

# Homework 1 - Introduction to Probabilistic Graphical Models

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## 1 Bayesian Networks

1. Consider a simple Markov Chain structure  $X \rightarrow Y \rightarrow Z$ , where all variables are binary. You are required to:
  - (a) Write a code (using your preferred programming language) that generates a distribution (not necessarily a valid BN one) over the 3 variables.
  - (b) Write a code that verifies whether a distribution is a valid BN distribution.
  - (c) Using your code, generate 10000 distributions and compute the fraction of distributions that are valid BN distributions.
2. \* Given the following Bayesian Network

Would you like me to implement the solution in Python?