6. Write a C program to check whether a given string belongs to the language defined by a Context Free Grammar (CFG)

S → 0S1 | ε

Program:

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