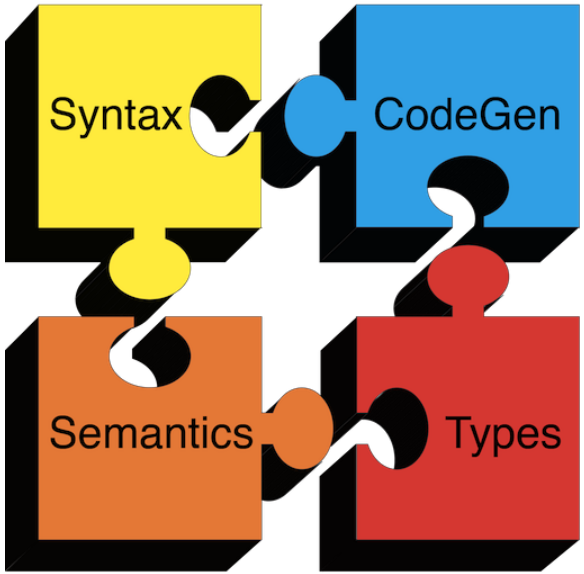


Compilers

Recognizing Viable Prefixes

Recognizing VP

1. Add a dummy production $S' \rightarrow S$ to G
2. The NFA states are the items of G
   - Including the extra production

NFA(stack) → yes / no

3. For item $E \rightarrow \alpha.X\beta$ add transition

   $E \rightarrow \alpha.X\beta \rightarrow^{X} E \rightarrow \alpha X.\beta$

   (seen α on stack)

4. For item $E \rightarrow \alpha.X\beta$ and production $X \rightarrow \gamma$ add

   $E \rightarrow \alpha.X\beta \rightarrow^{\varepsilon} X \rightarrow .\gamma$

   (X: non-terminal)

