EXPERIMENT 6

AIM

Convert NFA to DFA

ALGORITHM

1. Start
2. Input the required array ie, set of alphabets, set of states, initial state, set of final states, transitions.
3. Initially Q' = ϕ
4. Add q0 of NFA to Q'. Then find the transitions from this start state.
5. In Q', find the possible set of states for each input symbol. If this set of states is not in Q', then add it to Q'.
6. In DFA, the final state will be all the states which contain F(final states of NFA)
7. Stop

OUTPUT

```
gcc 11anaghasethu-p6.c
./a.out
```

```
Enter the number of alphabets?
NOTE:- [ use letter e as epsilon]
NOTE:- [e must be last character ,if it is present]

Enter No of alphabets and alphabets?
2
a
b
Enter the number of states?
4
Enter the start state?
1
Enter the number of final states?
2
Enter the final states?
3
4
Enter the number of transitions?
8
```

NOTE:- [Transition is in the form–> qno alphabet qno]
NOTE:- [States number must be greater than zero]

Enter transition?
1 a 1
1 b 1
1 a 2
2 b 2
2 a 3
3 a 4
3 b 4
4 b 3

Equivalent DFA.....
Transitions of DFA

{q1,} a {q1,q2,}

{q1,} b {q1,}

{q1,q2,} a {q1,q2,q3,}

{q1,q2,} b {q1,q2,}

{q1,q2,q3,} a {q1,q2,q3,q4,}

{q1,q2,q3,} b {q1,q2,q4,}

