

Exercise: Causal reasoning in the sprinkler network

Consider the causal network in Figure 1. Let T represent true and F represent false.

1. Suppose I perform a perfect intervention and make the grass wet. What is the probability the sprinkler is on?

$$p(S = T | \text{do}(W = T))$$

2. Suppose I perform a perfect intervention and make the grass dry. What is the probability the sprinkler is on?

$$p(S = T | \text{do}(W = F))$$

3. Suppose I perform a perfect intervention and make the clouds “turn on” (e.g., by seeding them). What is the probability the sprinkler is on?

$$p(S = T | \text{do}(C = T))$$

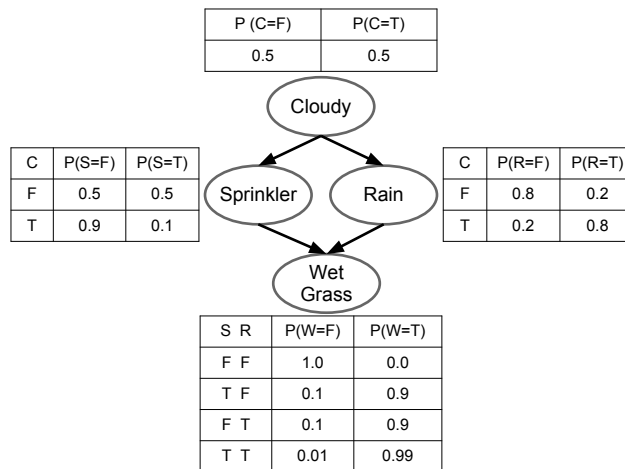


Figure 1: Water sprinkler DGM with corresponding binary CPTs. T and F stand for true and false.