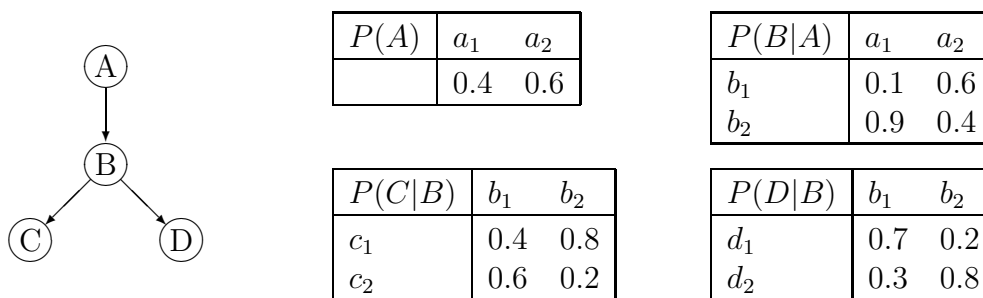


Exercise Sheet 7

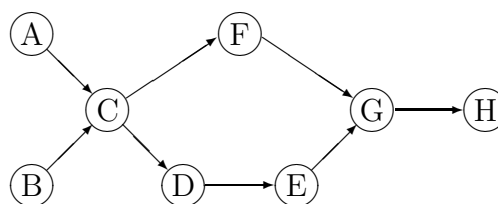
Exercise 22 Probabilistic Propagation

Consider the following Bayesian network and the corresponding (conditional) probability distributions:



- a) Determine the a-priori distribution for all four variables!
- b) It becomes evident that variable C assumes value c_2 . Propagate this evidence across the network with the tree-based propagation algorithm presented in the lecture, i.e., compute all four a-posteriori distributions!

Exercise 23 Construction of Clique Trees



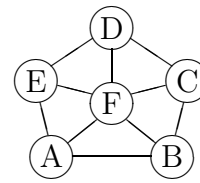
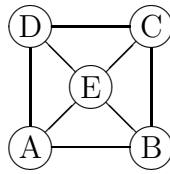
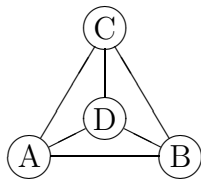
Construct stepwise for the depicted Bayesian network

- a) the moral graph,
- b) a triangulated moral graph, and
- c) a cliquen tree/join tree!

At which steps of the construction do you have multiple options to proceed?

Exercise 24 Triangulation and Joint Tree Construction

Given the following three undirected graphs:



- a) Check which graphs are triangulated! Try to recognize this without applying the triangulation algorithm from the lecture.
- b) Triangulate the graphs that are not yet triangulated and determine for each of them a join tree!