

Pacman AI : ID-DFS

Iterative deepening depth-first search
(迭代加深搜索)

多拉 A 夢

首先給你一張地圖



A -> B的最短距離？

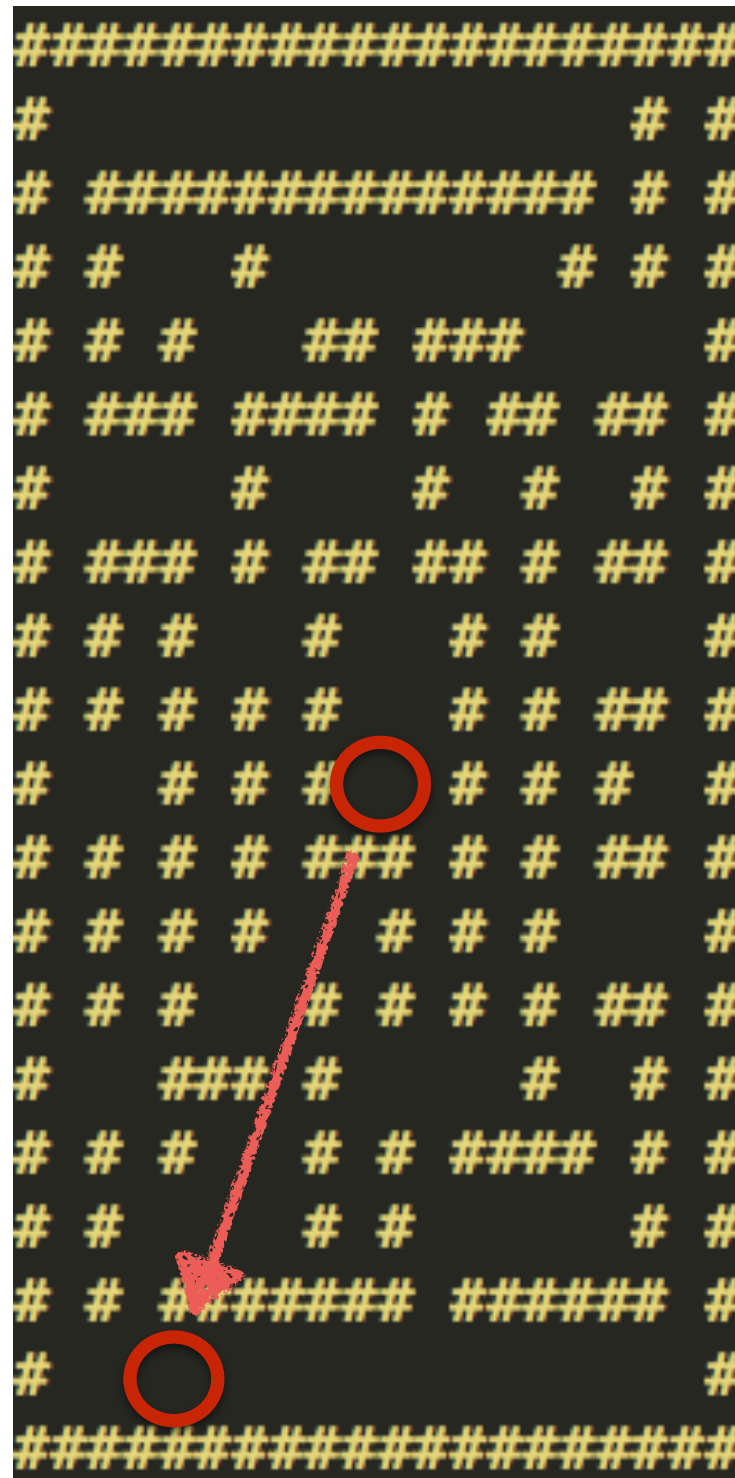


先不管這麼複雜的地圖 X D

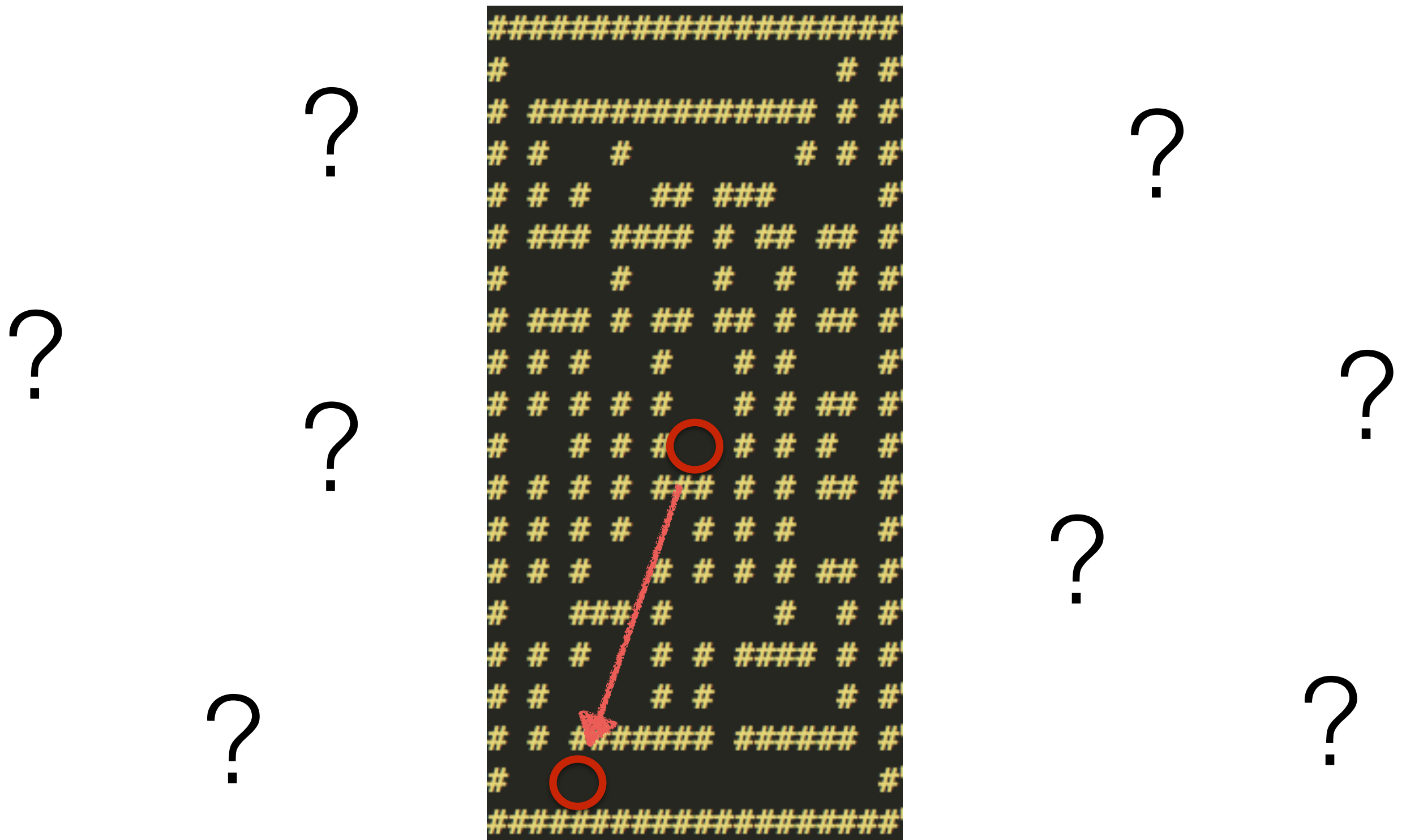
先來看看簡單的地圖



這樣子簡單多了吧：D

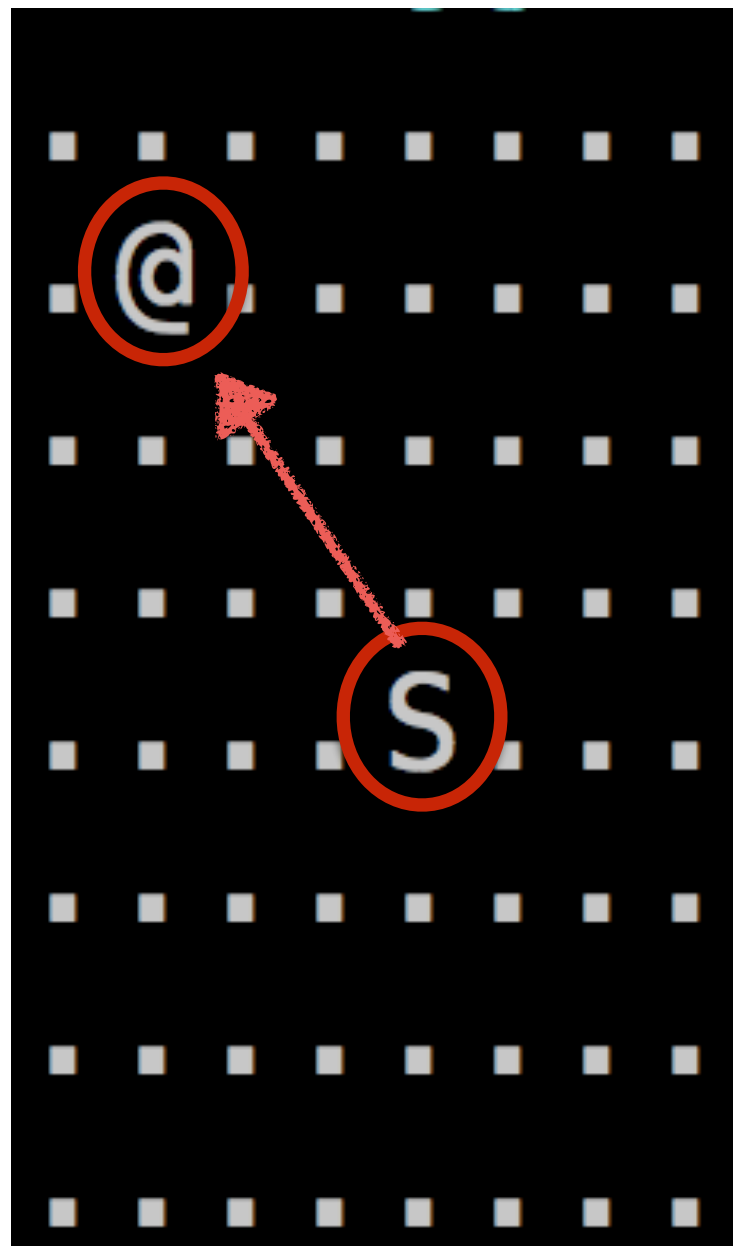


But how ?



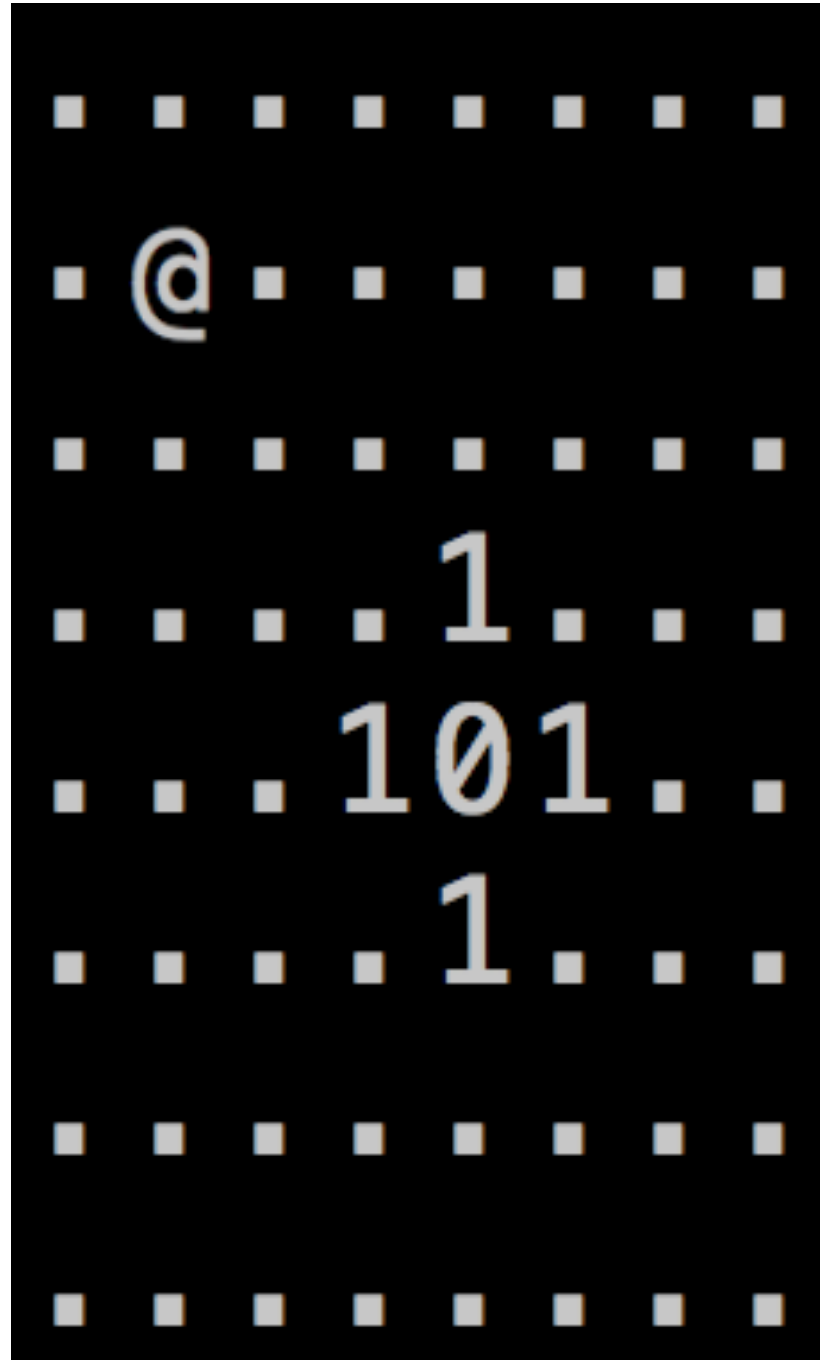
觀察

假設我們只能上下左右走....



