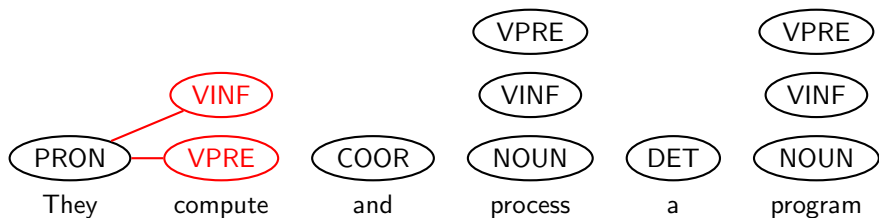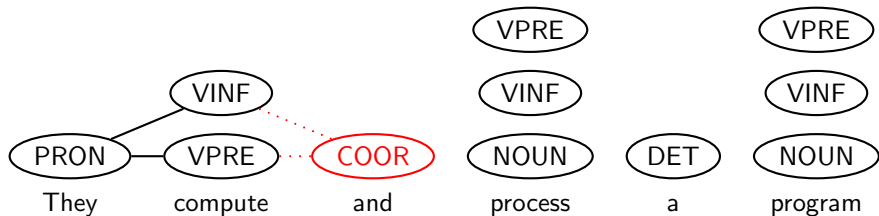$$\rho_1(\text{PRON}) = P_I(\text{PRON}) \cdot P(\text{They}|\text{PRON})$$
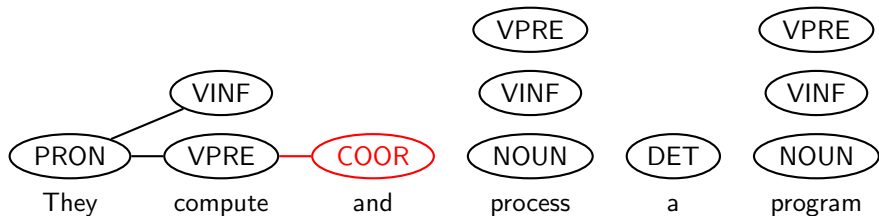
$$\rho_2(\text{VPRE}) = P(\text{compute}|\text{VPRE}) \cdot P(\text{VPRE}|\text{PRON}) \cdot \rho_1(\text{PRON})$$
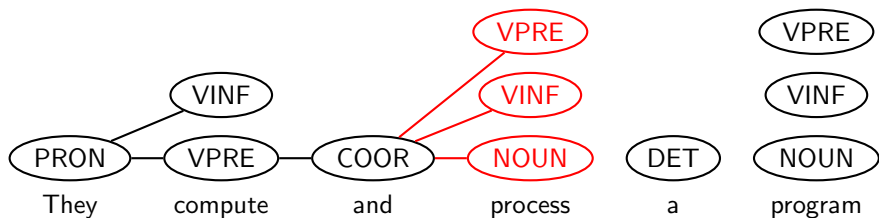
$$\rho_2(\text{VINF}) = P(\text{compute}|\text{VINF}) \cdot P(\text{VINF}|\text{PRON}) \cdot \rho_1(\text{PRON})$$

$$\rho_3(\text{COOR}) = P(\text{and}|\text{COOR}) \cdot \max \begin{cases} P(\text{COOR}|\text{VINF}) \cdot \rho_2(\text{VINF}) \\ P(\text{COOR}|\text{VPRE}) \cdot \rho_2(\text{VPRE}) \end{cases}$$
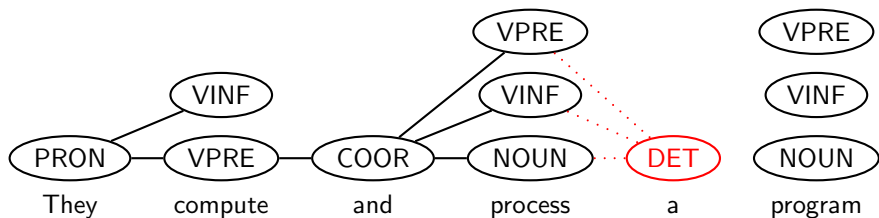
$$\rho_3(\text{COOR}) = P(\text{and}|\text{COOR}) \cdot P(\text{COOR}|\text{VPRE}) \cdot \rho_2(\text{VPRE})$$
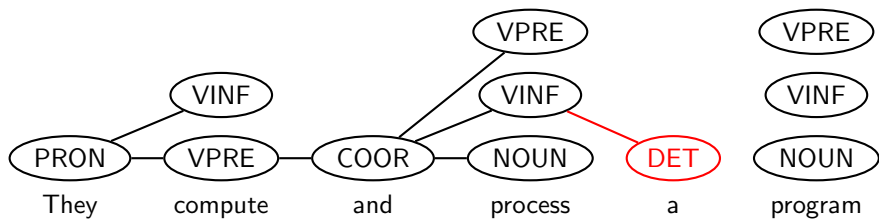
$$\rho_4(\text{VPRE}) = P(\text{process}|\text{VPRE}) \cdot P(\text{VPRE}|\text{COOR}) \cdot \rho_3(\text{COOR})$$

