CSC384 Bayesian Networks

Problem 1

1) Consider the following Bayesian network, where F = having the flu and C = coughing:

Write down the joint probability table specified by the Bayesian network.

2) Determine the probabilities for the following Bayesian network so that it specifis the same joint probabilities as the given one.

3) Are C and F independent in the given Bayesian network?

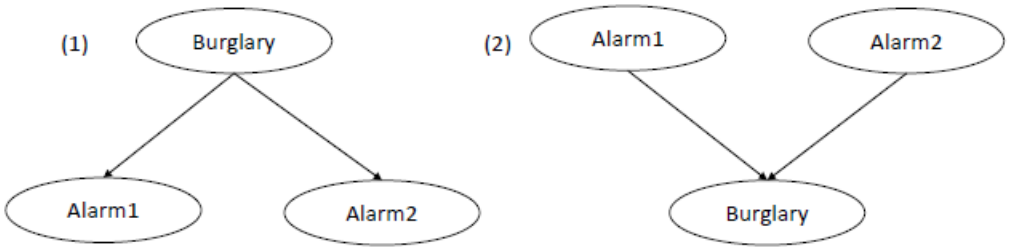
4) Are C and F independent in the Bayesian network from Question 2?

5) Which Bayesian network would you have specified using the rules learned in class?

Problem 2

To safeguard your house, you recently installed two different alarm systems by two diffeerent reputable manufacturers that use completely different sensors for their alarm systems.

a) Which one of the two Bayesian networks given below makes independence assumptions that are not true? Explain all of your reasoning. Alarm1 means that the first alarm system rings, Alarm2 means that the second alarm system rings, and Burglary means that a burglary is in progress.



b) Consider the first Bayesian network. How many probabilities need to be specified for its conditional probability tables? How many probabilities would need to be given if the same joint probability distribution were specifid in a joint probability table?