

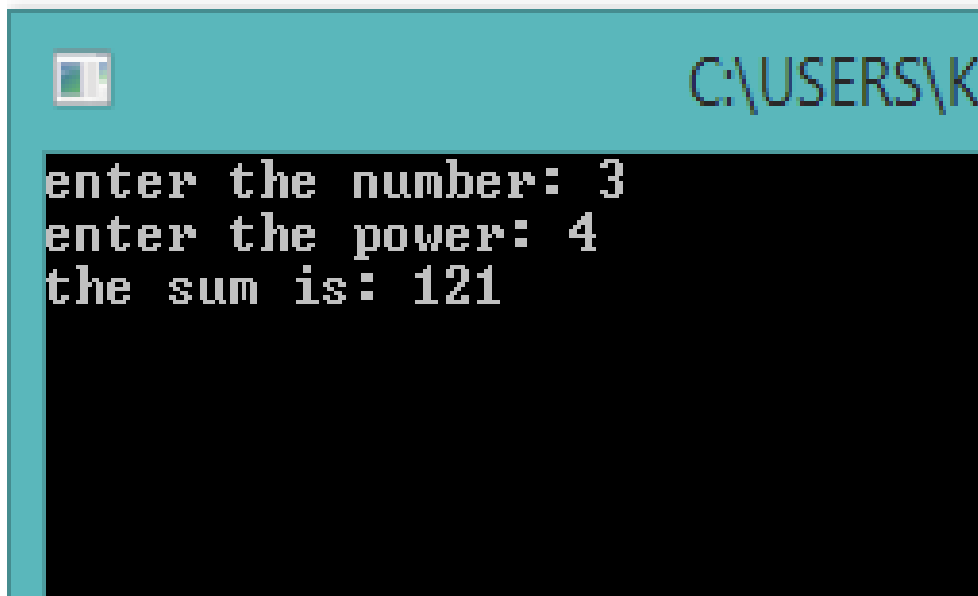
***Q.12 ✎ Write a program to display the following series:***

$$S = 1 + x + x^2 + \dots + x^n$$

```
#include<iostream.h>
#include<conio.h>
void main()
{int x,n,p,s=0;
cout<<"enter the number: ";
cin>>x;
cout<<"enter the power: ";
cin>>n;
for(int i=0;i<=(n);i++)
{ p=1;
for(int j=0;j<i;j++)
p=p*x;

s=s+p;
}
cout<<"the sum is: ";
cout<<s;
getch();
}
```

## Output:



A screenshot of a Windows command prompt window. The title bar is teal and displays the path 'C:\USERS\K'. The command prompt itself has a black background with white text. It shows three lines of output: 'enter the number: 3', 'enter the power: 4', and 'the sum is: 121'.

```
enter the number: 3  
enter the power: 4  
the sum is: 121
```

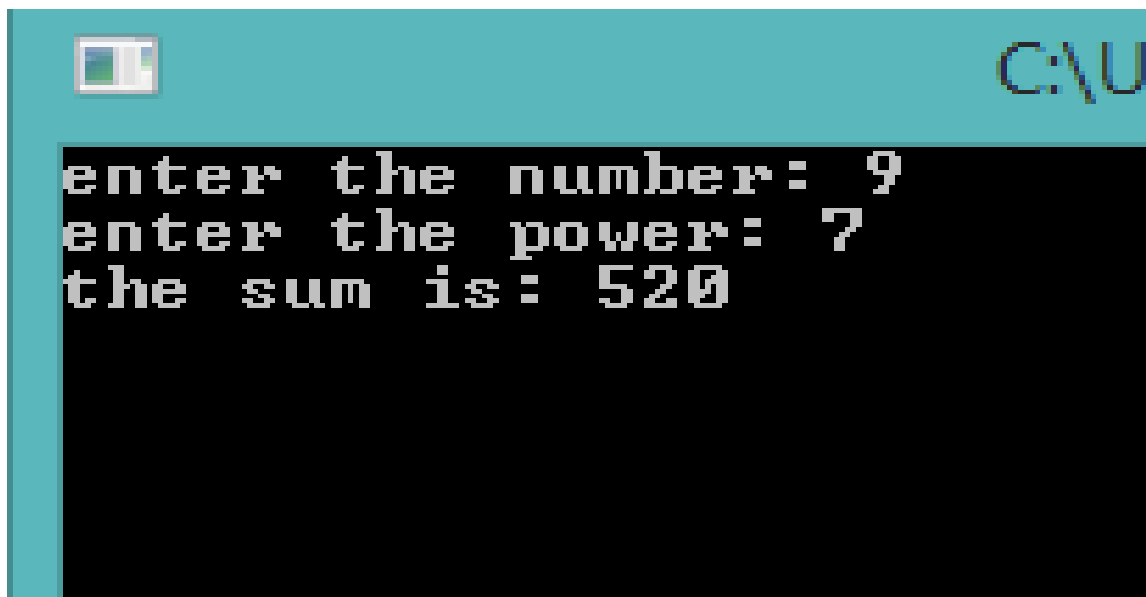
***Q.12 B. Write a program to display the following series:***