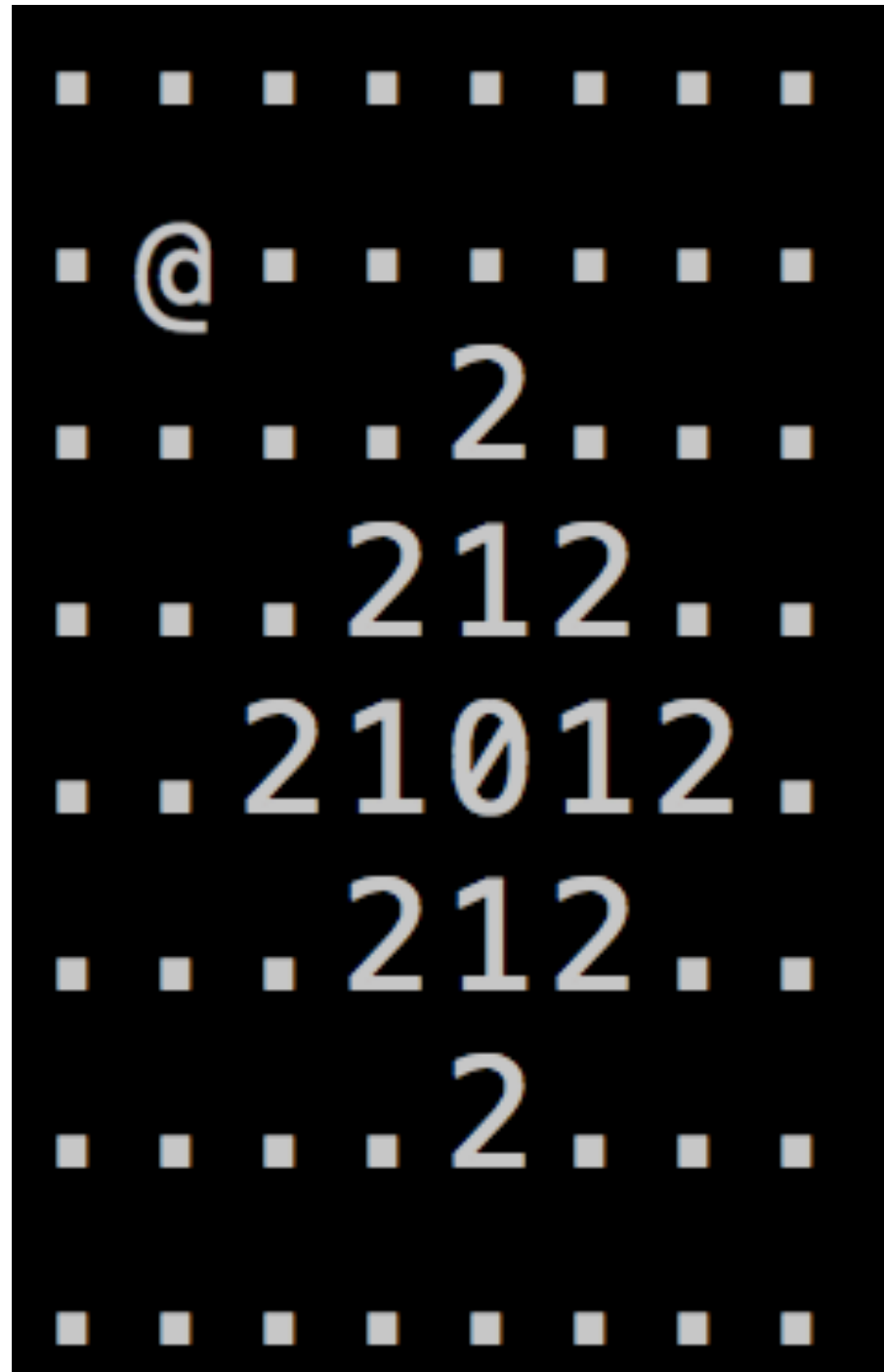
觀察

距離原點1



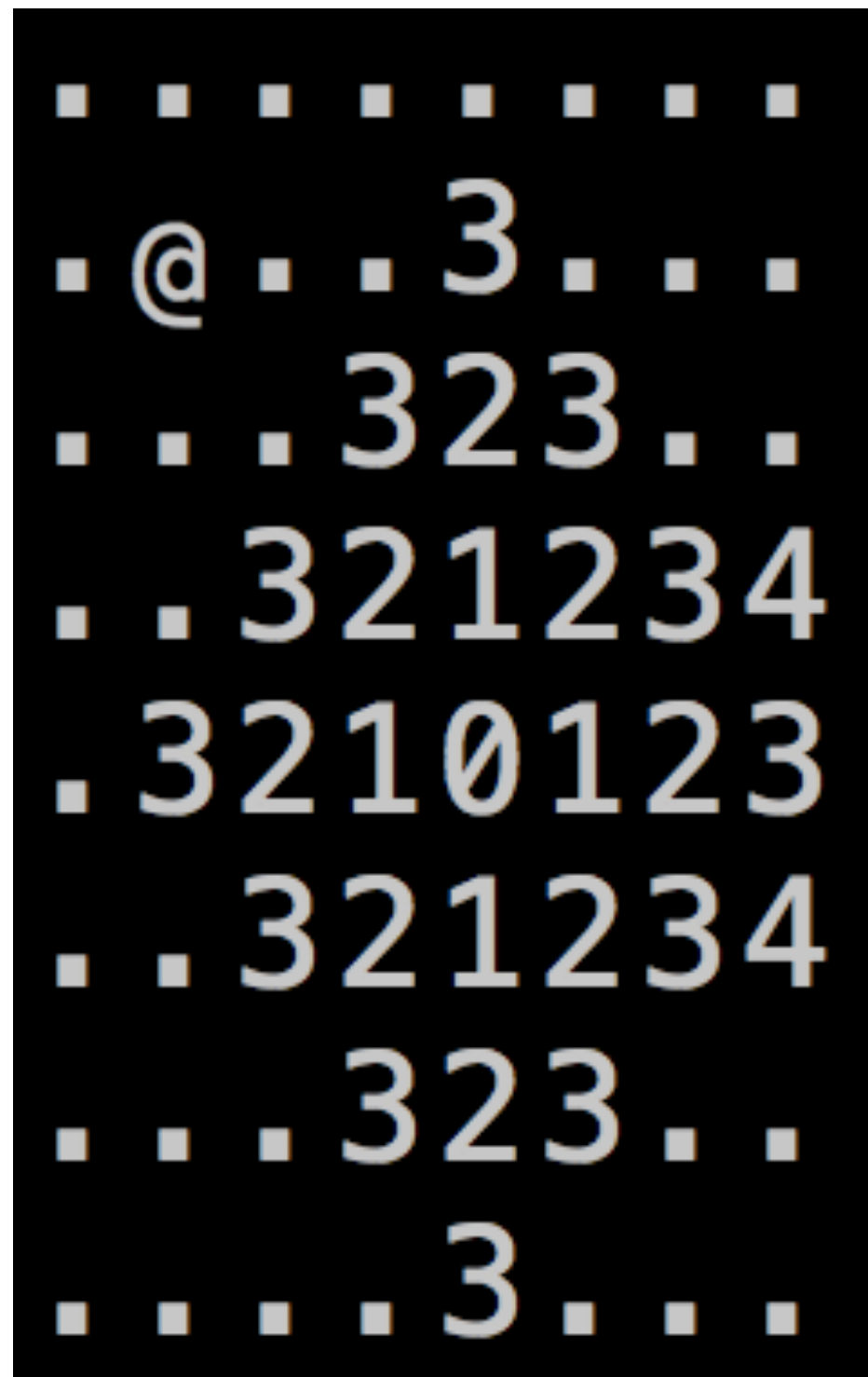
觀察

距離原點2



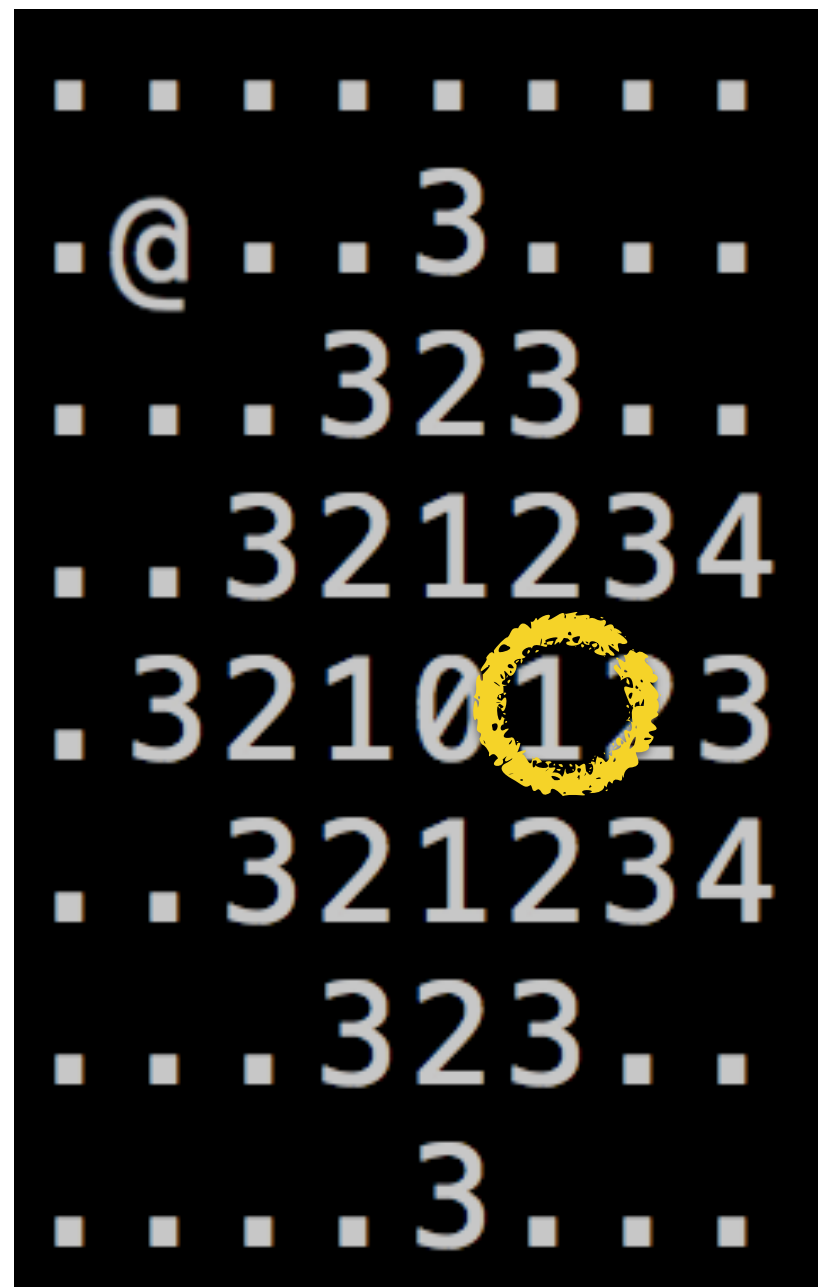
觀察

距離原點3



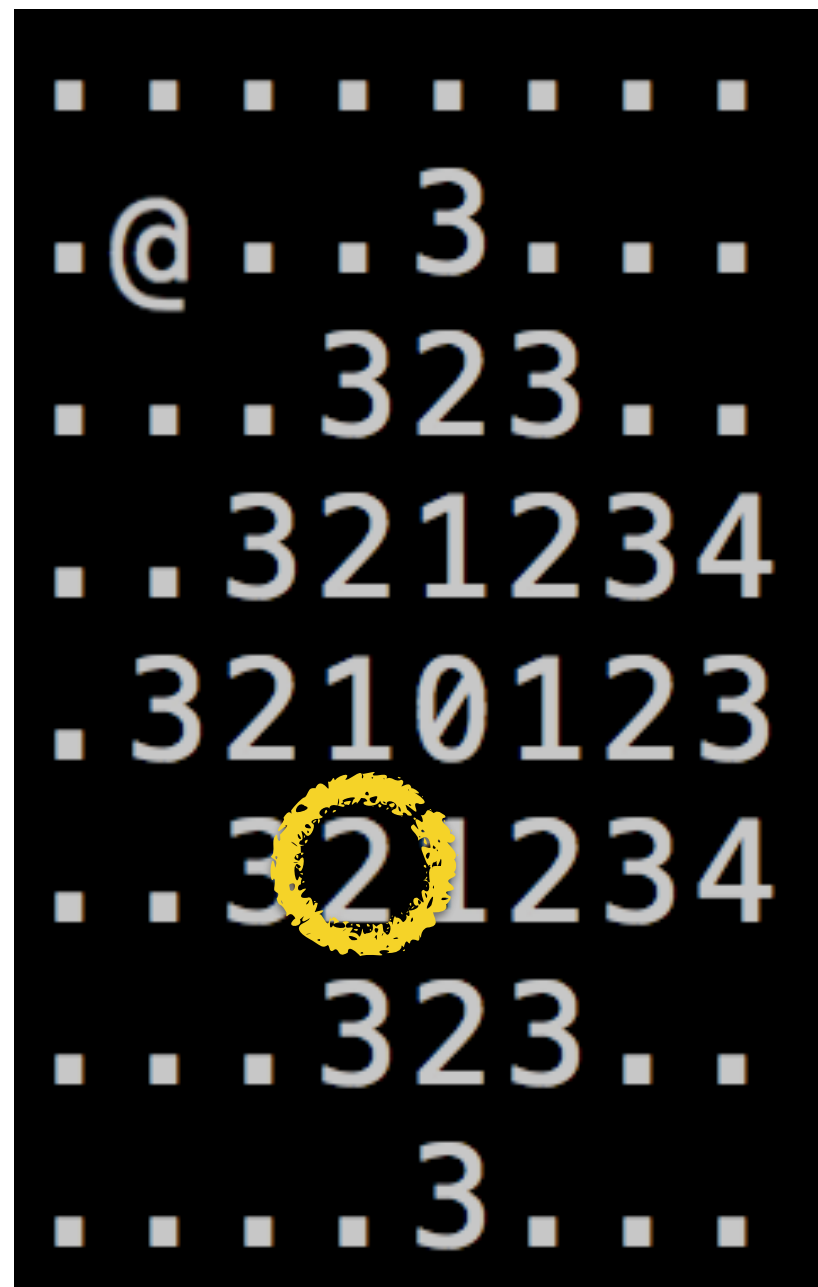
觀察

這個點距離原點為1



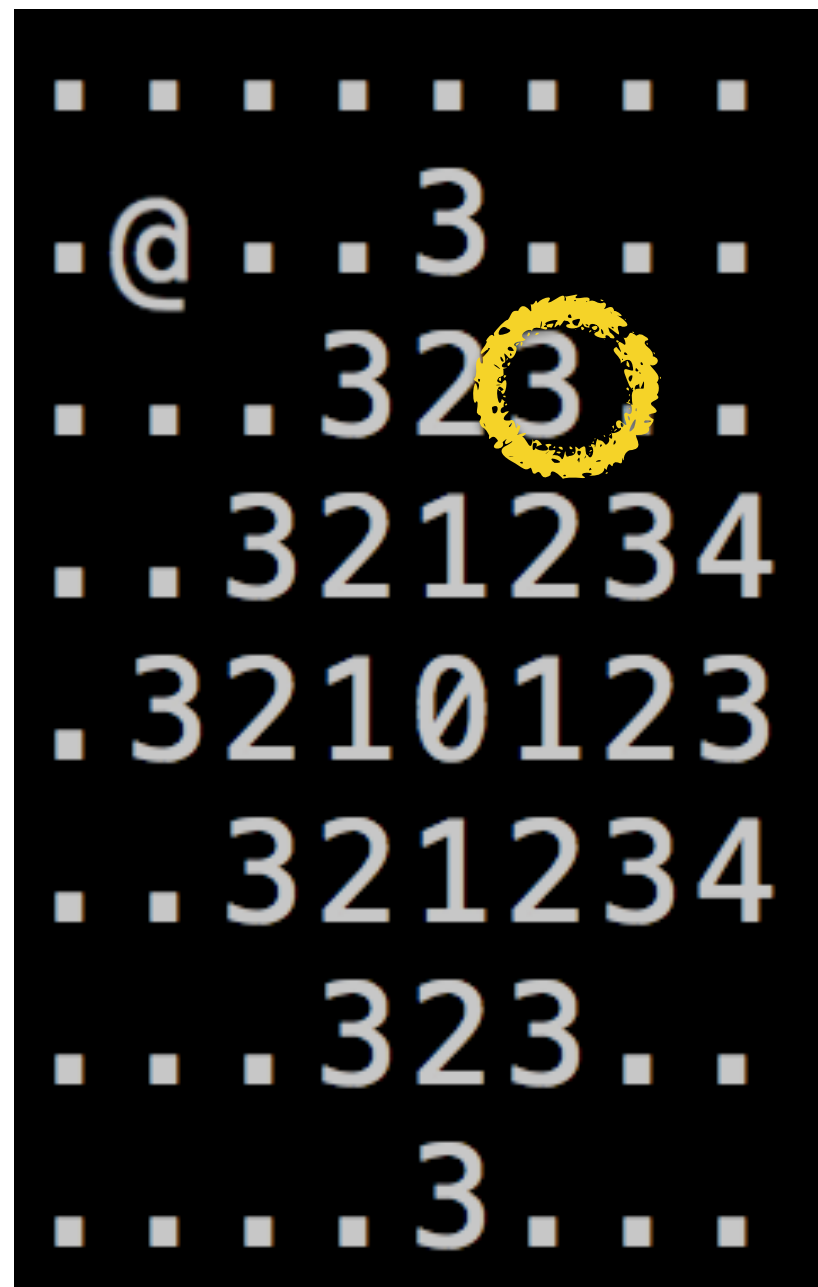
觀察

這個點距離原點為2



觀察

這個點距離原點為3...



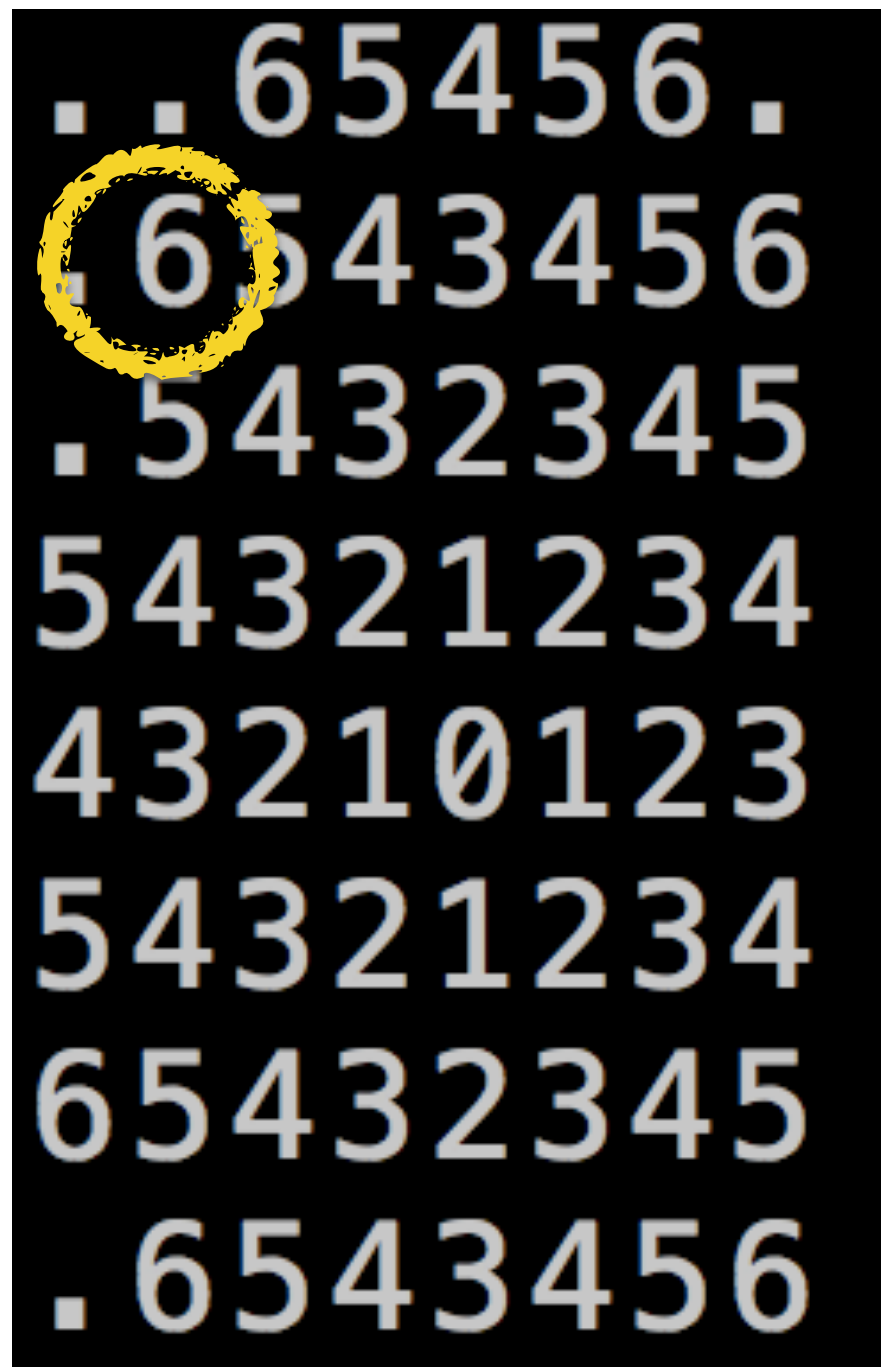
觀察

總有一天會淹沒抓到這隻可愛的老鼠 (X)



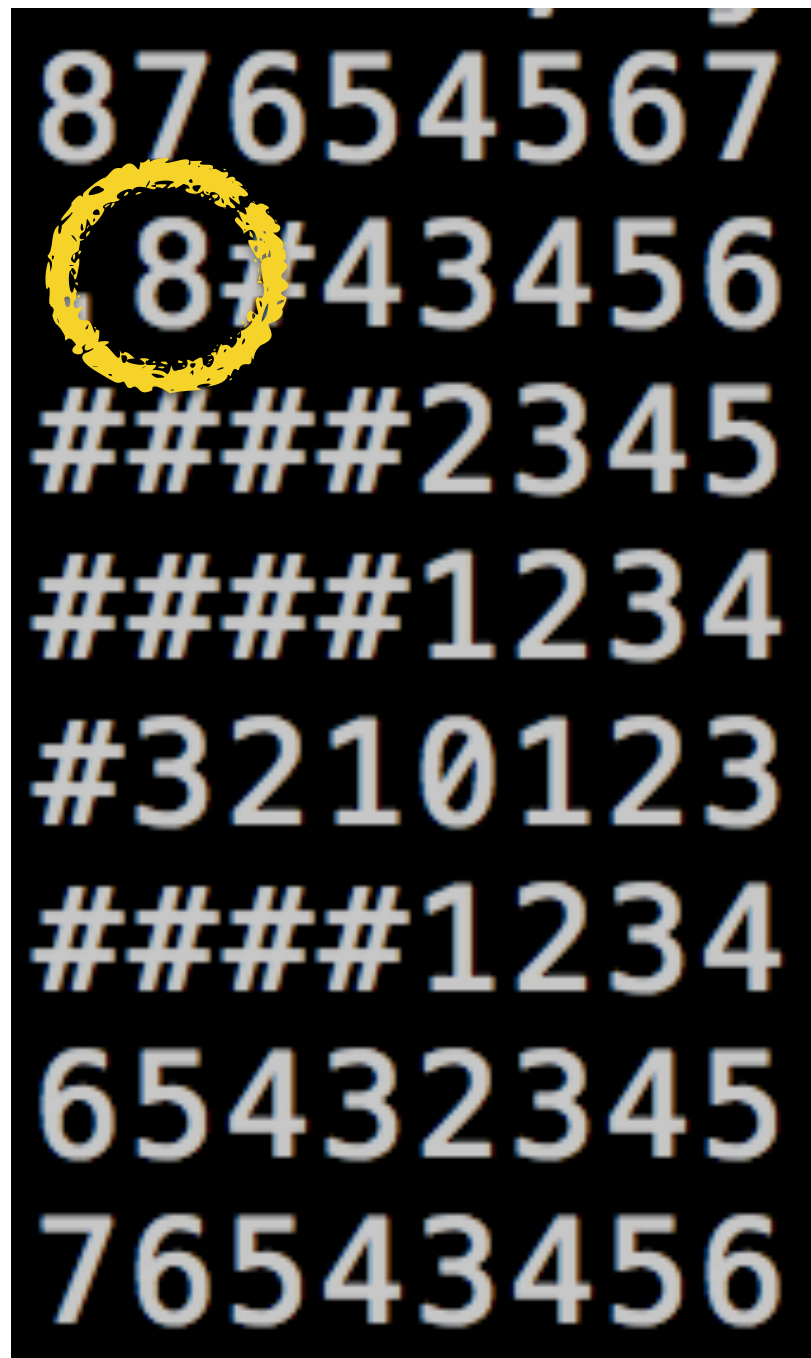
觀察

這時候... 我們就可以知道老鼠的距離(笑)



