

CMPSC 130

HW #4

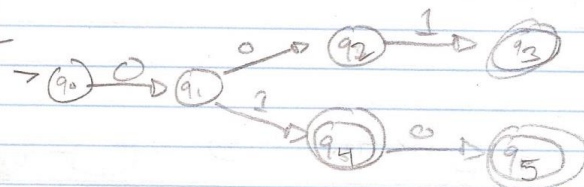
1.17, 1.18, 1.19, 1.20, 1.22

Justin Wong

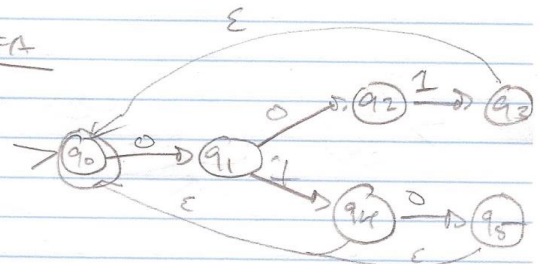
jujuwong
1264674

1.17 (01 U 001 U 010)*

DFA

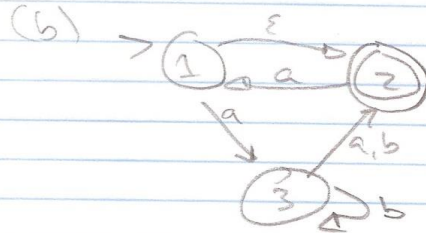
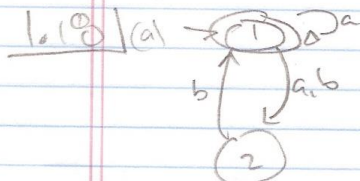
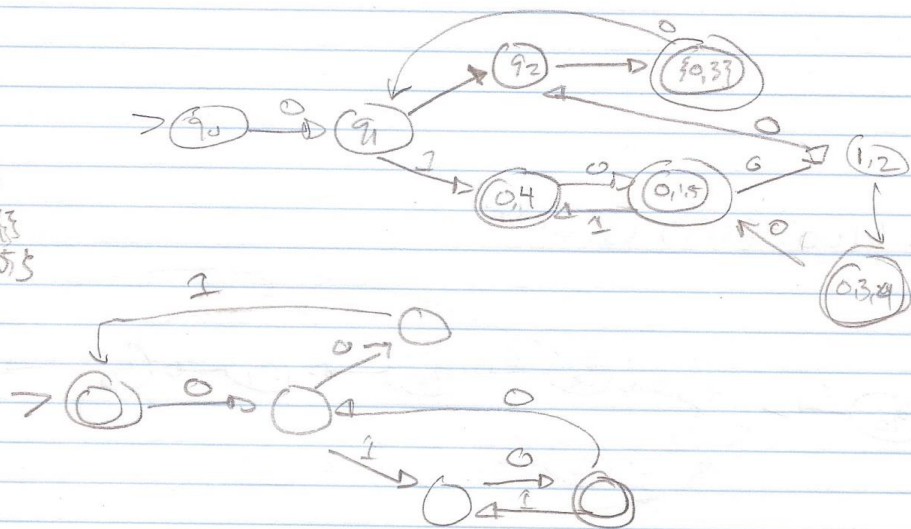


NFA



1.17b Closure

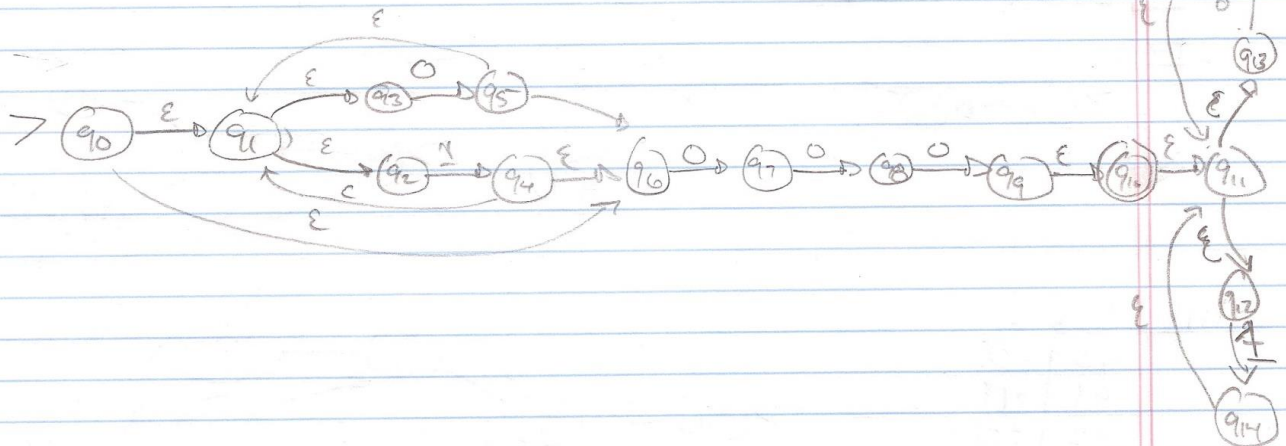
q0	{0}
q1	{1}
q2	{2}
q3	{0, 2}
q4	{0, 4}
q5	{0, 5}



