

EXP 4 b

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CHECKING WHETHER A STRING BELONGS TO A GRAMMAR

AIM :

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

$S \rightarrow 0S0 \mid 1S1 \mid 0 \mid 1 \mid \epsilon$

Language defined by the Grammar

Set of all strings over $\Sigma=\{0,1\}$ that are palindrome

ALGORITHM :

1. Get the input string from the user.
2. Find the length of the string. Let it be n.
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. If the 1st symbol and nth symbol are the same, 2nd symbol and (n-1)th symbol are the same and so on, then the given string is palindrome. So, print "String accepted". Otherwise, print "String not accepted"

PROGRAM :

```
#include<stdio.h>

#include<string.h>

void main()

{

char s[100];

int i,flag,flag1,a,b;

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)
```

```
{
```

```
flag1=1;
```

```
a=0;b=l-1;
```

```
while(a!=(l/2))
```

```
{
```

```
if(s[a]!=s[b])
```

```
{
```

```
flag1=0;
```

```
}
```

```
a=a+1;
```

```
b=b-1;
```

```
}
```

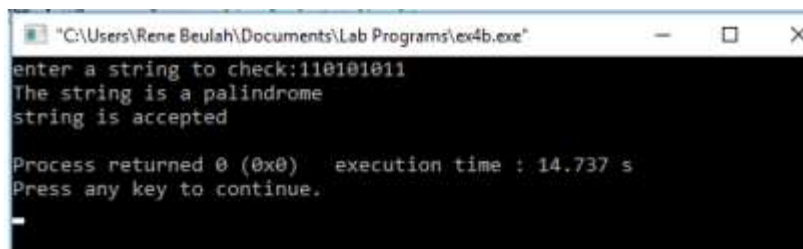
```
if (flag1==1)
```

```

{
    printf("The string is a palindrome\n");
    printf("string is accepted\n");
}
else
{
    printf("The string is not a palindrome\n");
    printf("string is Not accepted\n");
}
}
}
}

```

RESULT:

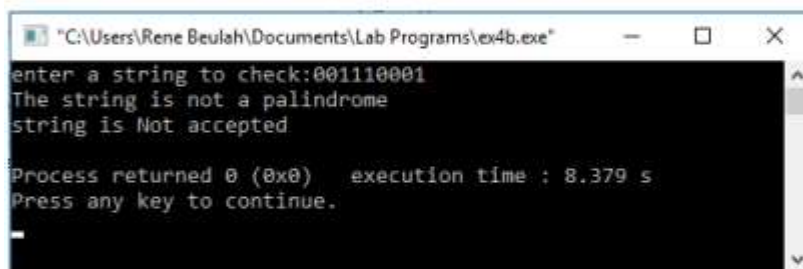


```

"C:\Users\Rene Beulah\Documents\Lab Programs\ex4b.exe"
enter a string to check:110101011
The string is a palindrome
string is accepted

Process returned 0 (0x0)   execution time : 14.737 s
Press any key to continue.

```

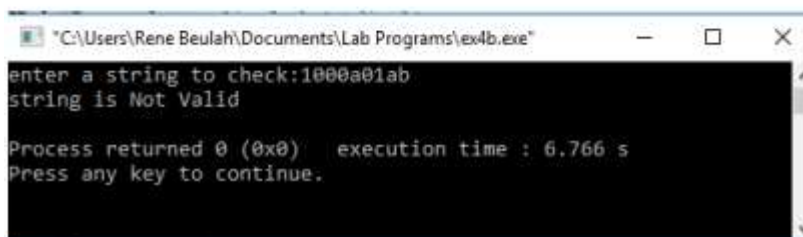


```

"C:\Users\Rene Beulah\Documents\Lab Programs\ex4b.exe"
enter a string to check:001110001
The string is not a palindrome
string is Not accepted

Process returned 0 (0x0)   execution time : 8.379 s
Press any key to continue.

```



```

"C:\Users\Rene Beulah\Documents\Lab Programs\ex4b.exe"
enter a string to check:1000a01ab
string is Not Valid

Process returned 0 (0x0)   execution time : 6.766 s
Press any key to continue.

```