

To write a C program to check whether a string belongs to the grammar

$S \rightarrow 0S1 \mid \epsilon$

AIM : To write a C program to check whether a string belongs to the grammar $S \rightarrow 0S1 \mid \epsilon$

Program:

```
#include<stdio.h>
#include<string.h>

void main()
{
    char s[100];
    int i,flag,flag1,flag2;
    int l;
    printf("enter a string to check:");
    scanf("%s",s);
    l=strlen(s);
    flag=1;
    for(i=0;i<l;i++)
    {
        if(s[i]!='0' && s[i]!='1')
        {
            flag=0;
        }
    }
    if(flag!=1)
        printf("string is Not Valid\n");
    if(flag==1)
    {
        if(l%2!=0) // If string length is odd
        {
            printf("The string does not satisfy the condition 0n1n\n");
            printf("String Not Accepted\n");
        }
    }
}
```

```
else
{
// To check first half contains 0s
flag1=1;
for(i=0;i<(l/2);i++)
{
if(s[i]!='0')
{
flag1=0;
}
}
// To check second half contains 1s
flag2=1;
for(i=l/2;i<l;i++)
{
if(s[i]!='1')
{
flag2=0;
}
}
if(flag1==1 && flag2==1)
{
printf("The string satisfies the condition 0n1n\n");
printf("String Accepted\n");
}
else
{
printf("The string does not satisfy the condition 0n1n\n");
printf("String Not Accepted\n");
}
}
```

}

}

OUTPUT:



The screenshot shows the Visual Studio Code (VS Code) interface. The main editor window displays a C program named `new.c` with the following code:

```
3 void main()
11 flag=1;
12 for(i=0;i<1;i++)
13 {
14     if(s[i]!='0' && s[i]!='1')
15     {
16         flag=0;
17     }
18 }
19 if(flag!=1)
20     printf("string is Not Valid\n");
21 if(flag==1)
22 {
```

The bottom panel shows the **TERMINAL** view. The terminal output is as follows:

```
PS C:\Users\kmoha\OneDrive\Documents\VSCODES BY MOhan\OPERATINGSYSTEM> cd "c:\Users\kmoha\OneDrive\Documents\VSCODES BY MOhan\OPERATINGSYSTEM\" ;
if ($?) { gcc new.c -o new } ; if ($?) { .\new }
enter a string to check:01101101
The string does not satisfy the condition 0n1n
String Not Accepted
PS C:\Users\kmoha\OneDrive\Documents\VSCODES BY MOhan\OPERATINGSYSTEM>
```

The status bar at the bottom indicates the current line and column: `Ln 20, Col 32`. The file encoding is `UTF-8` and the line ending is `CRLF`. The window title is `C Win32`.

}**RESULT:** Output is successfully obtained.