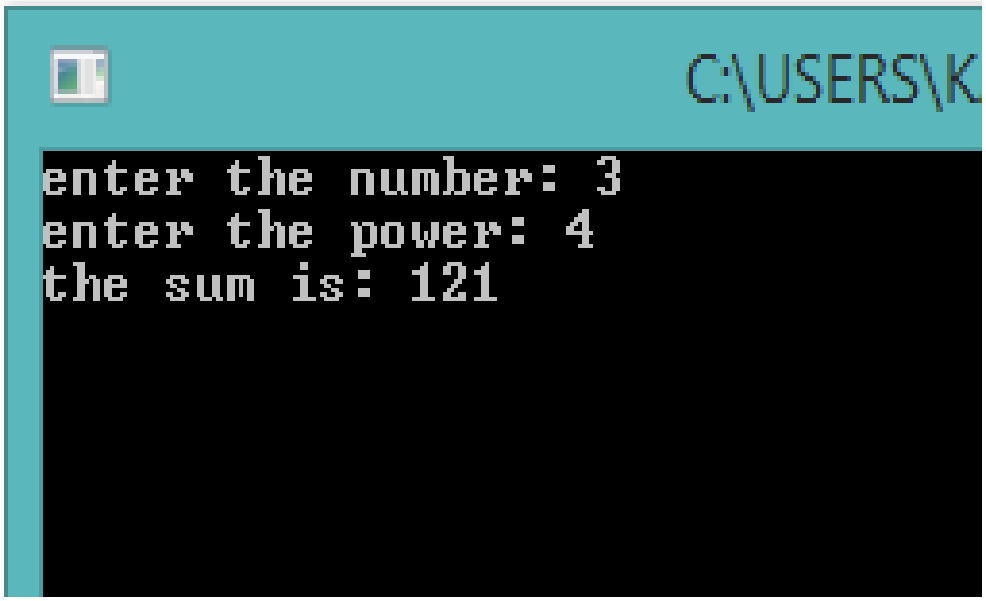
## Q.12 A. Write a program to display the following series:

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

```
#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:



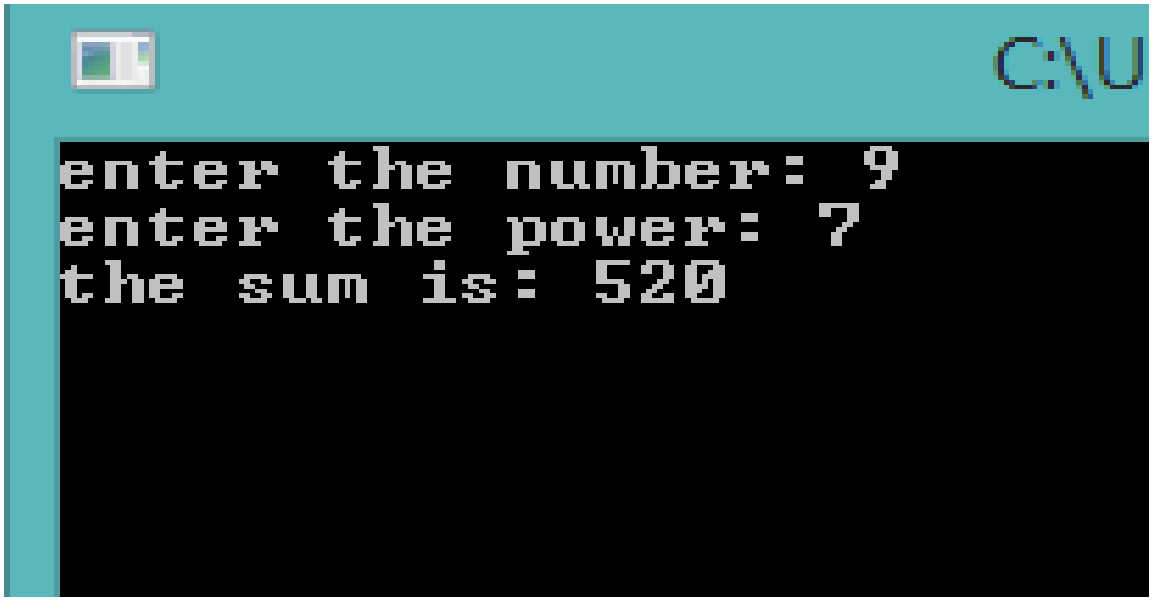
## Q.12 B. Write a program to display the following series:

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

```
