

COT 4210 Homework #4: Section 1.3, DFA Minimization

Assigned: 2/2/2021

Due Date/Time: On Webcourses

1) Use the algorithm described in class to convert a DFA to a regular expression on the two following DFAs described below:

DFA D_1 : $Q = \{1, 2\}$, $\Sigma = \{a, b\}$, $F = \{2\}$, 1 is the start state, and δ is described as follows:

Q	Σ	Q
1	a	1
1	b	2
2	a	2
2	b	1

DFA D_2 : $Q = \{1, 2, 3\}$, $\Sigma = \{a, b\}$, $F = \{1, 3\}$, 1 is the start state, and δ is described as follows:

Q	Σ	Q
1	a	2
1	b	2
2	a	2
2	b	3
3	a	1
3	b	2

2) Determine a DFA with the minimum number of states that is equivalent to the DFA described below:

DFA D : $Q = \{0, 1, 2, 3, 4, 5, 6\}$, $\Sigma = \{a, b\}$, $F = \{1, 3, 5, 6\}$, 0 is the start state, and δ is described as follows:

Q	Σ	Q
0	a	1
0	b	3
1	a	2
1	b	4
2	a	5
2	b	5
3	a	4
3	b	2
4	a	5
4	b	5
5	a	6
5	b	5
6	a	6
6	b	6

Please use the algorithm shown in class.