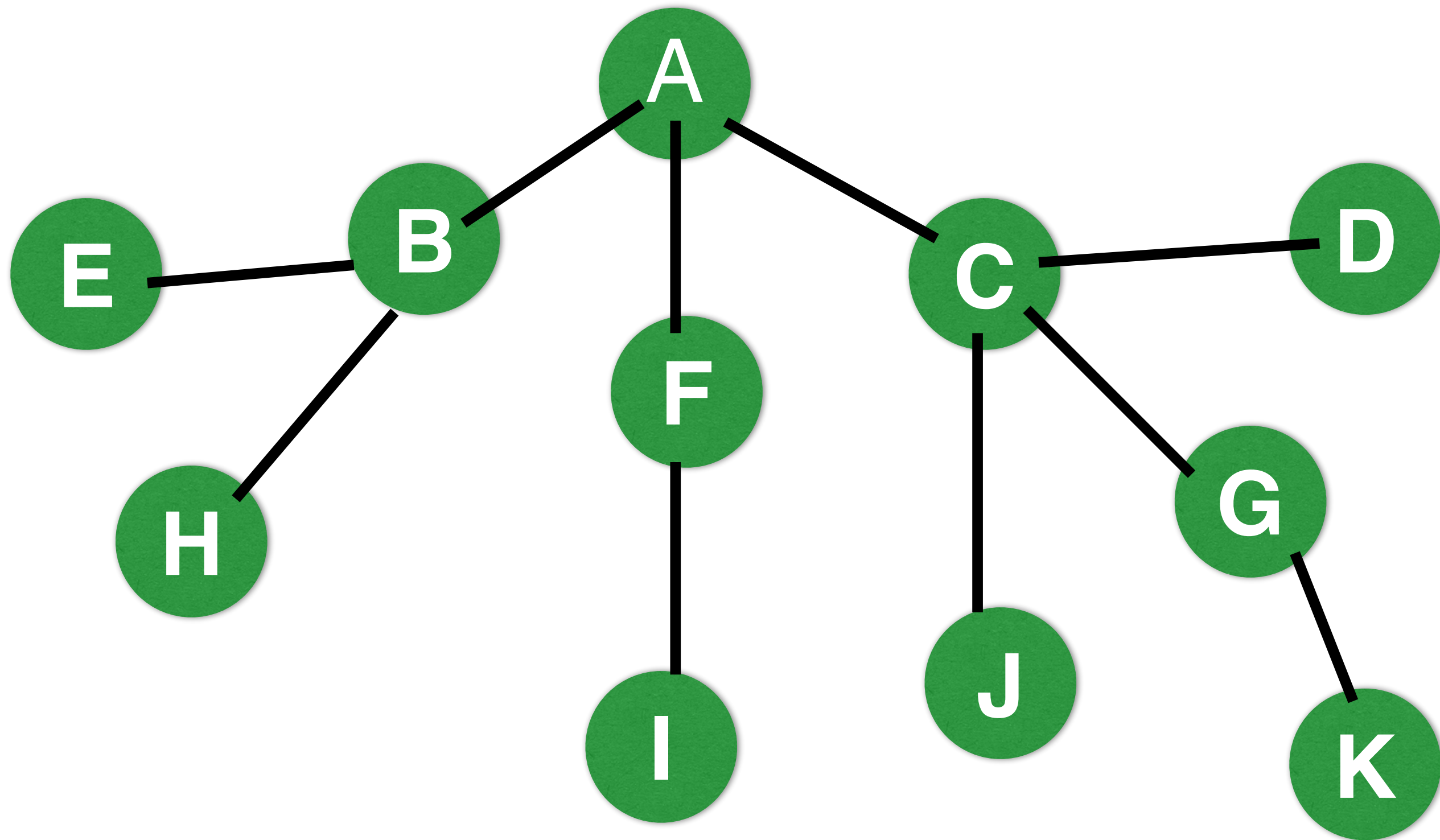
觀察

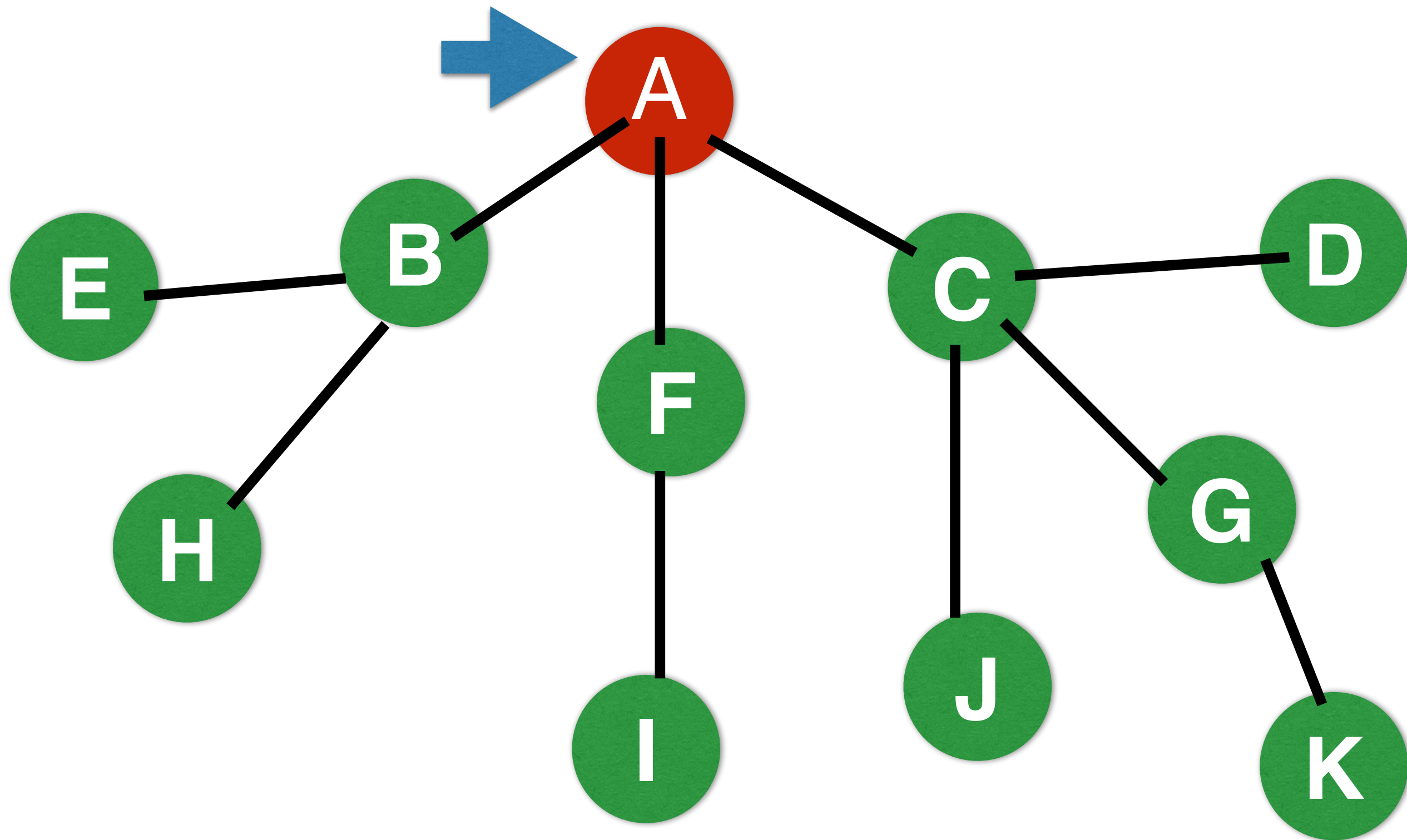
就算有障礙物....

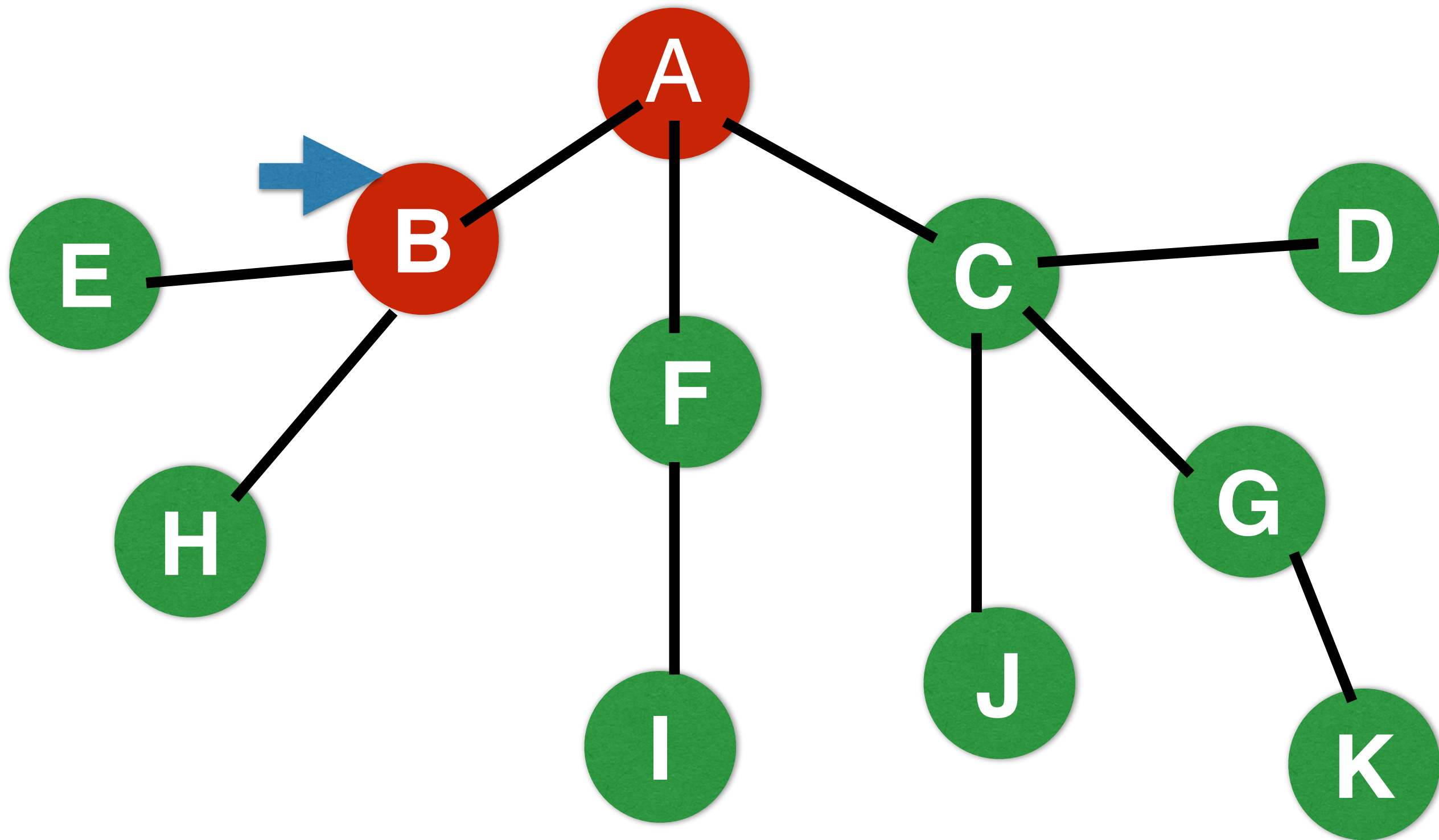


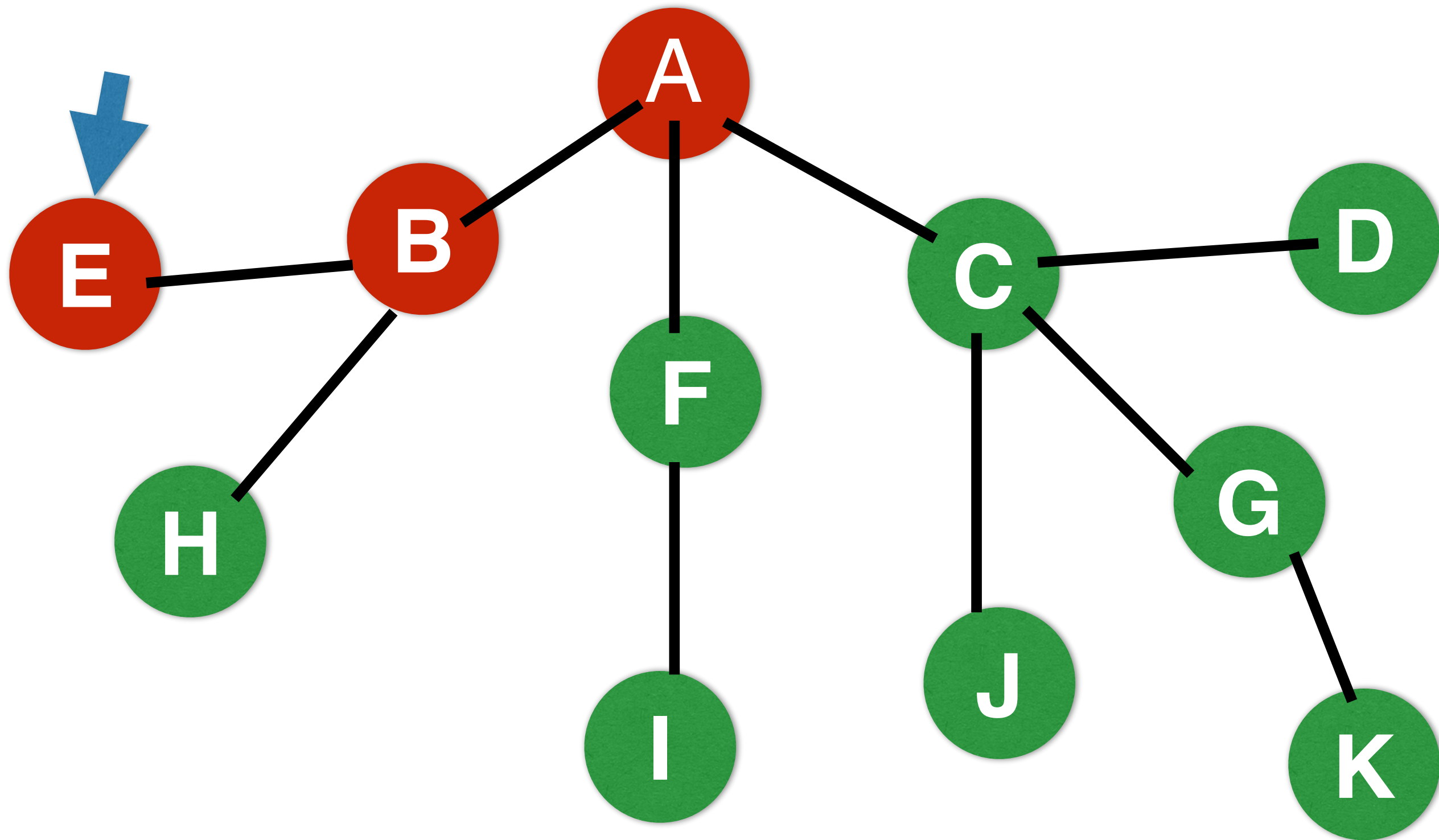
介紹DFS

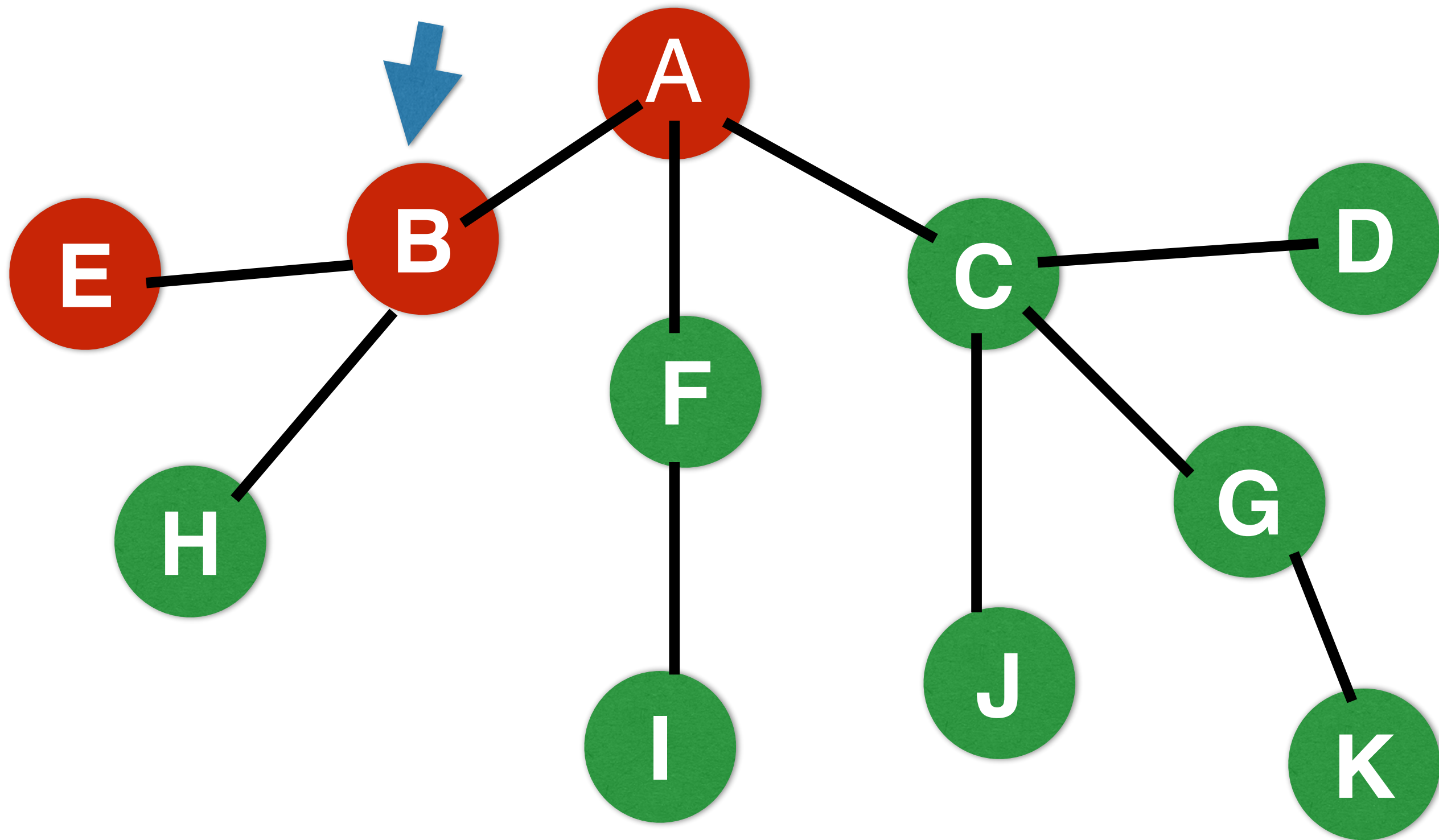
- 深度優先搜索
- 亂七八糟的口訣：
『可以右轉就盡量右轉，如果走到底退回來往左轉』

