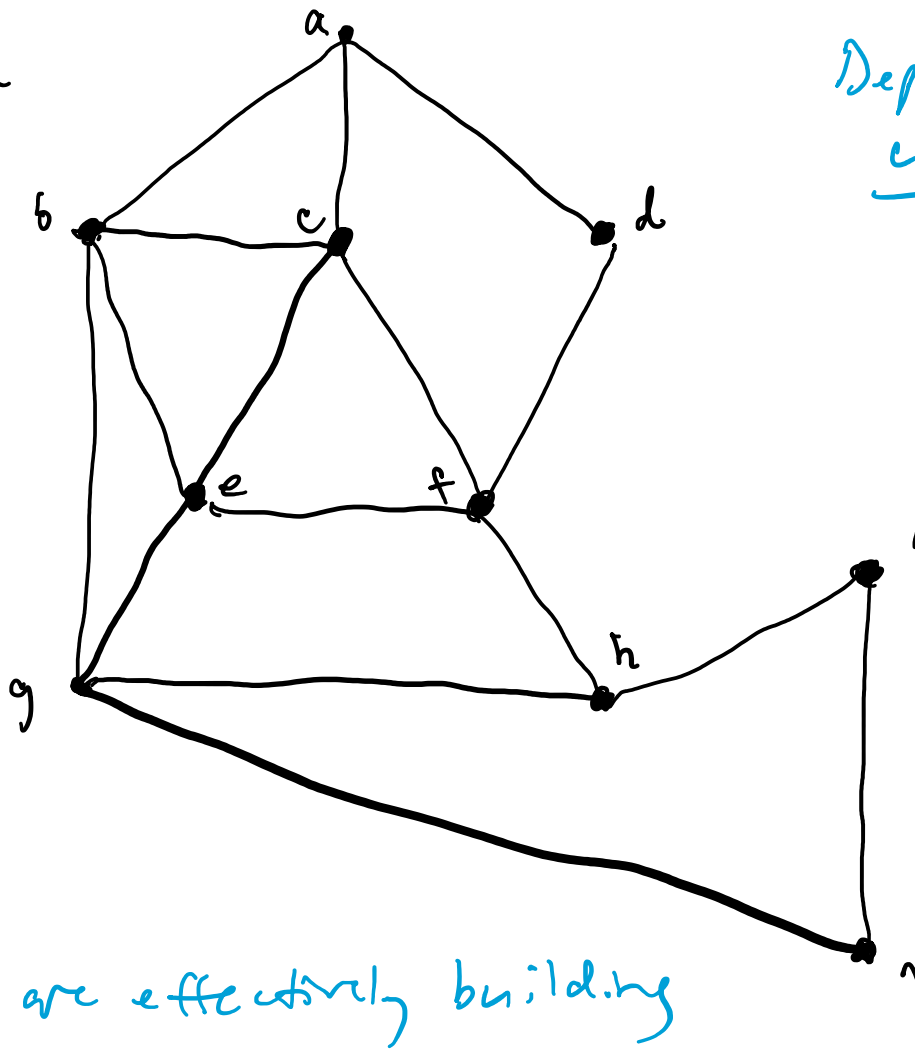
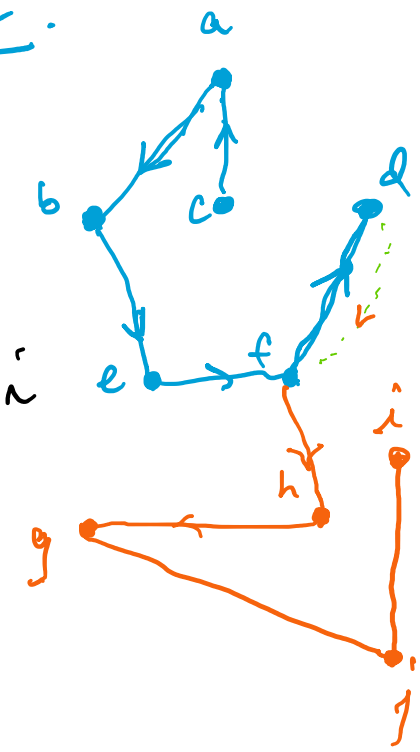
§7.4 #2, 20, 36

