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**CS 480 Fall 2022 Written Assignment #04**

Due: **Wednesday, November 30, 11:00 PM CST**

Points: **45**

**Instructions:**

1. Use this document template to report your answers. Name the complete document as follows:

LastName\_FirstName\_CS480\_Written04.doc

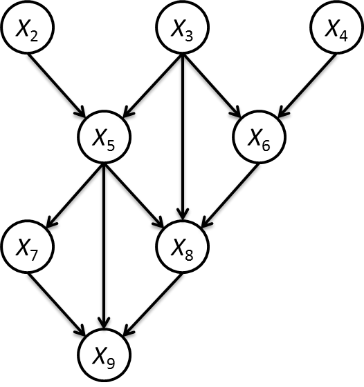
1. Submit the final document to Blackboard Assignments section before the due date. No late submissions will be accepted.

**Objectives:**

1. (10 points) Demonstrate your understanding of Bayes Networks.
2. (35 points) Demonstrate your understanding of Decision Networks.

**Problem 1 [10 pts]:**

We are given the following Bayesian network over X2, X3, …, X9. Note that there is no X1.

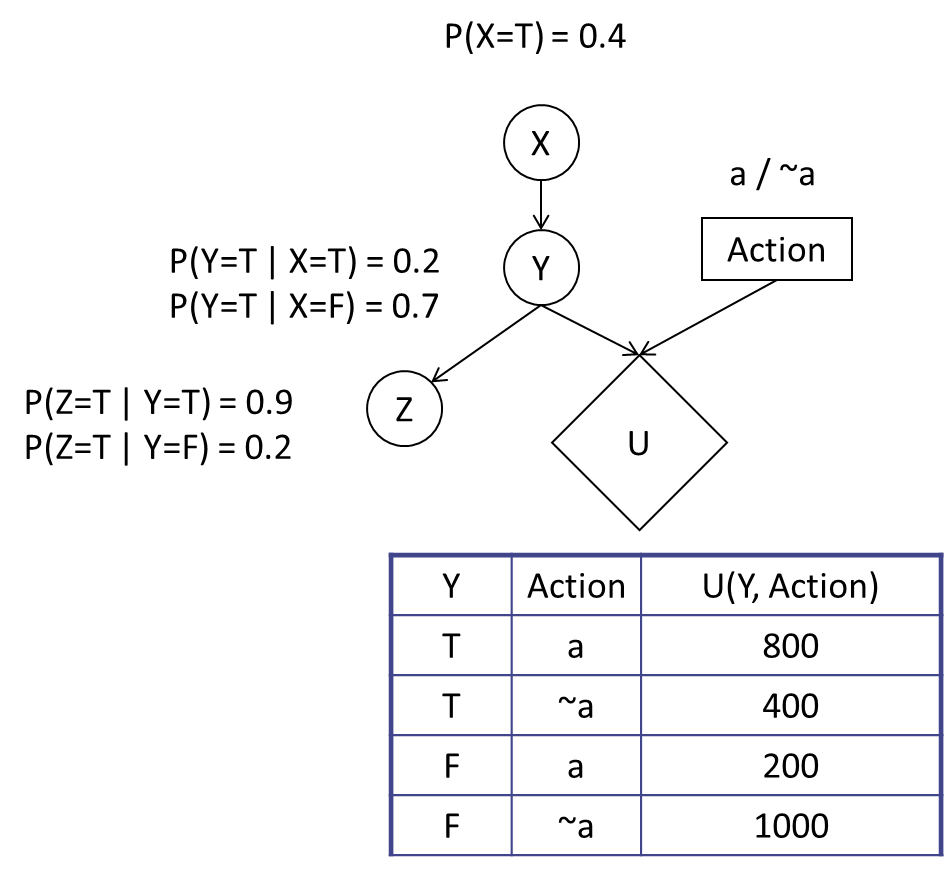
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What is the Bayesian network factorization of the joint probability **P**(X2, X3, …, X9)?

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| **Your solution:** |
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**Problem 2 [35 pts]:**

We are given the following decision network:



1. Which action should be taken? Justify your decision. **[7 pts]**

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| **Your solution:** |
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1. What is the value of information of Z? Justify your decision. **[8 pts]**

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| **Your solution:** |
| |  |  |  | | --- | --- | --- | | Z | Y | P(Y|Z) | | T | T |  | | F | T |  | | T | F |  | | F | F |  | |

1. What is the value of information of X? Justify your decision. **[10 pts]**

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| **Your solution:** |
| |  |  |  | | --- | --- | --- | | X | Y | P(Y|X) | | T | T | 0.2 | | F | T | 0.7 | | T | F | 0.8 | | F | F | 0.3 | |

1. Given Z = T, what is the value of information of X? Justify your decision. **[10 pts]**

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| **Your solution:** |
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