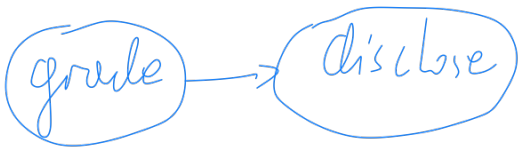
Tutorial 5

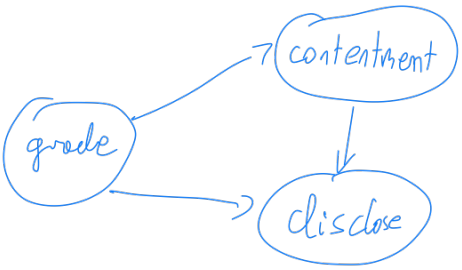
Question 1a. Draw the Bayesian network with the variables, grade and disclose, and the one with the variables, grade, contentment level, and disclose.

Question 1b. Write down the d-separation in the second Bayesian network, and answer that what the missingness mechanisms are in both cases (MCAR, MAR, or MNAR).

1.a) Grade influences disclose value



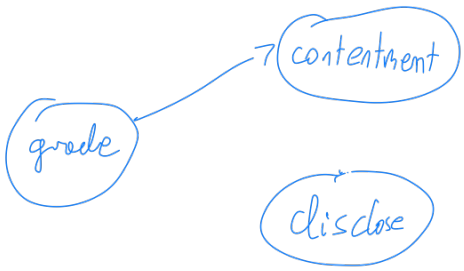
disclose indicator
0 - didn't disclose
1 - disclosed



disclose indicator is influenced by the grade and by the contentment level indicator

1b.

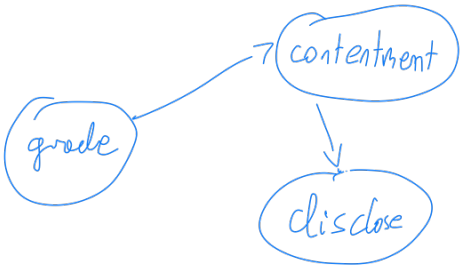
MCAR



In Missing completly at random we can see that disclose indicator is not influenced by any other node
-> disclose indicator = missing data indicator

In this case $D \perp G, C$

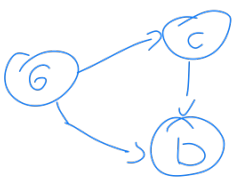
MAR



We have values of grade and contenment

In this case we can see that $D \perp G \mid C$

In the case where D influences by both C and G and G influences then we cannot talk about independency



Now our data is MNAR