CI- Tutorial-9

Exercise 5

1) we can fix the input alphabet $\Sigma = \{0,1\}$.

so set $L = \{x_1, x_2, \cdots, x_n \mid x_n \in \Sigma, n \in \mathbb{R}\}$.

$\Rightarrow$ $\bar{1} = 0$, $\bar{0} = 1$

$1 \vee 0 = 1$, $1 \vee 1 = 1$, $0 \vee 0 = 0$, $1 \wedge 0 = 0$, $1 \wedge 1 = 1$, $0 \wedge 0 = 0$.

so it could be a booleam algebra.

2). Definition of DFA:

① A finite set of states Q

② A finite set of input symbols Σ.

③ A transition function $\delta : Q \times \Sigma \to Q$

④ A start state $q_0 \in Q$

⑤ A set of accept states $F \subseteq Q$

we could fix the sets: $Q = \{0,1\}$, $\Sigma = \{0,1\}$,

so definition ①,② hold

$Q \times \Sigma \to Q$. : We could use boolean operators,

$\bar{1} = 0$. $\bar{0} = 1$, $1 \vee 0 = 1$, $1 \wedge 0 = 0$,

$1 \vee 1 = 1$ $\quad$ $1 \wedge 1 = 1$ $\quad$ So definition ③ holds.

$0 \vee 0 = 0$ $\quad$ $0 \wedge 0 = 0$.

We don't have start state and accept states. So definition ④,⑤ don't hold.

3)

Add start and accept states.