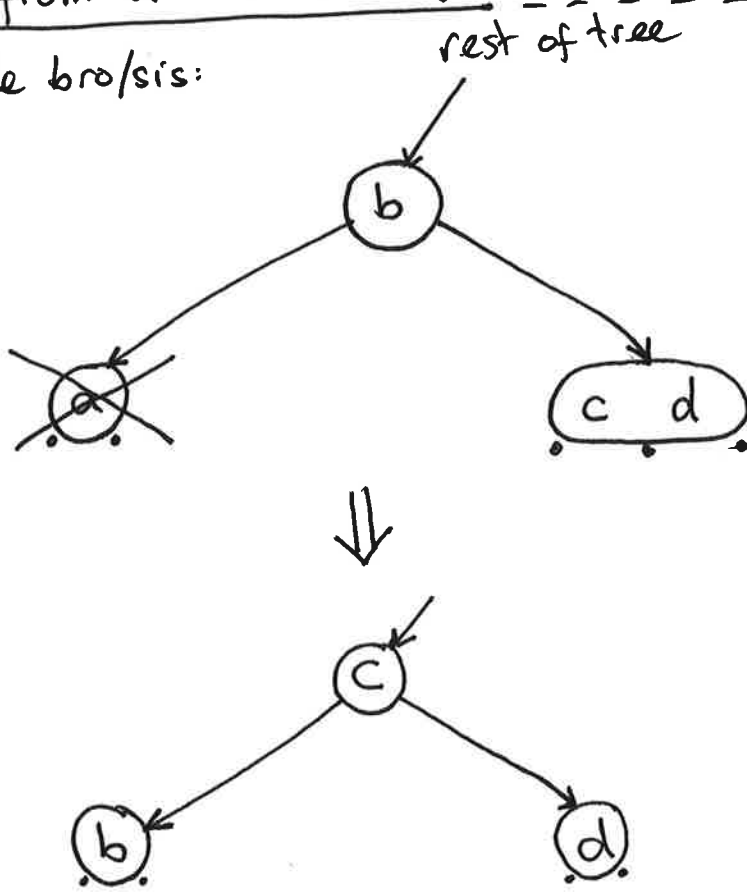
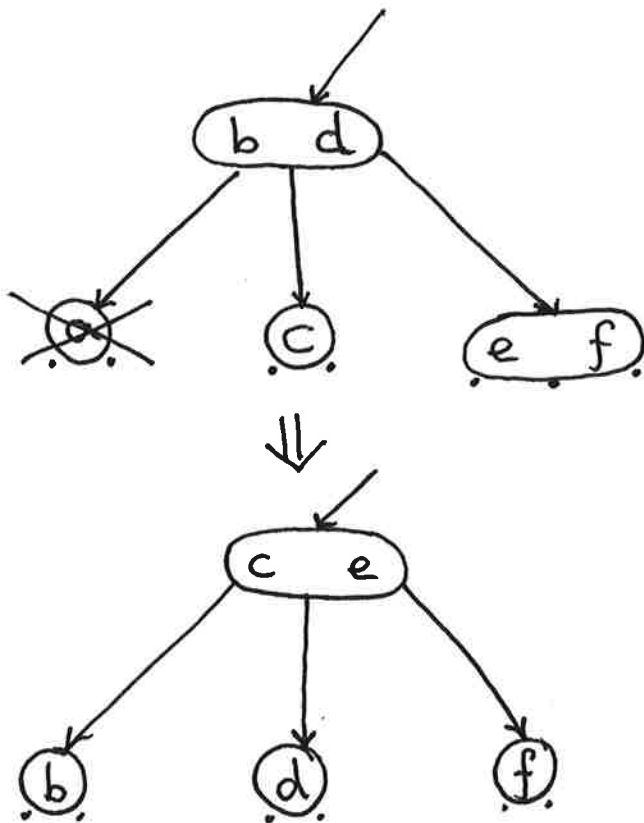