Recognizing VP

5. Every state is an accepting state

6. Start state is $S' \rightarrow .S$

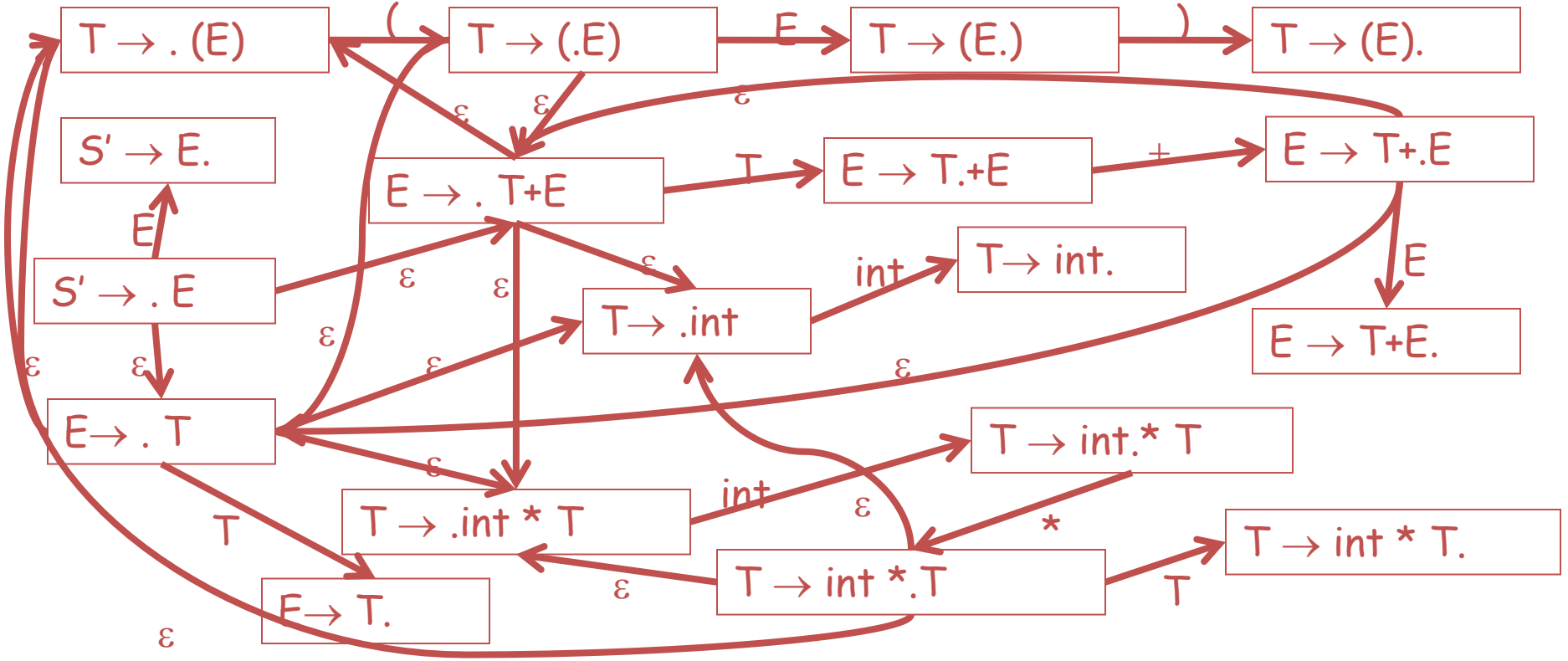
Recognizing VP

$S' \rightarrow E$

