Feb 15, 2011

\[ Q' = Q \cup \{ q_5, q_6 \} \]

\[ \Gamma' = \Gamma \cup \left\{ z \right\} \]

\( q_5 \) is new start state

\( F' = \{ \} \) anything doesn't matter

\( F = \) doesn't matter
Empty stack $\rightarrow$ final state

\[ Q' = Q \cup \{q_0, q_f^3\} \]

\[ F' = F \cup \{q_3\} \]

$q_0$ is new start state
GNF

all prod in the form

\[ A \to ax \]

\[ A \in V, \ a \in T, \ x \in V^* \]

Construct NPDA

\[ M = (Q, \Sigma, \Gamma, \delta, q_0, Z, F) \]
\[ Q = \{ q_0, q_1, q_f \} \]

\[ \Sigma = \{ \sigma \} \]

\[ \Gamma = \{ \Sigma, \{ \Sigma \} \} \]

\[ F = \{ q_f \} \]

1. Start by putting \( S \) on stack

2. For each prod

\[ A \rightarrow a X_1 X_2 \ldots X_n \]
put \( (q_1, x_1, x_2, \ldots, x_n) \) in \( S(q_1, q_1, A) \)

3. Accept if \( S \downarrow w \)

replace all variables on stack
Replace by

$q_i \xrightarrow{a, A; CD} (q_i, B, C; BD) \xrightarrow{\lambda, C; BC} (q_j, B; BB) \xrightarrow{\lambda, B; BB} q_j$
replace

\[ a, A, B \]

by

\[ a, A, AB \]

\[ \text{arrows} \]

\[ a, A, r, A, z \]

\[ \text{arrows} \]

\[ a, A, AB \]

\[ \text{arrows} \]

\[ \text{arrows} \]