Deleting from a 2-node leaf

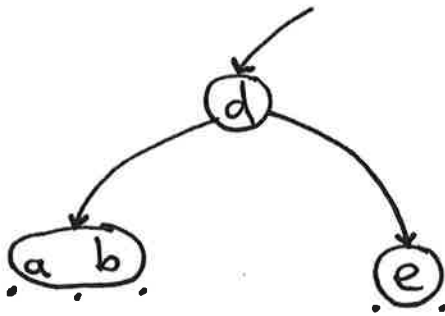
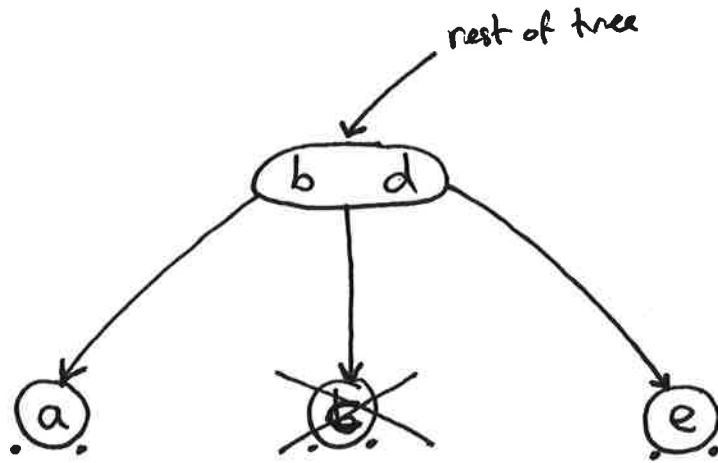
1) Has a 3-node bro/sis:
1a)



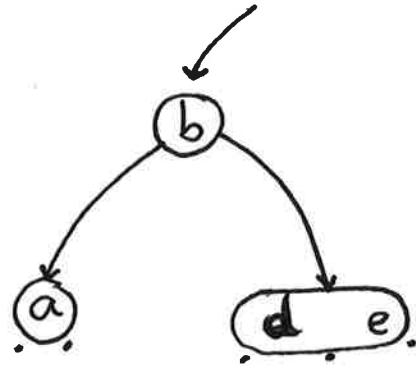
1b)



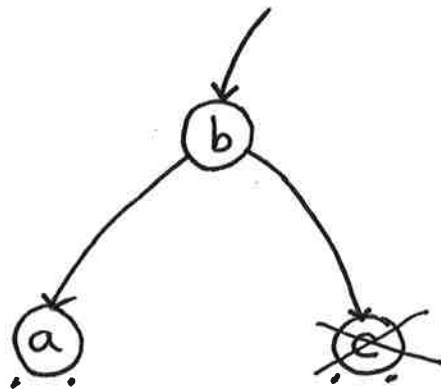
2) No 3-node bro/sis, but parent is a 3-node



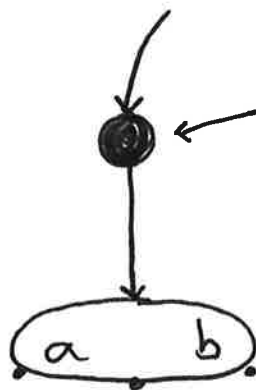
OR
(programmer's
choice)



3) Only 2-nodes near-by (bro/sis or parent)



This is where a black hole is created



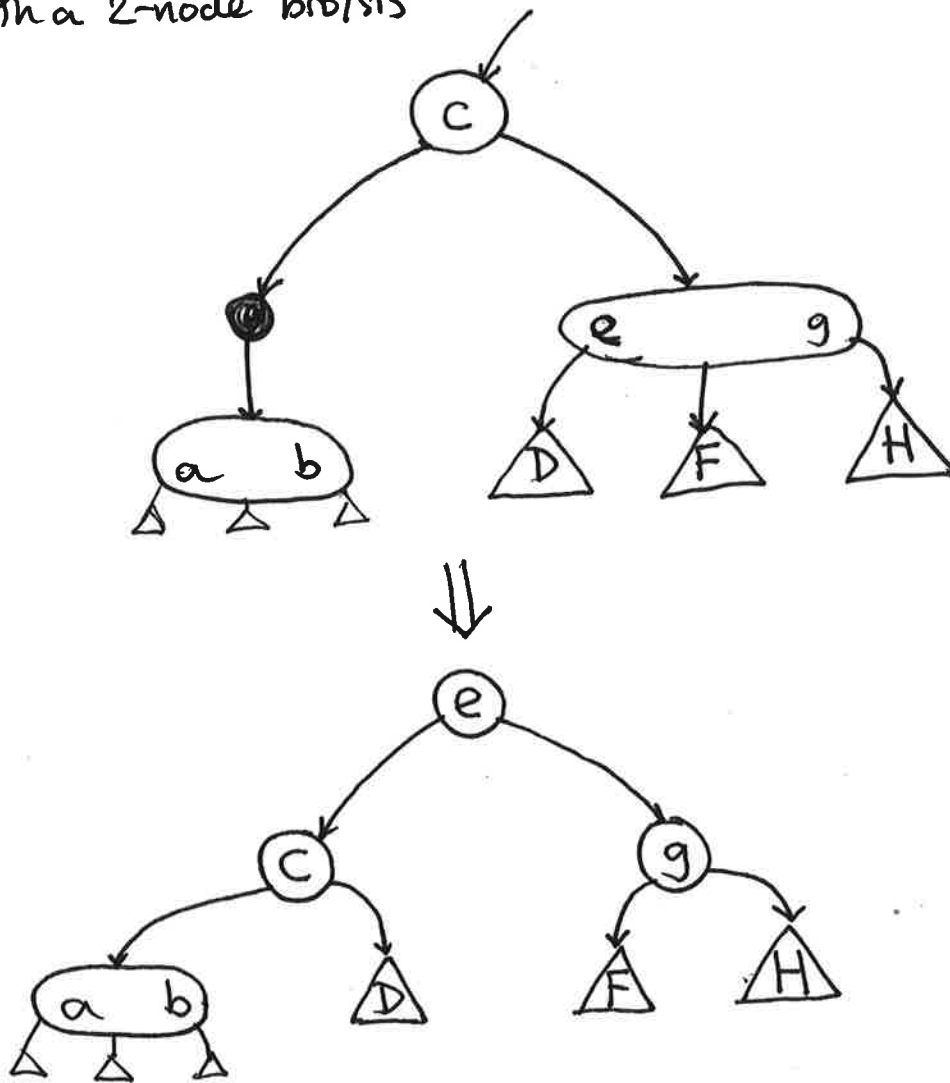
(Note the subtree, including the black hole, is the same height)

