EXP 4 d

Reg o: 192011478

Name: c. ramakrishna

CHECKING WHETHER A STRING BELONGS TO A GRAMMAR

AIM :

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

S -> 0 S 1 | ε

Language defined by the Grammar

Set of all strings over **Σ**={0,1} satisfying 0n1n

ALGORITHM :

1. Get the input string from the user.

2. Find the length of the string.

3. Check whether all the symbols in the input are either 0 or 1. If so,

print “String is valid” and go to step 4. Otherwise print “String not

valid” and quit the program.

4. Find the length of the string. If the length is odd, then print “String

not accepted” and quit the program. If the length is even, then go to

step 5.

5. Divide the string into two halves.

6. If the first half contains only 0s and the second half contains only 1s

then print “String Accepted”. Otherwise print “String Not Accepted”

PROGRAM :

```
#include<stdio.h>

#include<string.h>

void main()

{
```

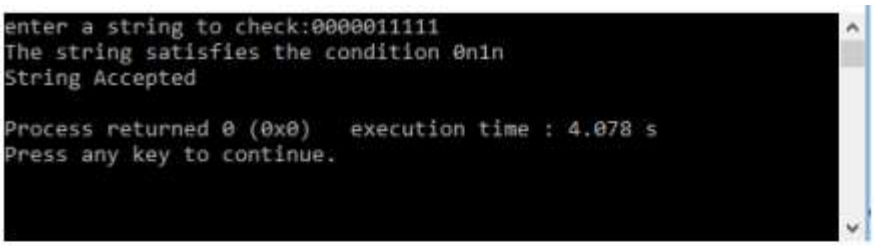
```
char s[100];
int i,flag,flag1,flag2;
int l;
printf("enter a string to check:");
scanf("%s",s);
l=strlen(s);
flag=1;
for(i=0;i<l;i++)
{
if(s[i]!='0' && s[i]!='1')
{
 flag=0;
}
}
if(flag!=1)
printf("string is Not Valid\n");
if(flag==1)
{
if(l%2!=0) // If string length is odd
 {
 printf("The string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

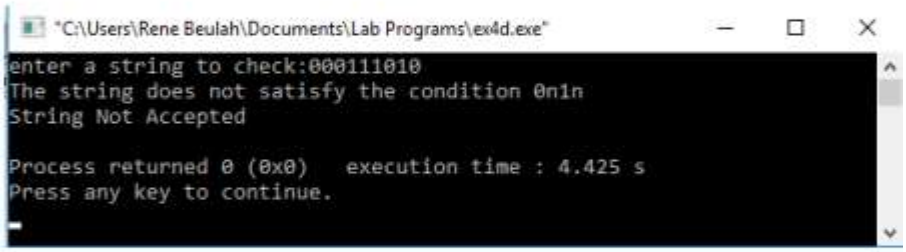
```
for(i=0;i<(l/2);i++)
{
if(s[i]!='0')
{
flag1=0;
}
}
// To check second half contains 1s
flag2=1;
for(i=l/2;i<l;i++)
{
if(s[i]!='1')
{
flag2=0;
}
}
if(flag1==1 && flag2==1)
 {
 printf("The string satisfies the condition 0n1n\n");
 printf("String Accepted\n");
 }
else
 {
 printf("The string does not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

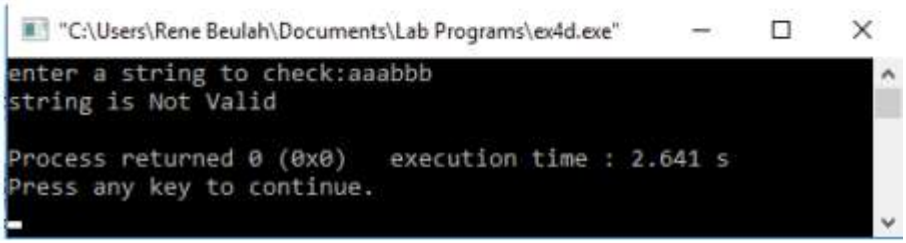
```
}

}
```

RESULT:


enter a string to check:0000011111
The string satisfies the condition 0n1n
String Accepted
Process returned 0 (0x0)   execution time : 4.078 s
Press any key to continue.


"C:\Users\Rene Beulah\Documents\Lab Programs\ex4d.exe"
enter a string to check:000111010
The string does not satisfy the condition 0n1n
String Not Accepted
Process returned 0 (0x0)   execution time : 4.425 s
Press any key to continue.


"C:\Users\Rene Beulah\Documents\Lab Programs\ex4d.exe"
enter a string to check:aaabbb
string is Not Valid
Process returned 0 (0x0)   execution time : 2.641 s
Press any key to continue.