$$S = x - \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \dots + \frac{x^n}{n!}$$

```
#include<iostream.h>
#include<conio.h>
#include<math.h>
void main()
{int fact=1,sum=0;
cout<<"enter the number: ";
int x;
cin>>x;
cout<<"enter the power: ";
int n;
cin>>n;
for(int i=1;i<=n;i++)
{int p=pow(x,i);
fact=i*fact;
if(i%2!=0)
sum=sum+(p/fact);
else
sum=sum-(p/fact);
}
```

```
cout<<"the sum is: ";  
cout<<sum;  
getch();  
}
```

## Output:



A screenshot of a Windows command prompt window. The title bar is teal and contains a small icon on the left and the text "C:\U" on the right. The main area is black with white text. The text displayed is:

```
enter the number: 9  
enter the power: 7  
the sum is: 520
```

*Q13. Write a program to generate the following pattern for n lines:*

```
    1
  1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
```

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
void main()
```

```
{int i, j, k, a, n;
```

```
cout<<"enter the number of lines: ";
```

```
cin>>n;
```

```
for(i=1;i<=n;i++)
```

```
{
```

```
    for(k=n;k>i;k--)
```

```
cout<<" ";
```

```
for(int j=1;j<=i;j++)
```

```
cout<<" "<<j;
```

```
for(a=i-1;a>=1;a--)
```

```
cout<<" "<<a;
```

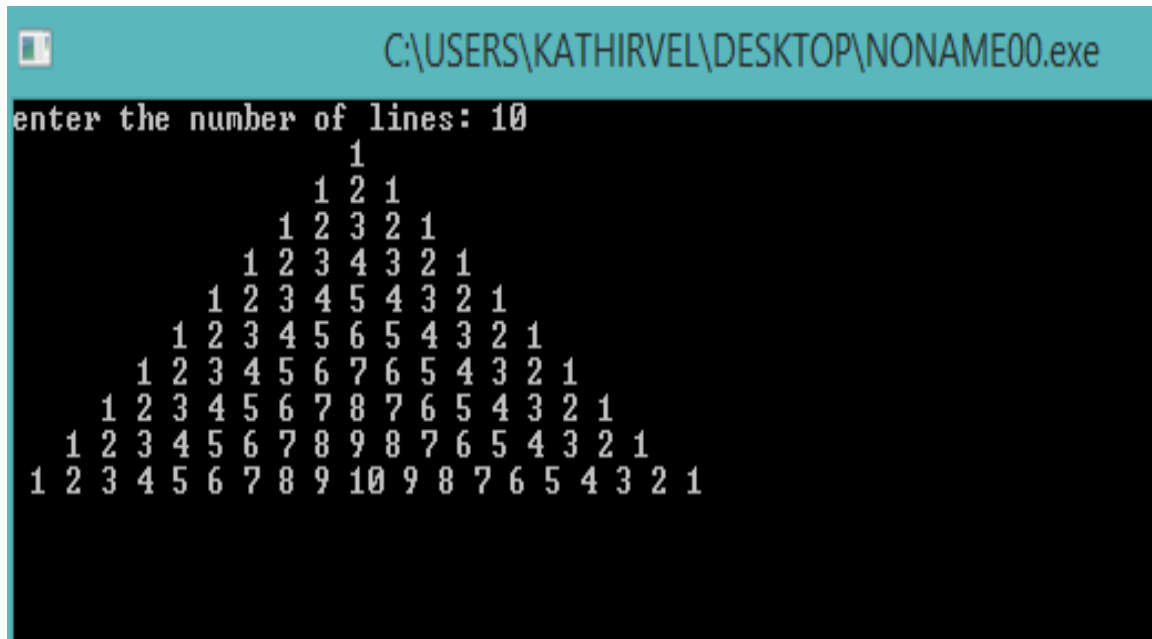
```
cout<<endl;
```