$E \rightarrow T + E \mid T$

$T \rightarrow \text{int} * T \mid \text{int} \mid (E)$

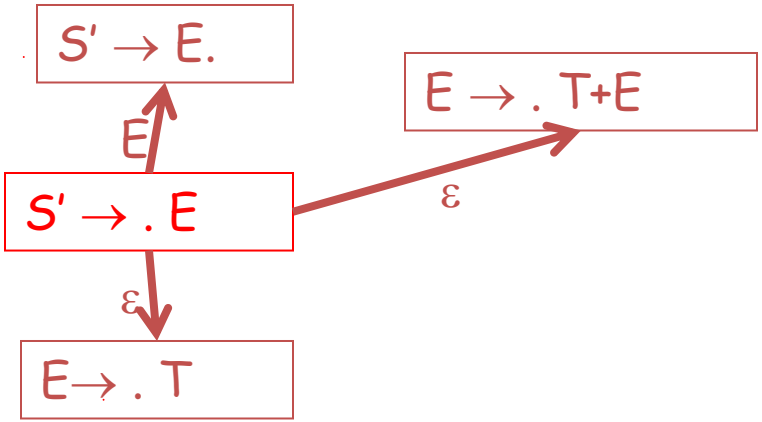
Recognizing VP



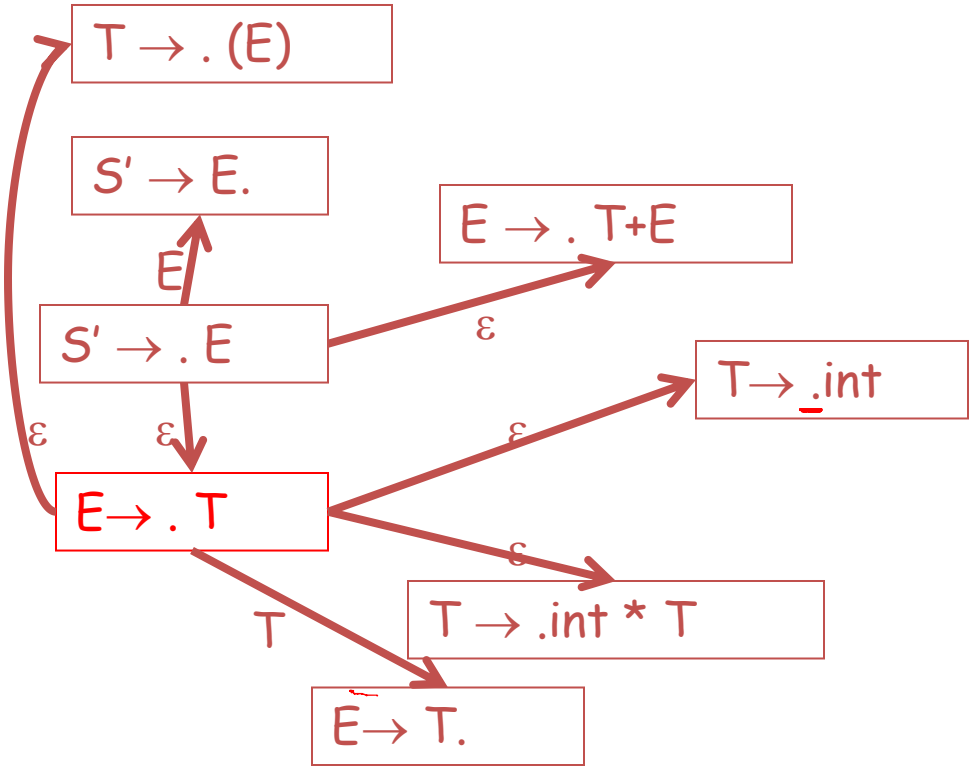
Recognizing VP

$S' \rightarrow . E$

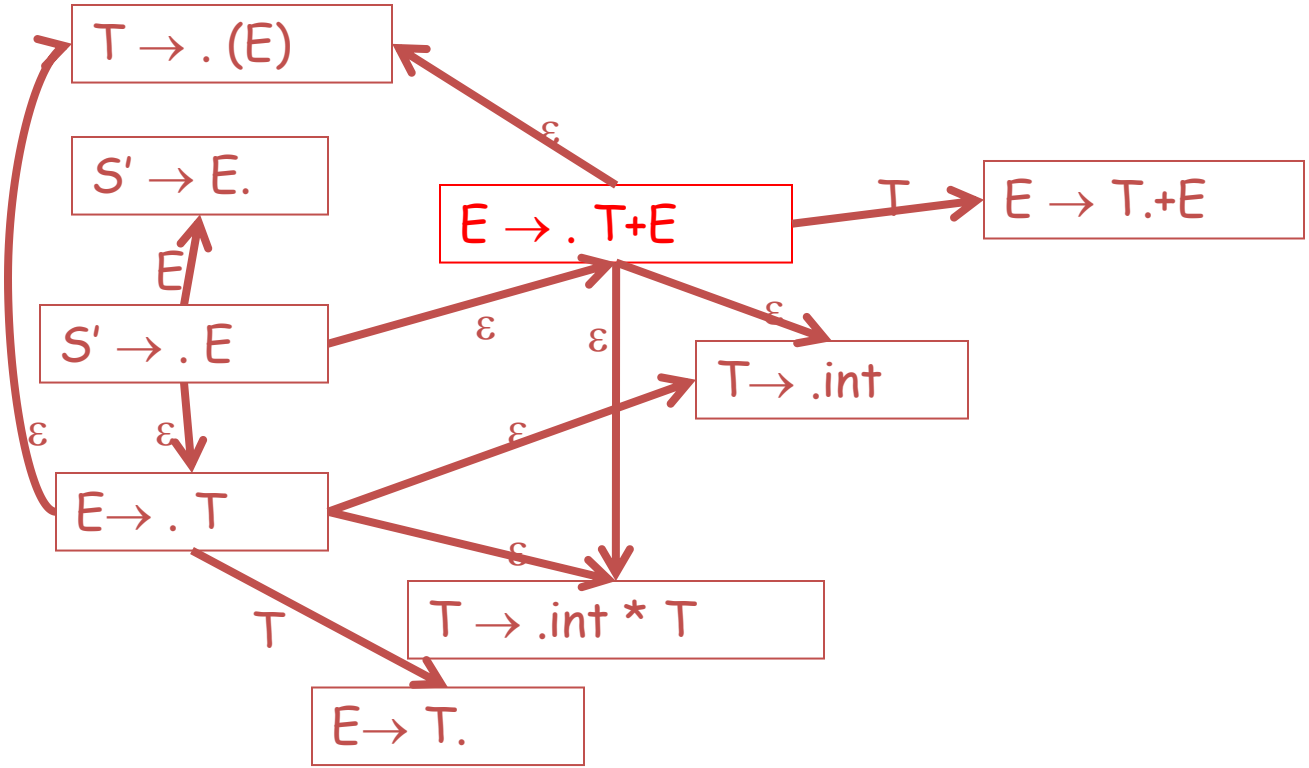
Recognizing VP



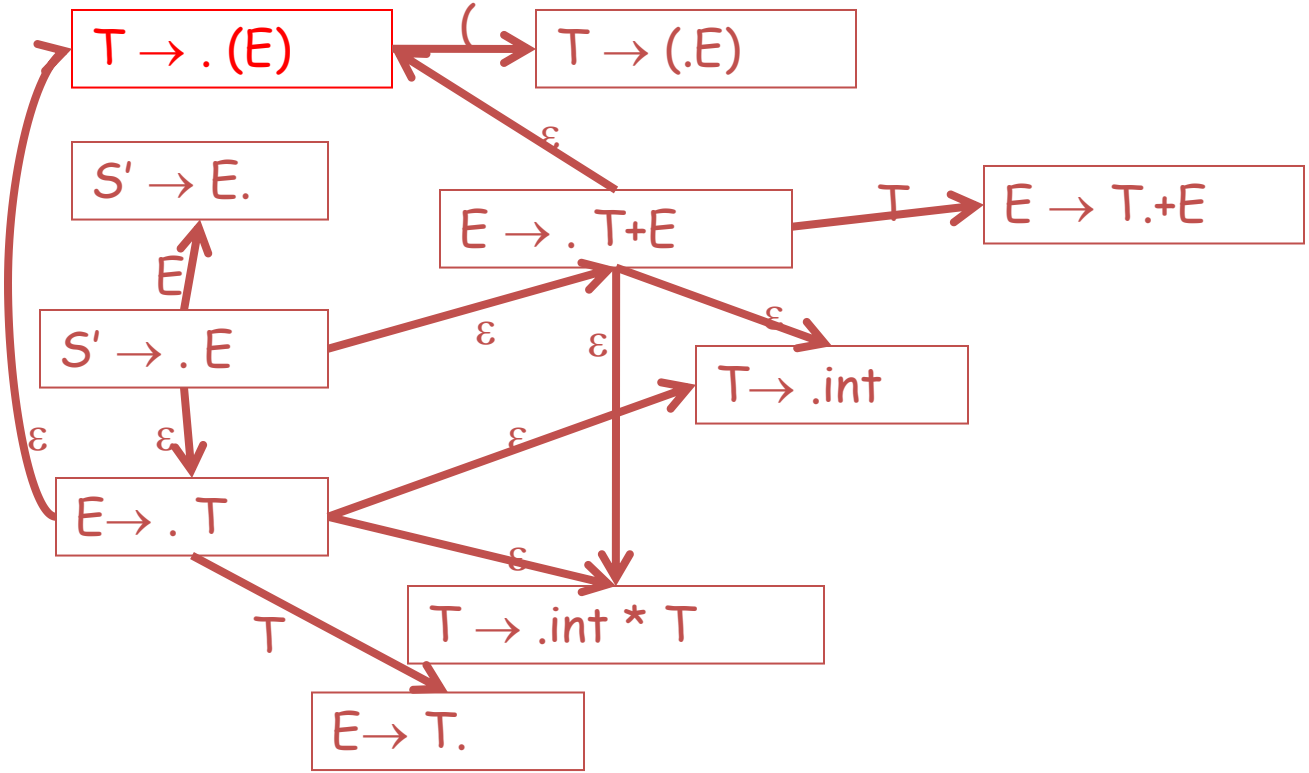