$$\rho_4(\text{VINF}) = P(\text{process}|\text{VINF}) \cdot P(\text{VINF}|\text{COOR}) \cdot \rho_3(\text{COOR})$$
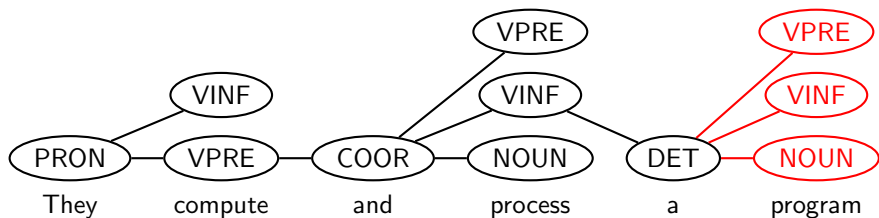
$$\rho_4(\text{NOUN}) = P(\text{process}|\text{NOUN}) \cdot P(\text{NOUN}|\text{COOR}) \cdot \rho_3(\text{COOR})$$

$$\rho_5(\text{DET}) = P(\text{a}|\text{DET}) \cdot \max \begin{cases} P(\text{DET}|\text{VINF}) \cdot \rho_4(\text{VINF}) \\ P(\text{DET}|\text{VPRE}) \cdot \rho_4(\text{VPRE}) \\ P(\text{DET}|\text{NOUN}) \cdot \rho_4(\text{NOUN}) \end{cases}$$
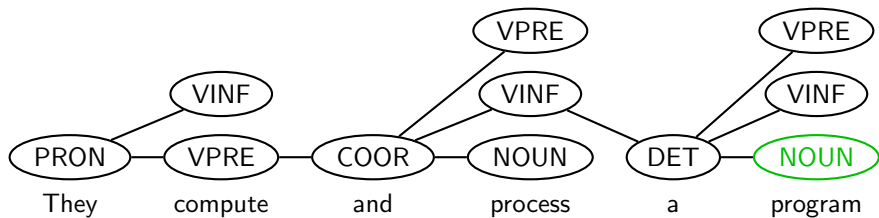
$$\rho_5(\mathsf{DET}) = P(\mathsf{a}|\mathsf{DET}) \cdot P(\mathsf{DET}|\mathsf{VINF}) \cdot \rho_4(\mathsf{VINF})$$

$$\rho_6(\text{VPRE}) = P(\text{program}|\text{VPRE}) \cdot P(\text{VPRE}|\text{DET}) \cdot \rho_5(\text{DET})$$
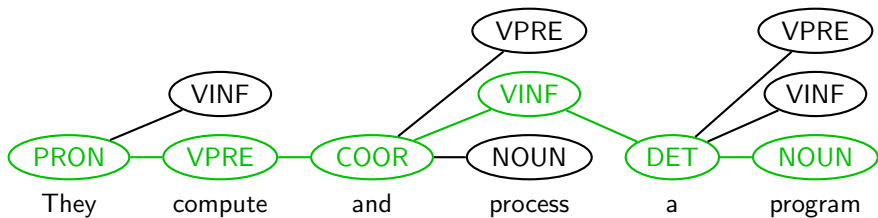
$$\rho_6(\text{VINF}) = P(\text{program}|\text{VINF}) \cdot P(\text{VINF}|\text{DET}) \cdot \rho_5(\text{DET})$$

$$\rho_6(\text{NOUN}) = P(\text{program}|\text{NOUN}) \cdot P(\text{NOUN}|\text{DET}) \cdot \rho_5(\text{DET})$$

Backward step:
1– choose the last maximum node

Backward step:
2– reconstruct the whole solution (backward)