

Assignment- D09

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Div :- A

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Problem Statement: A palindrome is a string of character that's 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 a given string is a 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

Program:

```
#include<iostream>
#include<string.h>
using namespace std;
#define MAX 50

class sta
{
    private:
        char data[MAX], str[MAX];
        int top,length,count;
        void push(char );
        char pop();
    public:
        sta()
        {
            top=-1;
            length = 0;
            count=0;
        }
        void getstring();
        void extractstring();
}
```

```

    void checkPalindrome();
}ob;

void sta :: getstring()
{
    cout<<"\nEnter the string : ";
    cin.getline(str,MAX);
    length = strlen(str);
}

```

```

void sta :: extractstring()
{
    char temp[MAX],j;
    for(int i=0;i<length;i++)
    {
        temp[i]=str[i];
    }
    j=0;
    for(int i=0;i<length;i++)
    {
        if(isalpha(temp[i]))
        {
            str[j]=tolower(temp[i]);
            j++;
        }
    }
    str[j]='\0';
    cout<<str;
    length=j;
}

```

```

void sta:: checkPalindrome()
{
    for(int i=0;i<length;i++)
    {
        push(str[i]);
    }
    for(int i=0;i<length;i++)
    {
        if(str[i]==pop())
            count++;
    }
    if(count==length)
    {

```

```

        cout<<"\nEntered string is palindrome";
    }
    else
    {
        cout<<"\nEntered string is not palindrome";
    }
}

```

```

void sta ::push(char ch)
{
    if(top==MAX-1)
    {
        cout<<"\nstack is overflow";
        return;
    }
    else
    {
        top++;
        data[top]=ch;
    }
}

```

```

char sta :: pop()
{
    if(top==-1)
    {
        cout<<"\nstack is underflow";
    }
    else
    {
        char temp =data[top];
        top--;
        return temp;
    }
}

```

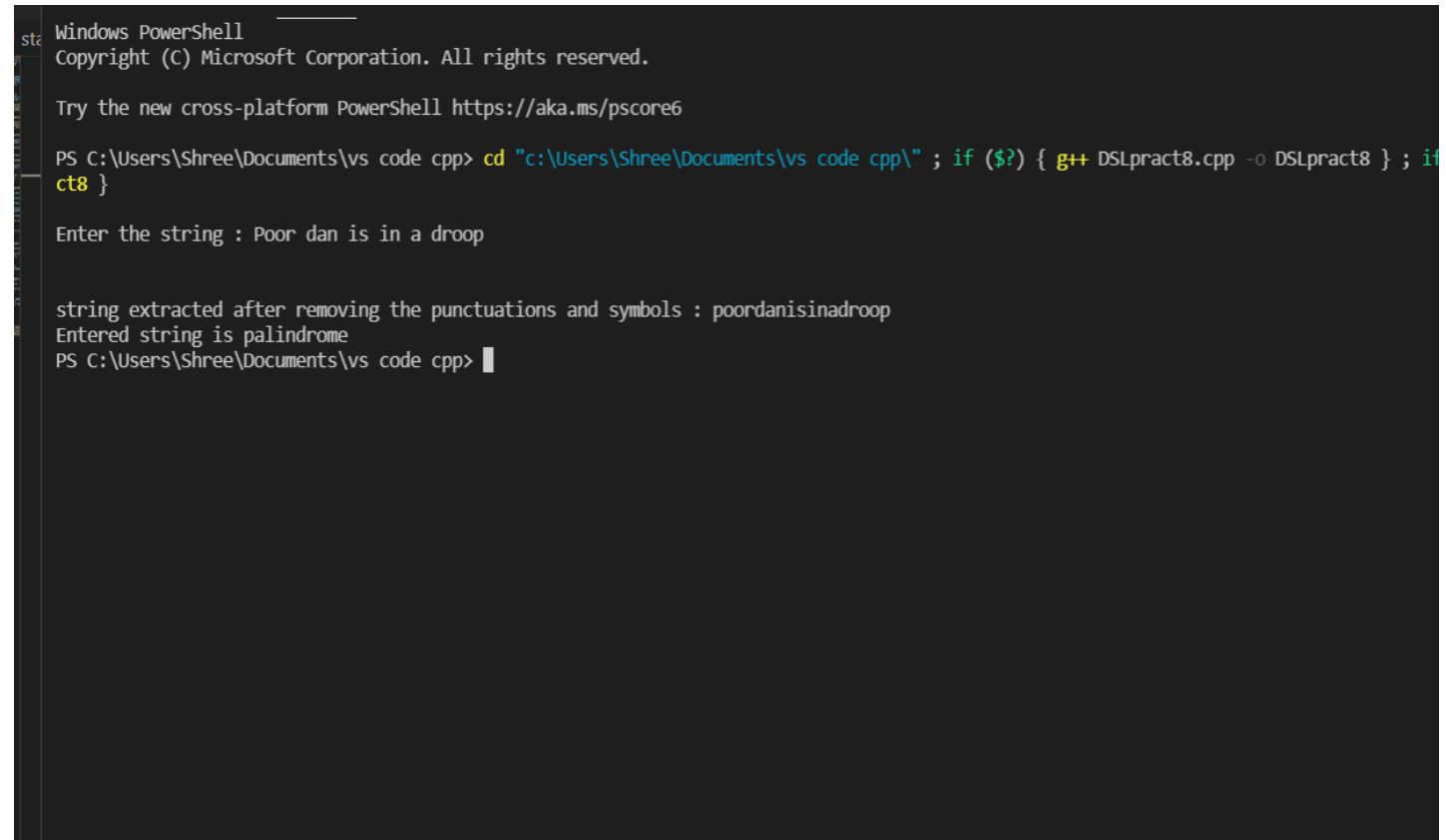
```

int main()
{
    ob.getstring();
    cout<<"\n\nstring extracted after removing the punctuations and symbols : ";
}

```

```
    ob.extractstring();  
    ob.checkPalindrome();  
}
```

Output:-



```
Windows PowerShell  
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Try the new cross-platform PowerShell https://aka.ms/pscore6  
  
PS C:\Users\Shree\Documents\vs code cpp> cd "c:\Users\Shree\Documents\vs code cpp\" ; if ($?) { g++ DSLpract8.cpp -o DSLpract8 } ; if  
ct8 }  
  
Enter the string : Poor dan is in a droop  
  
string extracted after removing the punctuations and symbols : poordanisinadroop  
Entered string is palindrome  
PS C:\Users\Shree\Documents\vs code cpp> █
```