

$$\text{First}(S) = \{a, \epsilon\}$$

$$S \Rightarrow \text{---} \dots$$

$$\text{First}(\text{tail1}) = \{a, \$, \epsilon\}$$

$$\text{Follow}(S) = \{\epsilon\}$$

$$\text{First}(W) = \{a\}$$

$$\underline{S} \Rightarrow \$ \text{tail1} \Rightarrow \$ \underline{S} \Rightarrow \$ \$ \text{tail1} \Rightarrow \$ \$ S$$

$$\text{First}(\text{tail2}) = \{a, b\}$$

$$\text{Follow}(\text{tail1}) = \{\epsilon\}$$

$$\text{Follow}(W) = \{b, \epsilon\} \Rightarrow ab$$

$$\begin{aligned} \underline{S} \Rightarrow \underline{W} \Rightarrow a \text{tail2} &\Rightarrow a \underline{W} b \\ &\Rightarrow a a \text{tail2} b \\ &\Rightarrow a a \underline{W} b b b \end{aligned}$$

$$\text{Follow}(\text{tail2}) = \{b, \epsilon\}$$

$$\text{Predict}(S \rightarrow W) = \{a\}$$

$$\text{Predict}(S \rightarrow \$ \text{tail1}) = \text{First}(\$ \text{tail1}) = \{\$\}$$

$$\begin{aligned} \text{Predict}(\text{tail1} \rightarrow \epsilon) &= \text{First}(\epsilon) - \{\epsilon\} \cup \text{Follow}(\text{tail1}) \\ &= \{\epsilon\} - \{\epsilon\} \cup \{\epsilon\} = \{\epsilon\} \end{aligned}$$

$$\text{Predict}(\text{tail2} \rightarrow S) = \text{First}(\epsilon) = \{\epsilon, a\}$$

$$\text{Predict}(w \rightarrow a\text{tailZ}) = \text{First}(a\text{tailZ}) = \{a\}$$

$$\text{Predict}(\text{tailZ} \rightarrow b\text{b}) = \text{First}(b\text{b}) = \{b\}$$

$$\text{Predict}(\text{tailZ} \rightarrow w\text{bb}) = \text{First}(w\text{bb}) = \text{First}(w) = \{a\}$$