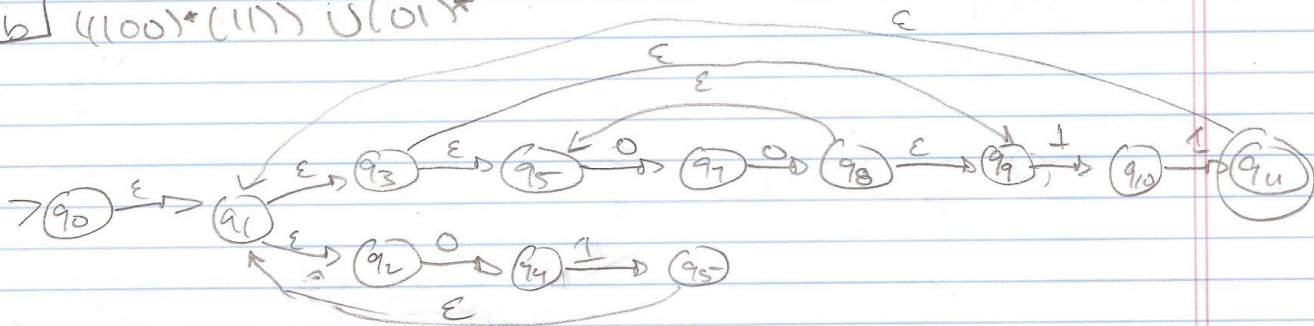
- can be empty string
- either a b a or a b b
- more than 2 a's means

$a^*(a^*bb)^*$

$$\frac{1.19}{a} \quad (0U1)^* 000(0U1)^*$$



$$b) ((100)^*(11))^* U (01)^*$$



$$c) \emptyset^+ \quad \text{Or more nulls}$$

1.20 a) a^*b^*

<u>IN</u>	<u>NOT</u>
\emptyset	ba
a	aba

e) $(a \cup b)^*a(a \cup b)^*b(a \cup b)^*a(a \cup b)^*$

<u>IN</u>	<u>NOT</u>
aba	aaa
aabaa	bbb

b) $a(ba)^*b$

<u>IN</u>	<u>NOT</u>
ab	b
abab	a

f) $aba \cup bab$

<u>IN</u>	<u>NOT</u>
aba	aa
bab	bb

c) $a^* \cup b^*$

<u>IN</u>	<u>NOT</u>
a	ab
b	ba

g) $(\epsilon \cup a)^*b$

<u>IN</u>	<u>NOT</u>
a	ba
ab	bba

d) $(aaa)^*$

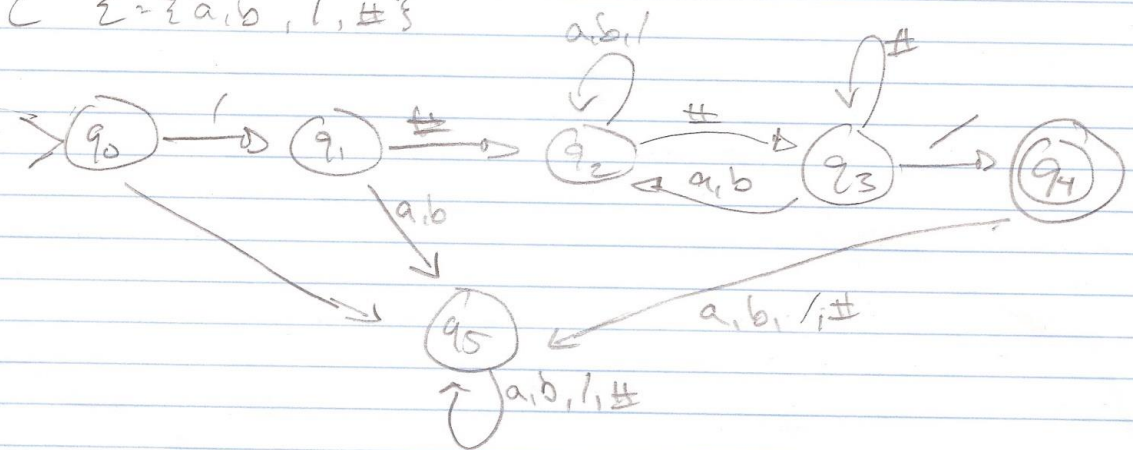
<u>IN</u>	<u>NOT</u>
ϵ	a
aaa	aa

h) $(a \cup ba \cup bb)(a \cup b)^*$

<u>IN</u>	<u>NOT</u>
a	aaa
ba	bbb

1.22 C $\Sigma = \{a, b, /, \#\}$

a)



b) Regexp for C

$/\#(a \cup b \cup / \cup \# a \cup \# b \cup \# \#)^* \# /$

starts with $/\#$, allows anything in between until $\# /$