```
}
```

```
getch();
```

```
}
```

## Output:



A screenshot of a Windows command prompt window. The title bar is teal and contains the text "C:\USERS\KATHIRVEL\DESKTOP\NONAME00.exe". The command prompt area is black with white text. It shows the prompt "enter the number of lines: 10" followed by a Pascal's triangle pattern of numbers. The pattern consists of 10 rows, with the first row having 1 number and each subsequent row having one more number than the previous row. The numbers are arranged in a symmetric, triangular shape, with the first row at the top and the 10th row at the bottom. The numbers in each row are: Row 1: 1; Row 2: 1 2 1; Row 3: 1 2 3 2 1; Row 4: 1 2 3 4 3 2 1; Row 5: 1 2 3 4 5 4 3 2 1; Row 6: 1 2 3 4 5 6 5 4 3 2 1; Row 7: 1 2 3 4 5 6 7 6 5 4 3 2 1; Row 8: 1 2 3 4 5 6 7 8 7 6 5 4 3 2 1; Row 9: 1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1; Row 10: 1 2 3 4 5 6 7 8 9 10 9 8 7 6 5 4 3 2 1.

```
C:\USERS\KATHIRVEL\DESKTOP\NONAME00.exe
enter the number of lines: 10
      1
    1 2 1
  1 2 3 2 1
1 2 3 4 3 2 1
 1 2 3 4 5 4 3 2 1
   1 2 3 4 5 6 5 4 3 2 1
    1 2 3 4 5 6 7 6 5 4 3 2 1
     1 2 3 4 5 6 7 8 7 6 5 4 3 2 1
      1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1
       1 2 3 4 5 6 7 8 9 10 9 8 7 6 5 4 3 2 1
```

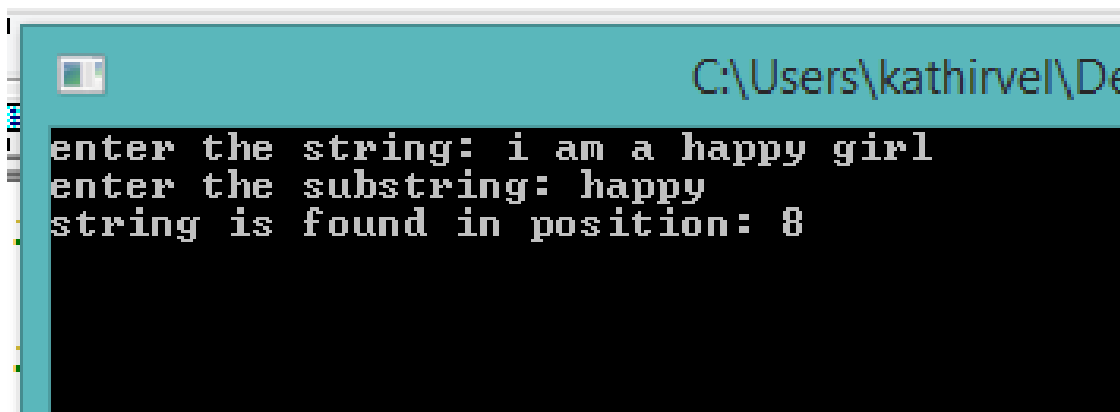


*Q.14. To accept a string and search for a sub-string (a group of contiguous characters). If the search is successful return the position of the substring otherwise return -1*

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
void main()
{char str[10],sub[10];
int j=0,flag=1,len=0,len1;
cout<<"enter the string: ";
gets(str);
cout<<"enter the substring: ";
gets(sub);
for(int k=0;sub[k]!=0;k++)
len+=k;
for(int k=0;str[k]!=0;k++)
len1+=k;
for(int i=0;i<10;i++)
{ if(str[i]==sub[j])
flag=0;
for(j=1;j<len;j++)
{if(str[i+j]!=sub[j])
{break;
```

```
flag=1;
}
}
if(flag==0)
{cout<<"string is found in position: "<<(i+1);
break;
}
else
j=0;
}
if(flag==1)
cout<<"string not found: 1";
getch();
}
```

