CS 352, Jens Palsberg Aug 29, 2000

Homework #1
Regular Languages

Question #1

Write regular expressions for each of the following:

a) String over the alphabet {a,b,c} with an odd number of a's

b) Binary numbers multiple of 2 and representing a decimal number greater than or equal to 8

c) Binary numbers greater than 110011

d) Strings of the kind EPX where E is an integer number, P is a lowercase letter from the alphabet and X is an integer greater than 3 and less than 13. Examples: 143a6, 555b12, etc.

Question #2.

Convert the following regular expressions to nondeterministic finite automata.

a) a* (b | c)* c

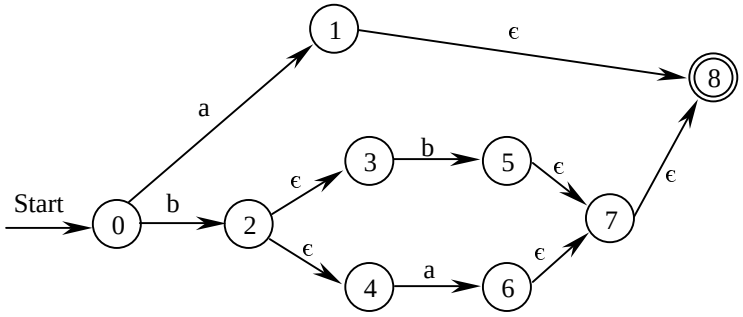
b) ((b|a)*|(c|a))*(cb)*

c) (((baa*)*bc)*d*)*

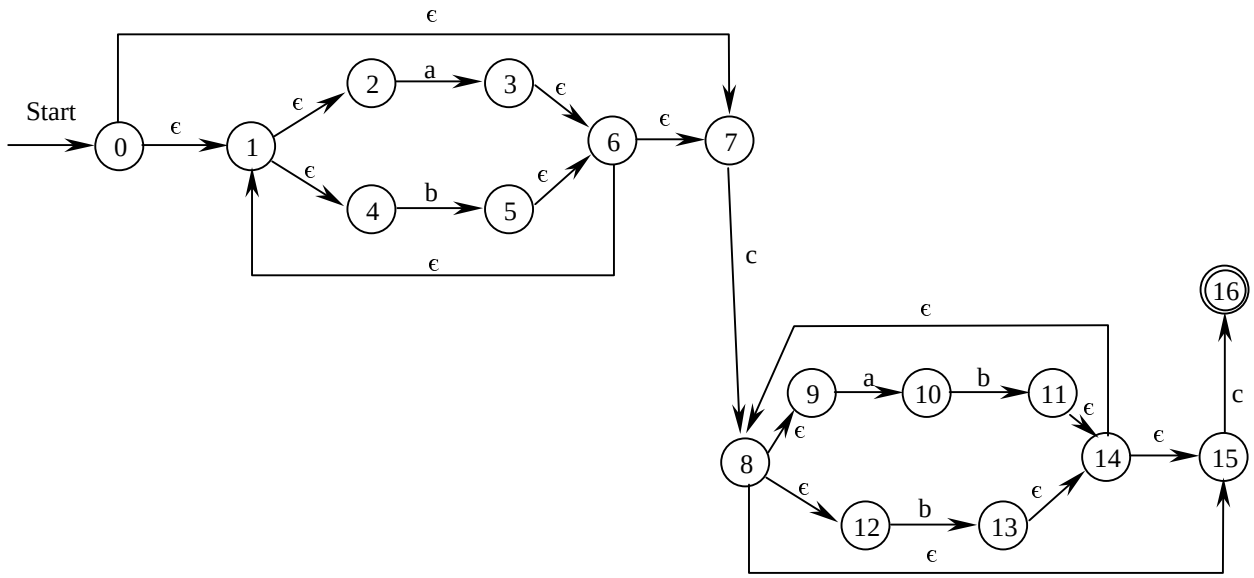
Question #3

Convert the following NFA to DFA. Show each **closure** and **edge** in the process. For a) and b) show the **state transition table.**

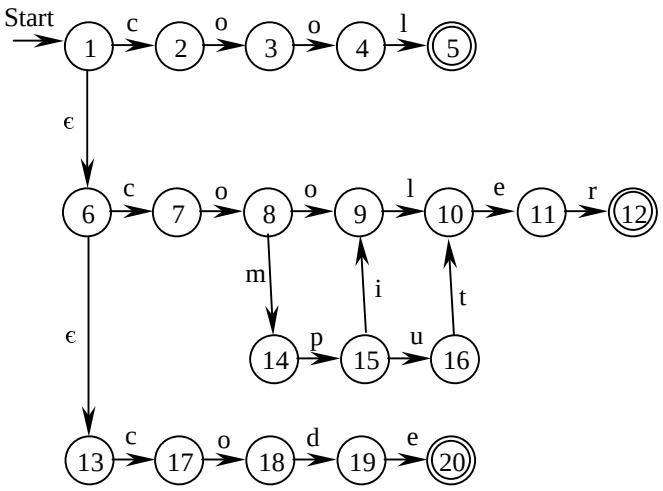
a)



b)


Start
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
a
b
c
ϵ

c)


Start
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
c
o
l
e
r
m
i
t
p
u
d
ϵ