**Assignment C23**

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**<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;

}

===========================================================================

Enter a String: Poor Dan is in a Droop

Extracted string: poordanisinadroop

Reverse of entered string: poordanisinadroop

Entered string is a Palindrome.