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A palindrome is a string of character that is the same forward and backward. Typically, punctuation, capitalization, and spaces are ignored. For example, ||Poor Dan is in a droop|| is a palindrome, as can be seen by examining the characters ||poor danisina droop|| and observing that they are the same forward and backward. One way to check for a palindrome is to reverse the characters in the string and then compare with them the original-in a palindrome, the sequence will be identical. Write C++ program with functions-

1). to check whether given string is palindrome or not that uses a stack to determine whether a string is a palindrome.

2). to remove spaces and punctuation in string, convert all the Characters to lowercase, and then call above Palindrome checking function to check for a palindrome

3). to print string in reverse order using stack;

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#include<iostream>

#include<stdlib.h>

#define SIZE 20

using namespace std;

class mystack

{

    private :

        char ST[SIZE];

        int top;

    public :

        mystack();

        void push(char X);

        char pop();

        int isEmpty();

        int isFull();

};

mystack :: mystack()

{

   top = -1;

}

int mystack :: isEmpty()

{

    if(top == -1)

        return 1;

    else

        return 0;

}

int mystack :: isFull()

{

    if(top == SIZE-1)

        return 1;

    else

        return 0;

}

void mystack :: push(char X)

{

    if(!isFull())

    {

        top++;

        ST[top] = X;

    }

    else

        cout<<"\nStack Overflow !! Error!!";

}

char mystack :: pop()

{

    char X = '\0';

    X = ST[top];

    top--;

    return X;

}

void convert\_string(char Str[],char Str1[])

{

 int i,j = 0;

    for(i=0;Str[i] != '\0';i++)

    {

        if(Str[i] >= 'a' && Str[i] <= 'z')

            Str1[j++] = Str[i];

        if(Str[i] >= 'A' && Str[i] <= 'Z')

            Str1[j++] = Str[i] + 32;

    }

    Str1[j] = '\0';

}

int main()

{

    int ch,flag,i;

    char Str[80],Str1[80];

    mystack S;

    system("clear");

    do

    {

        cout<<"\n\t\t\t1 : Check for Palindrome";

        cout<<"\n\t\t\t2 : Find Reverse";

        cout<<"\n\t\t\t3 : Exit";

        cout<<"\n\nEnter ur choice : ";

        cin>>ch;

        switch(ch)

        {

            case 1 : cout<<"\nEnter the string to be checked for palindrome : ";

                     cin.ignore();

                     cin.getline(Str,79);

                     cout<<"\nEntered String is "<<Str;

                     convert\_string(Str,Str1);

                     cout<<"\nconverted String is : "<<Str1;

                     for(i = 0; Str1[i] != '\0';i++)

                        S.push(Str1[i]);

                     i = 0; flag = 1;

                     while(!S.isEmpty())

                     {

                        if(Str1[i++] != S.pop())

                          flag = 0;

                     }

                     if(flag == 1)

cout<<"\nGiven string is a palindrome\n";

                     else

                       cout<<"\nGiven String is not a palindrome\n";

                     break;

            case 2 : cout<<"\nEnter the string to be reversed : ";

                     cin.ignore();

                     cin.getline(Str,79);

                     cout<<"\nString entered is "<<Str;

                     for(i = 0; Str[i] != '\0';i++)

                        S.push(Str[i]);

                     cout<<"\nReverse String = ";

                     while(!S.isEmpty())

                     {

                        cout<<S.pop();

                     }

                     break;

            case 3 : cout<<"\nEnd of Program\n";

                     break;

            default: cout<<"\nInvalid choice !! Try again\n\n";

        }

    }while(ch != 3);

    return 0;

}