Scientific Computing (MATH6183001)

Problem Set 6 - Pushdown Automata

July 24, 2024

Problem 1. Give the formal definition of the PDA given in the Figure 1.

Problem 2. Given the language $A = \{w \mid w \in \{0,1\}^*, w = w^R, \text{that is, } w \text{ is a palindrome}\}$ and the corresponding PDA describing it, show the formal computation of the string $w = 010010$, i.e. the transitions and the state of the stack at each step.

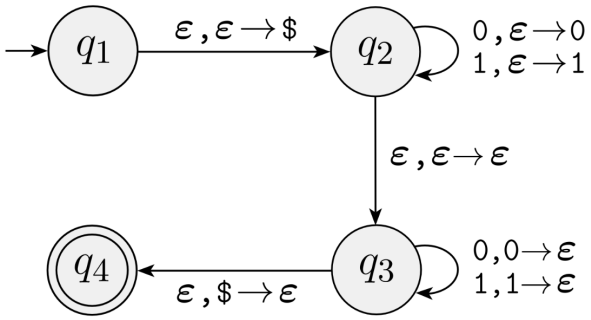

Figure 1: PDA for the language A.

Problem 3. Convert the following CFG to an equivalent PDA.
$E \to E + T \mid T$
$T \to T \times F \mid F$
$F \to (E) \mid a$