HOMEWORK NO. 1
(Due next Tuesday)

Question 1

Prove that the graphoid properties are satisfied if we interpret $(X \perp\!\!\!\perp Y | Z)$ to mean "all paths from a subset X of nodes to a subset Y of nodes are intercepted by a subset Z of nodes."

Question 2

Given this fragment of a Bayesian Network, in Figure 1, add two variables to the network, Z and W, such that the following three conditions hold simultaneously:
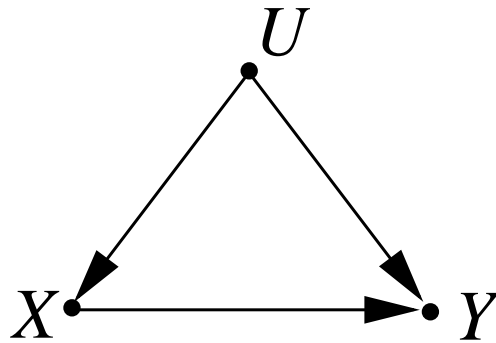

Figure 1: Bayesian network

   a. Z and X are dependent given W, and

   b. Z and U are independent given W.

   c. Z and W are ancestors of Y but not of X.