#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:



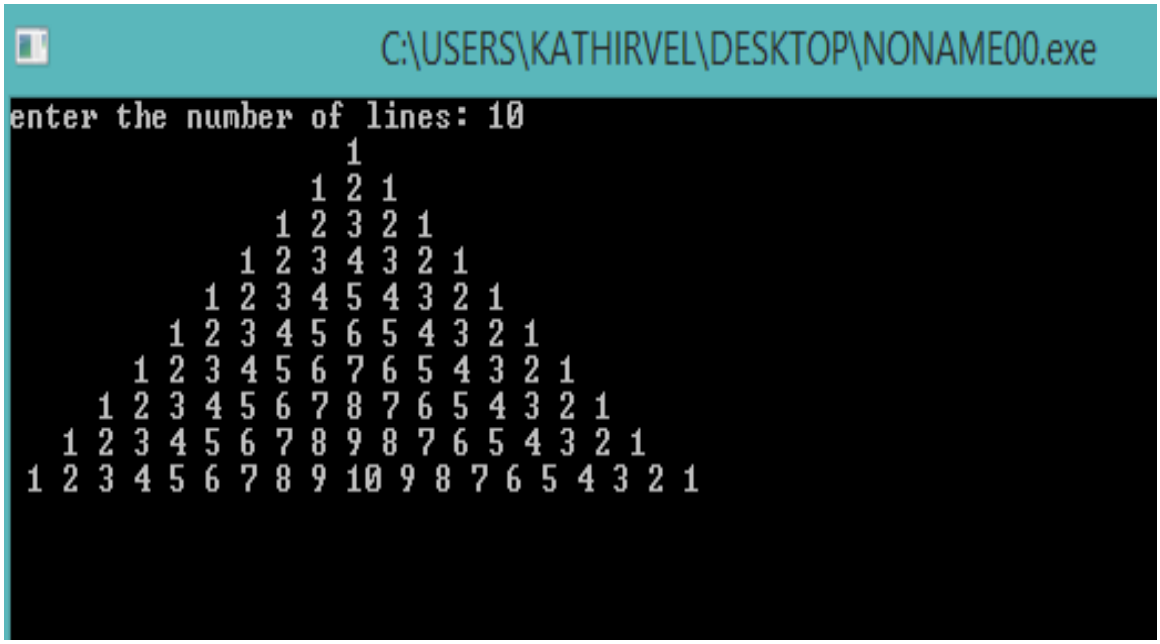
## Q13. Write a program to generate the following pattern for n lines:

```
    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:

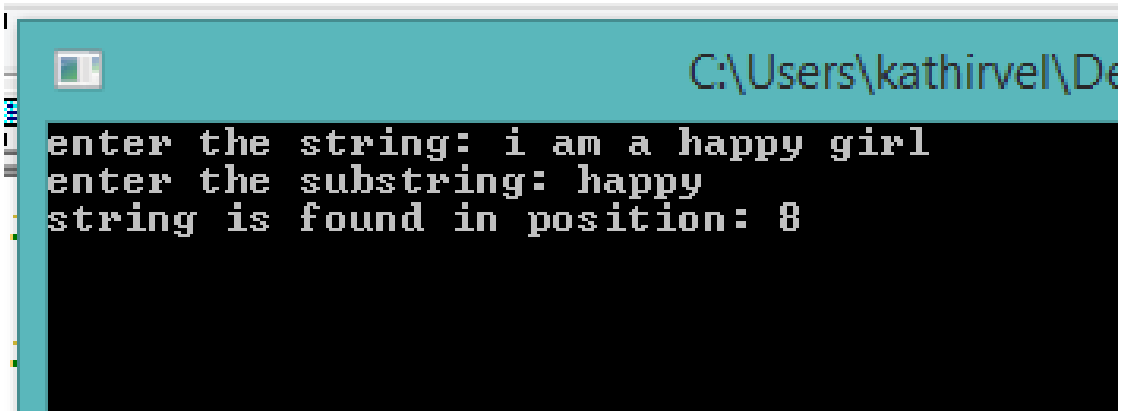

C:\USERS\KATHIRVEL\DESKTOP\NONAME00.exe
enter the number of lines: 10
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
1 2 3 4 5 6 5 4 3 2 1