{q1,q2,q3,q4,} a {q1,q2,q3,q4,}

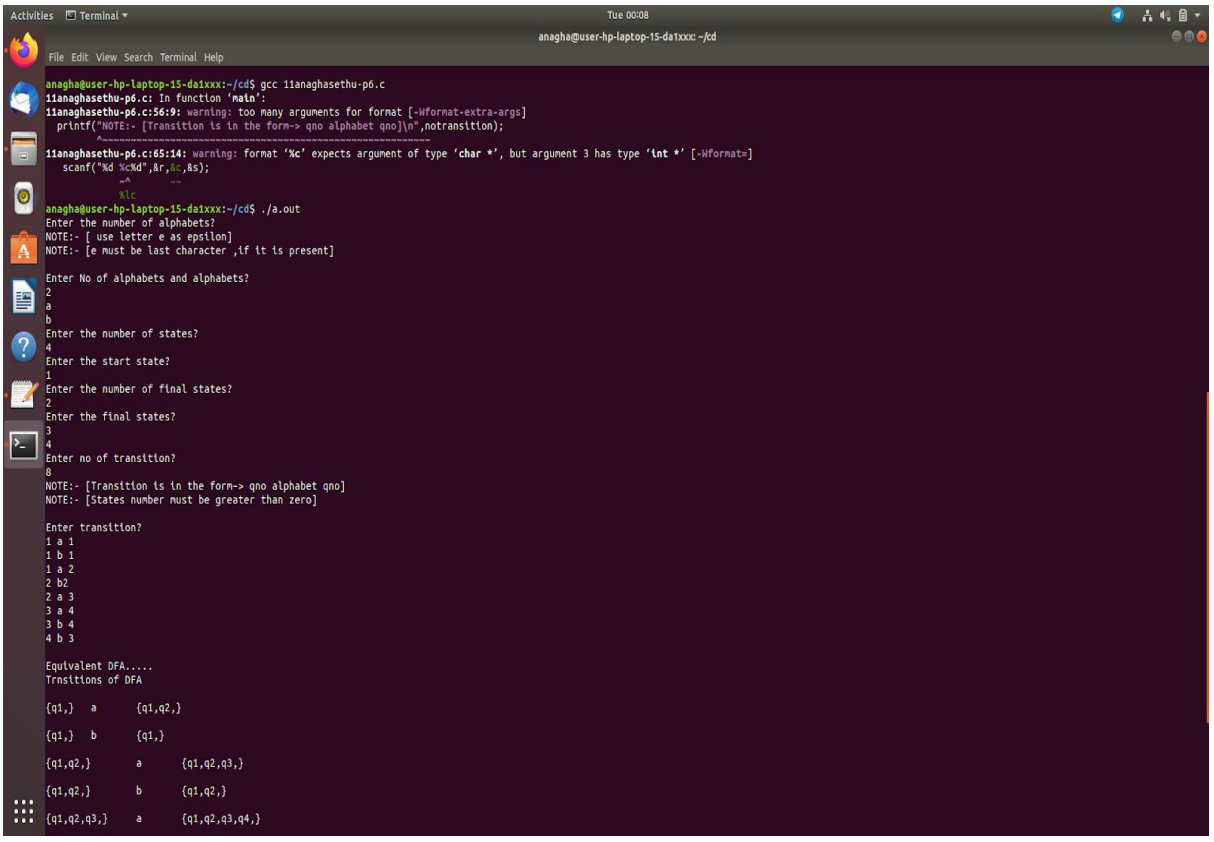
{q1,q2,q3,q4,} b {q1,q2,q3,q4,}

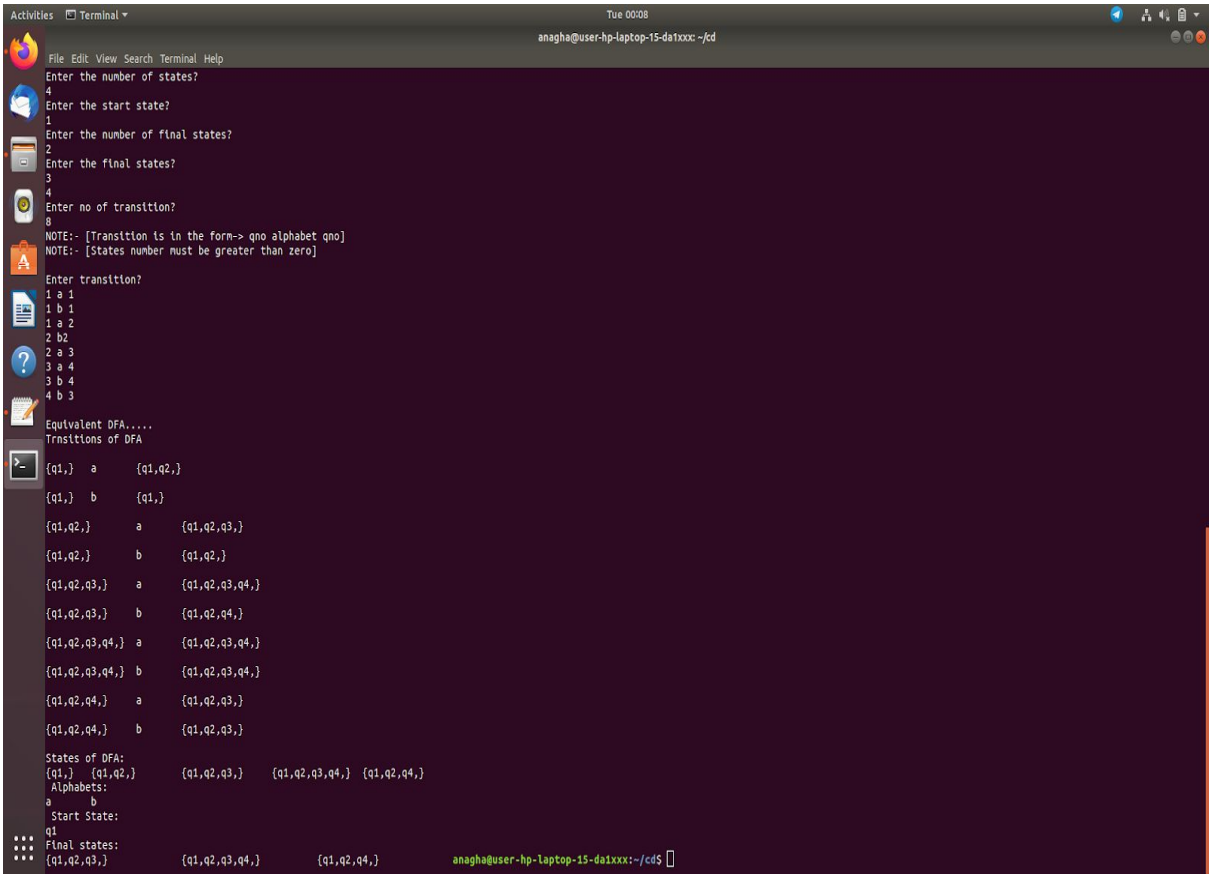
{q1,q2,q4,} a {q1,q2,q3,}

{q1,q2,q4,} b {q1,q2,q3,}

States of DFA:
{q1,} {q1,q2,} {q1,q2,q3,} {q1,q2,q3,q4,} {q1,q2,q4,}
Alphabets:
a b
Start State:
q1
Final states:
{q1,q2,q3,} {q1,q2,q3,q4,} {q1,q2,q4,}

SCREENSHOT


Activities
Terminal
Tue 00:08
anagha@user-hp-laptop-15-da1xxx: ~/cd
File Edit View Search Terminal Help
anagha@user-hp-laptop-15-da1xxx:~/cd$ gcc 11anaghasethu-p6.c
11anaghasethu-p6.c: In function 'main':
11anaghasethu-p6.c:56:9: warning: too many arguments for format [-Wformat-extra-args]
printf("NOTE:- [Transition is in the form-> qno alphabet qno]\n",notransition);
11anaghasethu-p6.c:65:14: warning: format '%c' expects argument of type 'char *', but argument 3 has type 'int *' [-Wformat=]
scanf("%d %c%d",&r,&c,&s);
%lc
anagha@user-hp-laptop-15-da1xxx:~/cd$ ./a.out
Enter the number of alphabets?
NOTE:- [use letter e as epsilon]
NOTE:- [e must be last character ,if it is present]
Enter No of alphabets and alphabets?
2
a
b
Enter the number of states?
4
Enter the start state?
1
Enter the number of final states?
2
Enter the final states?
3
4
