PRAKTIKUM TBFA MINGGU 11

PUSH DOWN AUTOMATA & CFG

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Soal 1

Ubahlah grammar berikut ke PDA yang menerima language yang sama, berdasarkan empty stack (accepts by empty stack)

$$S \rightarrow 0S1 \mid A$$
$$A \rightarrow 1AO \mid S \mid \varepsilon$$

JAWAB:

- Single state : $\{q\}$
- input alphabet : $\{0,1\}$
- stack alphabet : $\{0,1,S,A\}$
- transition function δ
- start state : $\{q\}$
- start symbol $\checkmark$

  ↳ * Menambahkan transisi fungsi pada variabel
    - $\delta(q, \varepsilon, S) = \{(q, 0S1), (q,A)\}$
    - $\delta(q, \varepsilon A) = \{(q, 1AO), (q,S)\}$
  * Menambahkan transisi fungsi pada masing-masing terminal.
    - $\delta(q, 0, 0) = \{(q, \varepsilon)\}$
    - $\delta(q, 1, 1) = \{(q, \varepsilon)\}$

Soal 2

Ubahlah PDA $P = (\{p, q\}, \{0,1\}, \{X, z_0\}, \delta, q, z_0)$ berikut menjadi CFG, dengan δ diberikan sebagai berikut :

1. $\delta(q, 1, z_0) = \{(q, X, z_0)\}$.
2. $\delta(q, 1, X) = \{(q, X, X)\}$.
3. $\delta(q, 0, X) = \{(p, X)\}$.
4. $\delta(q, \varepsilon, X) = \{(q, \varepsilon)\}$.
5. $\delta(p, 1, X) = \{(p, \varepsilon)\}$
6. $\delta(p, 0, z_0) = \{(q, z_0)\}$

JAWAB

$$S \to [q z_0 p] \mid [q z_0 q]$$

① $\delta(q, 1, z_0) = (q, X z_0)$

   ↳ $[q X q] \to 1[q X q][q z_0 q] \mid 1[q X p][p z_0 p]$

     $[q X p] \to 1[q X q][q z_0 p] \mid 1[q X p][p z_0 p]$

② $\delta(q, 1, X) = \{(q, XX)\}$

   ↳ $[q X q] \to 1[q X q][q X q] \mid 1[q X p][p X q]$

     $[q X p] \to 1[q X q][q X p] \mid 1[q X p][p X p]$

③ $\delta(q, 0, X) = \{(p, X)\}$

   ↳ $[q X q] \to 0[p X q]$

     $[q X p] \to 0[p X p]$

④ $\delta(q, \varepsilon, X) = \{(q, \varepsilon)\}$

   ↳ $[q X q] \to \varepsilon$

⑤ $\delta(p, 1, X) = \{(p, \varepsilon)\}$

   ↳ $[p X p] \to 1$

⑥ $\delta(p, 0, z_0) = \{(q, z_0)\}$

   ↳ $[p z_0 q] \to 0[q z_0 q]$

     $[p z_0 p] \to 0[q z_0 q]$