Recognizing VP



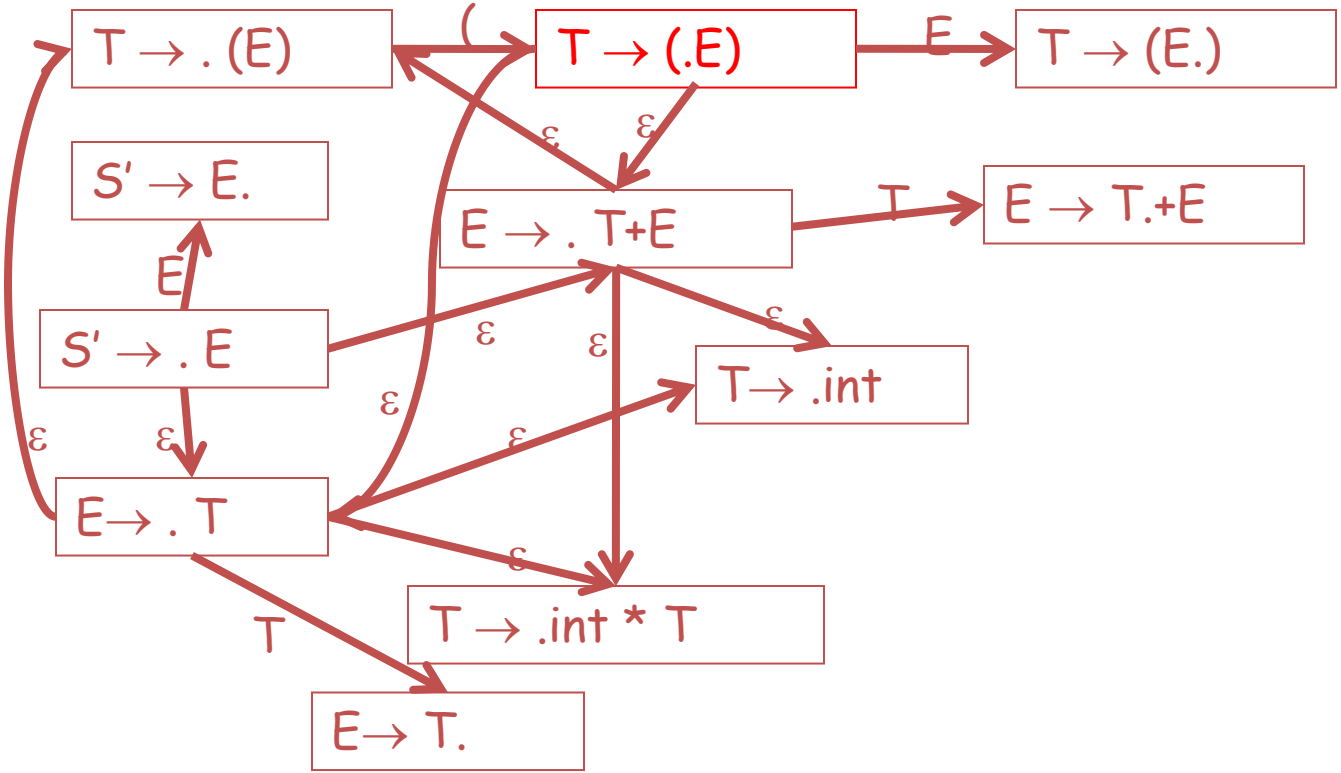
Recognizing VP



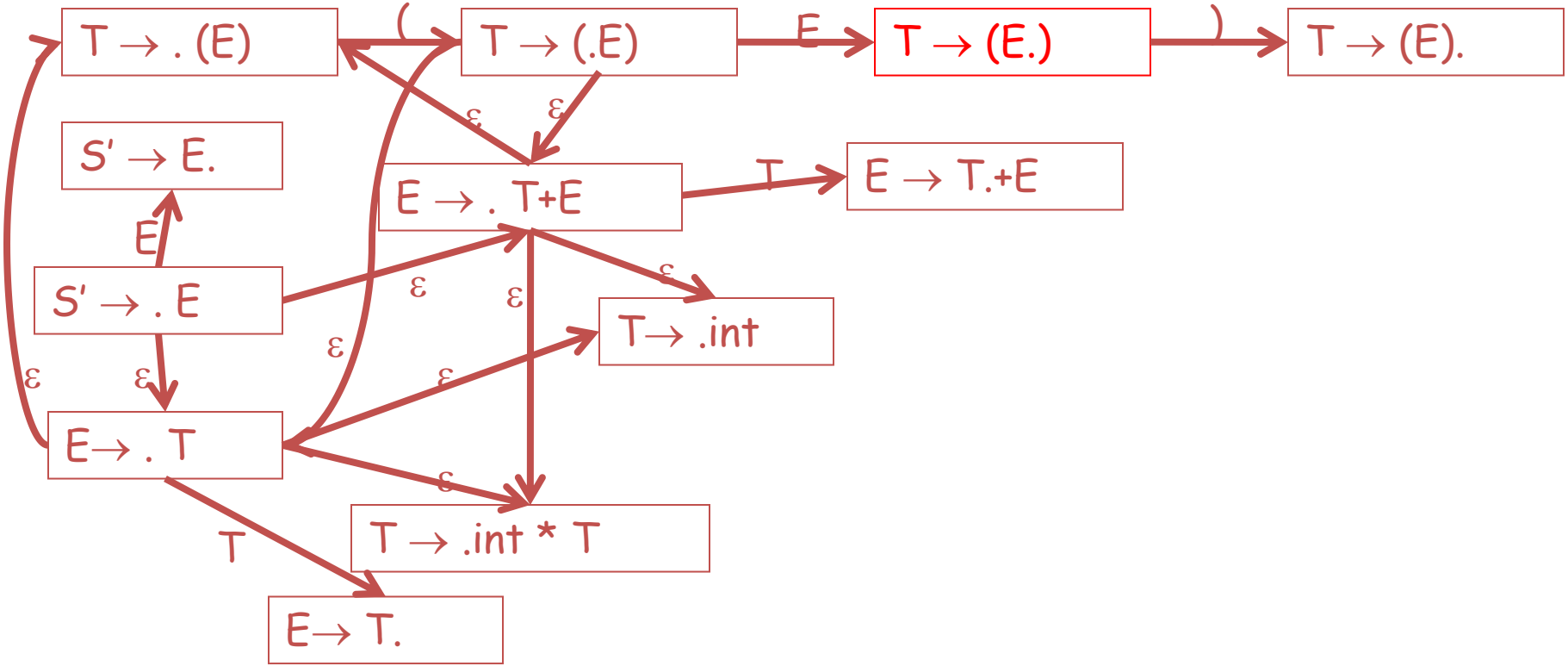
Recognizing VP