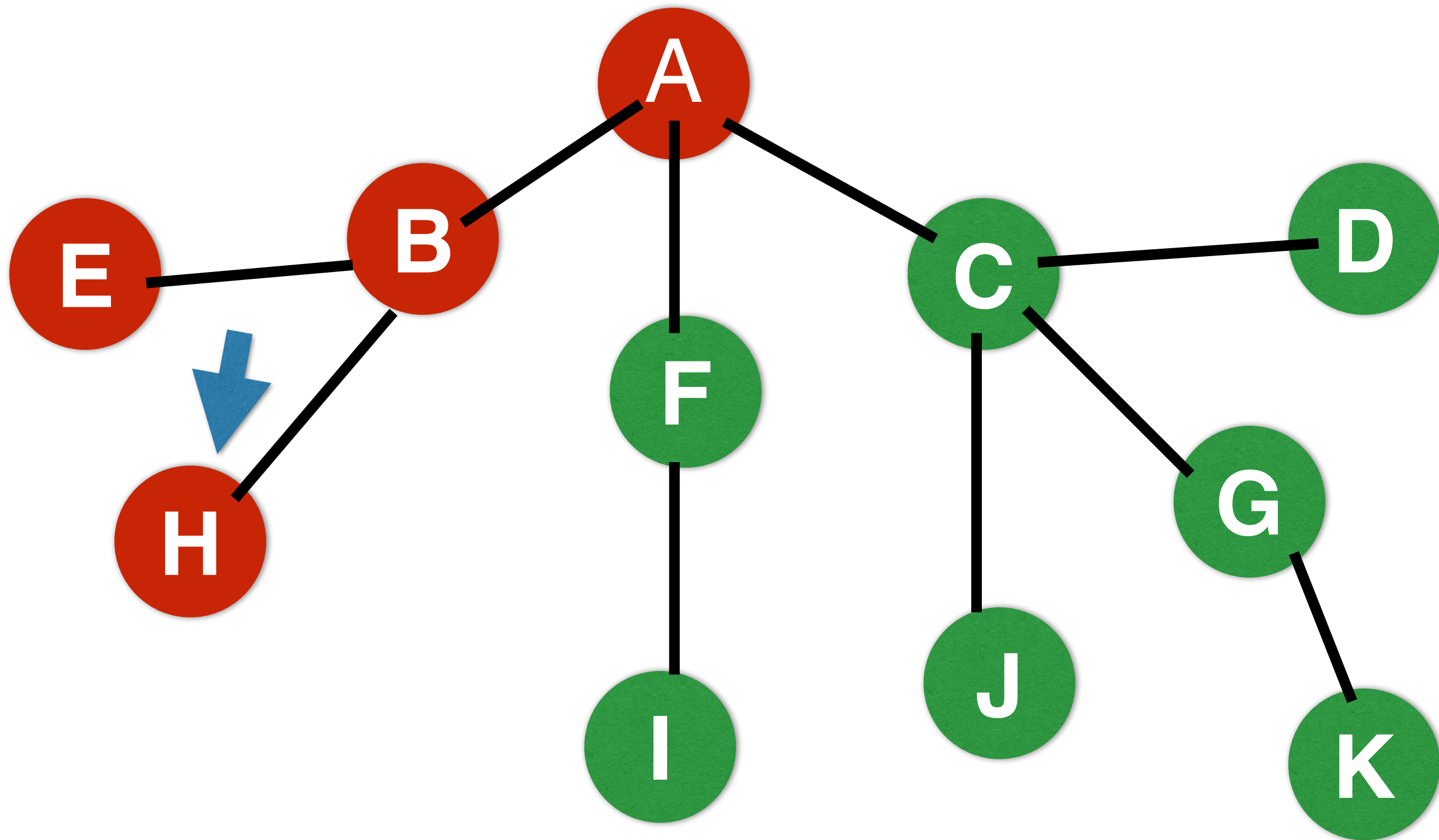


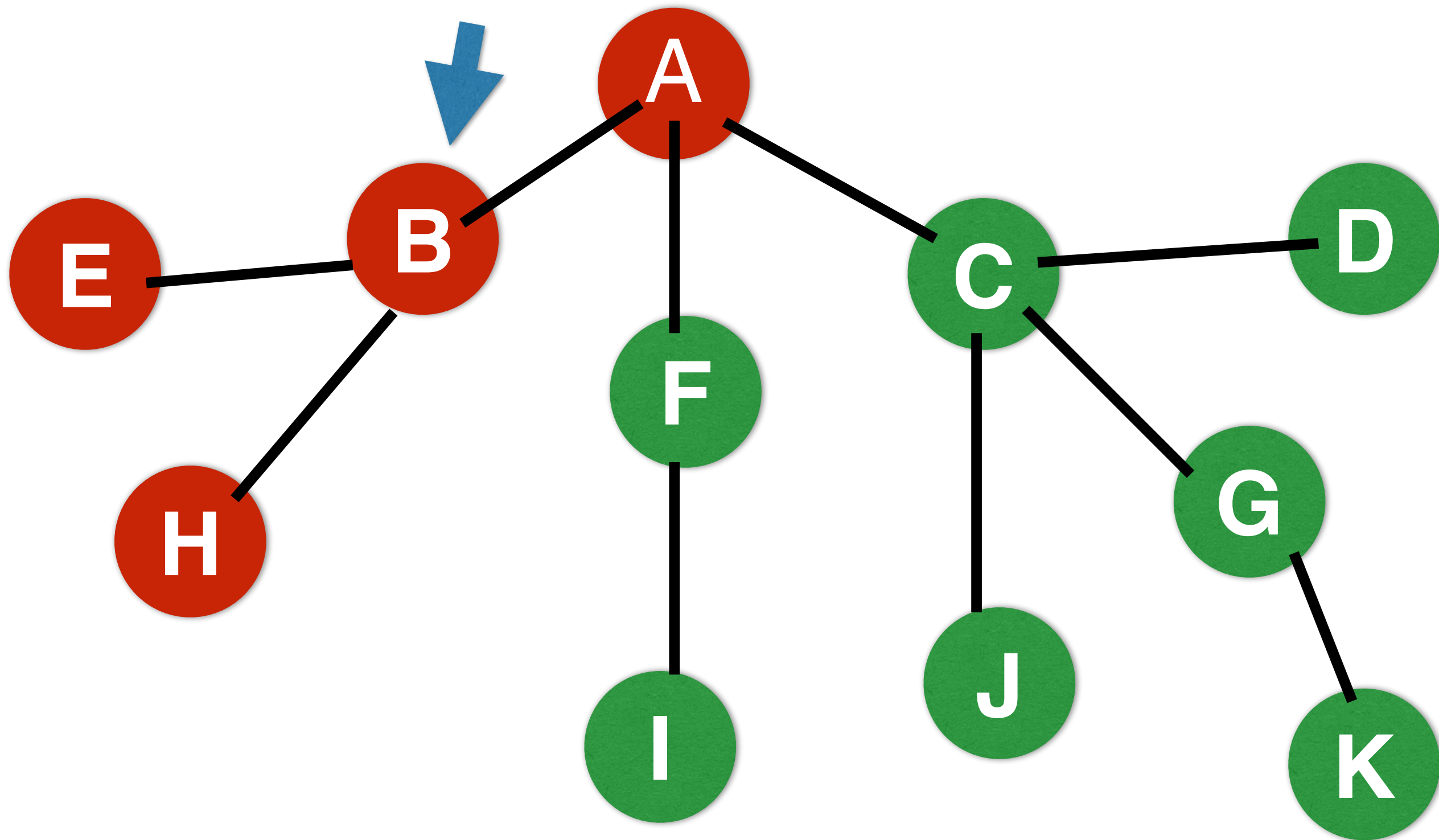


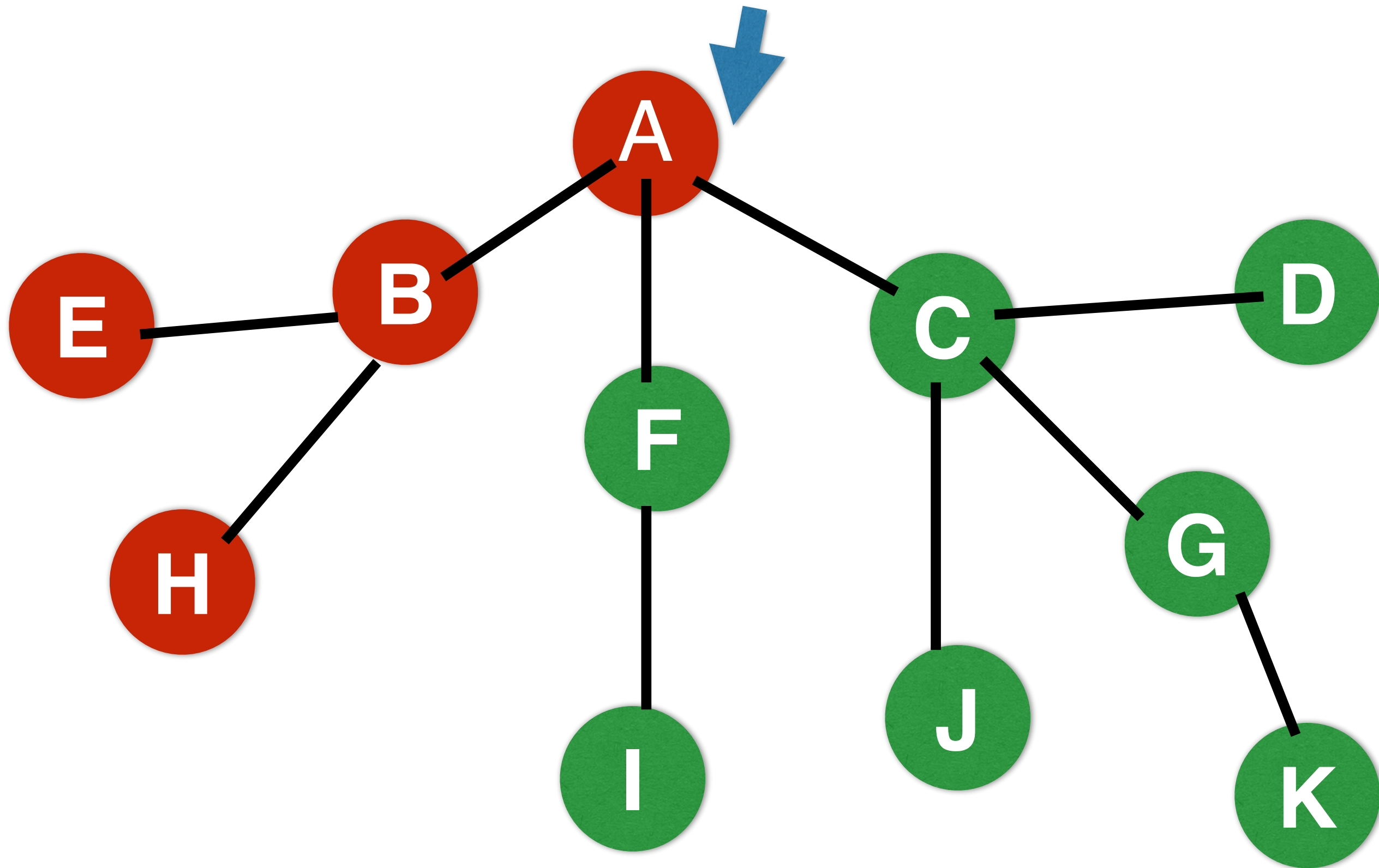


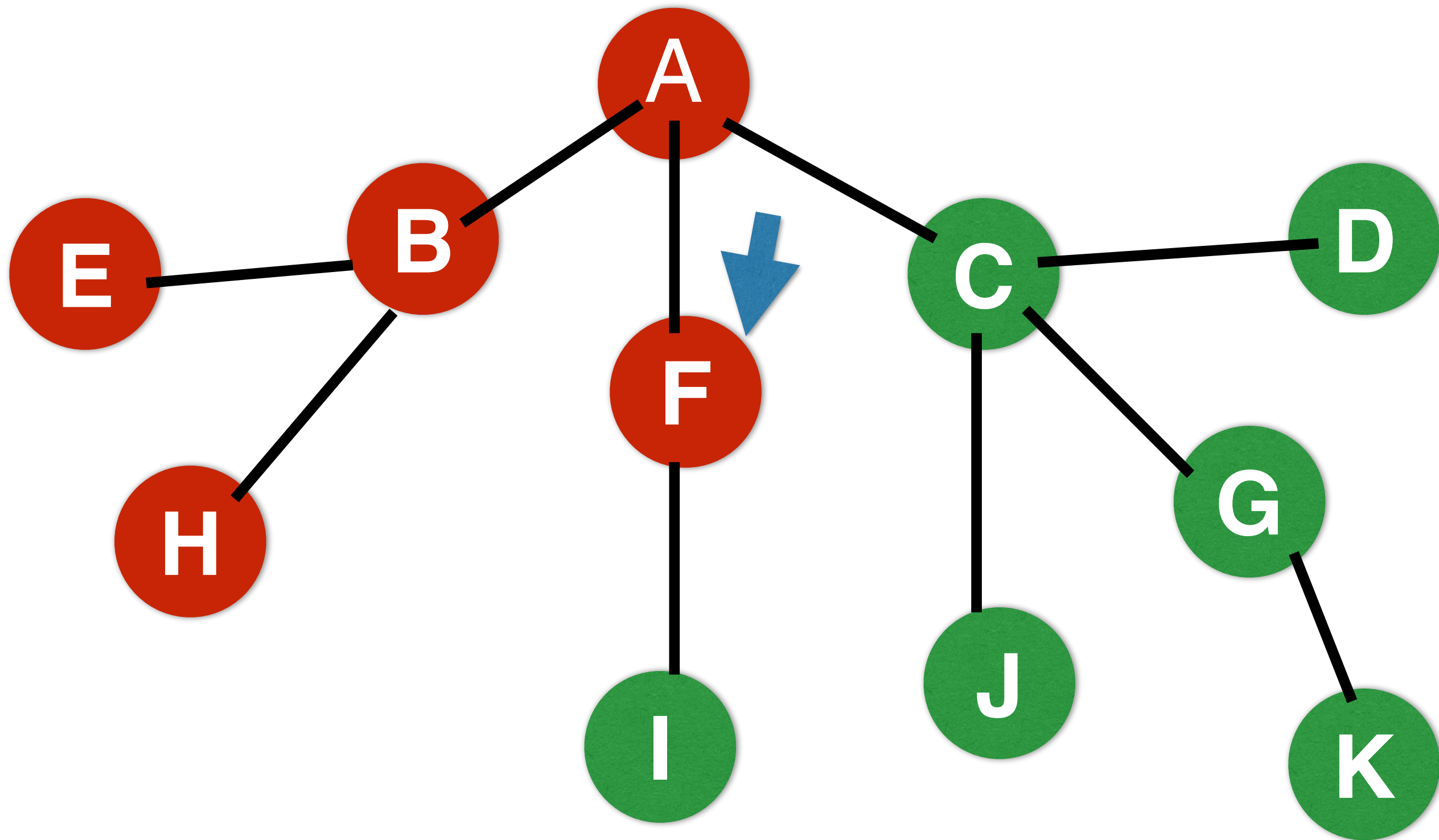


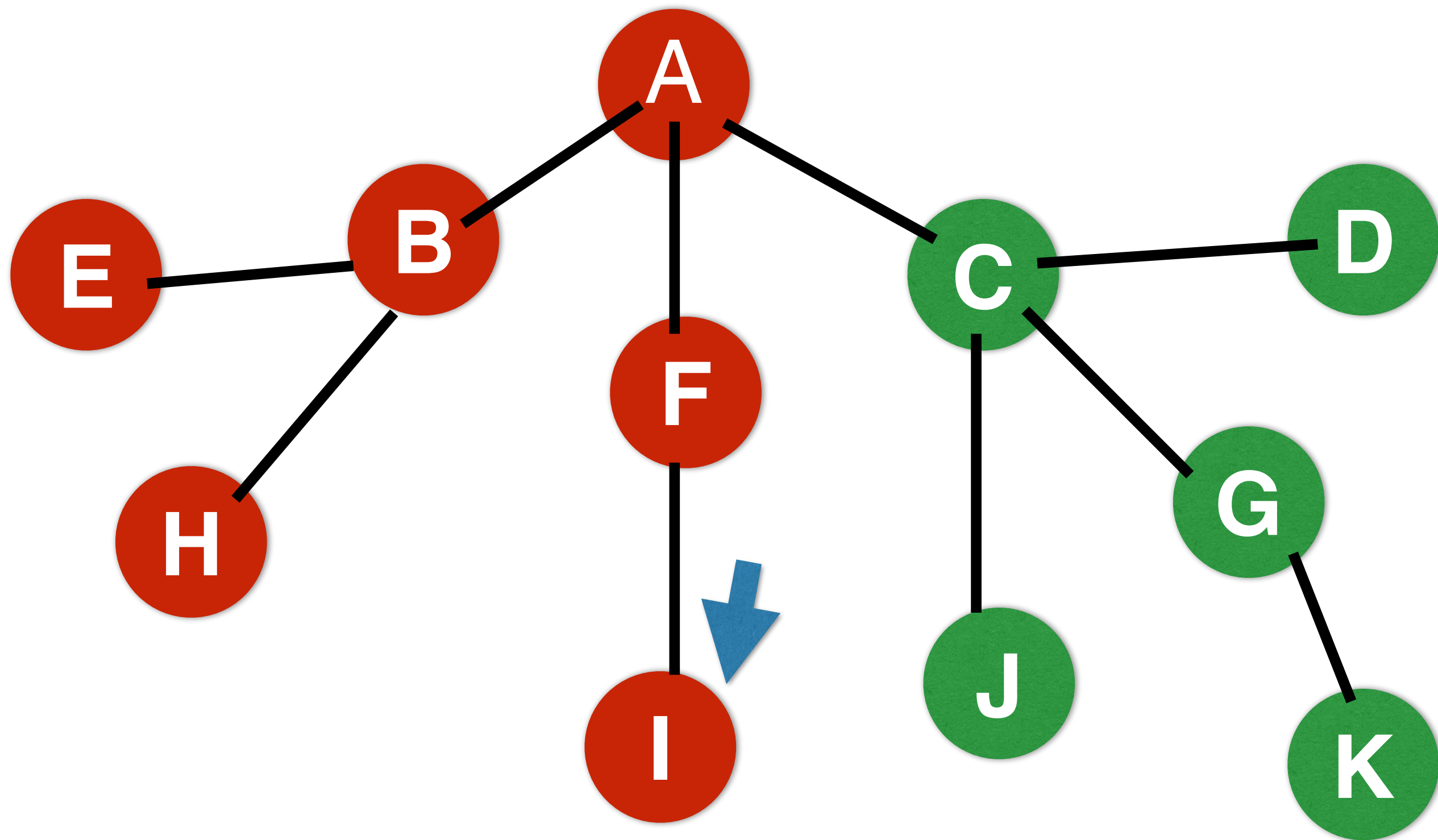


