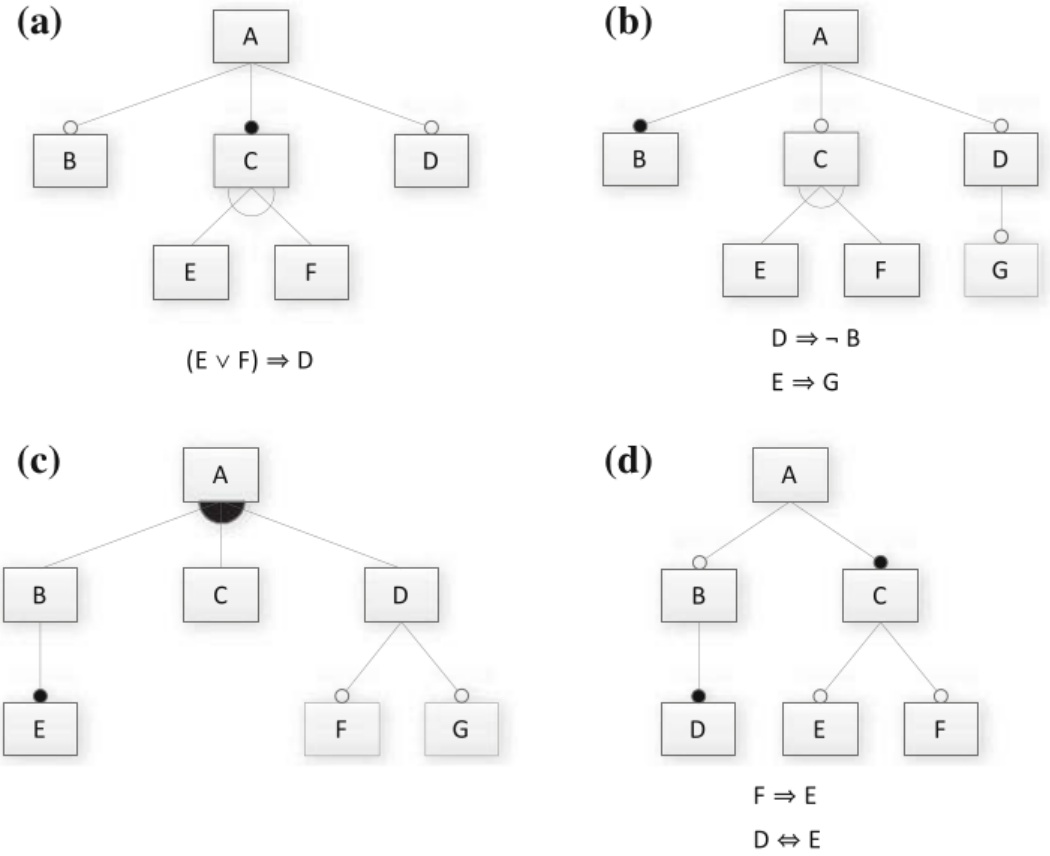
TDA 594/DIT 593 - Feature Model Analysis Activity

Consider the following Feature Models:



Start with Models A and B. If you have time, also try Models C and D.

1. Translate the feature model into a propositional logic formula. Note that the logical expressions next to models A, B, and D are cross-tree constraints that must be incorporated as well.
2. Provide two valid and two invalid feature selections (if possible).
3. Determine whether the feature model is consistent (are there any valid configurations?). If it is not consistent, identify one reason why.

Recall the following transformations from diagram to logic (where p and f are two features, and p is the parent of f):

- mandatory(p, f) ≡ $f \Leftrightarrow p$
- optional(p, f) ≡ $f \Rightarrow p$
- alternative(p, $\{f_1,...,f_n\}$) ≡ $((f_1 \vee \ldots \vee f_n) \Leftrightarrow p) \wedge_{(fi,fj)} \neg(f_i \wedge f_j)$
    - empty fan, choose exactly one
- or(p, $\{f_1,...,f_n\}$) ≡ $((f_1 \vee \ldots \vee f_n) \Leftrightarrow p)$
    - filled fan, choose at least one