Homework 12

Mathematics in Computer Science

1. Construct a deterministic finite automaton that accepts the set of all strings of 0's and 1's where the number of 0's is even and the number of 1's is divisible by 3.

2. Construct a deterministic finite automaton that accepts the set of all strings of 0's and 1's that have either two consecutive 0's or two consecutive 1's.

3. Let M_1 and M_2 be deterministic finite automata. Write out the formal definition of a DFA accepting $L(M_1) \cap L(M_2)$.

4. Given a finite automaton $M = (\{A, B\}, \{0\}, \delta, A, F = \{B\})$ with two states A and B and one accepting state B with the transition function shown below prove by induction that the automaton M accepts the set of all odd length strings of 0's. Note that the input alphabet of M has only one symbol 0.

	0
A	B
B	A