## Output:



```
C:\Users\kathirvel\De  
enter the string: i am a happy girl  
enter the substring: happy  
string is found in position: 8
```

*Q.15. Write a program to read a string. The program should handle the options as given below:*

*a. Check for Palindrome*

*b. Search for a given substring*

*c. Reverse all the string*

*d. Frequency of alphabets in each string*

*e. Exit*

*Use functions with proper arguments for each menu options. Use global variables only if it is necessary.*

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
#include<stdlib.h>
void palio()
{char str[20],sub[20];
int len=0,i,z;
cout<<"enter the string: ";
gets(str);

for(int j=0;str[j]!='\0';j++)
len=j;
```

```

z=len;

for(i=0;i<=z;i++)
{sub[i]=str[len--];
}

sub[i]='\0';
cout<<"the new string: "<<sub;

if(str==sub)
cout<<"\nit is a paliandrome";
else
cout<<"\nit is not a paliandrome";
}

void search()
{char str[10],sub[10];
int j=0,flag=1,len=0,len1;
cout<<"enter the string: ";
gets(str);
cout<<"enter the substring: ";
gets(sub);
for(int k=0;sub[k]!=0;k++)
len+=k;
for(int k=0;str[k]!=0;k++)
len1+=k;

```

```

for(int i=0;i<10;i++)
{ if(str[i]==sub[j])
    flag=0;
    for(j=1;j<len;j++)
    {if(str[i+j]!=sub[j])
        {break;
        flag=1;
        }
    }
    if(flag==0)
    {cout<<"string is found in position: "<<(i+1);
    break;
    }
    else
    j=0;
}
if(flag==1)
cout<<"string not found: 1";
}
void rev()
{char str[20],sub[20];
int len=0,i,z;
cout<<"enter the string: ";
gets(str);

```

```
for(int j=0;str[j]!='\0';j++)
```

```
len=j;
```

```
z=len;
```

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

```
{sub[i]=str[len--];
```

```
}
```

```
sub[i]='\0';
```

```
cout<<"the new string: "<<sub;
```

```
}
```

```
void freq()
```

```
{char ch[20],temp;
```

```
int freq[26];
```

```
cout<<"enter the string: ";
```

```
gets(ch);
```

```
for(int i=0;ch[i]!='\0';i++)
```

```
{if(ch[i]<='Z'&&ch[i]>='A')
```

```
ch[i]=ch[i]+32;
```

```
freq[ch[i]-97]++;
```

```
}
```

```
temp='A';
```

```
for(int i=0;i<26;i++)
```

```

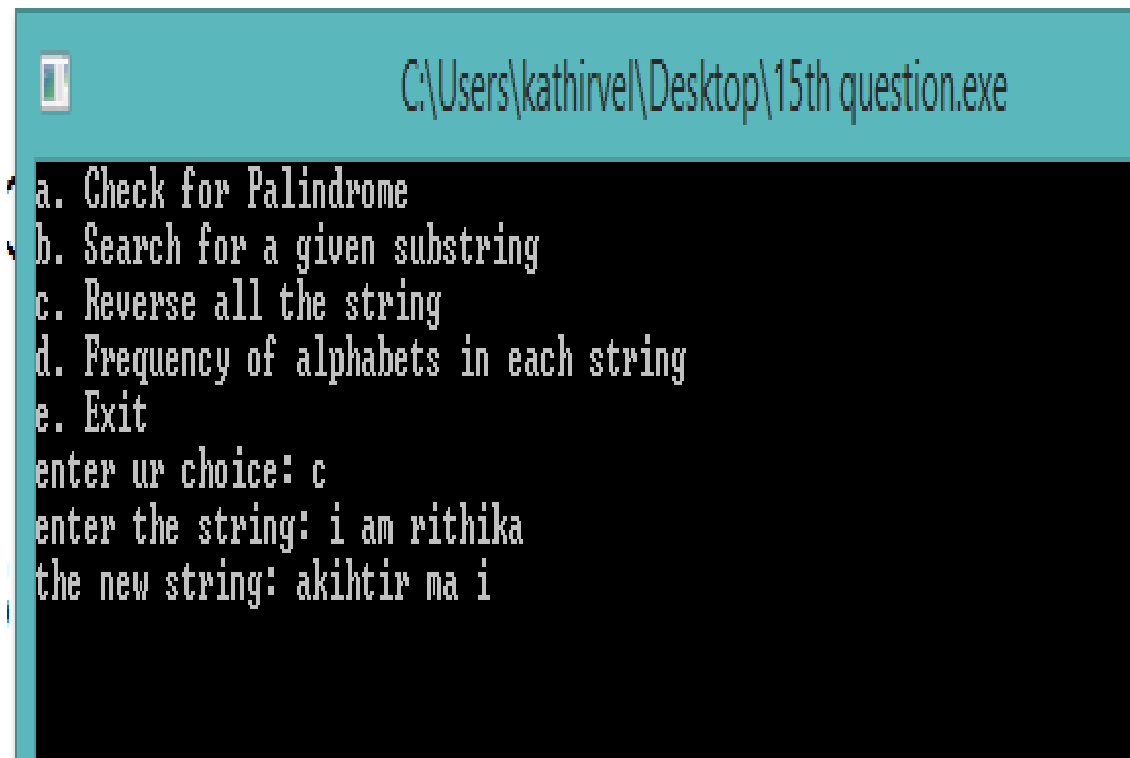
{ if(freq[i]!=0)
    cout<<ch<<" "<<freq[i]<<endl;
    temp++;}
}