#2



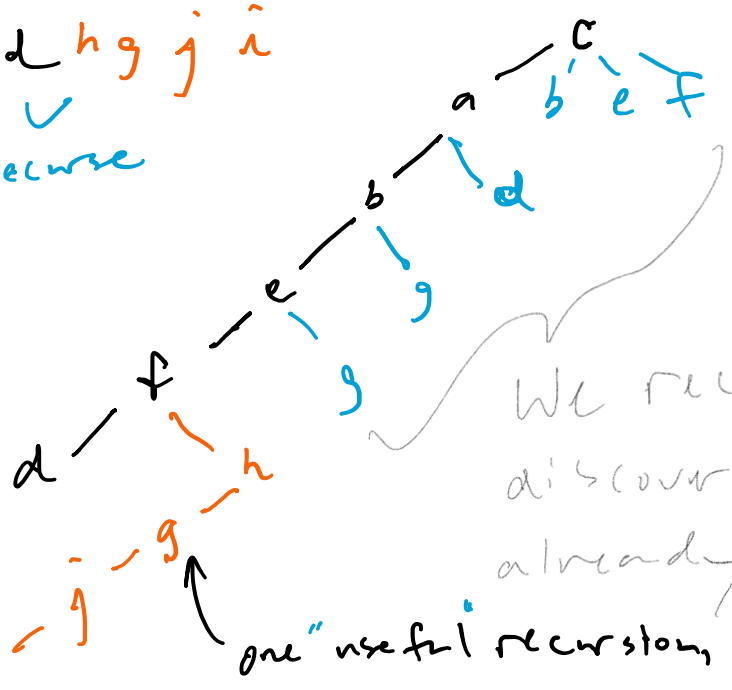
Depth 1st, from c.



We are effectively building a tree:

c a b e f d h g j i

↓ recurse

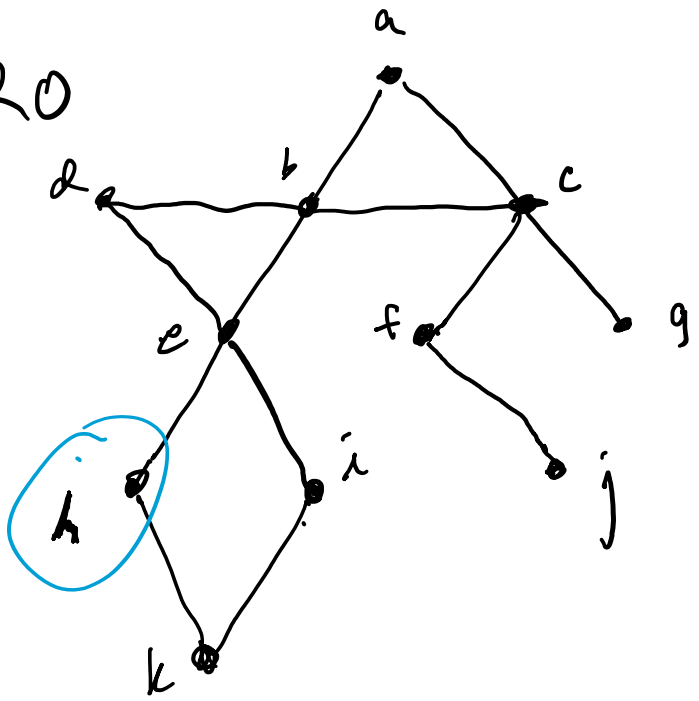


So long as one has an adjacency, one has a "child".

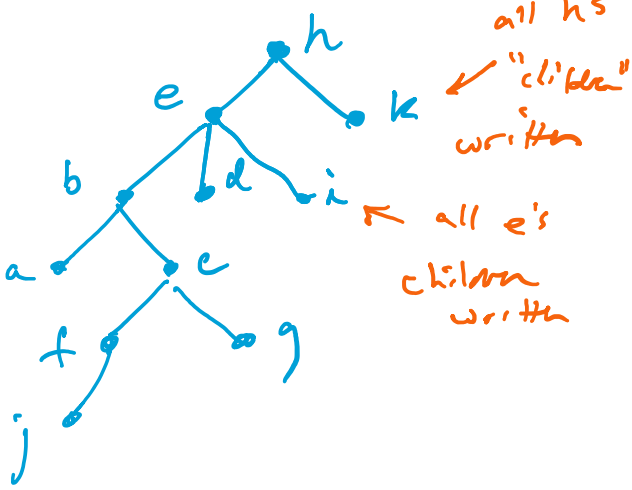
We recurse back up, but discover these "marked" + already written.

one "useful" recursion, after d fails to have a "child"

#20

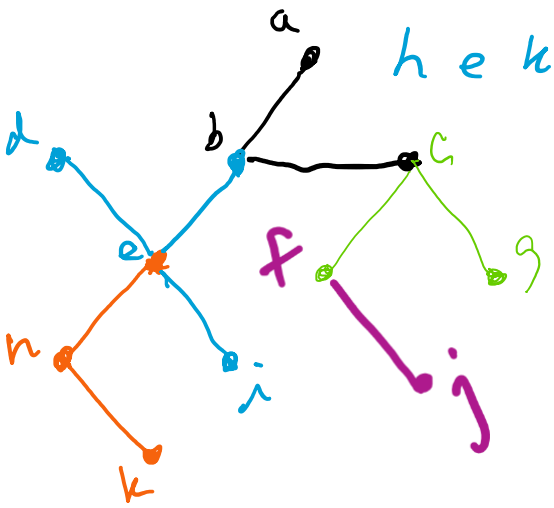


Breadth-first, starting from h.



