CS 222 Jeremiah Webb Test

1. Let A = {1, 2, 3 4 3}

	1	2	3	4
1	1	0	1	0
2	0	1	1	1
3	1	1	1	0
4	0	1	0	1

2. symmetric ✓
All 1s on diagonal reflexive ✓

3. already symmetric

4. 1s on all diagonals

5. [illegible] ✓
Transitive

6. Let B = {r, s}

	r	s
r	1	0
s	1	0

11.

Let A = {x, y, z} Let B = {4, 8, 12}

	4	8	12
x	0	0	1
y	1	0	0
z	0	1	0

Used once 4, 8, 12, x, y, z
One to one ✓ ends domain used once

12.

Let A = {x, y, z} B = {4, 8, 12}

	4	8	12
x	0	1	0
y	0	0	1
z	0	0	0

13.

$A = \{e, r, a, v\}$

$B = \{1, 9, 2, 6\}$

$ARB = \{(e,1), (r,9), (a,2), (v,6)\}$

14.

$ARB = \{(e,1), (e,9), (a,2), (a,6)\}$

same xs, ∴ not function

15.

$ARB = \{(e,9), (r,9)\}$

same Y, diff x

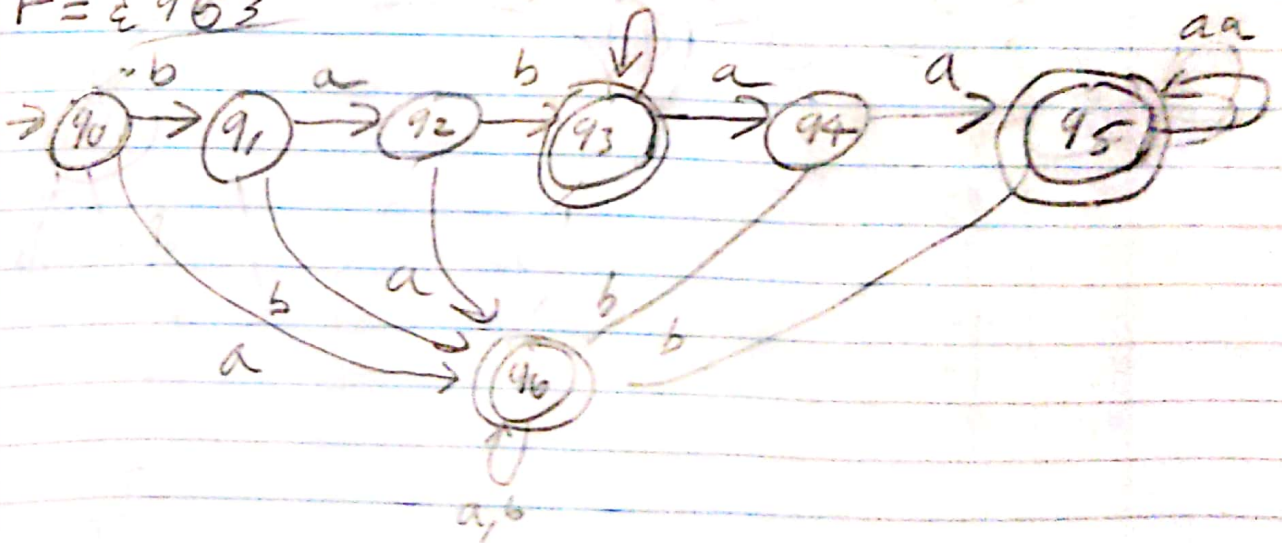
16.

$S = \{q_0, q_1, q_2, q_3, q_4, q_5, q_6\}$

$\Sigma = \{a, b\}$

$q_0 = \{q_0\}$

$F = \{q_6\}$



16. contd

δ	a	b
q_0	q_6	q_1
q_1	q_2	q_6
q_2	q_6	q_3
q_3	q_4	q_3
q_4	q_5	q_6
q_5	q_5	q_6
q_6	q_6	q_6

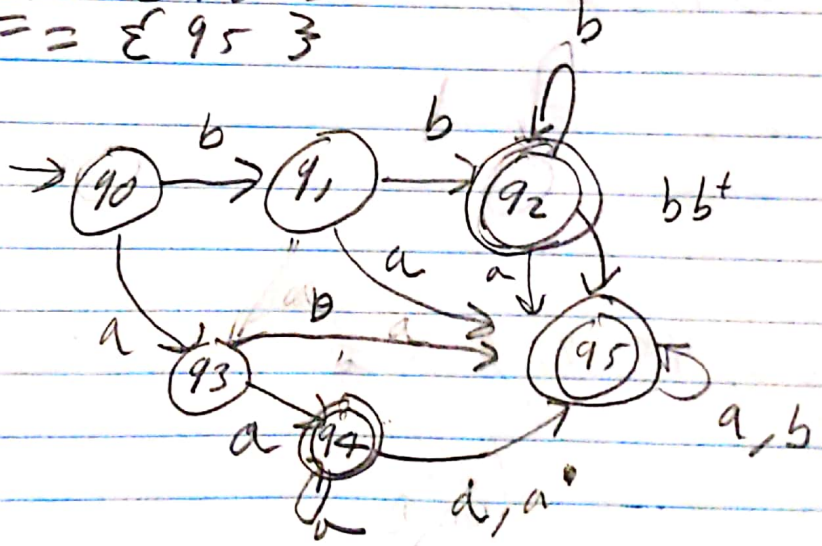
17. $L_1 = bb^+ + aa$

$S = \{q_0, q_1, q_2, q_3, q_4\}$

$\Sigma = \{a, b\}$

$q_0 = \{q_0\}$

$F = \{q_5\}$



δ	a	b
q_0	q_3	q_1
q_1	q_3	q_5
q_2	q_5	q_a
q_3	q_4	q_5
q_4	q_4	q_5
q_5	q_5	q_5