void main()
{char b;
cout<<"a. Check for Palindrome";
cout<<"\nb. Search for a given substring";
cout<<"\nc. Reverse all the string";
cout<<"\nd. Frequency of alphabets in each string";
cout<<"\ne. Exit";
cout<<"\nenter ur choice: ";
cin>>b;
if(b=='a')
    palio();
if(b=='b')
    search();
if(b=='c')
    rev();
if(b=='d')
    freq();
if(b=='e')
    exit(0);
    getch();
}

```



## Output:



```
C:\Users\kathirvel\Desktop\15th question.exe

a. Check for Palindrome
b. Search for a given substring
c. Reverse all the string
d. Frequency of alphabets in each string
e. Exit
enter ur choice: c
enter the string: i am rithika
the new string: akihtir ma i
```

***Q.16. Write a program to enter a list of strings and create new list that consists of those strings with their first characters removed***

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
void main()
{char a[50],a1[50],a2[50];
int n;
cout<<"enter the no. of strings(max.3): ";
cin>>n;
if(n==3)
{cout<<"enter the string: ";
gets(a);
gets(a1);
gets(a2);
int d,n1,n2;
for(int i=0;a[i]!='\0';i++)
d=i+1;
for(int i1=0;a1[i1]!='\0';i1++)
n1=i1+1;
for(int i2=0;a2[i2]!='\0';i2++)
n2=i2+1;
for(int j=0;j<d;j++)
```

```

a[j]=a[j+1];

```

```

d--;

```

```

for(int j1=0;j1<n1;j1++)

```

```

a1[j1]=a1[j1+1];

```

```

n1--;

```

```

for(int j2=0;j2<n2;j2++)

```

```

a2[j2]=a2[j2+1];

```

```

n2--;

```

```

cout<<"the strings are: "<<endl;

```

```

cout<<a<<endl;

```

```

cout<<a1<<endl;

```

```

cout<<a2<<endl;

```

```

}

```

```

if(n==2)

```

```

{int d,n1;

```

```

cout<<"enter the string: ";

```

```

gets(a);

```

```

gets(a1);

```

```

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

```

```

d=i+1;

```

```

for(int i1=0;a1[i1]!='\0';i1++)

```

```

n1=i1+1;

```

```
for(int j=0;j<d;j++)
```

```
a[j]=a[j+1];
```

```
d--;
```

```
for(int j1=0;j1<n1;j1++)
```

```
a1[j1]=a1[j1+1];
```

```
n1--;
```

```
cout<<"the strings are: "<<endl;
```

```
cout<<a<<endl;
```

```
cout<<a1<<endl;
```

```
}
```

```
if(n==1)
```

```
{cout<<"enter the string: ";
```

```
gets(a);
```

```
int d;
```

```
for(int i=0;a[i]!='\0';i++)
```

```
d=i+1;
```

```
for(int j=0;j<d;j++)
```

```
a[j]=a[j+1];
```

```
d--;
```

```
cout<<"the strings is: ";
```