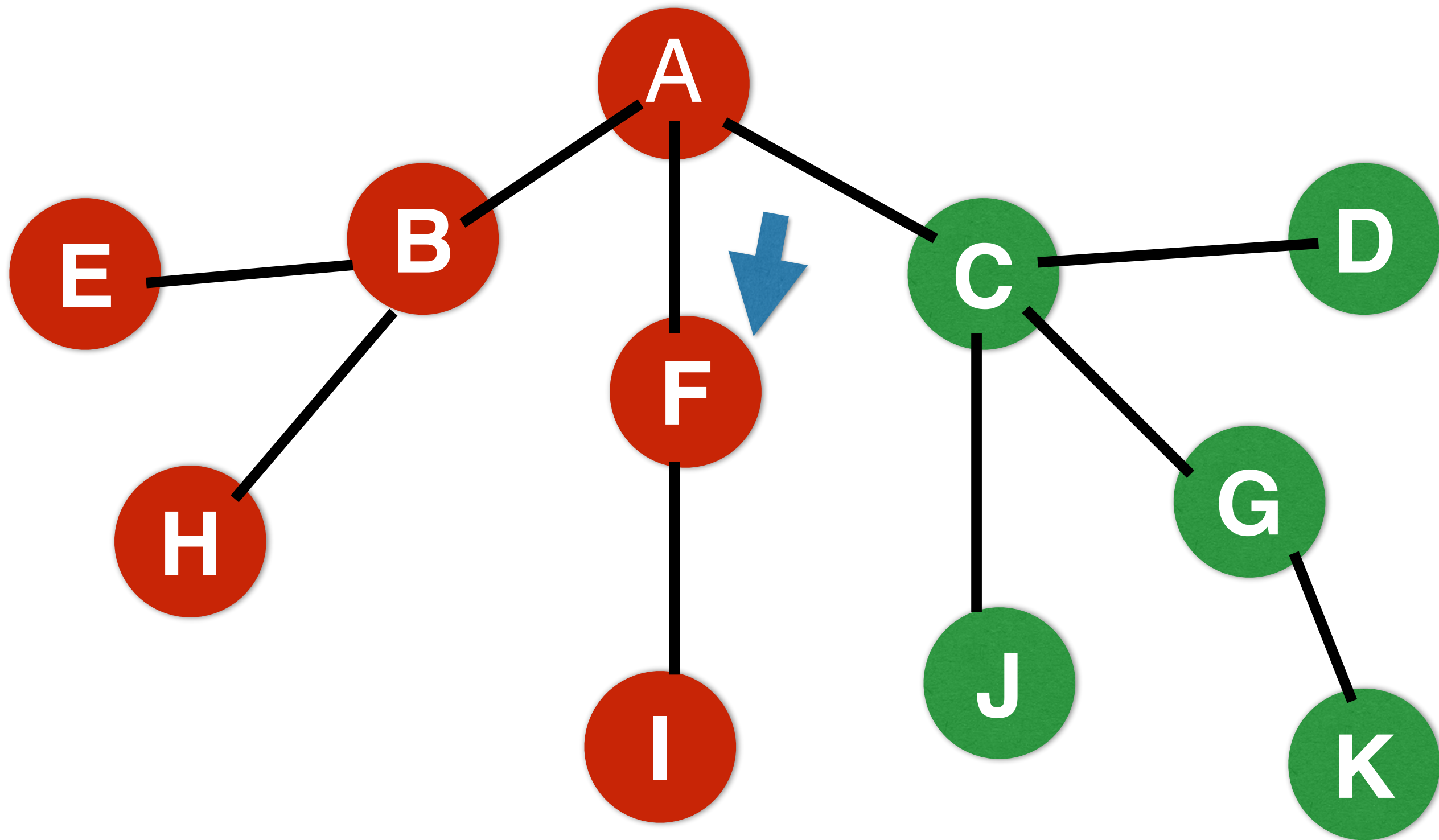


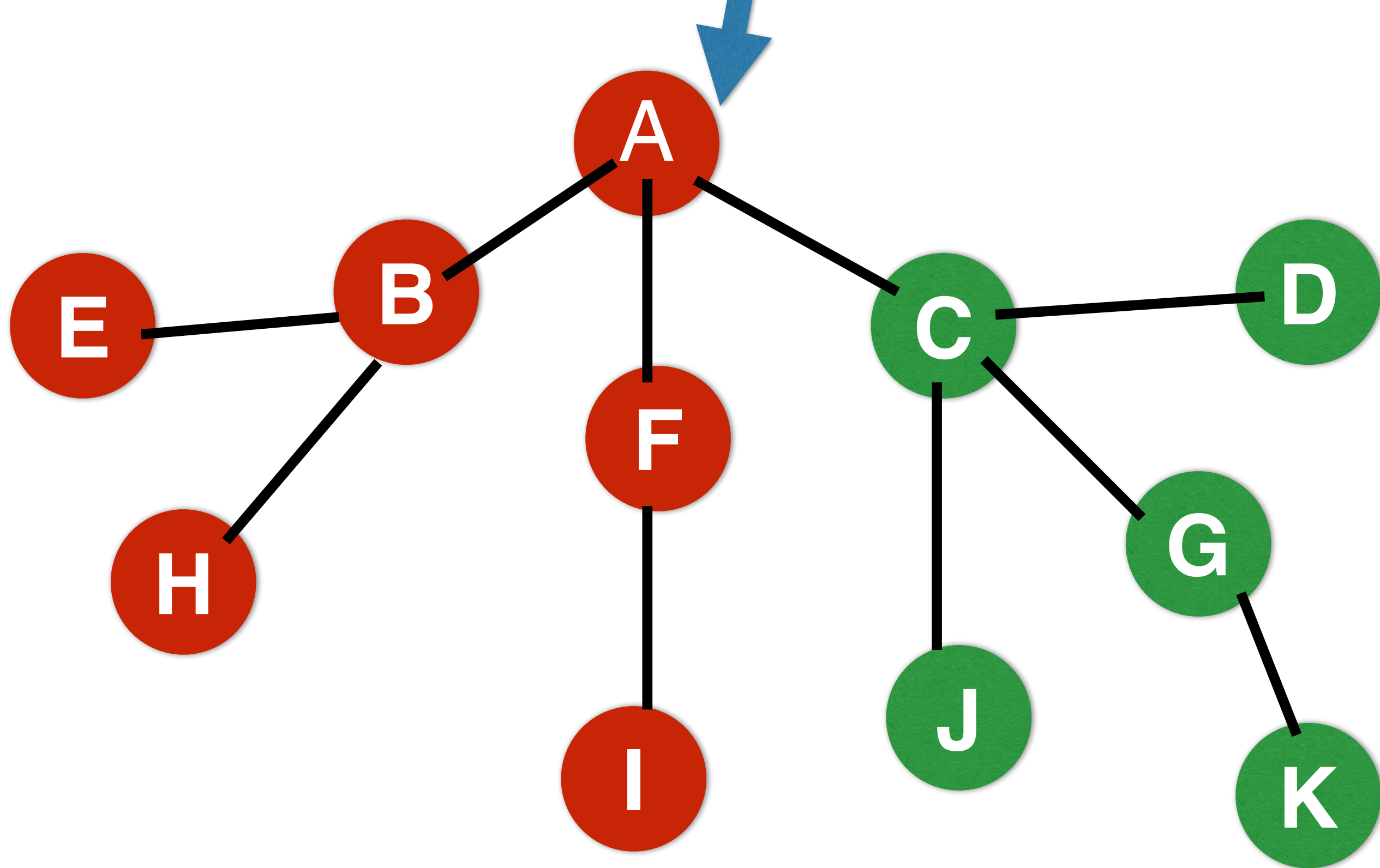


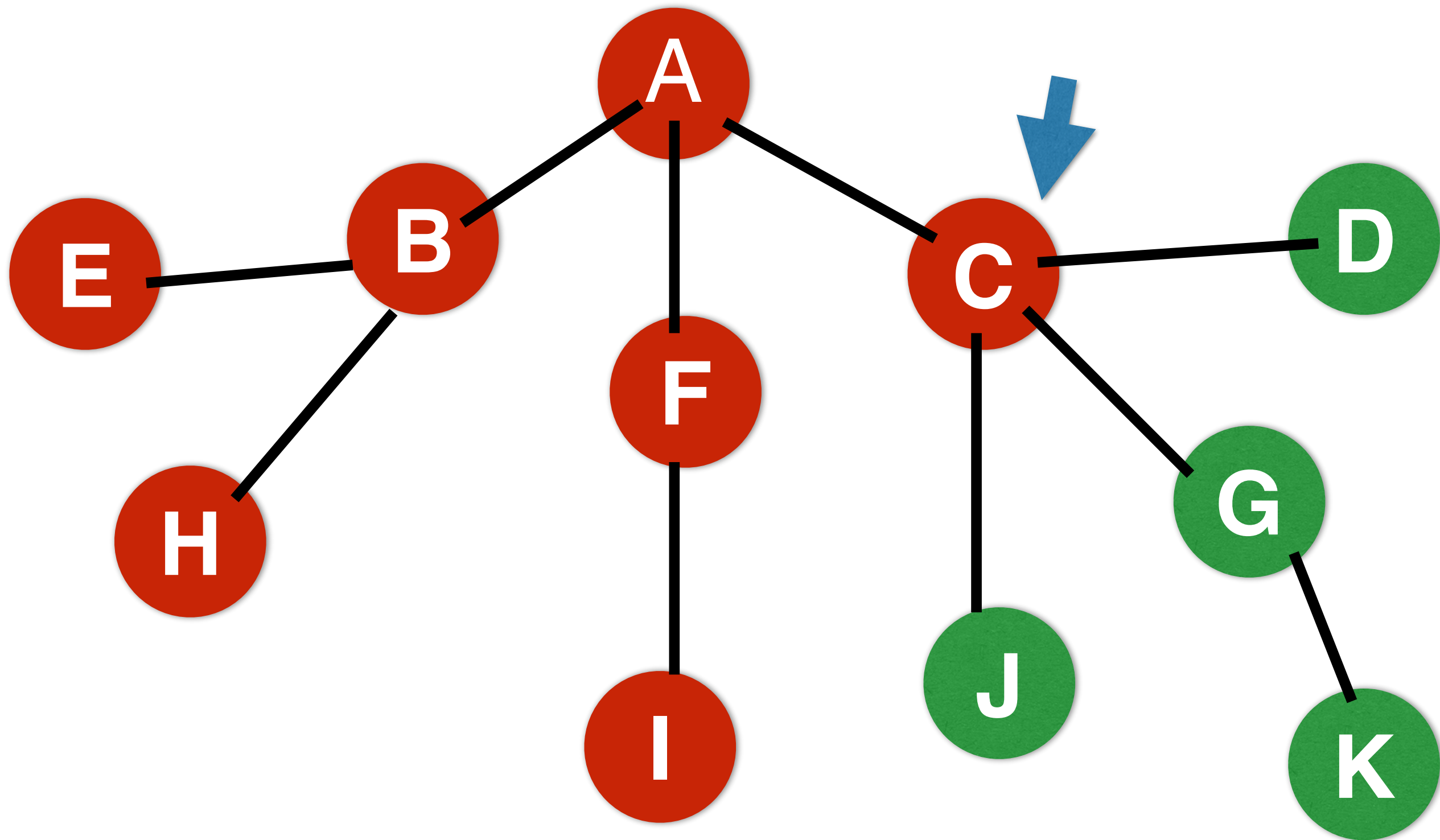


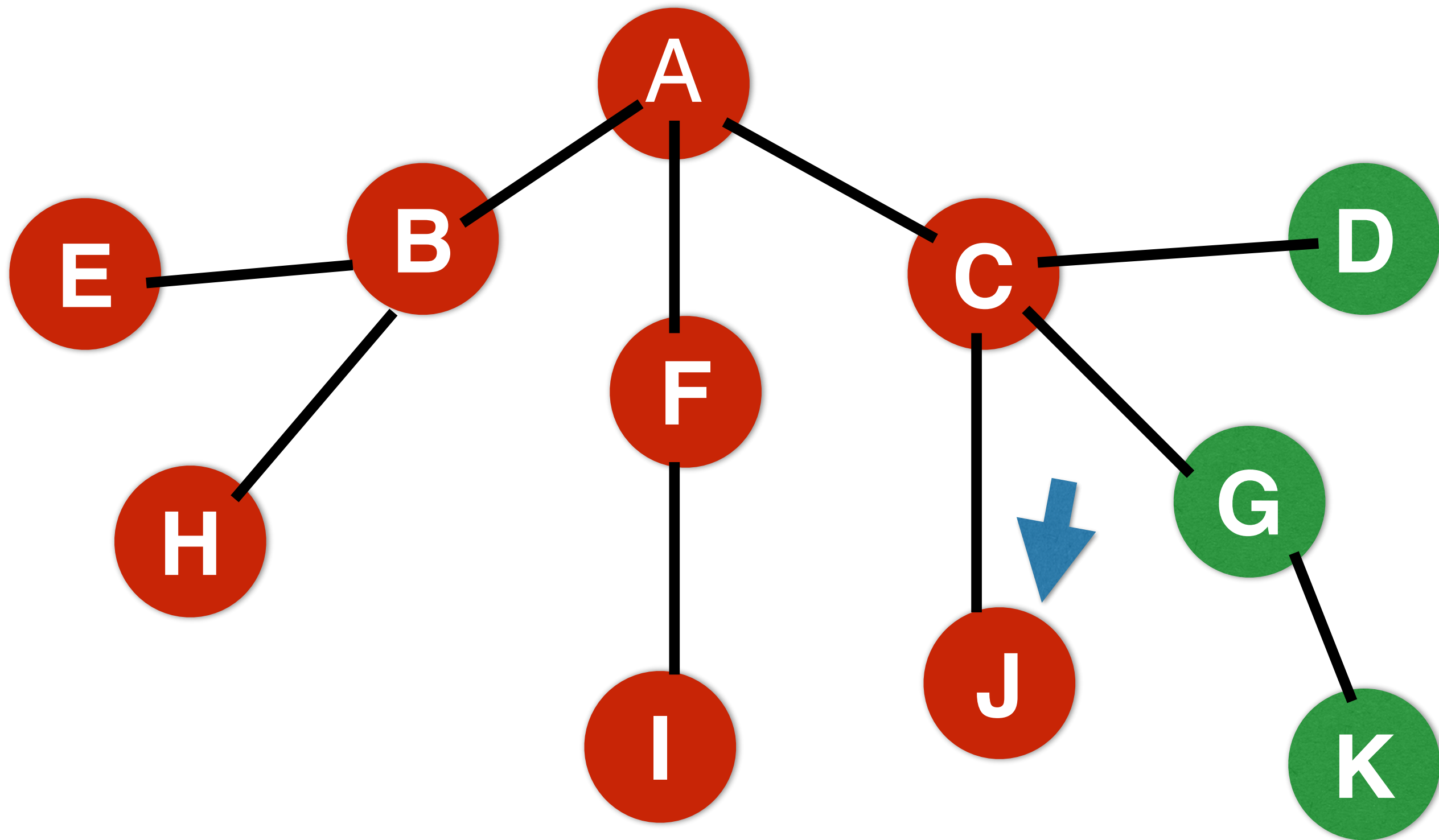


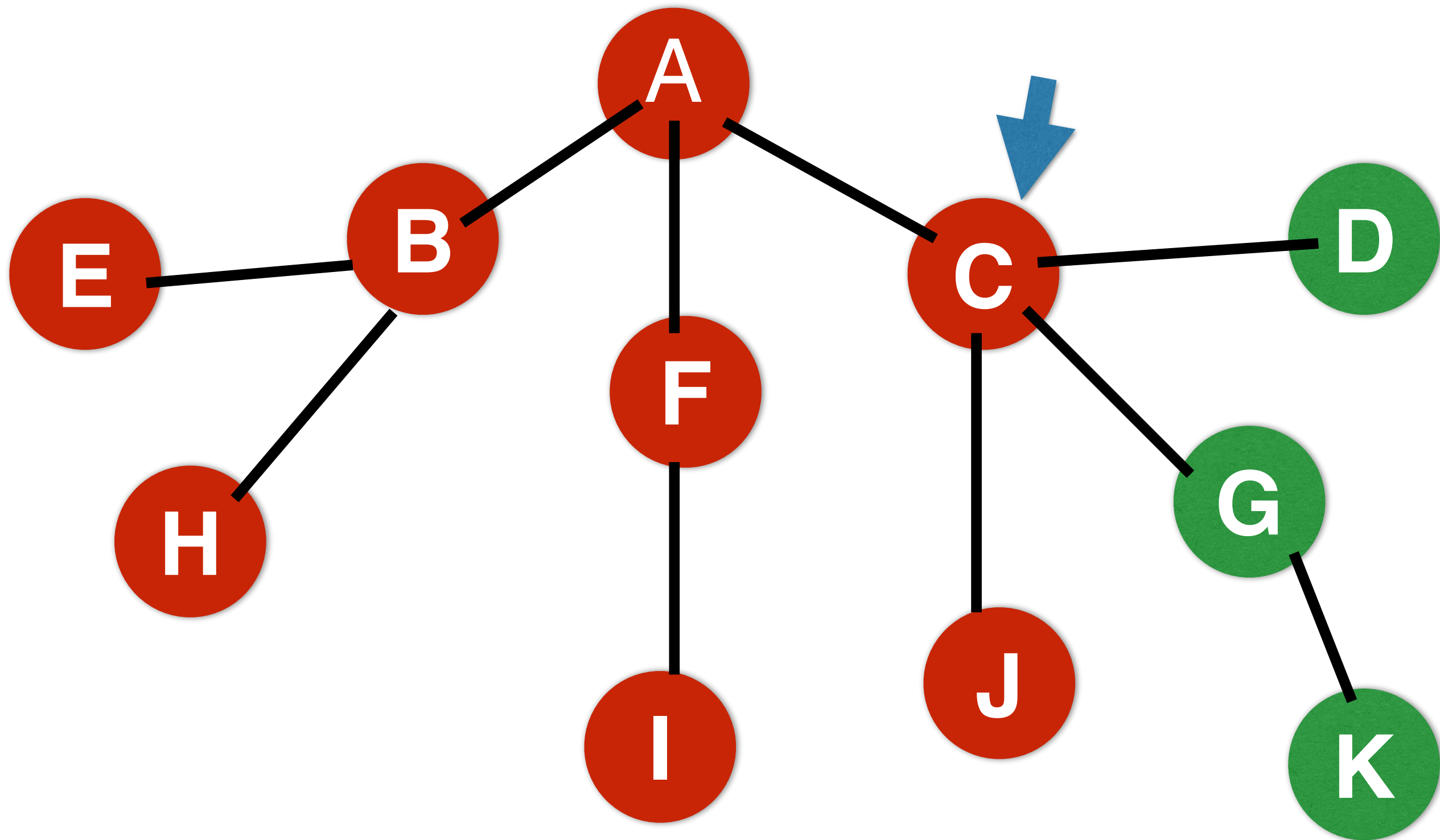


