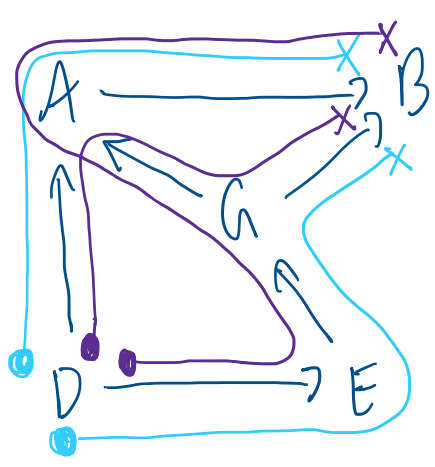


Quiz notes

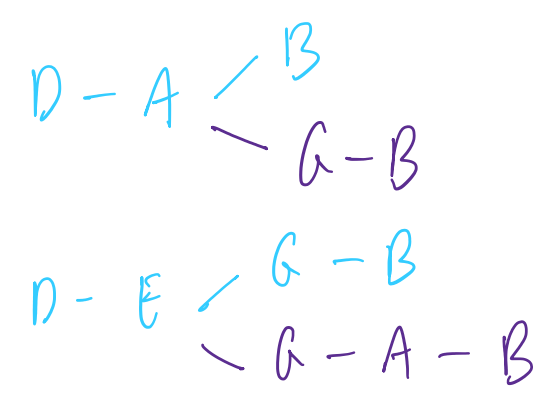
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DAG 1:



• start, x end

- 1) # paths from D to B:
4 (3 is wrong)

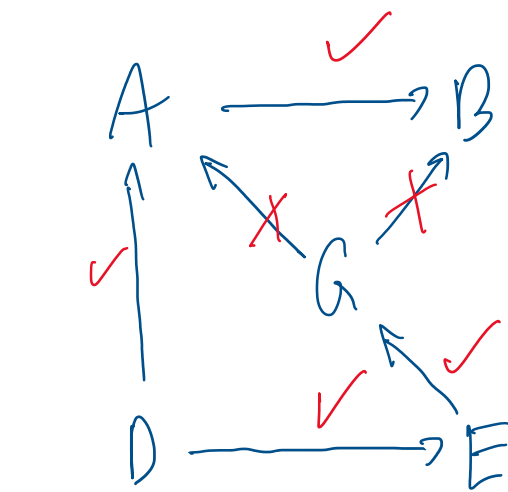


- 2) # backdoor paths from G to B:
potential candidate: $G \leftarrow E \leftarrow D \rightarrow A \rightarrow B$ (#=1).

- 3) $G \perp\!\!\!\perp D \mid E$?
yes b/c chain $D \rightarrow E \rightarrow G$ blocked and
collider at A in path $D \rightarrow A \leftarrow G$ blocked by default

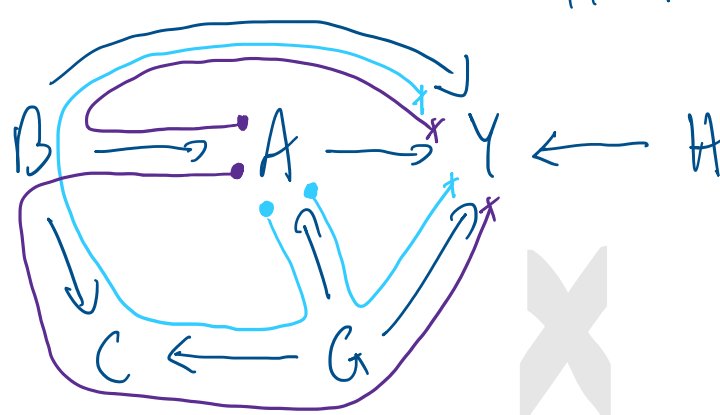
- 4) $G \perp\!\!\!\perp D$?
no b/c of chain unblocked: $D \rightarrow E \rightarrow G$

- 5) # parents for B?
2 (G and A)



backdoor path from G to B:
 $G \leftarrow E \leftarrow D \rightarrow A \rightarrow B$

DAG 2: assume interested in:
(causal effect of A on Y)



• start
x end

two paths using backdoor $A \leftarrow G \dots$
two paths using backdoor $A \leftarrow B \dots$

- 6) # backdoor paths from A to Y?

- 1. $A \leftarrow B \rightarrow C \leftarrow G \rightarrow Y$ (blocked: C is collider)
2. $A \leftarrow B \rightarrow Y$ 3. $A \leftarrow G \rightarrow Y$ (fork)

=> answer: 4 backdoor paths (2 is wrong)

- 7) # of unblocked backdoor paths from A to Y?
=> answer: 2: (both are forks)
($A \leftarrow B \rightarrow Y$) & ($A \leftarrow G \rightarrow Y$)

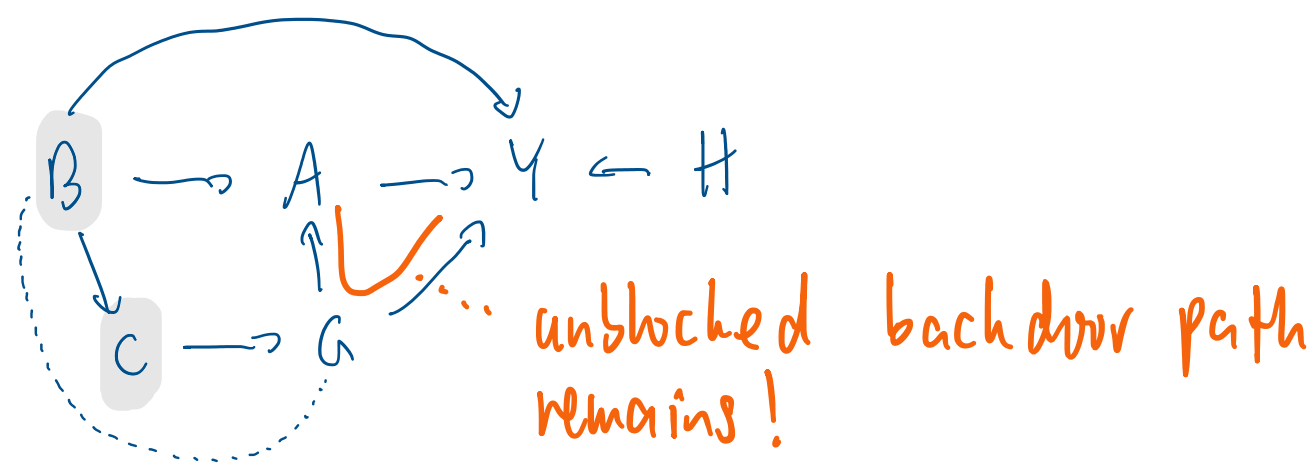
- 8) conditioning on C creates link btw. which nodes?
=> A and B.

- 9) does conditioning on {G, B} satisfy the backdoor path criteria?
=> yes. both forks from answer 6) would be blocked

- 10) what would be the set of variables to control for using the disjunctive cause criterion?

due to A: B,
due to Y: B, H, G } union
=> answer: {B, H, G}

- 11) is the set {C, B} sufficient (satisfying the backdoor path criterion?)



=> answer: {C, B} is not sufficient set to satisfy the backdoor path criterion.