

Homework Assignment 1

1. Let $\Sigma = \{0, 1\}$. Give DFAs that recognize the following languages:
 - (a) $L_1 = \{001\}$
 - (b) $L_2 = \{w \mid w_1, w, w_2 \in \Sigma^* \wedge w = w_1 \cdot 010 \cdot w_2\}$
 - (c) $L_3 = \{(01)^n \mid n \geq 1\}$
 - (d) $L_4 = L_2 \cup L_3$ using the algorithm we learned in Lesson 2.
 - (e) $L_5 = \text{char}_\Sigma(1) \cup \text{empty}_\Sigma$ using the algorithms we learned in Lesson 2.
 - (f) Simplify L_5 so it uses the fewer number of states possible.