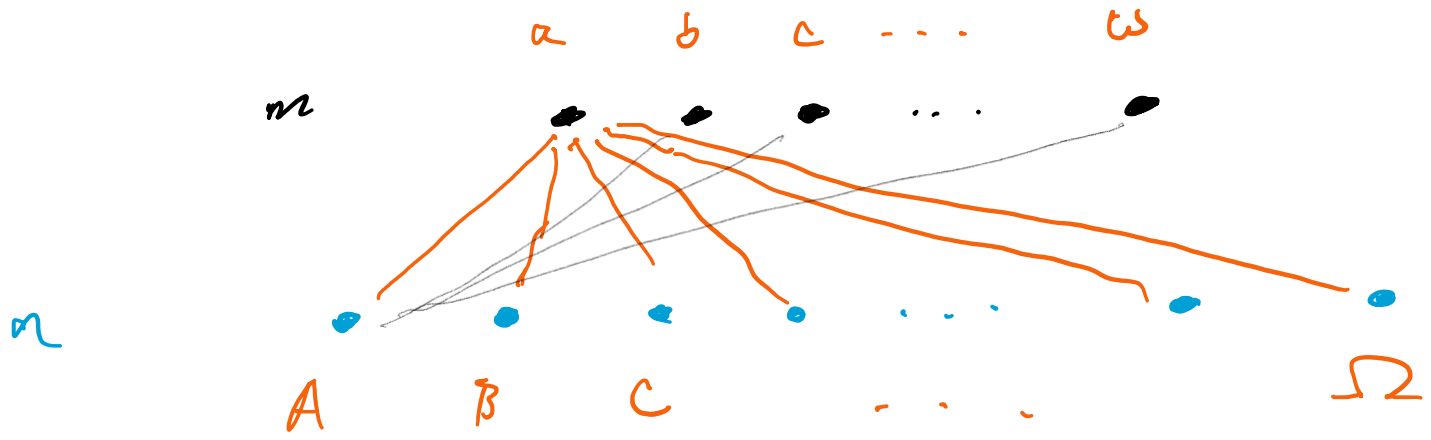
Nodes were written by depth, & left to right:

h e k b d i a c f g j



Everyone's marked & written when we arrive at j.

36 a). Describe the order in which nodes are visited in a breadth-first search of the bipartite complete graph $K_{m,n}$.



It will only take two "steps" (from a):

a A B C ... Ω b c ... w

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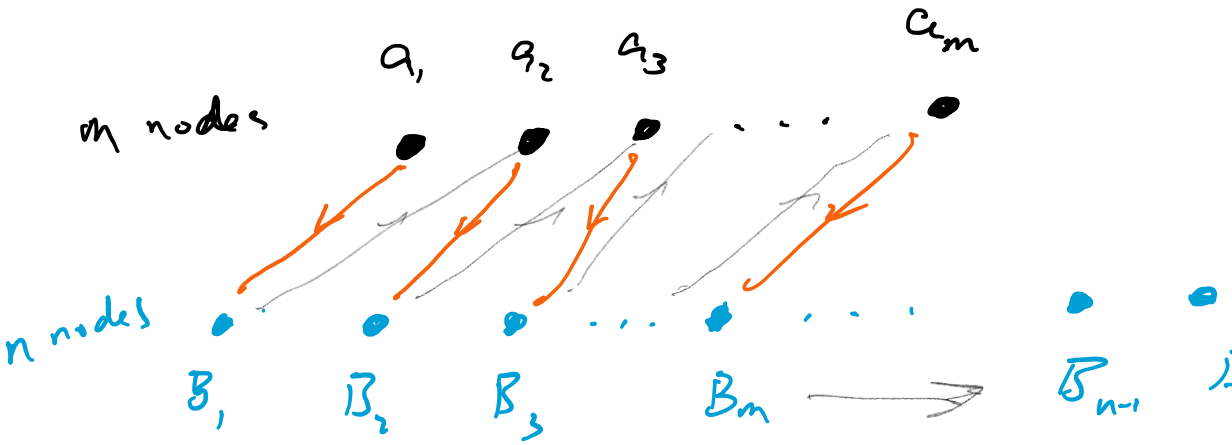
b). Same question for depth-first.



WLOG (Without Loss Of Generality)

Assume $m \leq n$

Starting from a_1 (see above):

$a_1 B_1 a_2 B_2 \dots a_m B_m B_{m+1} B_{m+2} \dots B_n$

Starting from B_1:

$B_1 a_1 B_2 a_2 \dots B_m a_m B_{m+1} \dots B_n$