Theory of Automata and Formal Language

Lecture-9

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Exercise

Construct DFA for the following sets:-

1. The set of all the even binary numbers.
2. The set of all the strings of 0 and 1, which start with 1 and ends with 0.
3. The set of all the strings of 0 and 1 in which number of 1's is odd.
4. The set of all the binary numbers divisible by 3.
5. The set of all the positive integers divisible by 3.
6. The set of all the strings of 0 and 1, which contains even numbers of 0's and 1's.
7. The set of all the strings of 0 and 1, in which number of 0's is divisible by 5 and number of 1's is divisible by 3.

Exercise

Construct DFA for the following sets:-

1. The set of all the strings of 0 and 1 ending with 00.
2. The set of all the strings of a and b ending with abb.
3. The set of all the strings of 0 and 1 which contains 010 as a substring.
4. The set of all the strings of 0 and 1 that contains at least two 0's.
5. The set of all the strings of 0 and 1 that contains at most two 0's.
6. The set of all the strings of 0 and 1 that have length at most five.
7. The set of all the strings of a and b that begins and ends with different letters.
8. The set of all the strings of a and b that contains at least two consecutive a's and not contain consecutive b's.

Exercise

For $\Sigma = \{a,b\}$, construct DFA's that accept the sets consisting of

1. L $=\{w \mid w \mid \bmod 3 = 0\}$
2. L $=\{w \mid w \mid \bmod 5 \neq 0\}$
3. L $=\{w \mid n_a(w) \bmod 3 > 1\}$
4. L $=\{w \mid n_a(w) \bmod 3 > n_b(w) \bmod 3\}$
5. L $=\{w \mid (n_a(w) - n_b(w)) \bmod 3 > 0\}$
6. L $=\{w \mid | n_a(w) - n_b(w) | \bmod 3 < 2\}$