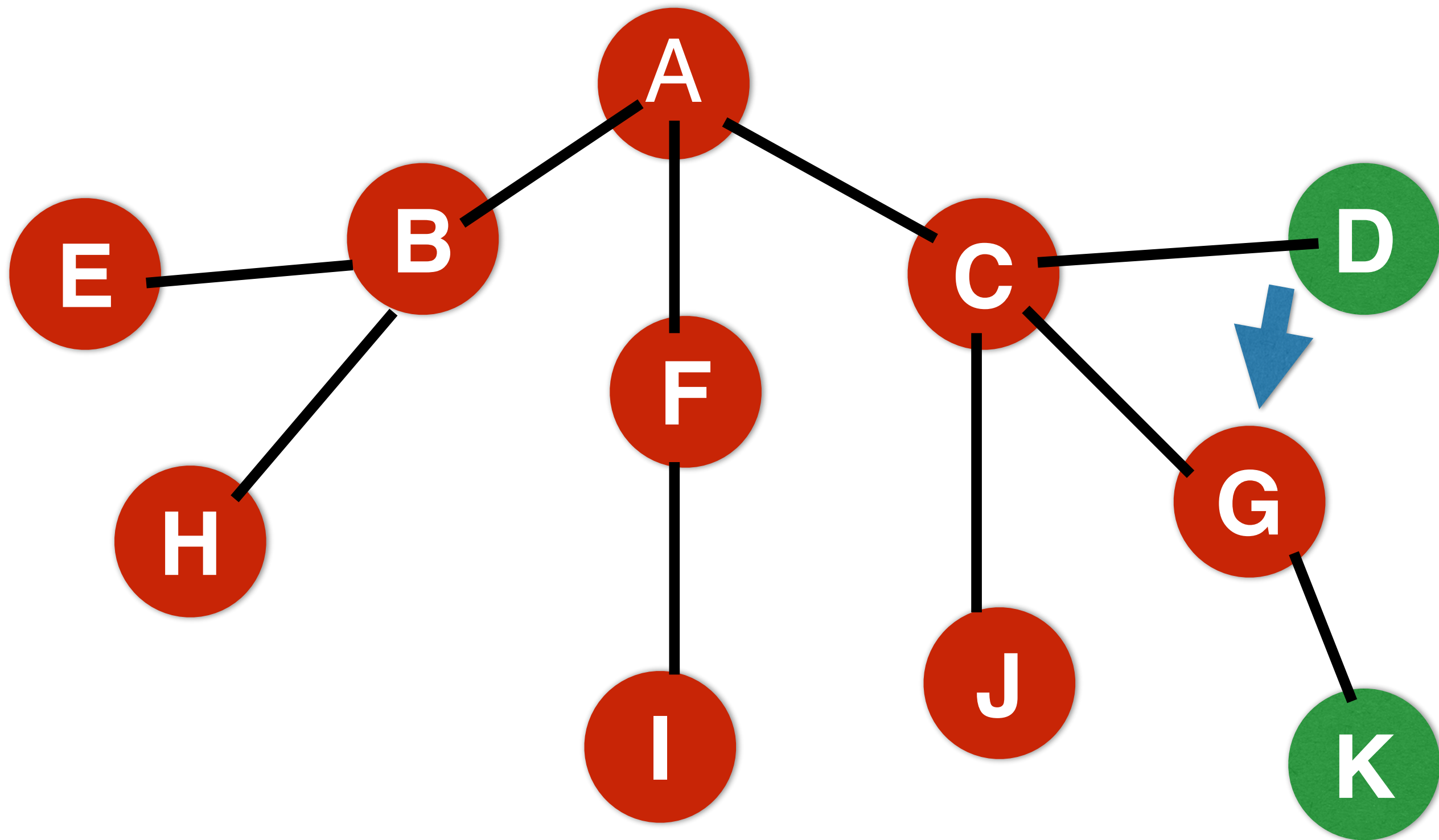


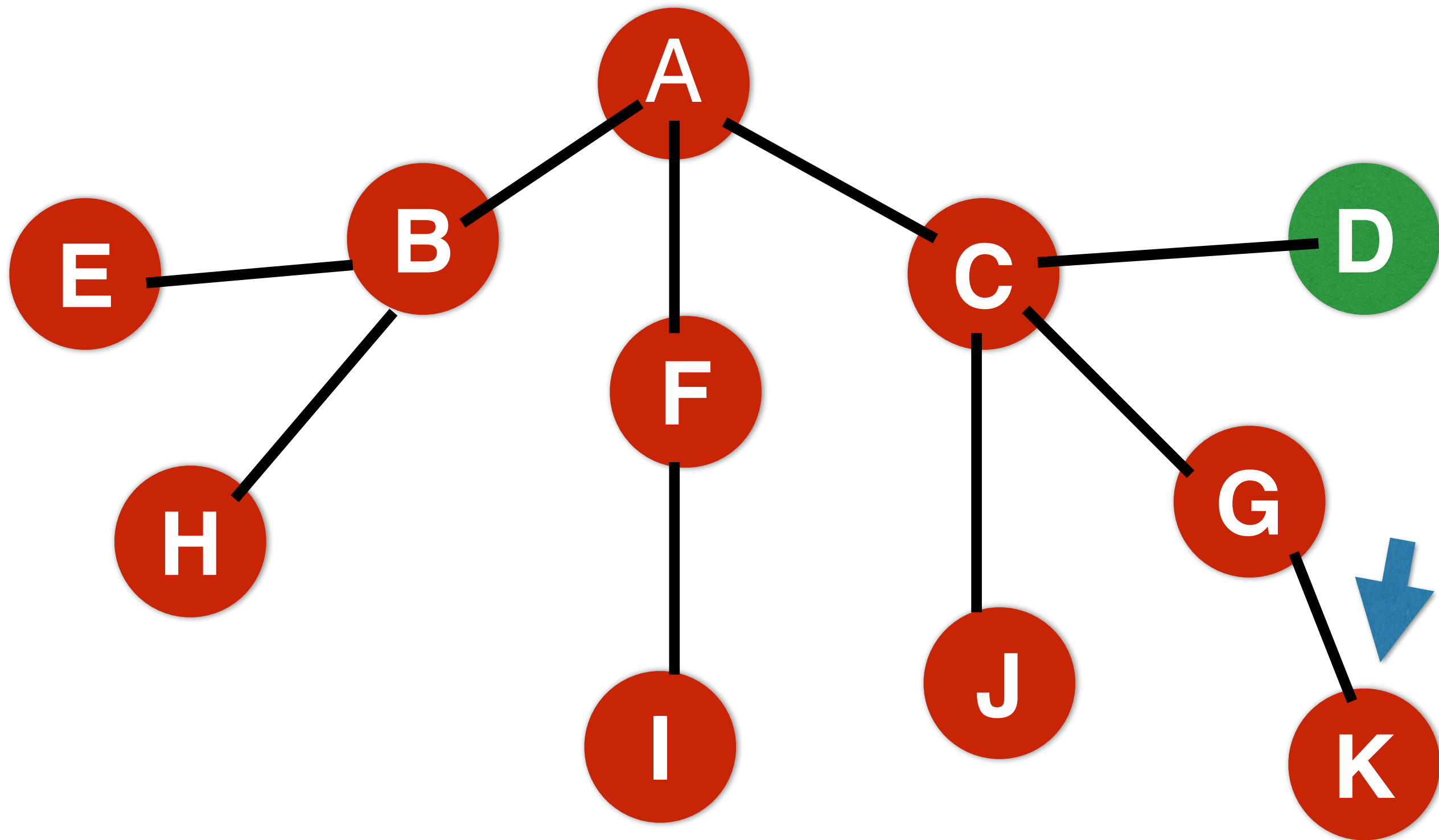


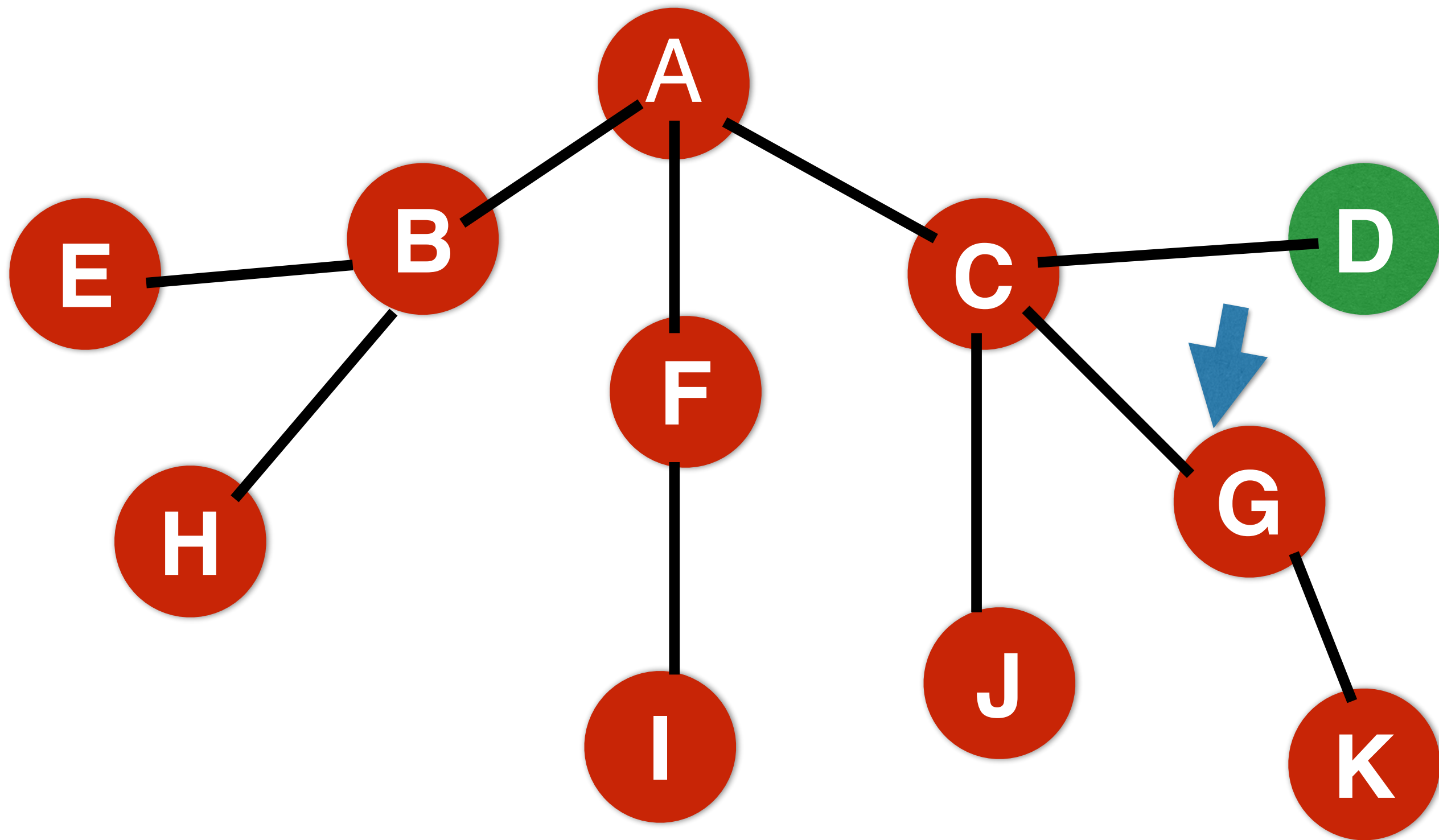


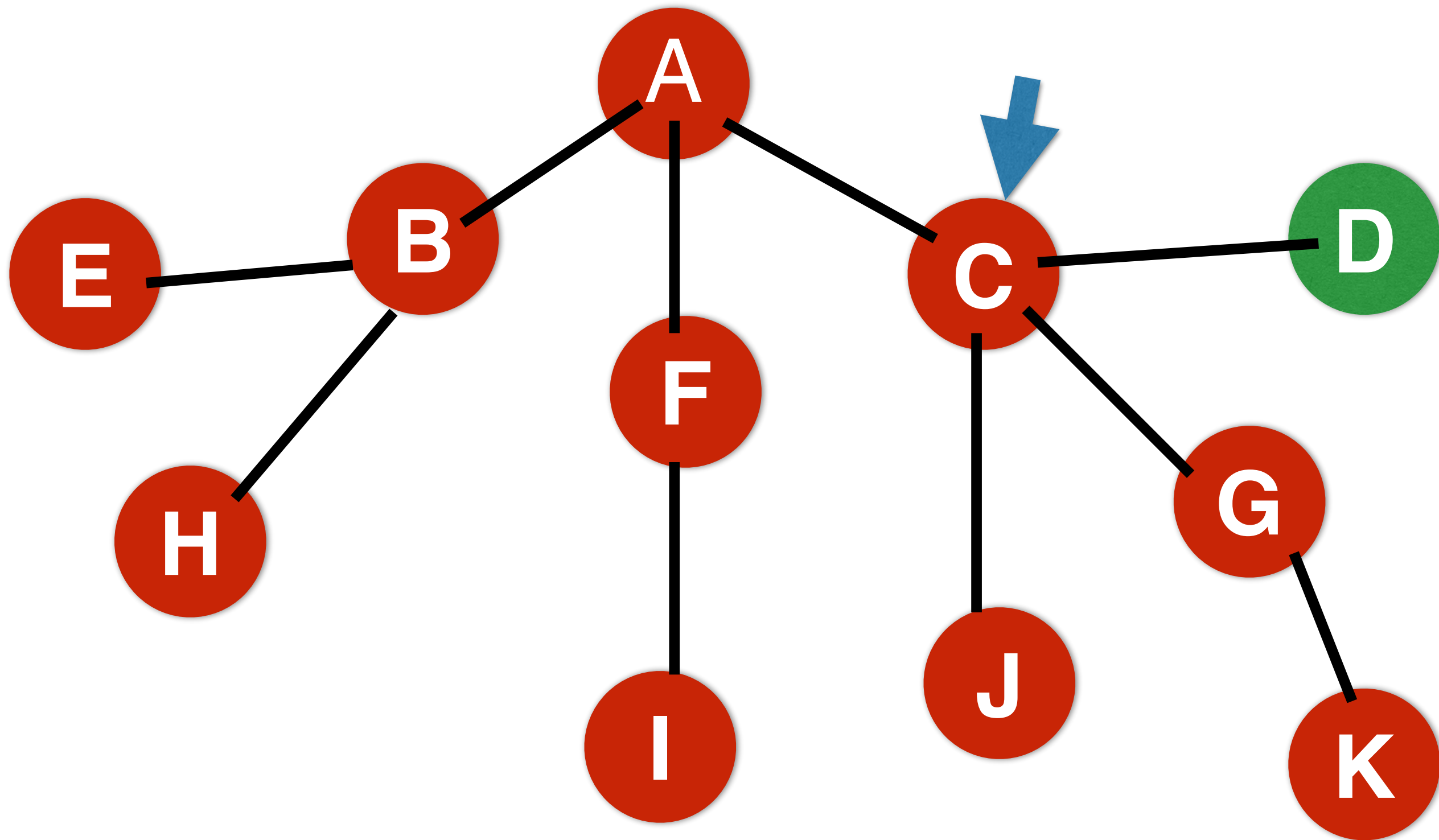


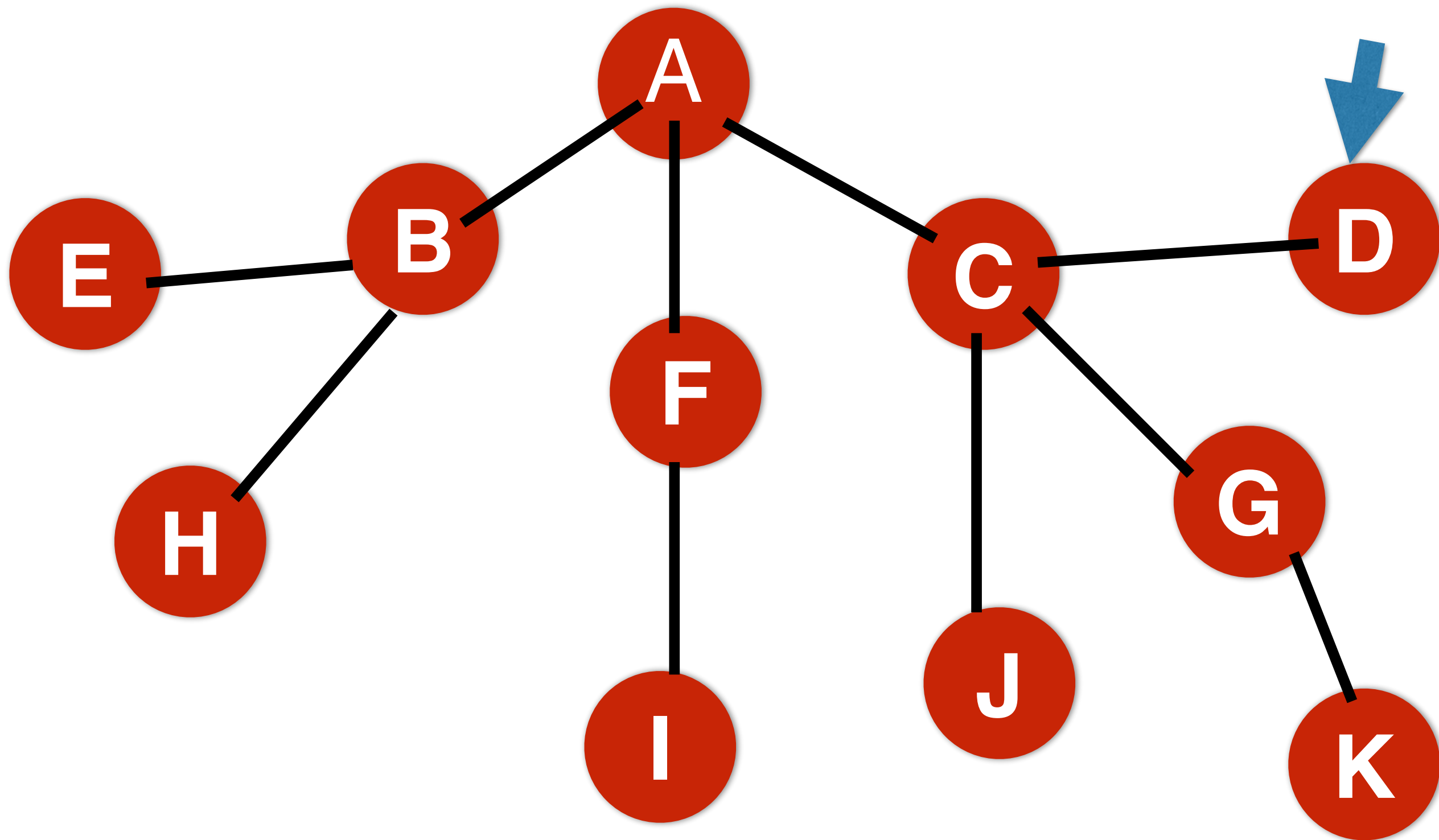


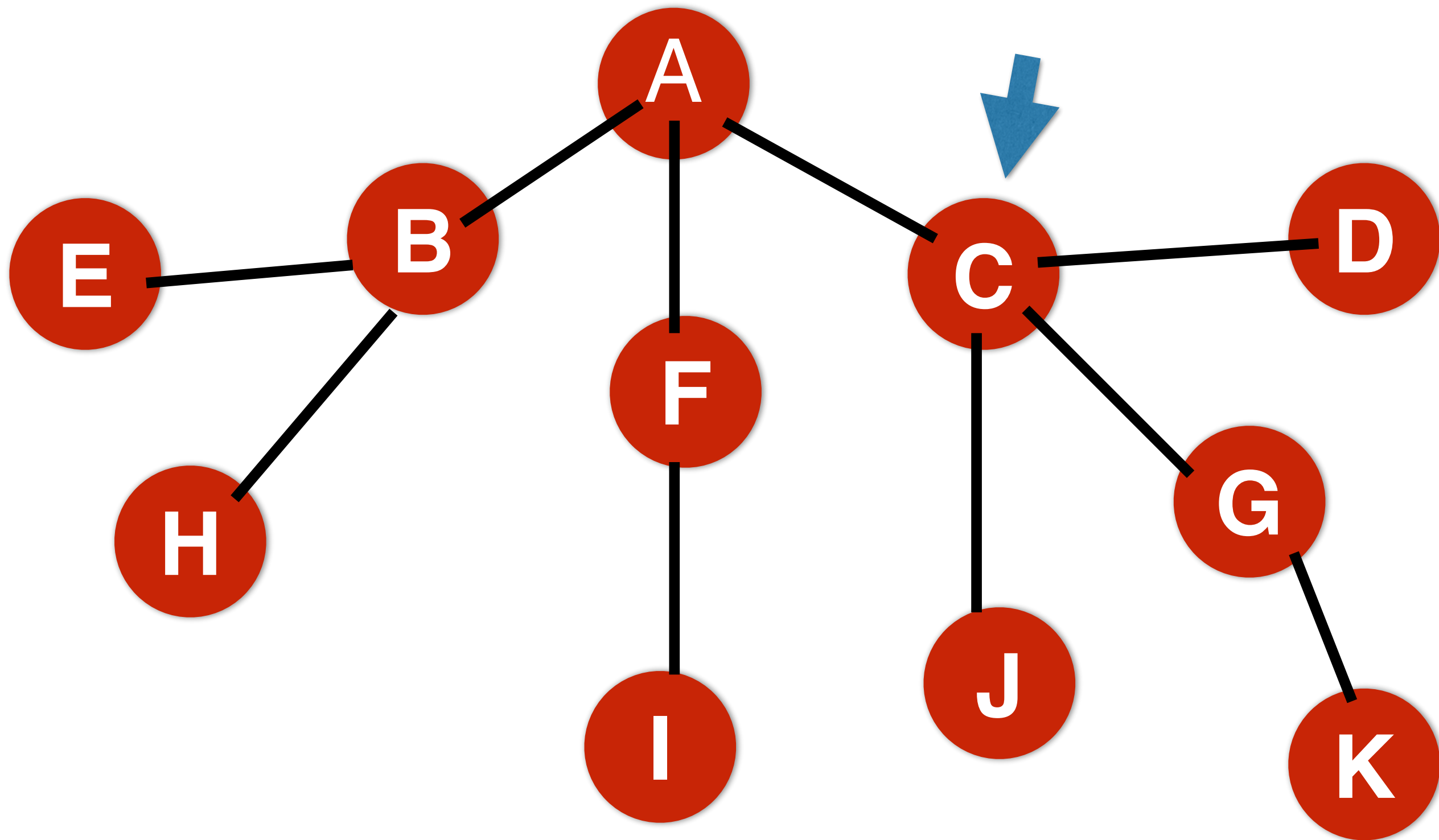


