

K L University
Department of Computer Science and Engineering
III B.Tech-Odd Semester AY 2017-18

Theory of Computation(15-CS3109)

Section:S11

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Lecture Problems on DFA

1. Design a DFA, Language $L = \{w/w \text{ contains '01' as a substring}, \Sigma = \{0,1\}\}$
2. Design a DFA, Language $L = \{w/w \text{ starts with 'ab'}, \Sigma = \{a,b\}\}$
3. Design a DFA, Language $L = \{w/w \text{ ends with '00'}, \Sigma = \{0,1\}\}$
4. Construct DFA, $L = \{w/w \text{ contains even number of '0's' and even number of '1's'}, \Sigma = \{0,1\}\}$
5. Construct DFA, $L = \{w/w \text{ contains even number of a's}, \Sigma = \{a,b\}\}$
6. Construct DFA, $L = \{w/w \text{ contains odd number of b's}, \Sigma = \{a,b\}\}$
7. Construct DFA, $L = \{w/w \text{ represent base 3 divisible by 4}\}$
8. Construct DFA, $L = \{w/w \leq 4, w = \{a,b\}\}$
9. Construct DFA, $L = \{w/w \text{ contains b as a third symbol from right } w = \{a,b\}\}$
10. Construct DFA, $L = \{w/w \text{ contains a as a second symbol from left } w = \{a,b\}\}$
11. Design a DFA which accepts set of strings that **does not contain** "010" as substring over an alphabet $\Sigma = \{0, 1\}$.
12. Design a DFA which accepts set of strings that **starts and ends with 'b' (same symbol)** over an alphabet $\Sigma = \{a, b\}$.
13. $L = \{w / |w| = 3 \text{ and } w \text{ starts with 'a'}\}$ over an alphabet $\Sigma = \{a, b\}$.

DFA TUTORIAL-CO-I

1. Design a DFA which accepts string 1100 only over an alphabet $\Sigma = \{0, 1\}$.
2. $L = \{w / w \text{ starts and ends with different symbol}\}$ over an alphabet $\Sigma = \{a, b\}$.
3. $L = \{w / w \text{ contains 3 consecutive zero's}\}$ over an alphabet $\Sigma = \{a, b\}$.
4. $L = \{w / w \text{ contains exactly 4 one's over an alphabet } \Sigma = \{0, 1\}\}$.
5. $L = \{ \{a^n\} \cup \{b^n\} \mid n \geq 1 \}$ over an alphabet $\Sigma = \{a, b\}$.
6. $L = \{ a^m b^n \mid m, n \geq 1 \}$ over an alphabet $\Sigma = \{a, b\}$.

7. $L = \{w / w \text{ contains no of } a\text{'s divisible by } 2 \text{ and no of } b\text{'s divisible by } 3\}$ over an alphabet $\Sigma = \{a, b\}$.

8. $L = \{w / |w| \text{ is even}\}$ over an alphabet $\Sigma = \{0, 1\}$.