Enter no of transition?
8
NOTE:- [Transition is in the form-> qno alphabet qno]
NOTE:- [States number must be greater than zero]
Enter transition?
1 a 1
1 b 1
1 a 2
2 b2
2 a 3
3 a 4
3 b 4
4 b 3
Equivalent DFA.....
Trnsitions of DFA
{q1,} a {q1,q2,}
{q1,} b {q1,}
{q1,q2,} a {q1,q2,q3,}
{q1,q2,} b {q1,q2,}
{q1,q2,q3,} a {q1,q2,q3,q4,}


Activities
Terminal
Tue 00:08
anagha@user-hp-laptop-15-da1xxx: ~/cd
File Edit View Search Terminal Help
Enter the number of states?
4
Enter the start state?
1
Enter the number of final states?
2
Enter the final states?
3
4
Enter no of transition?
8
NOTE:- [Transition is in the form-> qno alphabet qno]
NOTE:- [States number must be greater than zero]
Enter transition?
1 a 1
1 b 1
1 a 2
2 b2
2 a 3
3 a 4
3 b 4
4 b 3
Equivalent DFA.....
Trnsitions of DFA
{q1,} a {q1,q2,}
{q1,} b {q1,}
{q1,q2,} a {q1,q2,q3,}
{q1,q2,} b {q1,q2,}
{q1,q2,q3,} a {q1,q2,q3,q4,}
{q1,q2,q3,} b {q1,q2,q4,}
{q1,q2,q3,q4,} a {q1,q2,q3,q4,}
{q1,q2,q3,q4,} b {q1,q2,q3,q4,}
{q1,q2,q4,} a {q1,q2,q3,}
{q1,q2,q4,} b {q1,q2,q3,}
States of DFA:
{q1,} {q1,q2,} {q1,q2,q3,} {q1,q2,q3,q4,} {q1,q2,q4,}
Alphabets:
a b
Start State:
q1
Final states:
{q1,q2,q3,} {q1,q2,q3,q4,} {q1,q2,q4,}
anagha@user-hp-laptop-15-da1xxx:~/cd$