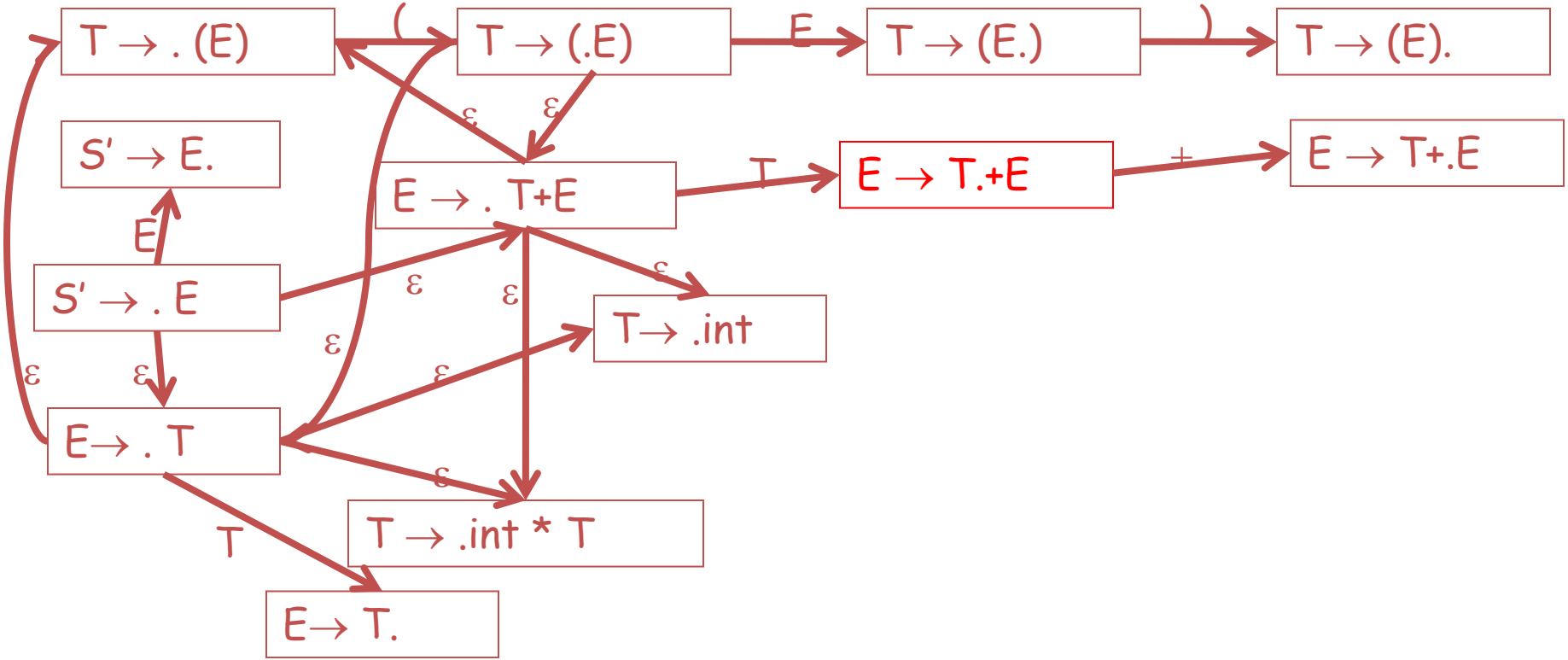
Recognizing VP



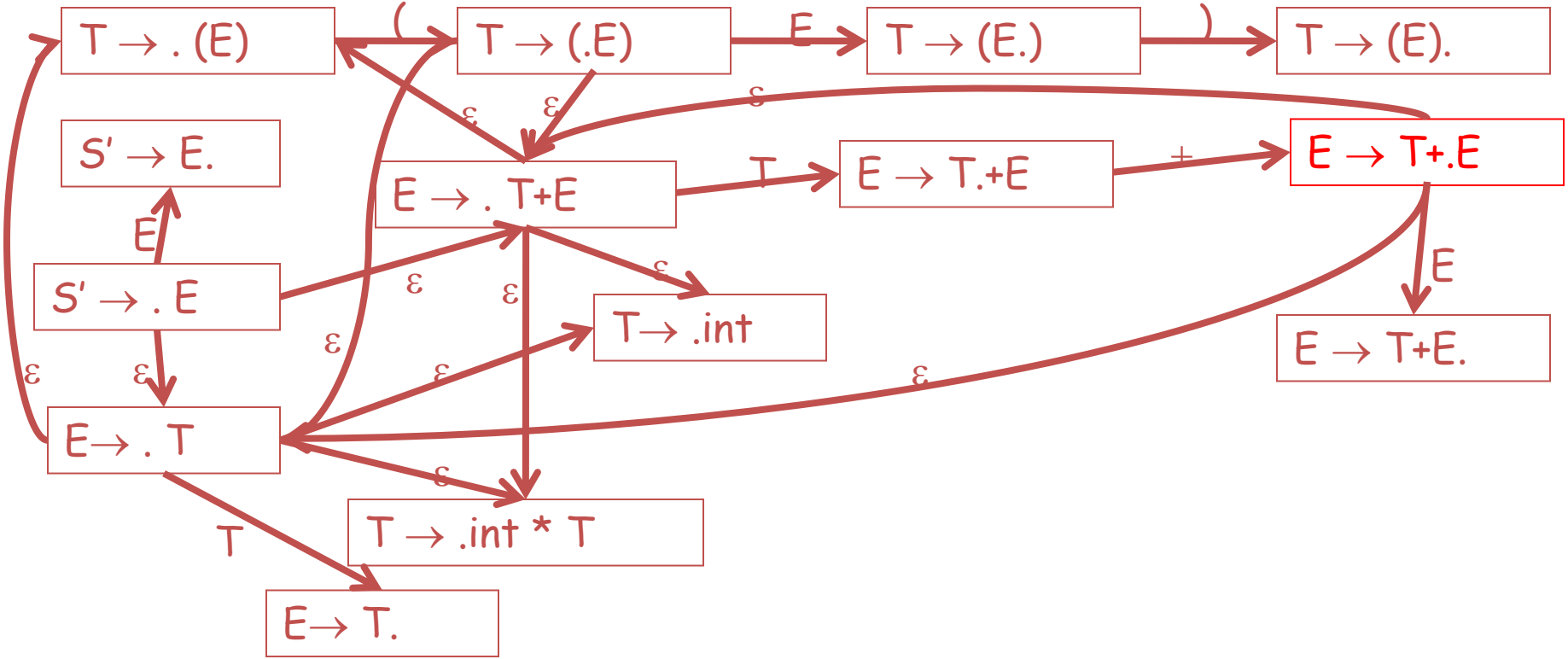
Recognizing VP



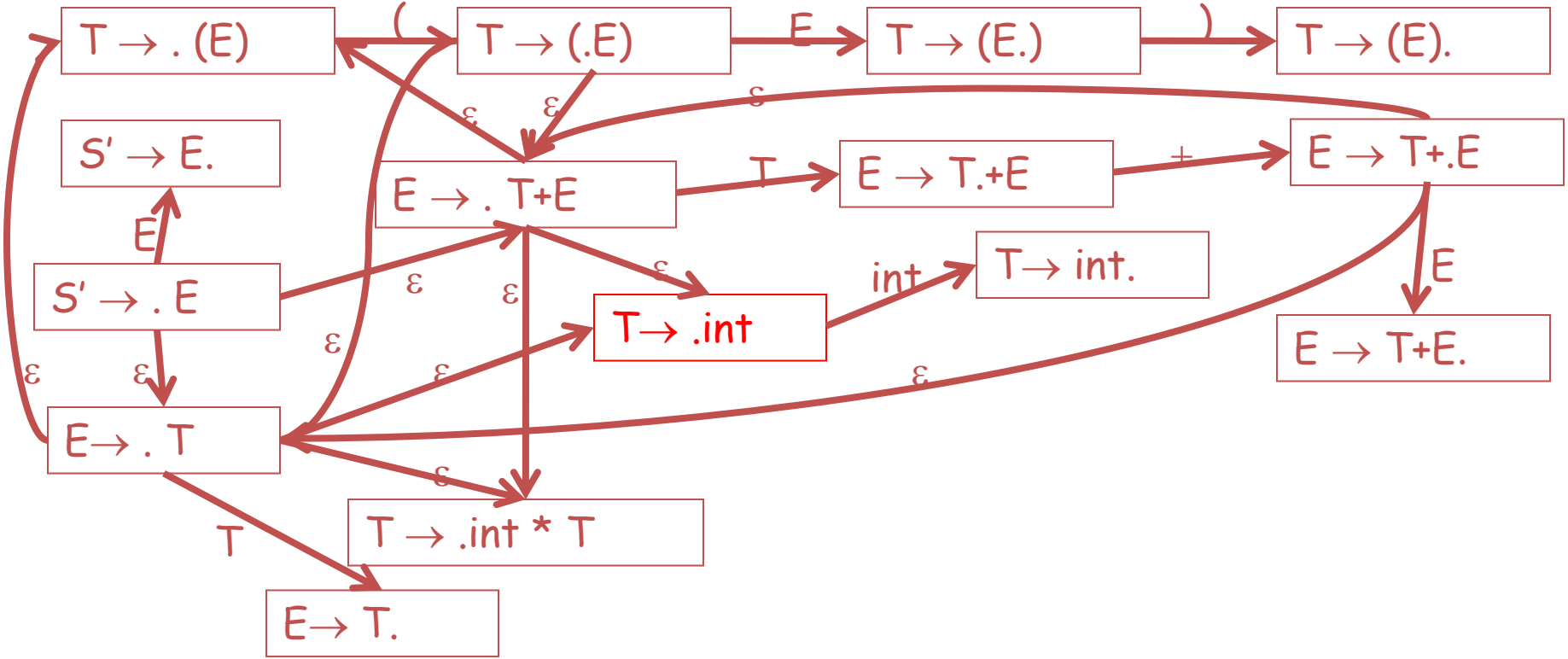
Recognizing VP



