CS4408 Learning Journal 6

For this week’s assignment, I focused on understanding and applying the principles of belief networks, specifically examining how evidence flows through a Bayesian network. I began by reviewing the provided PDF, which detailed a belief network that extended the electrical domain to include an overhead projector. The network included various variables such as **Projector\_plugged\_in**, **Lamp\_works**, **Screen\_lit\_up**, and **Sam\_reading\_book**. My first step was to carefully read through the material to grasp the relationships among these variables. I then structured my discussion assignment using a clear question-and-answer format to address how changes in one variable’s state could impact another.

In developing my answers, I first mapped out the connections between variables. For example, I analyzed how knowing the status of the projector being plugged in might indirectly influence the likelihood of Sam reading a book by affecting subsequent nodes like the projector’s power and lamp status. This mapping exercise was crucial because it allowed me to visualize the indirect effects and identify which nodes were critical for influencing outcomes. I even considered drawing a diagram to consolidate my thoughts, which further helped clarify the dependencies within the network.

I was initially excited about applying the theoretical aspects of Bayesian networks to a practical problem, and I felt confident in my ability to analyze the relationships. However, I also encountered some challenges. One significant challenge was ensuring that I clearly articulated the indirect effects without oversimplifying the relationships. To overcome this, I revisited the textbook and online resources, including Russell and Norvig (2010), which provided additional clarity on evidence propagation in complex networks. This additional research helped me reinforce my reasoning and allowed me to refine my explanations.

In the discussion forum, I received constructive feedback from peers who appreciated the clear layout and logical progression of my Q&A format. Their suggestions to elaborate further on the role of the **Screen\_lit\_up** variable and its immediate effect on Sam’s behavior were especially helpful. These interactions not only boosted my confidence but also prompted me to incorporate transitional phrases and a more cohesive narrative in my final submission.

Overall, the assignment deepened my understanding of Bayesian networks and the importance of clear, structured reasoning when explaining complex dependencies. I learned that breaking down the problem into manageable parts and seeking feedback from peers can significantly enhance the clarity and depth of an explanation. This reflective process has improved my ability to analyze probabilistic models and has given me valuable insights into how evidence is handled within belief networks. I now feel more comfortable with applying these concepts to real-world scenarios, and I am eager to build on this knowledge in future assignments.

**References**

Russell, S. J., & Norvig, P. (2010). *Artificial Intelligence: A Modern Approach* (3rd ed.). Prentice Hall.