

PROGRAM:---

```
#include<iostream>

#include<string.h>

#include<ctype.h>

using namespace std;

#define MAX 50

class Stack

{

private:

    char data[MAX],str[MAX];

    int top,length,count;

    void pushData(char);

    char popData();

public:

    Stack()

    {

        top=-1;

        length=0;
```

```

        count=0;
    }

    void getString();

    void checkPalindrome();

    void extractString();

    void displayReverse();

};

int main()
{
    Stack obj;

    obj.getString();

    cout<<"\n Extracted string: ";

    obj.extractString();

    cout<<"\n Reverse of entered string: ";

    obj.displayReverse();

    obj.checkPalindrome();

    return 0;
}

void Stack::getString()
{

```

```
cout<<"\n Enter a String: ";
```

```
cin.getline(str,MAX);
```

```
length=strlen(str);
```

```
}
```

```
void Stack::extractString()
```

```
{
```

```
    char temp[MAX];
```

```
    int i,j;
```

```
    for(i=0; i<length; i++)
```

```
    {
```

```
        temp[i]=str[i];
```

```
    }
```

```
    j=0;
```

```
    for(i=0; i<length; i++ )
```

```
    {
```

```
        if(isalpha(temp[i]))
```

```
        {
```

```
            str[j]=tolower(temp[i]);
```

```
            j++;
```

```
        }
```

```
}
```

```
length=j; //update length with new str length
```

```
for(int i=0; i<length; i++)
```

```
    cout<<str[i];
```

```
}
```

```
void Stack::checkPalindrome()
```

```
{
```

```
    for(int i=0; i<length; i++)
```

```
        pushData(str[i]);
```

```
    for(int i=0; i<length; i++)
```

```
    {
```

```
        if(str[i]==popData())
```

```
            count++;
```

```
    }
```

```
    if(count==length) {
```

```
        cout<<"\n Entered string is a Palindrome. \n";
```

```
    }
```

```
    else cout<<"\n Entered string is not a Palindrome. \n";
```

```
}
```

```
void Stack::displayReverse()
```

```
{
```

```
    for(int i=length-1; i>=0; i--)
```

```
        cout<<str[i];
```

```
}
```

```
void Stack::pushData(char temp)
```

```
{
```

```
    if(top==MAX-1)
```

```
    {
```

```
        cout<<"\n Stack Overflow!!!";
```

```
        return;
```

```
    }
```

```
    top++;
```

```
    data[top]=temp;
```

```
}
```

```
char Stack::popData()
```

```
{  
    if(top== -1)  
    {  
        cout<<"\n Stack Underflow!!!";  
        return 0;  
    }  
    char temp=data[top];  
    top--;  
    return temp;  
}
```

OUTPUT:-

Case1:--

Enter a String: Was it a car or a cat I saw

Extracted string: wasitacaroracatisaw

Reverse of entered string: wasitacaroracatisaw

Entered string is a Palindrome.

Case2:---

Enter a String: My name is Kaustubh.

Extracted string: mynameiskaustubh

Reverse of entered string: hbutsuaksiemany

Entered string is not a Palindrome.