The black hole now works on its parent, just like a leaf deletion.

Propagating a black hole

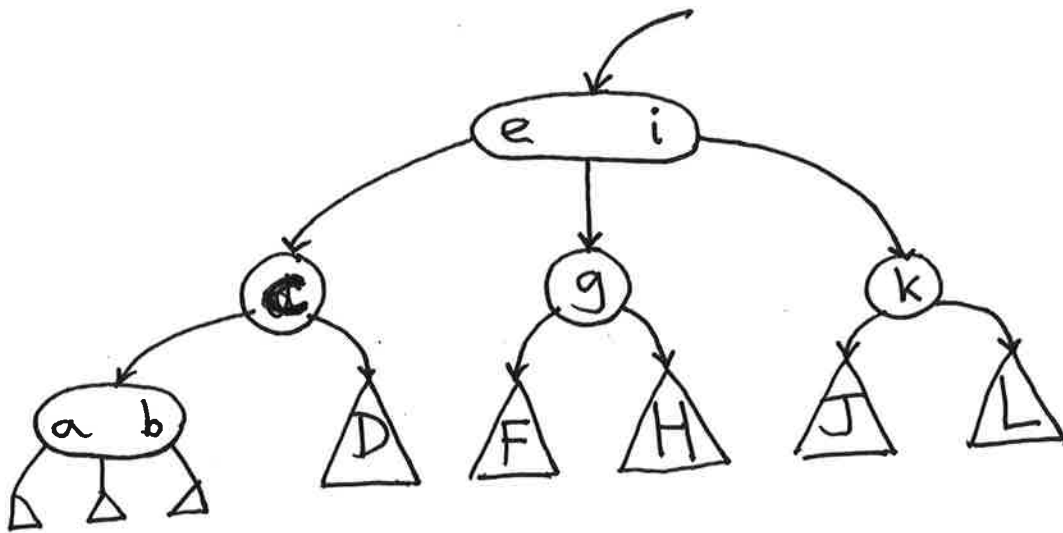
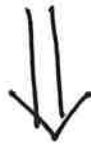
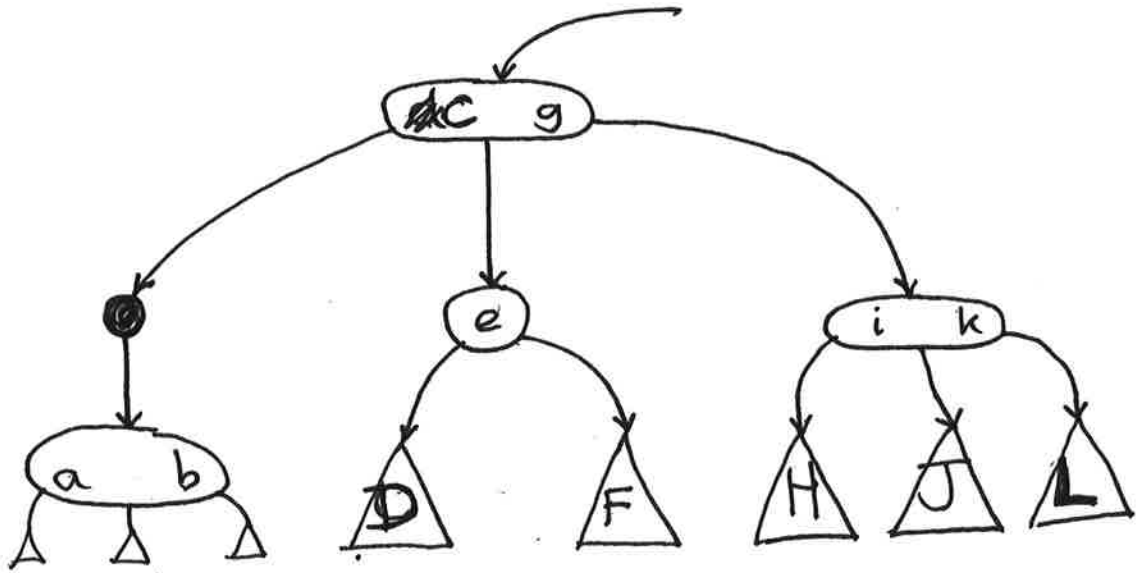
4) with a 2-node bro/sis

