Assignment 4

COS30023 - Languages in Software Development

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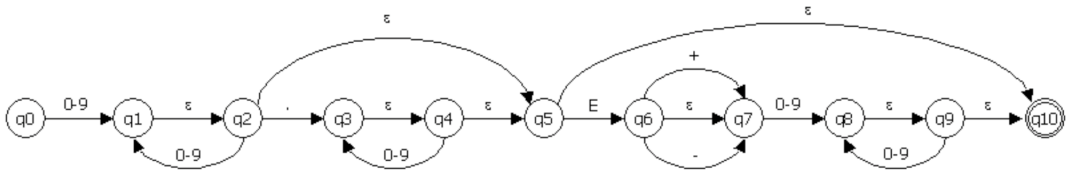
1. Problem 1

1.1. Finite Automaton



1.2. Equations and Rules

$(S_1 \cdot S_2) \cdot S_3 = S_1 \cdot (S_2 \cdot S_3)$
$(S_1|S_2) \cdot T = S_1 \cdot T|S_2 \cdot T$
$T \cdot (S_1|S_2) = T \cdot S_1|T \cdot S_2$
$S \cdot \epsilon = S$
$S \cdot \emptyset = \emptyset$
$S \cdot (T \cdot S)^* = (S \cdot T)^* \cdot S$

1.3. Equation Set

$q_0 = 0 - 9 \oplus q_1$
$q_1 = \epsilon \oplus q_2$
$q_2 = 0 - 9 \oplus q_1 \mid . \oplus q_3 \mid \epsilon \oplus q_5$
$q_3 = \epsilon \oplus q_4$
$q_4 = 0 - 9 \oplus q_3 \mid \epsilon \oplus q_5$
$q_5 = E \oplus q_6 \mid \epsilon \oplus q_{10}$
$q_6 = + \oplus q_7 \mid \ - \oplus q_7 \mid \epsilon \oplus q_7$

$q_7 = 0 - 9 \oplus q_8$
$q_8 = \epsilon \oplus q_9$
$q_9 = 0 - 9 \oplus q_8 \mid \epsilon \oplus q_{10}$
$q_{10} = \epsilon$