
    string ch;
```

```
char ans;
cout<<"\n Enter String = ";
cin>>ch;
do
{
    cout<<"\n String Operation Menu \n 1.frequency \n 2.Delete \n 3.Delete Character
\n 4.Palindrome Check" <<endl;
    cout<<"\n Enter your choice : ";
    cin>>choice;
    switch(choice)
    {
        case 1:
        {
            s.frequencyl(ch);
            break;
        }
        case 2:
        {
            s.delete1(ch);
            break;
        }
        case 3:
        {
            s.chardedl(ch);
            break;
        }
        case 4:
        {
            s.palindrome(ch);
            break;
        }
    }
}
```

```
    }
}

default:
{
    cout<<"Invalid Input "<<endl;
}

cout<<"\n Do you want to continue(Y/N)=";
cin>>ans;

}

while(ans=='Y' | ans=='y');

return 0;
}
```

Output:

Enter String = akash

String Operation Menu

1.Frequency

2.Delete

3.Delete Character

4.Palindrome Check

Enter your choice :1

Enter the character for which you want to count frequency:

a

frequency of character a is= 2

Do you want to continue(Y/y)=Y

String Operation Menu

- 1.Frequency
- 2.Delete
- 3.Delete Character
- 4.Palindrome Check

Enter your choice :2

enter the two position at which you want to delete character:

1
4

the edited string is=
ka

Do you want to continue(Y/y)=Y

String Operation Menu

- 1.Frequency
- 2.Delete
- 3.Delete Character
- 4.Palindrome Check

Enter your choice :3

enter character to be deleted: s

the edited string is= akah

Do you want to continue(Y/y)=Y
String Operation Menu

- 1.Frequency
- 2.Delete
- 3.Delete Character