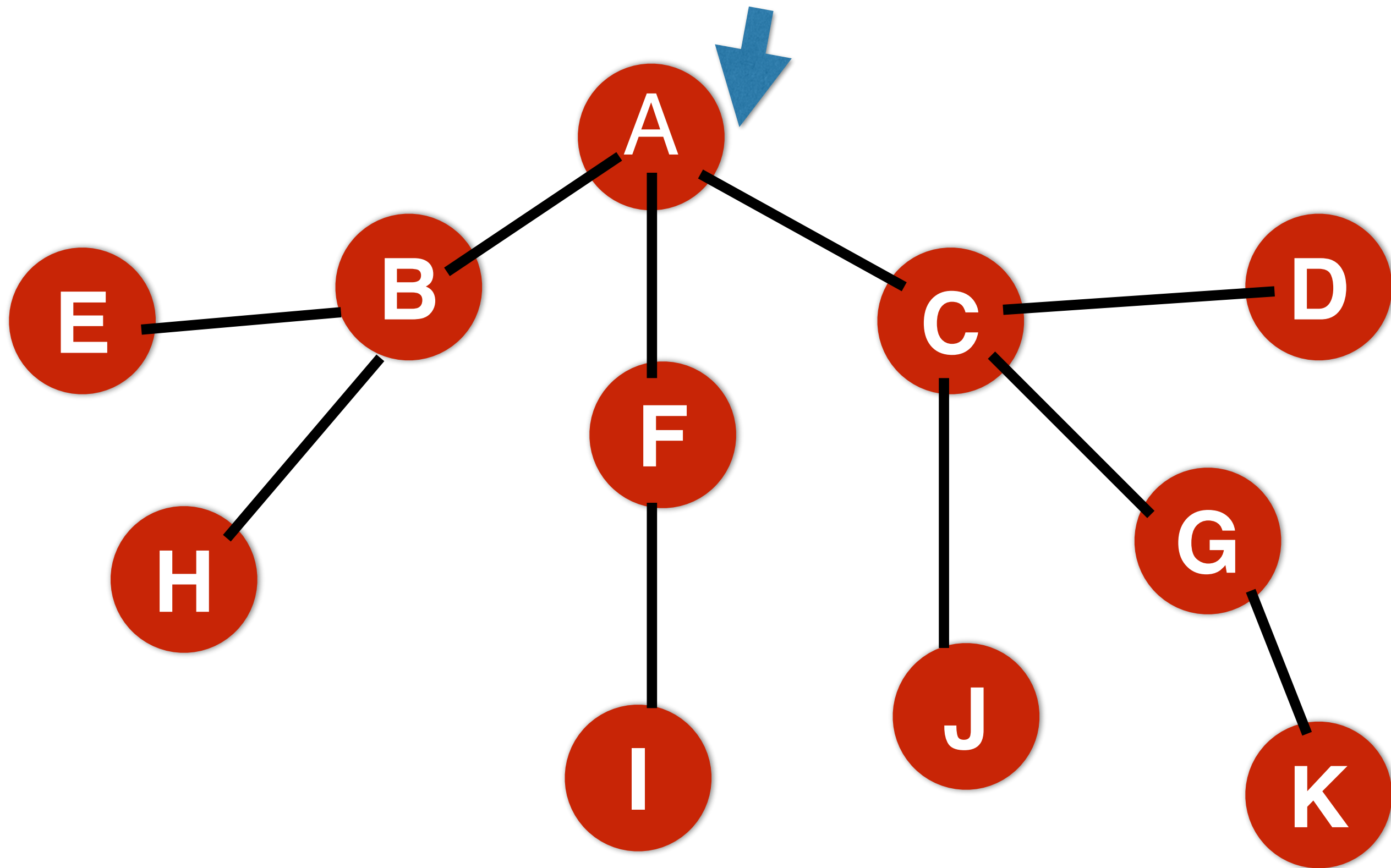








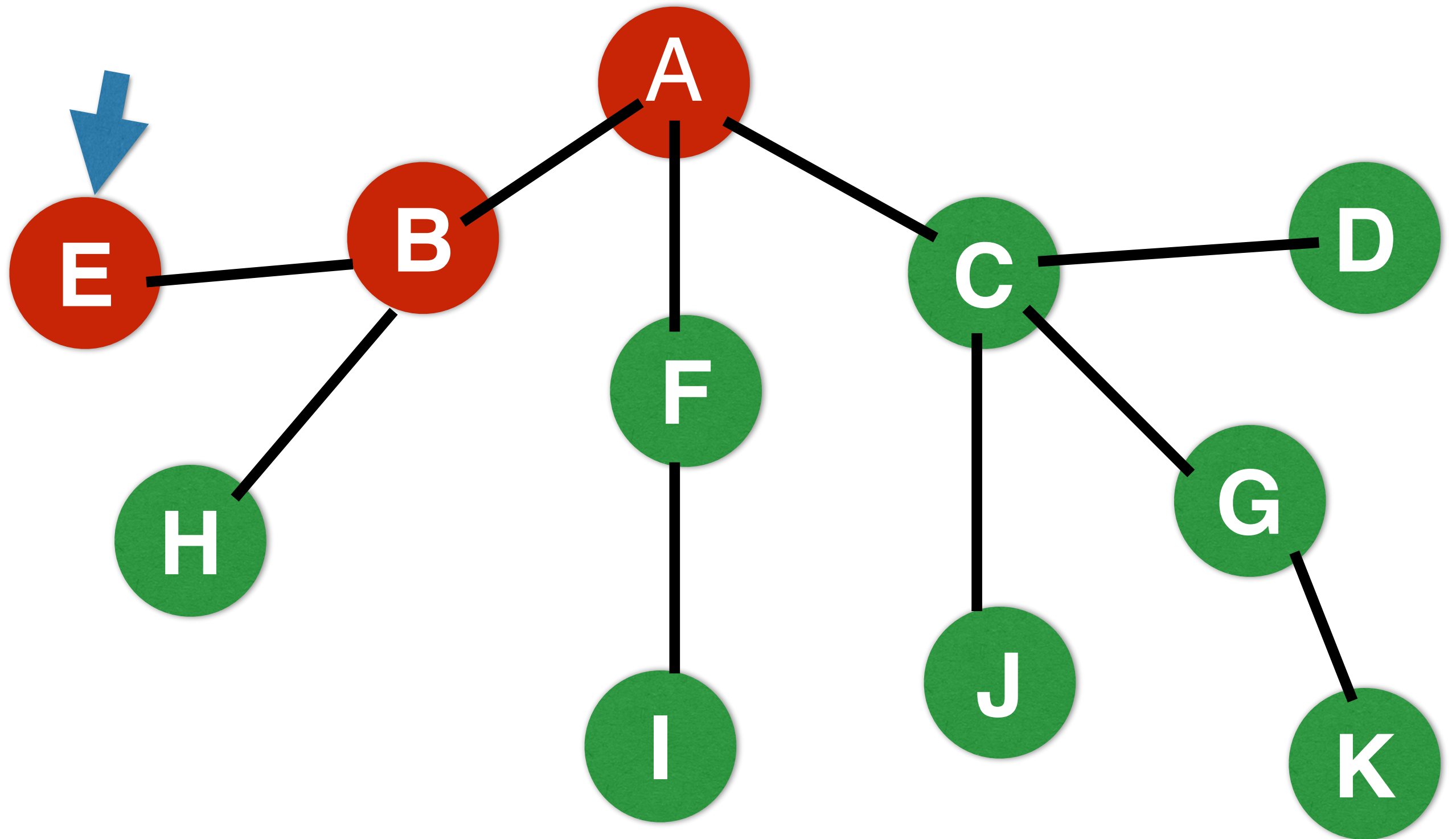




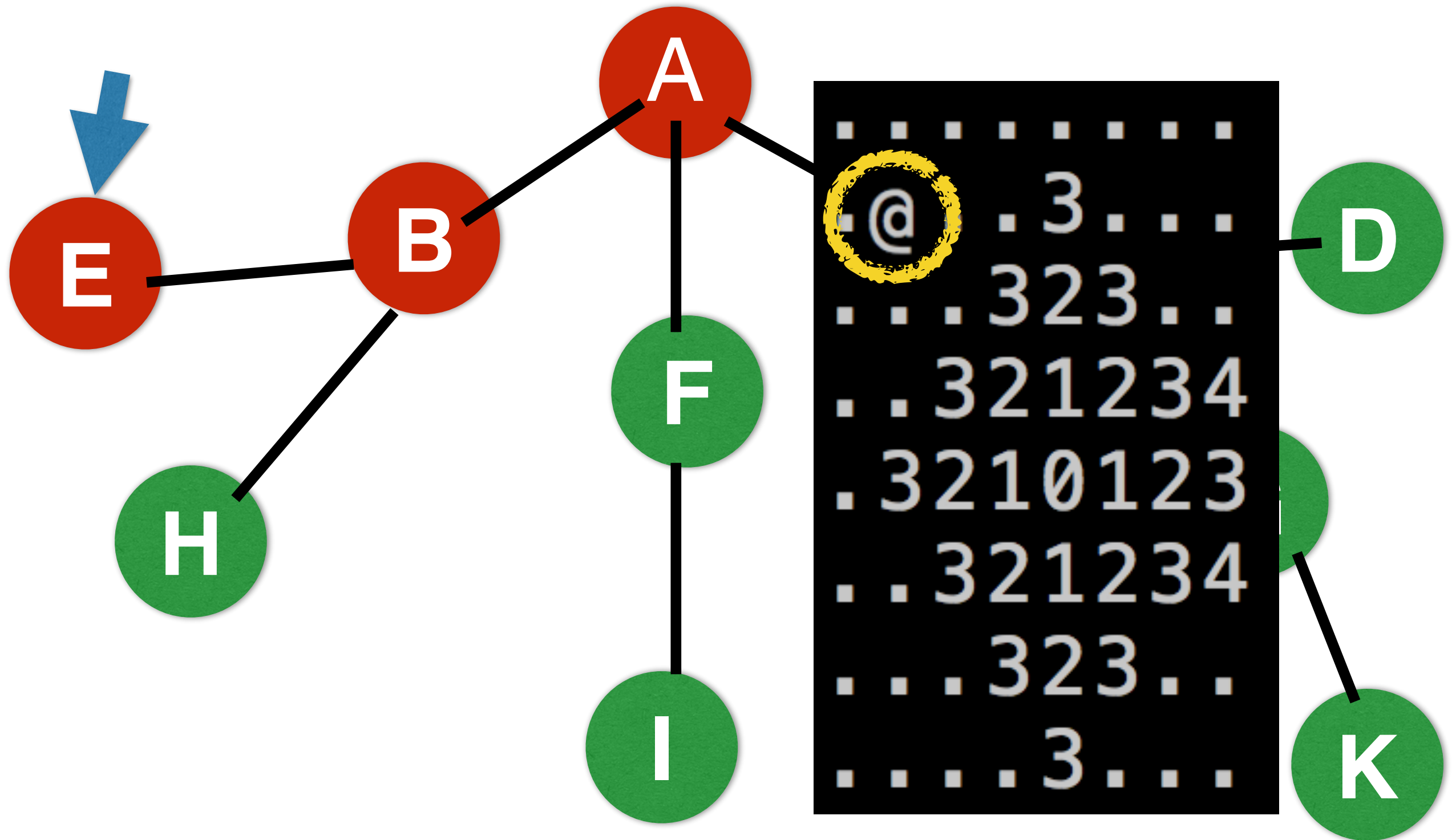
如何實作DFS?

想想遞回：D

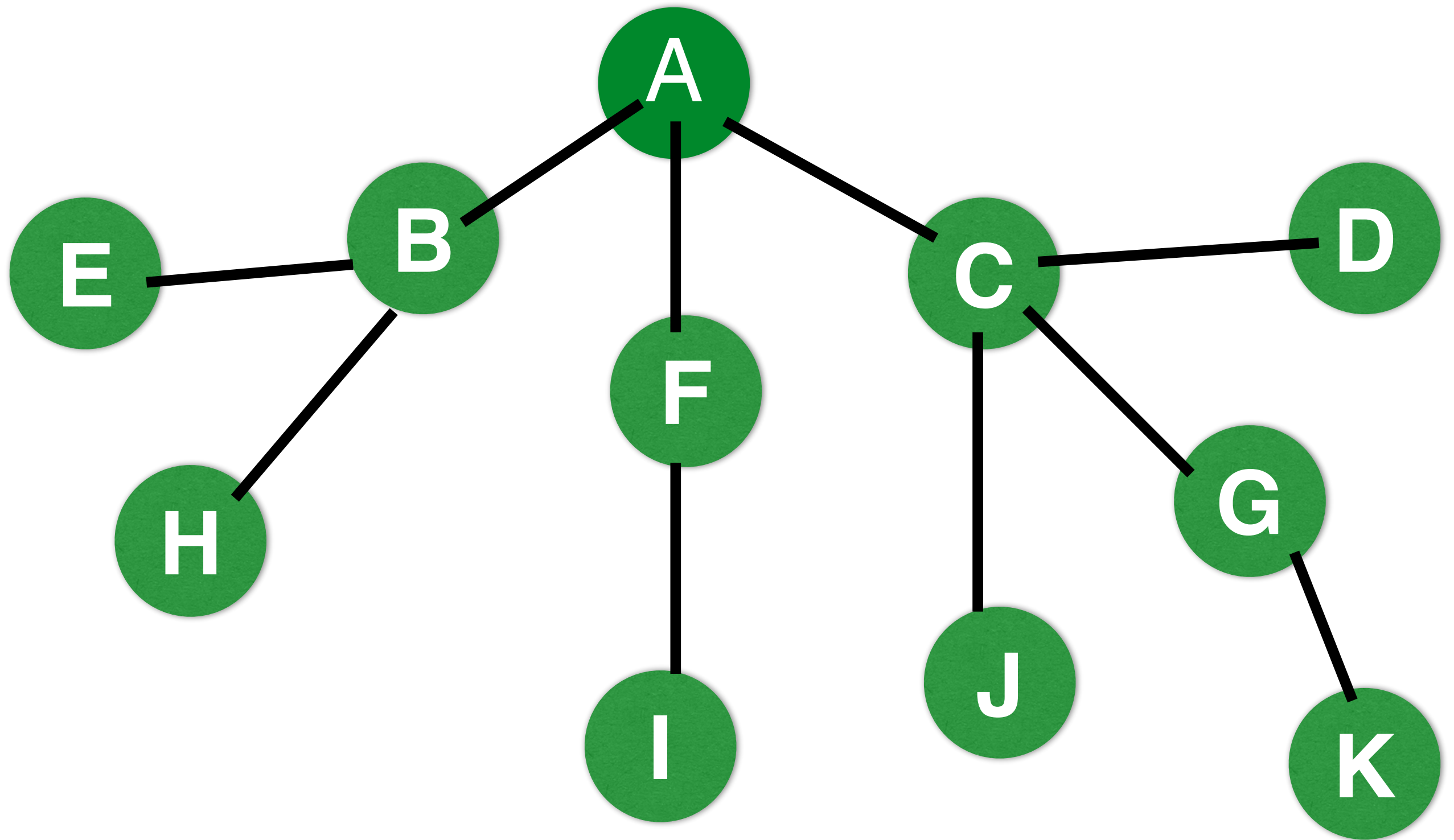
可是他一次就衝到底了..