1 2 3 4 5 6 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 9 10 9 8 7 6 5 4 3 2 1

## 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;
```

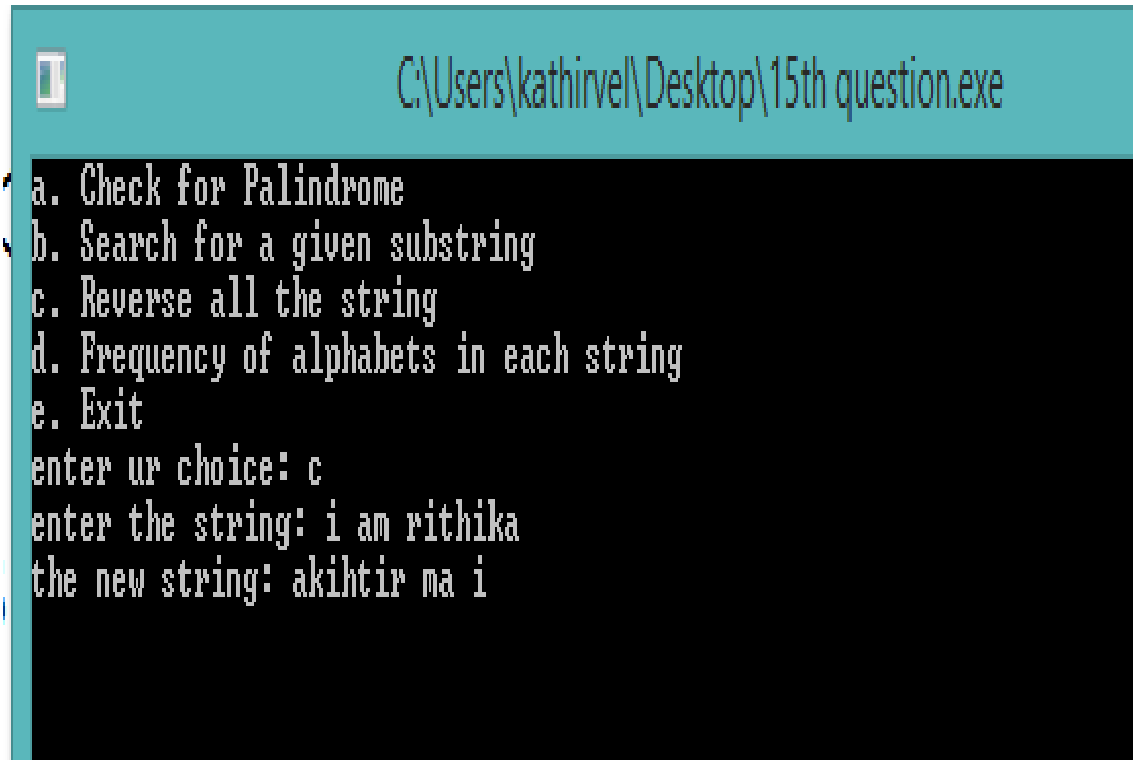
```
    z=len;

    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

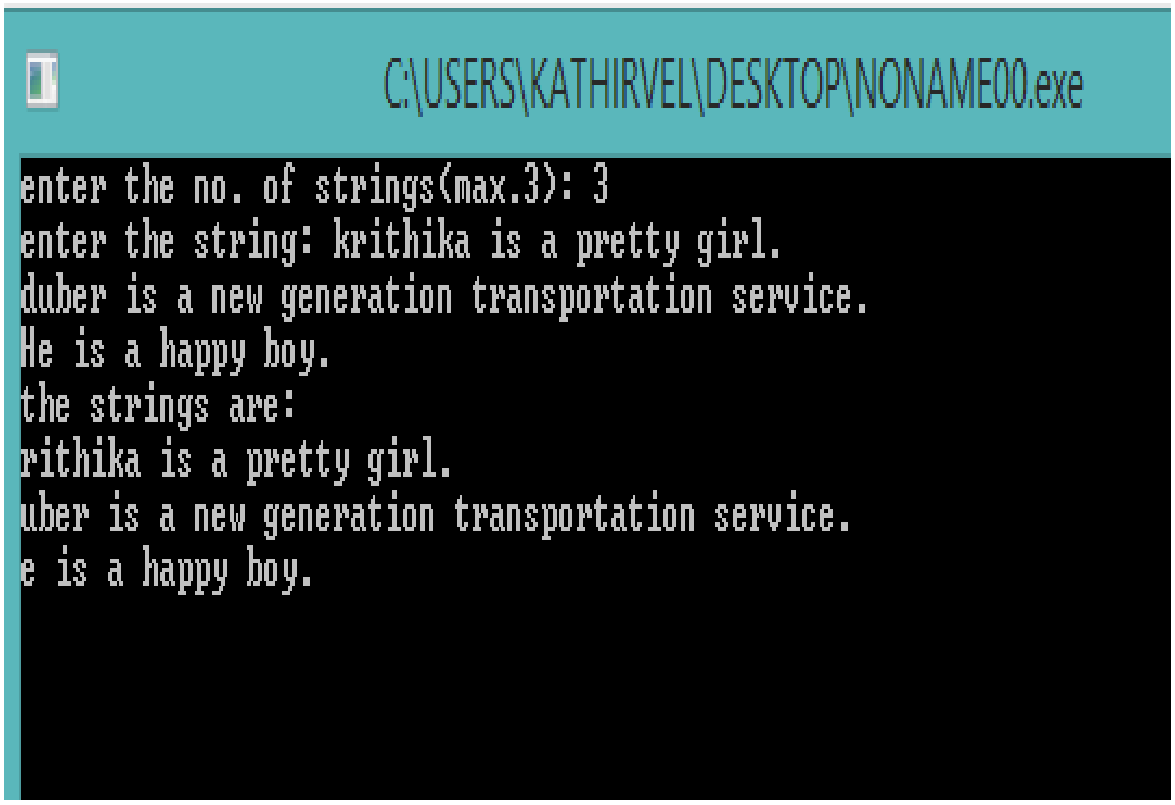
```
#include<iostream.h>
#include<conio.h>
#include<stdio.h>
void main()