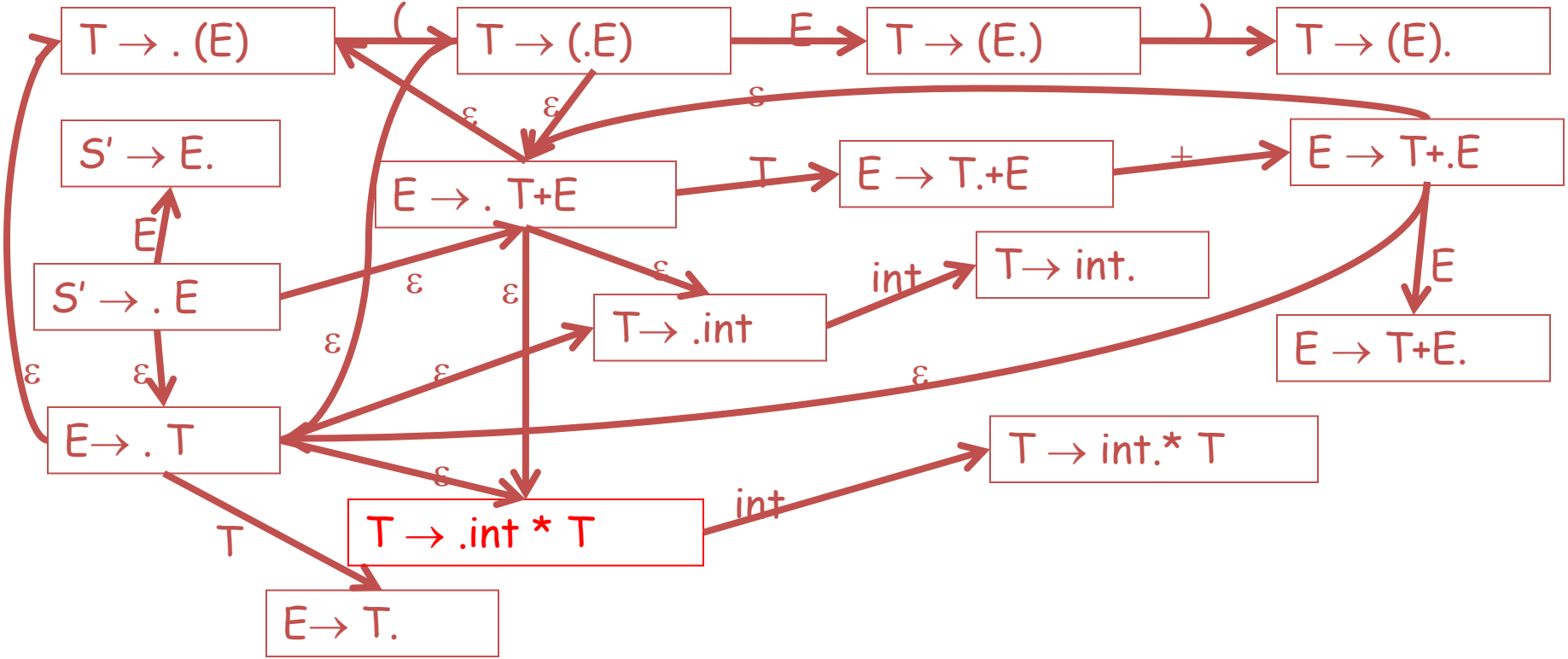
Recognizing VP



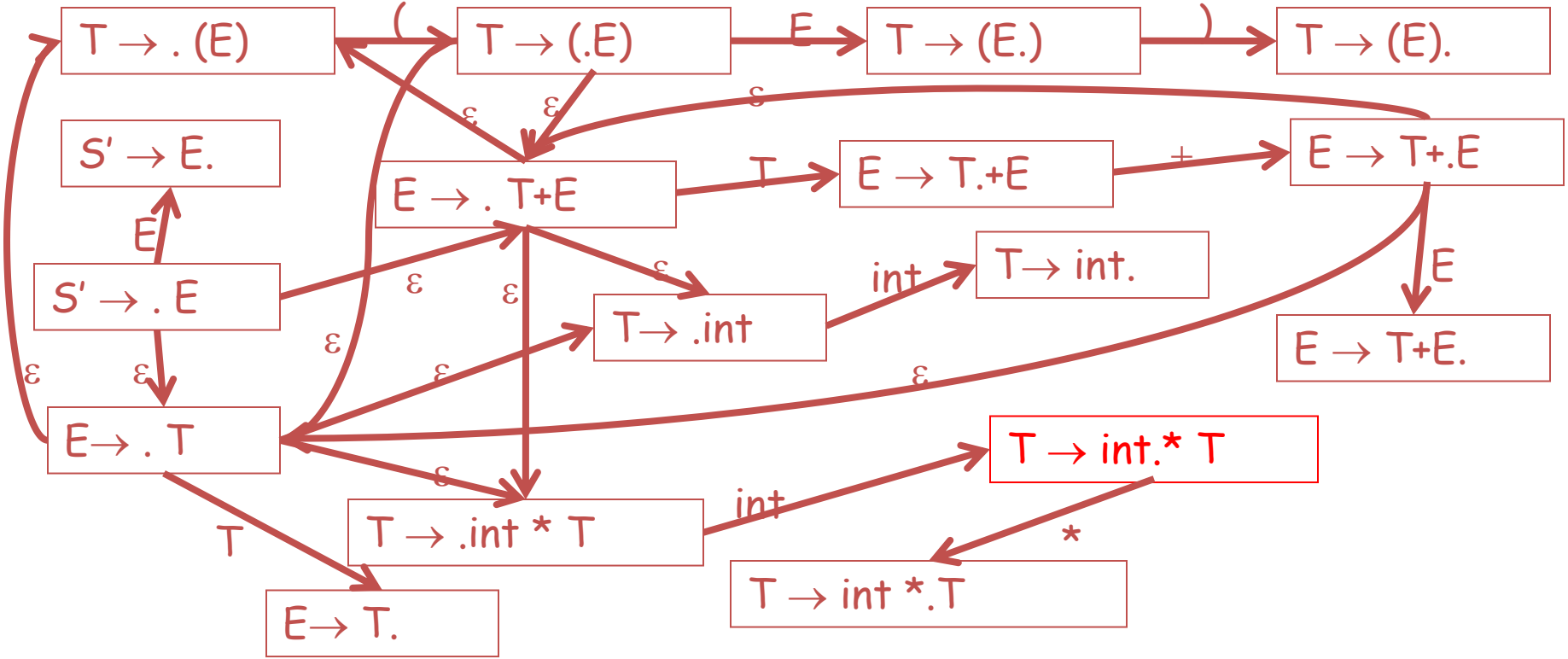
Recognizing VP



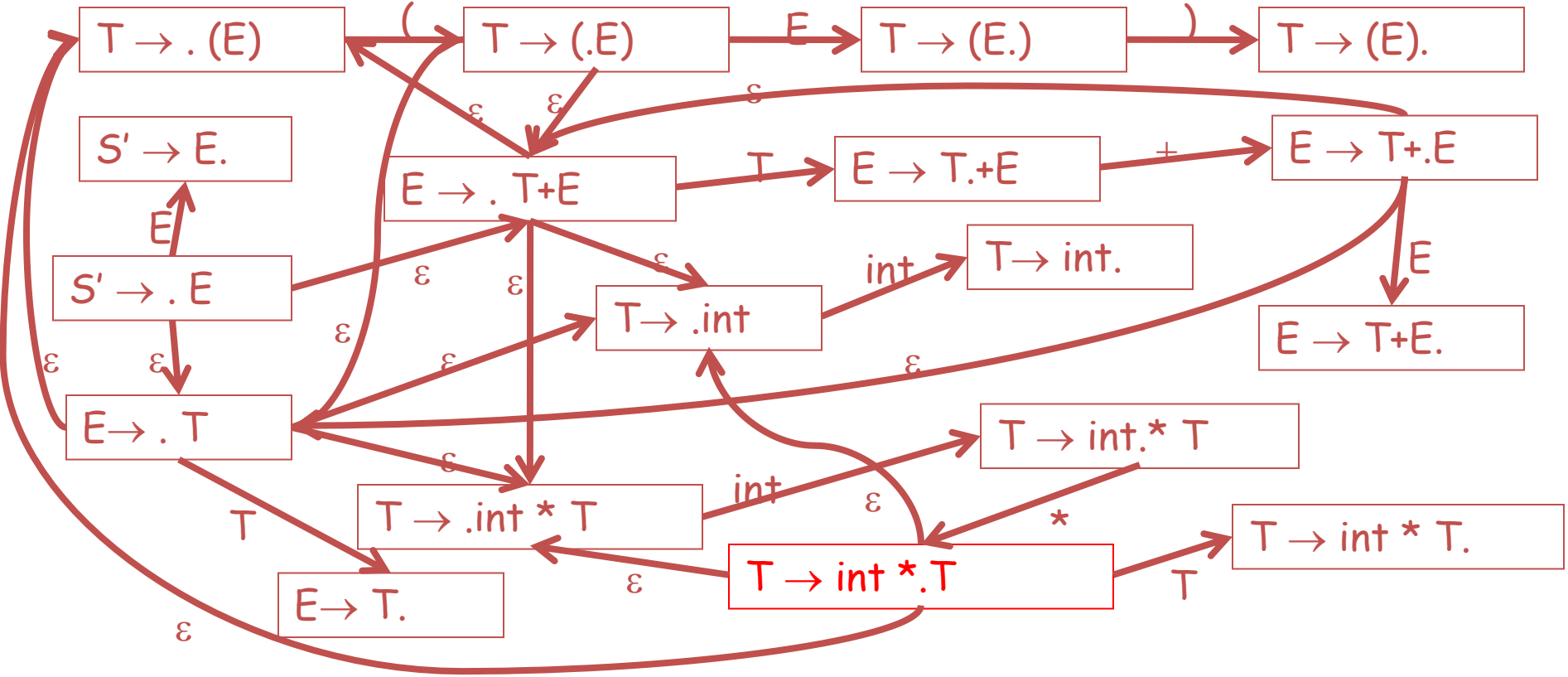
Recognizing VP



Recognizing VP



Recognizing VP



Recognizing VP

Choose the correct NFA for the given grammar

$S' \rightarrow E$ $E \rightarrow -E \mid id$