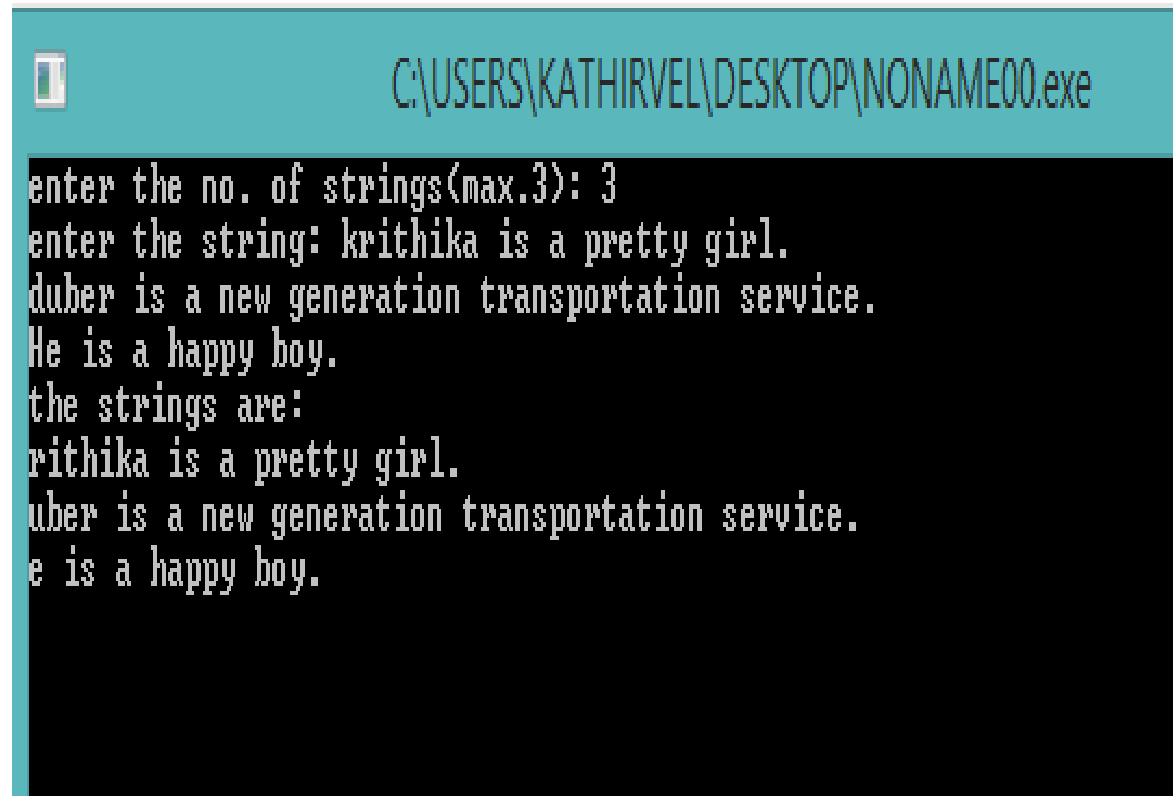
```
cout<<a;
```

```
}
```

```
getch();
```

```
}
```

## Output:



A screenshot of a Windows command prompt window. The title bar is teal and displays the file path "C:\USERS\KATHIRVEL\DESKTOP\NONAME00.exe". The command prompt area has a black background with white text. The text shows the user entering the number of strings (3) and then three lines of strings: "krithika is a pretty girl.", "duber is a new generation transportation service.", and "He is a happy boy.". The program then displays these strings back to the user.

```
enter the no. of strings(max.3): 3
enter the string: krithika is a pretty girl.
duber is a new generation transportation service.
He is a happy boy.
the strings are:
krithika is a pretty girl.
duber is a new generation transportation service.
e is a happy boy.
```