{char a[50],a1[50],a2[50];
int n;
cout<<"enter the no. of strings(max.3): ";
cin>>n;
if(n==3)
{cout<<"enter the string: ";
gets(a);
gets(a1);
gets(a2);
int d,n1,n2;
for(int i=0;a[i]!='\0';i++)
d=i+1;
for(int i1=0;a1[i1]!='\0';i1++)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

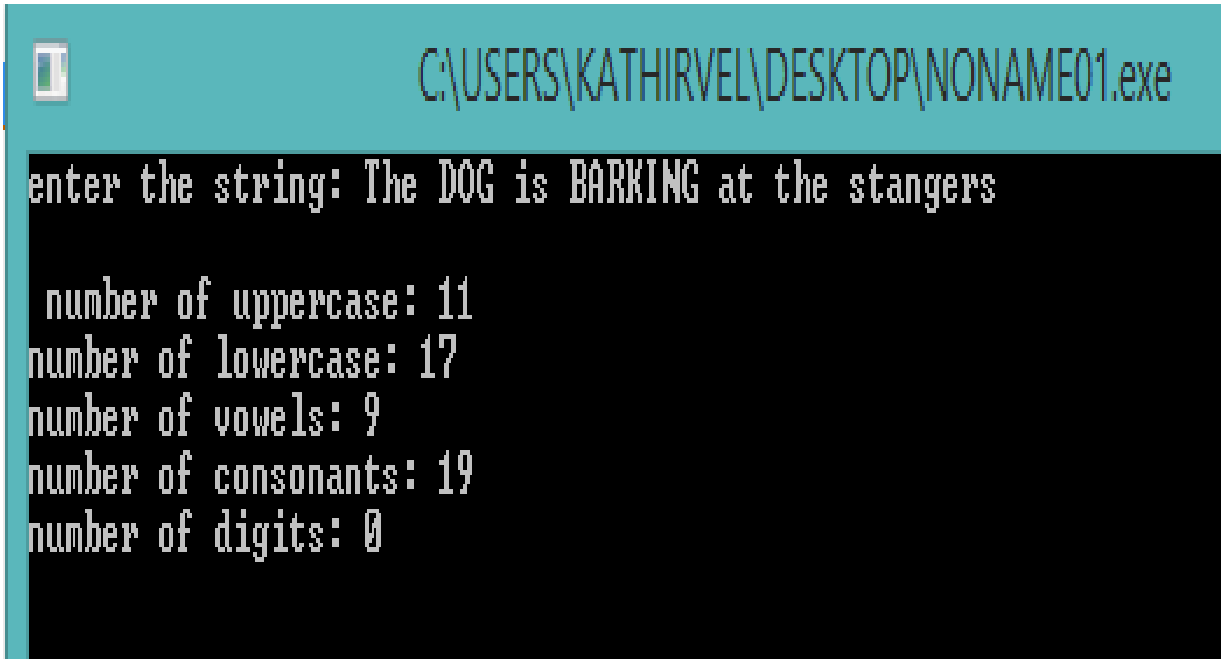

C:\USERS\KATHIRVEL\DESKTOP\NONAME00.exe
enter the no. of strings(max.3): 3
