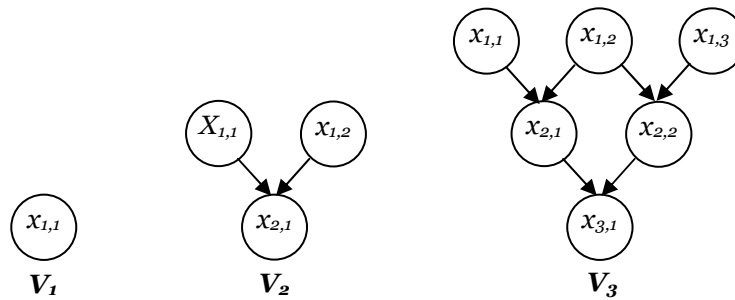


Name:

Student ID#:

Statistical Pattern Recognition (CE-725)
Department of Computer Engineering
Quiz #8 (Bayesian net) - Spring 2012

Let V_n be a Bayesian net with nodes $x_{i,j}$ for all $i+j \leq n+1$, where both $i \geq 1$ and $j \geq 1$, and where the parents of $x_{i,j}$ are $x_{i-1,j}$ and $x_{i-1,j+1}$. Nodes $x_{1,j}$ have no parents. V_1 , V_2 , and V_3 are shown below.



a. (50 points) For any V_n , give general conditions in terms of i, j, k , and l that guarantee $x_{i,j}$ independent of $x_{k,l}$ (i.e., $x_{i,j} \perp x_{k,l}$), assuming $i < k$.

b. (50 points) For V_n , give conditions in terms of i, j, k , and l that guarantee $x_{1,i} \perp x_{1,j} \mid x_{k,l}$ for $i < j$.