HW4

① $M = (Q, \Sigma, \Gamma, R, E, S, \perp, F)$ where:

- $Q = \{1,2,3,4,5,6\}$
- $\Sigma = \{b, \rightarrow\}$
- $\Gamma = \{Z, E, A\}$
- $R(\circ) = (2, -E, 2)$
  $R(\rightarrow) = (2, -A, 2)$
- $E = \{(0, +Z, 1), (1, +E, 2), (2, -E, 4), (2, -Z, 3), (4, +E, 5), (5, +A, 6), (6, +E, 2)\}$
- $S = 0$, $\perp = Z$, $F = 3$

② q s.t. $(0, q, 3) \in R^{\Sigma}[b \rightarrow b]$

$$(0, \varepsilon, \varepsilon) \xrightarrow{+Z} (1, \varepsilon, Z) \xrightarrow{+E} (2, \varepsilon, ZE)$$
$$\xrightarrow{-E} (4, \varepsilon, Z) \xrightarrow{+E} (5, \varepsilon, ZE) \xrightarrow{+A} (6, \varepsilon, ZEA)$$
$$\xrightarrow{+E} (2, \varepsilon, ZEAE) \xrightarrow[b]{-E} (2, b, ZEA) \xrightarrow[\rightarrow]{-A} (2, b\rightarrow, ZE)$$
$$\xrightarrow[b]{-E} (2, b\rightarrow b, Z) \xrightarrow{-Z} (3, b\rightarrow b, \varepsilon)$$

$+Z + E - E + E + A + E - E - A - E - Z = q$

$Z + E + A - A - E - Z =$

$Z + E - E - Z =$

$Z - Z =$

ε

③

$E \rightarrow bA$

$A \rightarrow \quad \rightarrow E$

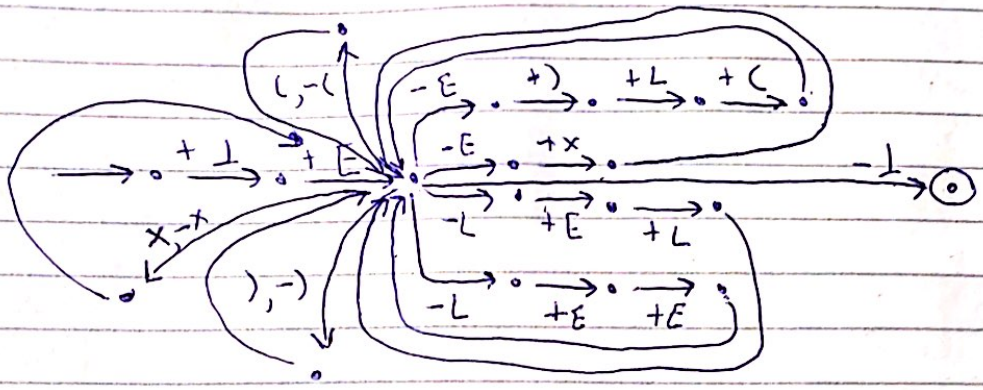
$A \rightarrow \quad \rightarrow$

④ $b \rightarrow b \rightarrow b$

$\hat{\Gamma}_1 = \{+Z, +E, -E, +E, +A, +E, -E, +E, +A, +E, -E, -A, -E, -A, -E, -Z\}$
$b \rightarrow b \rightarrow b$

$\hat{\Gamma}_2 = \{+Z, +E, -E, +E, +A, +E, -E, -A, -E, +E, +A, +E, -E, -A, -E, -Z\}$
$b \rightarrow \quad b \rightarrow b$

Question 2, pt. 2



- Couldn't figure out how to implement this using the Pda data class