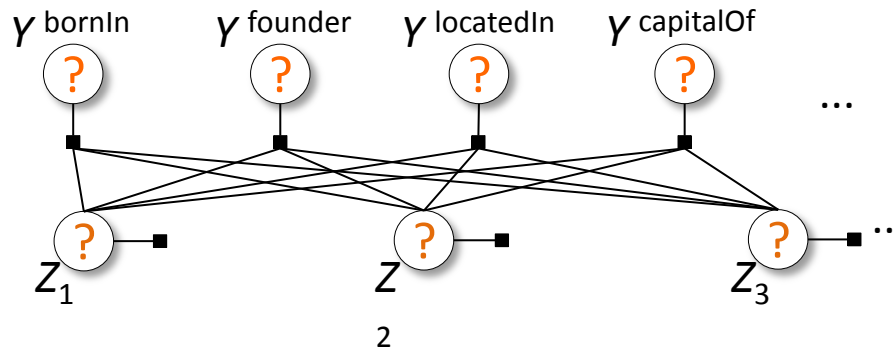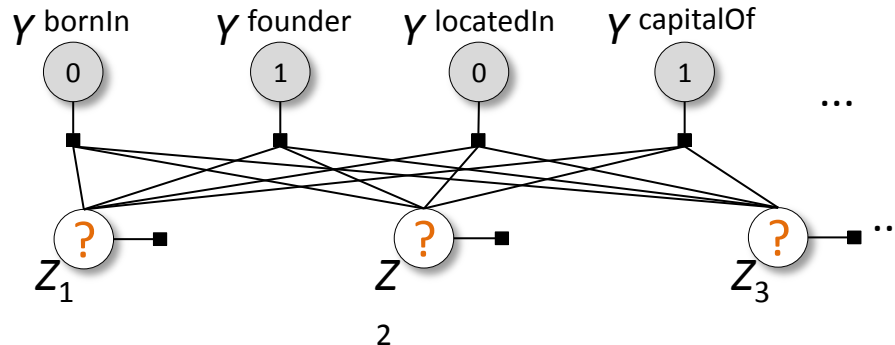# Inference

Need:

- ## Most likely sentence labels:

$$\arg\max_{\mathbf{y},\mathbf{z}} p(\mathbf{y}, \mathbf{z}|\mathbf{x}; \theta)$$

Easy

- ## Most likely sentence labels *given* facts:

$$\arg\max_{\mathbf{z}} p(\mathbf{z}|\mathbf{x}, \mathbf{y}; \theta)$$

Challenging