

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

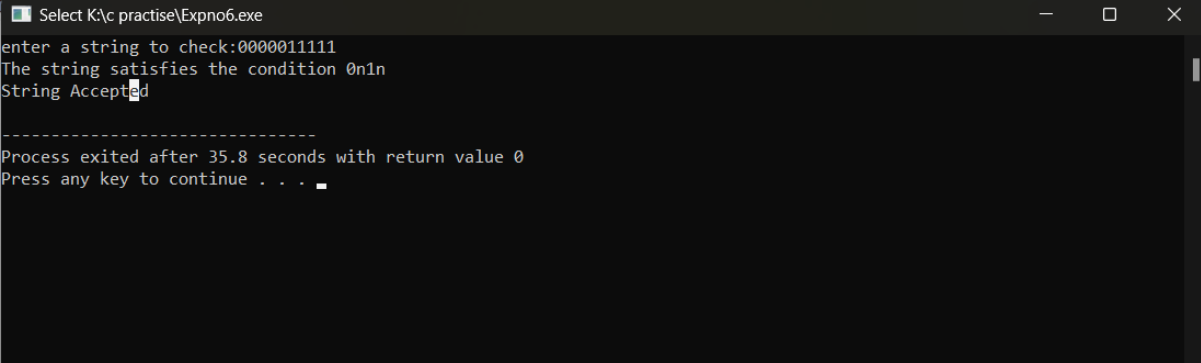
$S \rightarrow 0S1 \mid \epsilon$

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:



```
Select K:\c practise\Expno6.exe
enter a string to check:0000011111
The string satisfies the condition 0n1n
String Accepted

-----
Process exited after 35.8 seconds with return value 0
Press any key to continue . . .
```