enter the string: krithika is a pretty girl.
duber is a new generation transportation service.
He is a happy boy.
the strings are:
rithika is a pretty girl.
uber is a new generation transportation service.
e is a happy boy.

## 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();
}
```

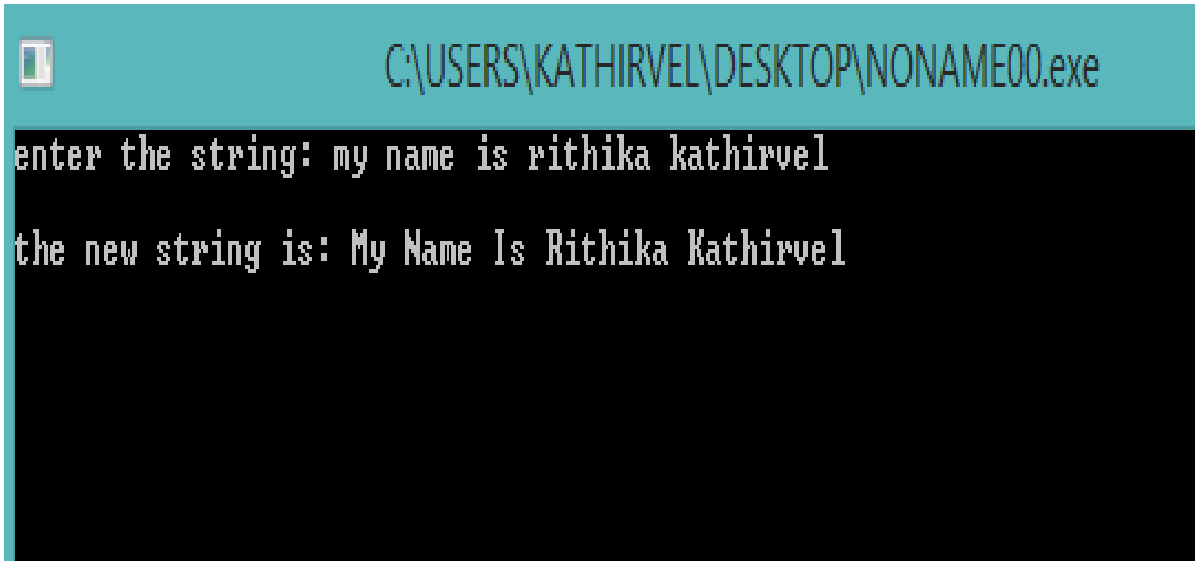
## Output:


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