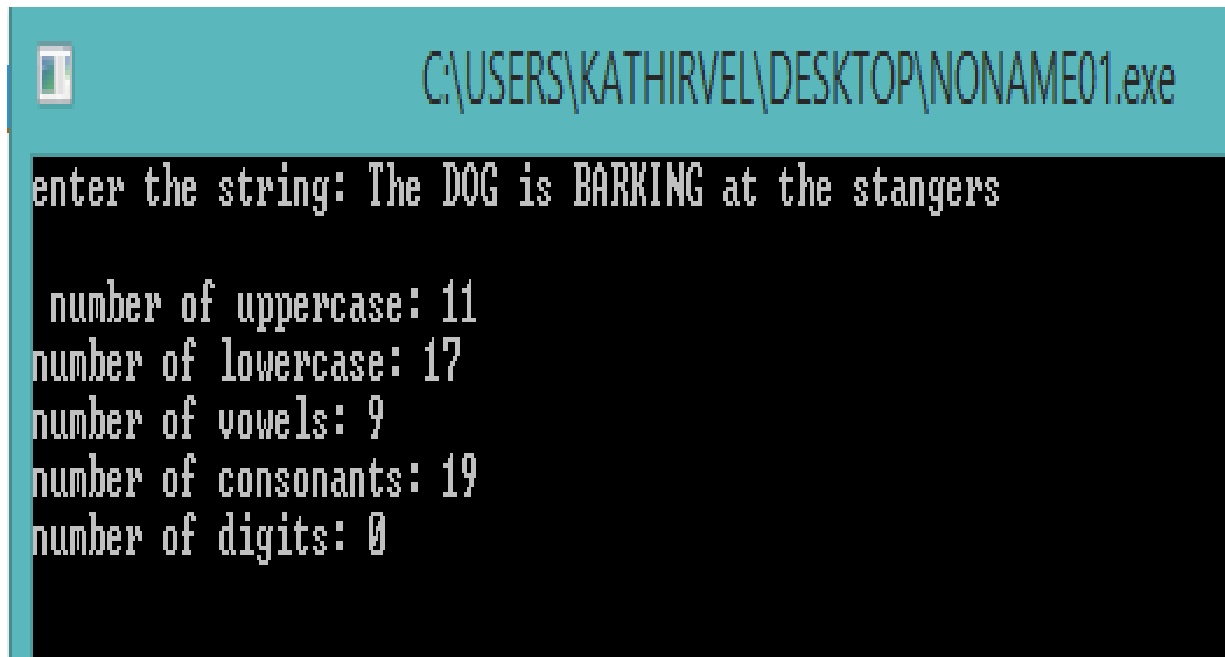
***Q.17. Write a program to input any string and count number of uppercase, lowercase, vowels, consonants and digits.***

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
void main()
{char ch[100];
int vow=0,con=0,low=0,upp=0,dig=0;
cout<<"enter the string: ";
gets(ch);
for(int a=0;ch[a]!='\0';a++)
{if((ch[a]>='a'&&ch[a]<='z')||(ch[a]>='A'&&ch[a]<='Z'))
{if(ch[a]=='a' || ch[a]=='e' || ch[a]=='i' || ch[a]=='o' || ch[a]=='u' ||
ch[a]=='A' || ch[a]=='E' || ch[a]=='I' || ch[a]=='O' || ch[a]=='U')
vow=vow+1;
else
con=con+1;
if(ch[a]>='a'&&ch[a]<='z')
low=low+1;
if(ch[a]>='A'&&ch[a]<='Z')
upp=upp+1;
}
if(ch[a]>='0'&&ch[a]<='9')
```

```
dig=dig+1;
}
cout<<"\n number of uppercase: "<<upp;
cout<<"\nnumber of lowercase: "<<low;
cout<<"\nnumber of vowels: "<<vow;
cout<<"\nnumber of consonants: "<<con;
cout<<"\nnumber of digits: "<<dig;
getch();
}
```



## Output:



```
C:\USERS\KATHIRVEL\DESKTOP\NONAME01.exe  
enter the string: The DOG is BARKING at the stangers  
  
number of uppercase: 11  
number of lowercase: 17  
number of vowels: 9  
number of consonants: 19  
number of digits: 0
```

*Q.18. Write a program that takes a string with multiple words and then capitalizes the first letter of each word and forms a new string out of it.*

```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
void main()
{char a[100];
cout<<"enter the string: ";
gets(a);
if(a[0]>='a'&&a[0]<='z')
a[0]=a[0]-32;
for(int k=0;a[k]!='\0';k++)
{if(a[k]==' ')
{if(a[k+1]>='a' || a[k+1]<='z')
a[k+1]=a[k+1]-32;
}
}
cout<<"\nthe new string is: ";
cout<<a;
getch();
}
```

## Output:



C:\USERS\KATHIRVEL\DESKTOP\NONAME00.exe

enter the string: my name is rithika kathirvel

the new string is: My Name Is Rithika Kathirvel

