CS161 - Quiz 6

Started: Mar 10 at 6:06pm

Quiz Instructions

Question 1	1 pts

$$Pr\left(\alpha\right) = Pr\left(\alpha \wedge \beta\right) Pr\left(\alpha \wedge \neg\beta\right) \ for \ any \ events \ \alpha \ and \ \beta$$

○ True

○ False

Question 2	1 pts

If X and Y are probabilistically independent, then they must continue to be independent given any variable Z.

○ True

○ False

Question 3	1 pts

The local semantics of Bayesian network says:

○ Every node is independent of its parents given its non-descendants

○ Every node is independent of its descendants given its parents

○ None of the others

○ Every node is independent of its parents given its descendants

○ Every node is independent of its non-descendants given its parents

Question 4   **1 pts**

Consider a Bayesian network $X_1 \longrightarrow X_2 \longrightarrow \ldots \longrightarrow X_n$ (a chain with n nodes). Assume that each variable X_i has only two values x_i and $\overline{x_i}$. Then $Pr\left(x_3 \mid \overline{x_1}\right)$ is equal to:

○ $Pr\left(x_3 \mid x_2\right) Pr\left(x_2 \mid \overline{x_1}\right) + Pr\left(x_3 \mid \overline{x_2}\right) Pr\left(\overline{x_2} \mid \overline{x_1}\right)$

○ $Pr\left(x_3, \overline{x_1}\right) Pr\left(\overline{x_1}\right)$

○ None of the others

○ $Pr\left(x_3\right)$

○ $Pr\left(x_3 \mid x_2, \overline{x_1}\right) + Pr\left(x_3 \mid \overline{x_2}, \overline{x_1}\right)$

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