4a)



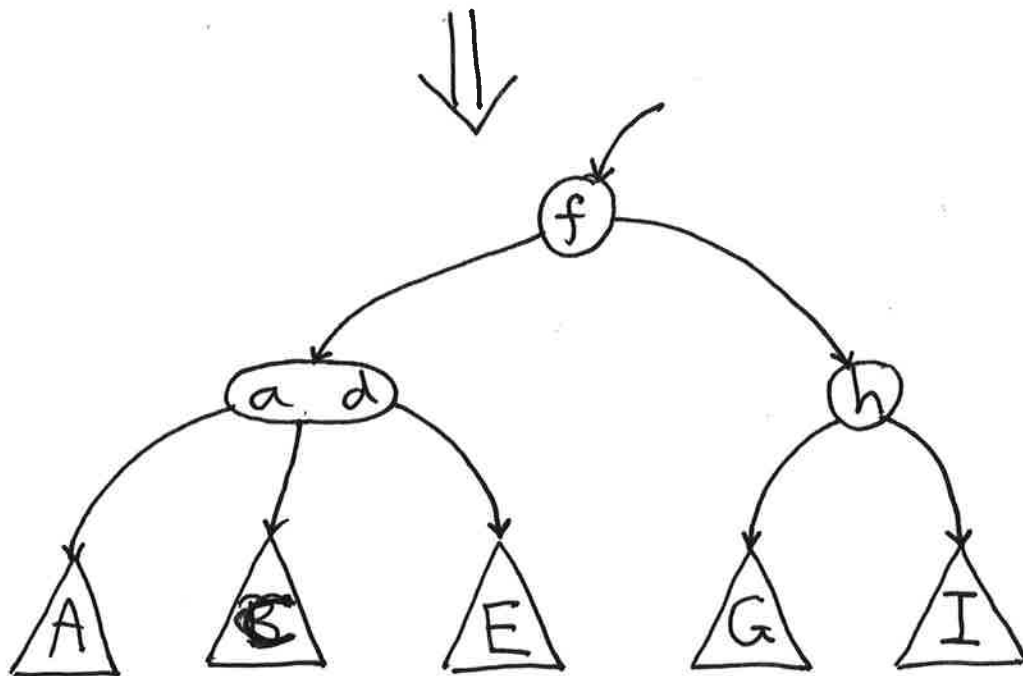
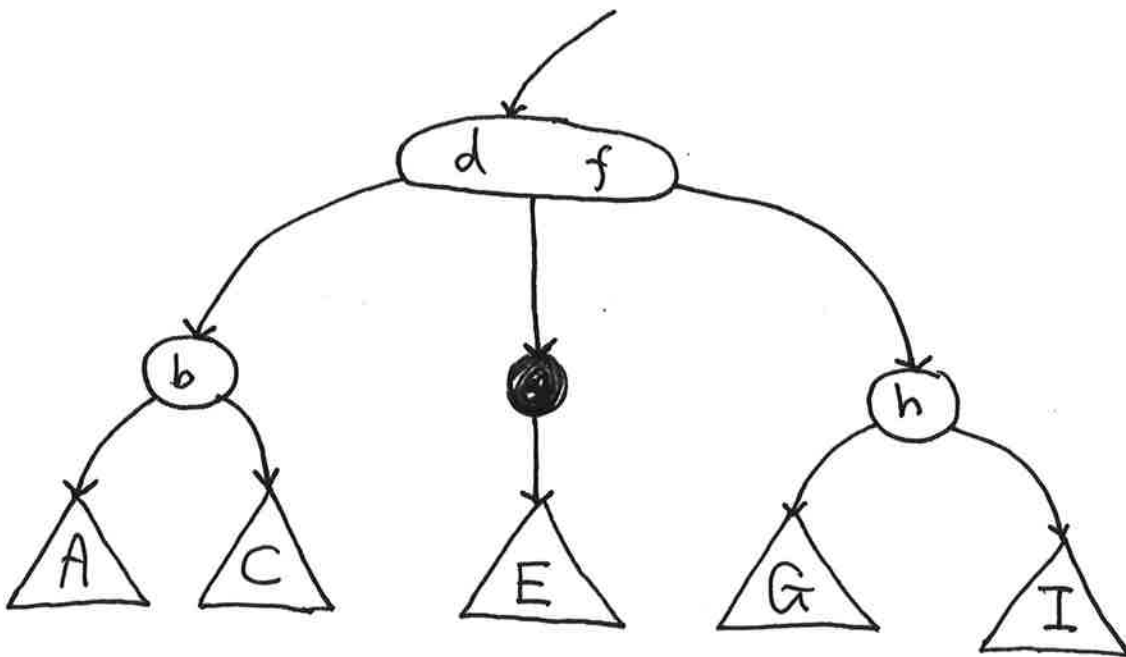
and the black hole has evaporated!

