$$P = \underbrace{\begin{cases} a \ [Z \to XXZ] \\ a \ [X \to XXX] \end{cases}}_{\epsilon \ [Z \to Z]} \underbrace{\begin{cases} b \ [X \to \epsilon] \end{cases}}_{\epsilon \ [Z \to Z]} \underbrace{\begin{cases} q_1 \\ q_2 \end{cases}}_{\epsilon \ [X \to X]}$$

$$L(P) = \{a^n b^{2n} \mid n \ge 0\}$$
Word  $w = \begin{bmatrix} a & a & b & b & b \\ \hline & & & & & & \\ \end{bmatrix}$ 
Stack  $\alpha = \begin{bmatrix} & & & & \\ & & & & \\ \end{bmatrix}$ 

$$P = \underbrace{\begin{cases} a \ [Z \to XXZ] \\ a \ [X \to XXX] \end{cases}}_{\epsilon \ [Z \to Z]} \underbrace{\begin{cases} b \ [X \to \epsilon] \end{cases}}_{q_1} \underbrace{\begin{cases} Q_2 \\ Q_2 \end{cases}}_{\epsilon \ [X \to X]}$$

$$L(P) = \{a^n b^{2n} \mid n \ge 0\}$$
Word  $w = \begin{bmatrix} a & b & b & b & b \end{bmatrix}$ 
Stack  $\alpha = \begin{bmatrix} X \mid X \mid Z \end{bmatrix}$ 

$$P = \underbrace{ \begin{cases} Z \to XXZ \\ a \ [X \to XXX] \end{cases} b \ [X \to \epsilon]}_{\epsilon \ [Z \to Z]} \underbrace{ \begin{cases} Q_1 \\ q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_1 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_1 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_1 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_1 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_1 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{ \begin{cases} Q_2 \\ Q_2 \end{cases} }_{\epsilon \ [X \to X]} \underbrace{$$

$$L(P) = \{a^n b^{2n} \mid n \ge 0\}$$
Word  $w = \begin{bmatrix} a & a & b & b & b & b \end{bmatrix}$ 
Stack  $\alpha = \begin{bmatrix} X \mid X \mid X \mid X \mid Z \end{bmatrix}$ 

$$P = \underbrace{\begin{cases} a \ [Z \to XXZ] \\ a \ [X \to XXX] \end{cases}}_{\text{start } [Z] \xrightarrow{q_0}} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\epsilon} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{q_1} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{q_2} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{q_2} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\epsilon} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{q_2} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\epsilon} \underbrace{A \ [Z \to Z] }_{\epsilon} \underbrace{A \ [Z$$

$$L(P) = \{a^n b^{2n} \mid n \ge 0\}$$
Word  $w = \begin{bmatrix} a & a & b & b & b & b \end{bmatrix}$ 
Stack  $\alpha = \begin{bmatrix} X \mid X \mid X \mid X \mid Z \end{bmatrix}$ 

$$P = \underbrace{ \begin{cases} z \to XXZ \\ a [X \to XXX] \end{cases} b [X \to \epsilon]}_{\epsilon [Z \to Z]}$$
start  $[Z] \xrightarrow{q_0} \underbrace{ \begin{cases} Z \to Z \\ \epsilon [X \to X] \end{cases} } \underbrace{ \begin{cases} q_1 \\ q_2 \end{cases} }_{\epsilon [X \to X]}$ 

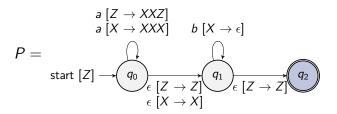
$$P = \underbrace{\begin{cases} a \ [Z \to XXZ] \\ a \ [X \to XXX] \end{cases}}_{\text{start } [Z] \xrightarrow{q_0}} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{\begin{cases} A \ [Z \to Z] \end{cases}}_{\text{e} \ [Z \to Z]} \underbrace{A \ [Z \to Z]}_{$$

$$P = \underbrace{\begin{cases} z \to XXZ \\ a [X \to XXX] \end{cases}}_{\text{start } [Z] \xrightarrow{q_0}} \underbrace{\begin{cases} Z \to Z \\ e [Z \to Z] \end{cases}}_{\text{e } [X \to X]} \underbrace{\begin{cases} q_1 \\ q_2 \end{cases}}_{\text{e } [Z \to Z]}$$

$$L(P) = \{a^n b^{2n} \mid n \ge 0\}$$
Word  $w = \begin{bmatrix} a & a & b & b & b \end{bmatrix}$ 
Stack  $\alpha = \begin{bmatrix} X & Z \end{bmatrix}$ 

$$P = \underbrace{ \begin{cases} a \ [Z \to XXZ] \\ a \ [X \to XXX] \end{cases} b \ [X \to \epsilon]}_{\epsilon \ [Z \to Z]} \underbrace{ \begin{cases} Q_2 \\ q_1 \end{cases} }_{\epsilon \ [Z \to Z]} \underbrace{ \begin{cases} Q_2 \\ q_2 \end{cases} }_{\epsilon \ [X \to X]}$$

$$P = \underbrace{ \begin{cases} z \to XXZ \\ a [X \to XXX] \end{cases} b [X \to \epsilon]}_{\epsilon [Z \to Z]}$$
start  $[Z] \xrightarrow{q_0} \underbrace{ \begin{cases} Z \to Z \\ \epsilon [X \to X] \end{cases} } \underbrace{ \begin{cases} q_1 \\ q_2 \end{cases} }_{\epsilon [X \to X]}$ 



 $aabbbb \in L_F(P)!$