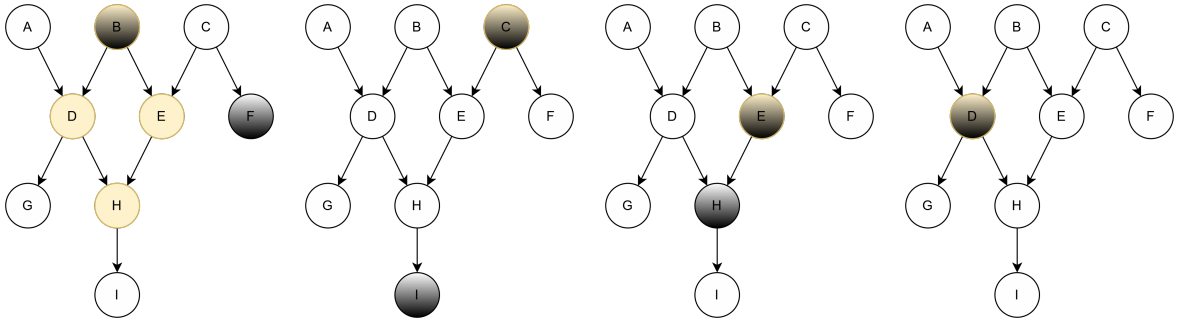


(a) (b) (c) (d)

Graphs for a-d. Observed nodes have a gradient, blocked ones are yellow.

Part 1

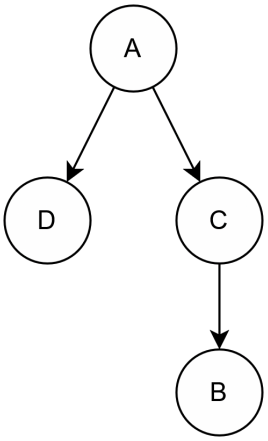
(a)
Assume that node B and F are clamped/observed.
Are D and E conditionally independent? Yes
Are A and E conditionally independent? Yes
Are G and C conditionally independent? Yes

(b)
Assume that node I and C are clamped/observed.
Are D and E conditionally independent? No
Are A and E conditionally independent? No
Are E and F conditionally independent? Yes

(c)
Assume that node E and H are clamped/observed.
Are C and I conditionally independent? Yes
Are A and I conditionally independent? No

(d)
Assume that node D is clamped/observed.
Are A and H conditionally independent? Yes
Are C and I conditionally independent? No
Are G and F conditionally independent? Yes

(e)
Now we look for a graph that satisfies certain relations.
Consider four random variables (A, B, C, D).
Find a graph that has the following relations.
1. A is a parent of D.
2. B is a child of C.
3. There is no edge between A and B.
4. D and C are c.i. when A is observed.
5. D and C are not c.i. when A is not observed.



Part 2

(a)
(b)
(c)