4b)



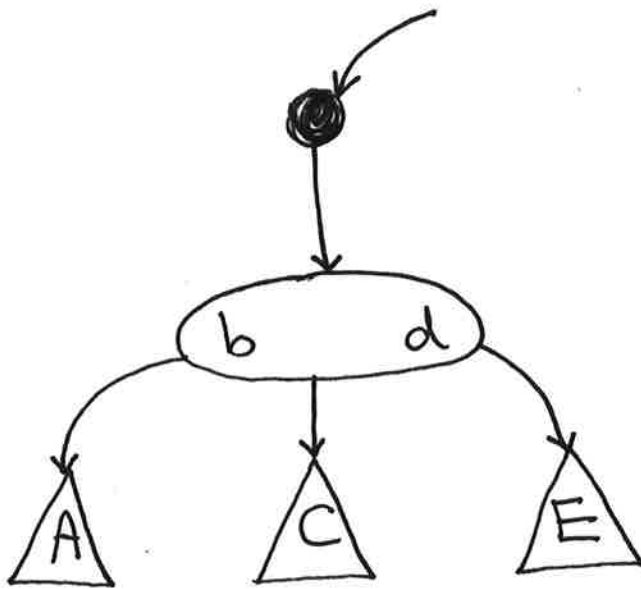
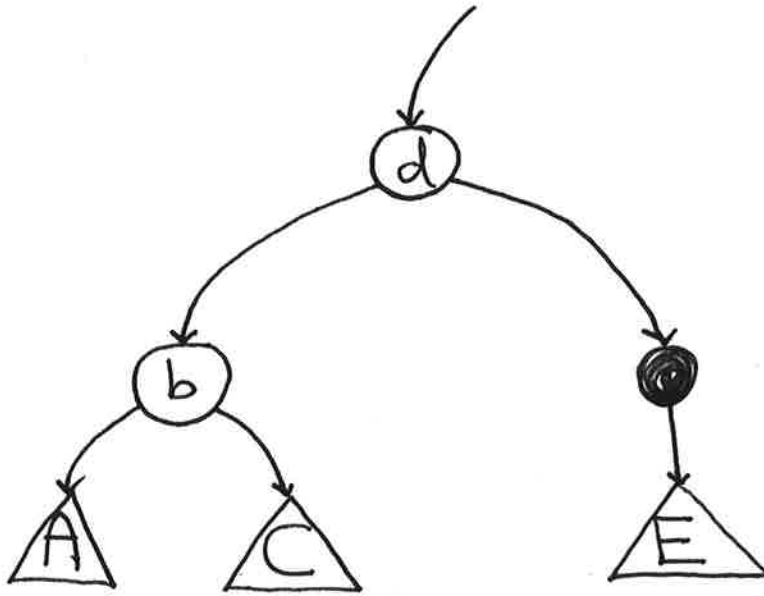
all balanced and no more black hole

5) No 3-node bro/sis, but parent is a 3-node



No black hole, all balanced.

6) only 2-nodes near-by



black hole moves up one level & attacks its own parent