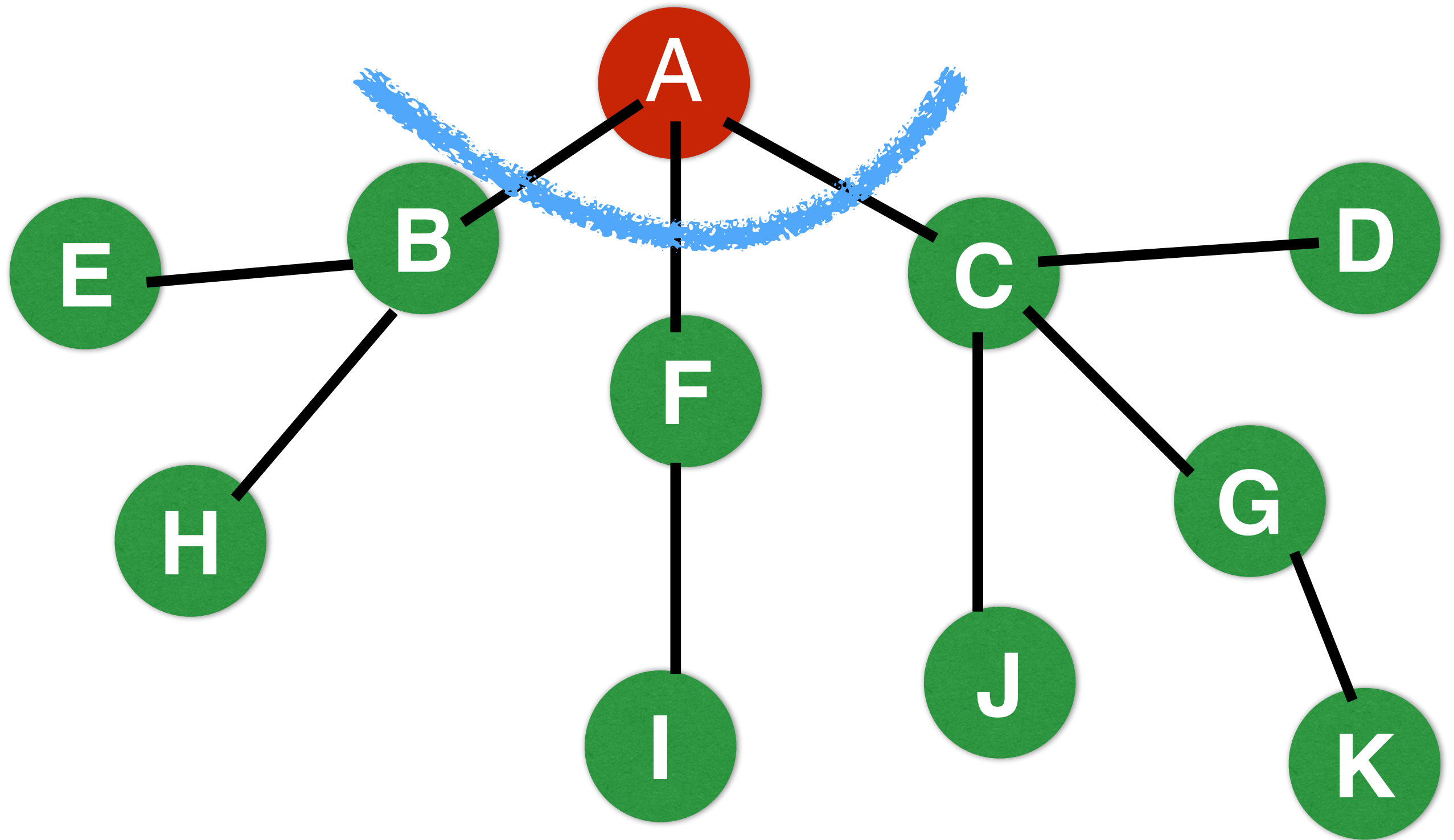
要怎麼做到像是觀察到的結果...



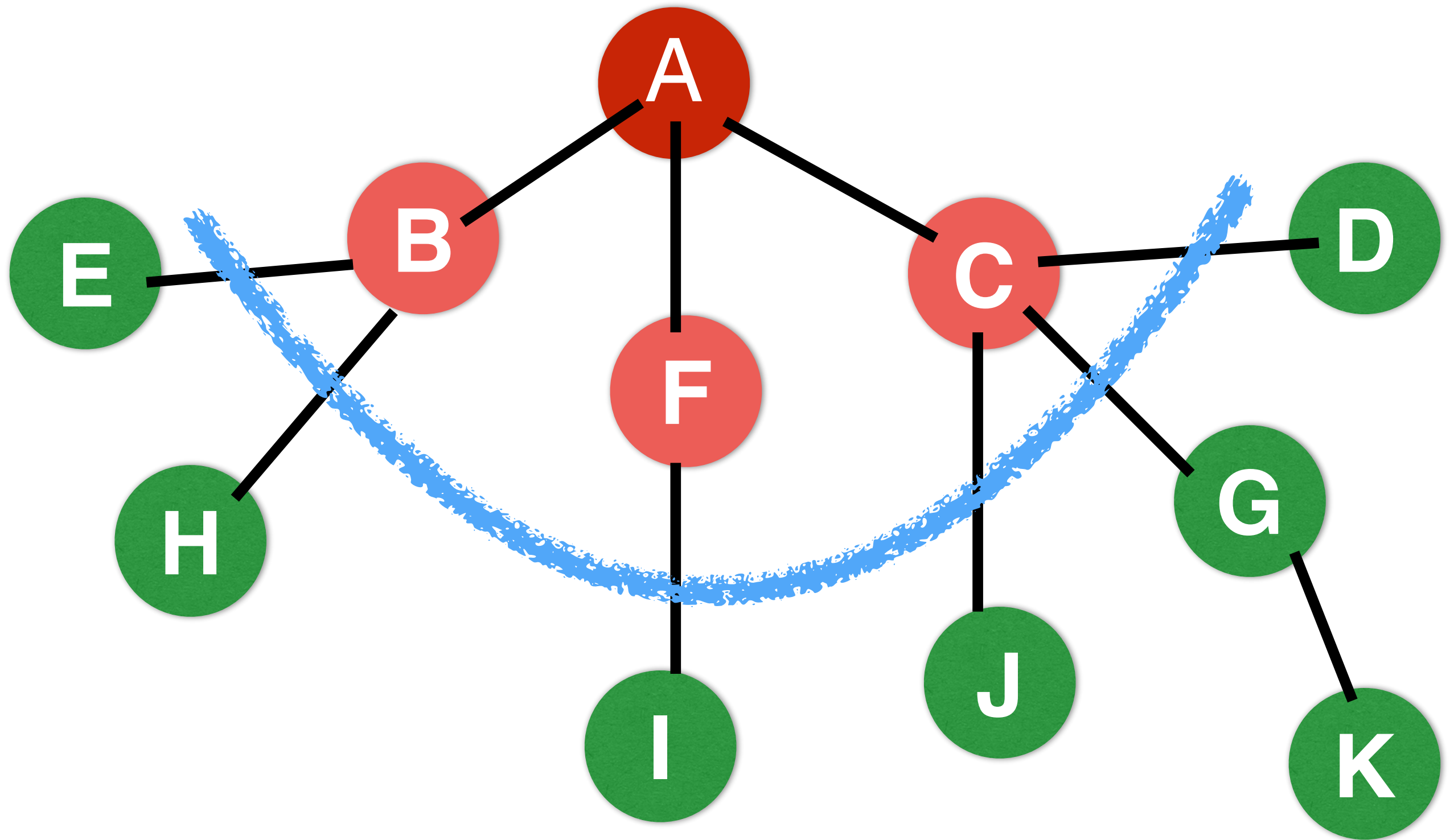
限制他的範圍！！



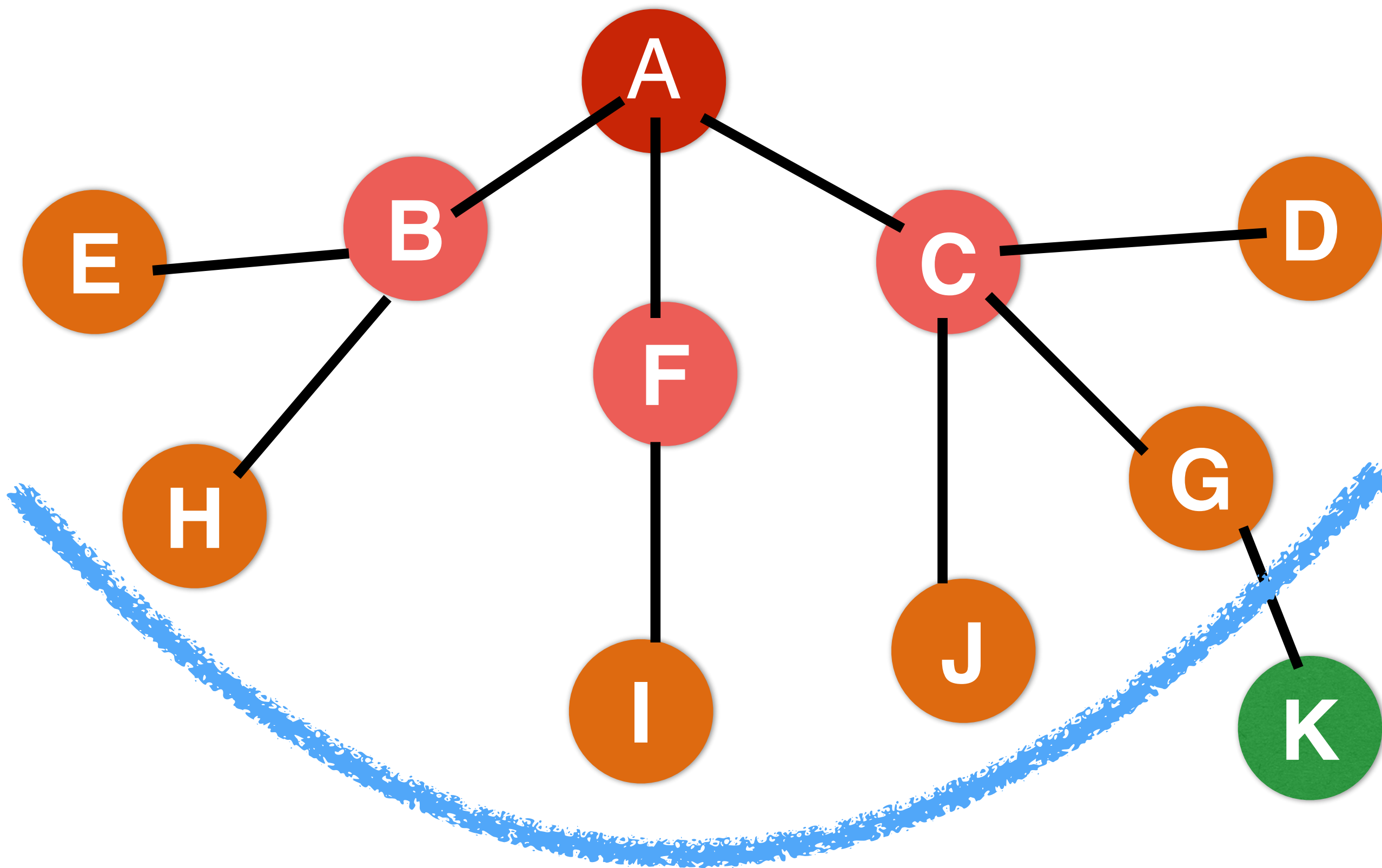
限制他的範圍！！深度1



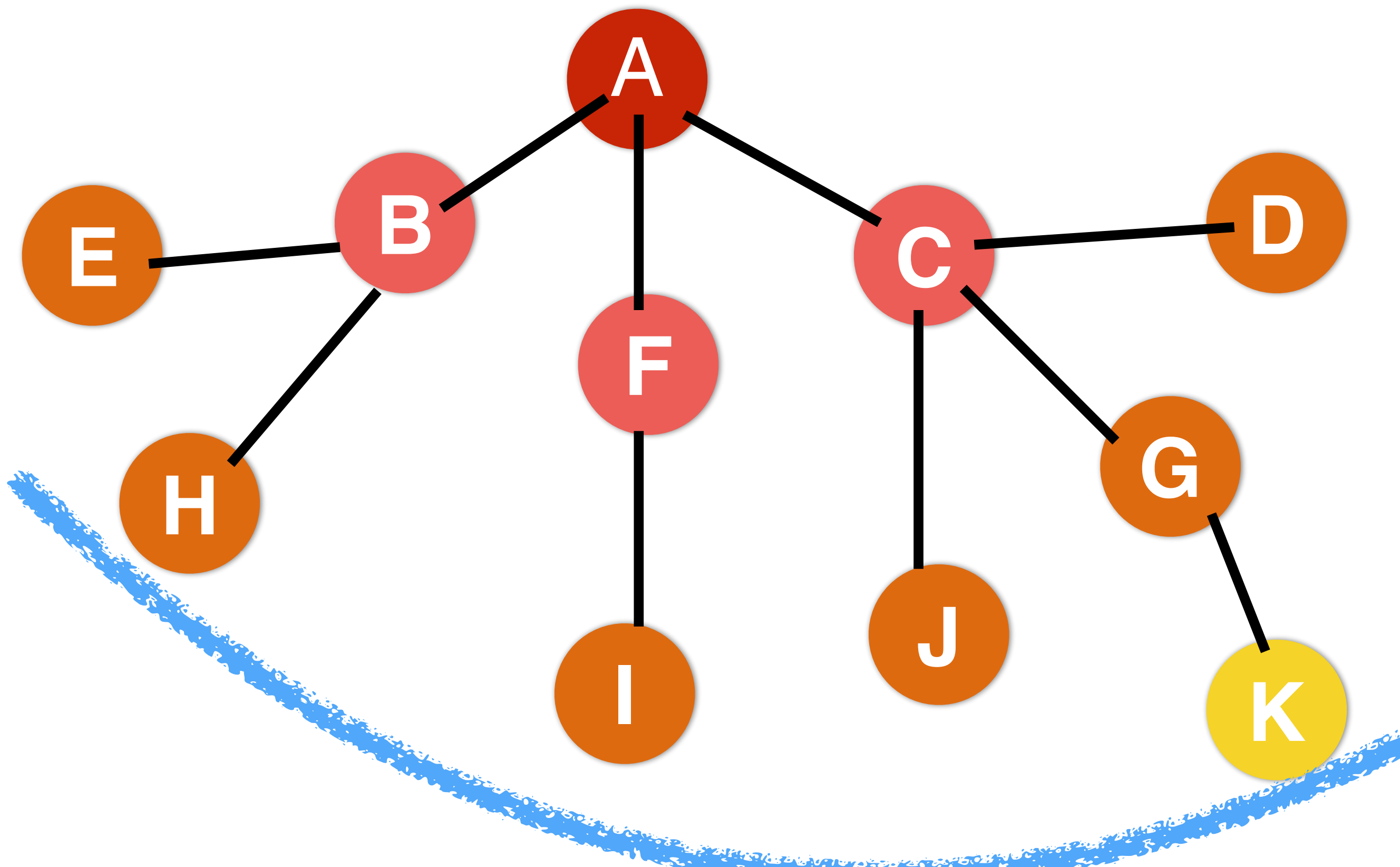
限制他的範圍！！深度2



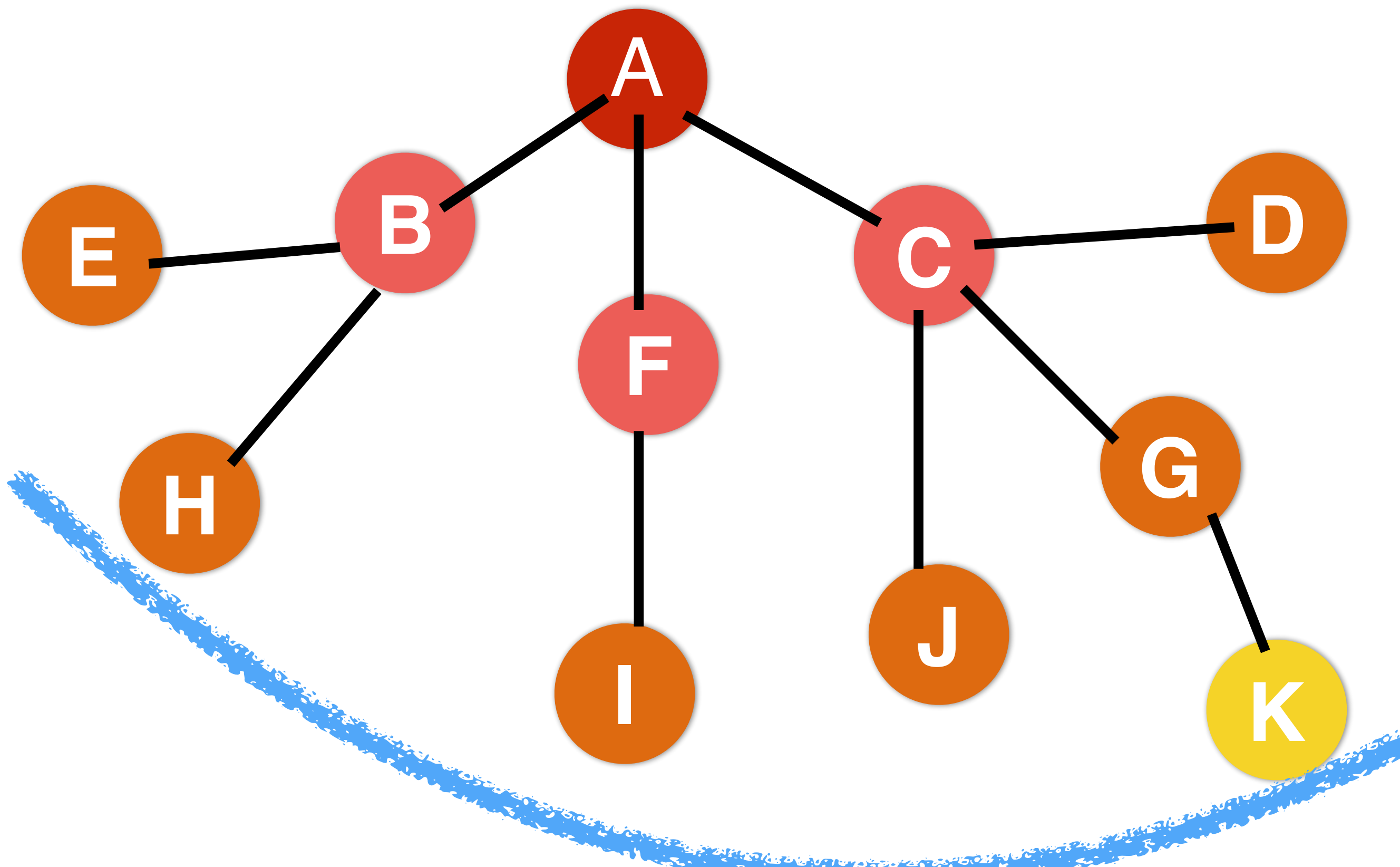
限制他的範圍！！深度3



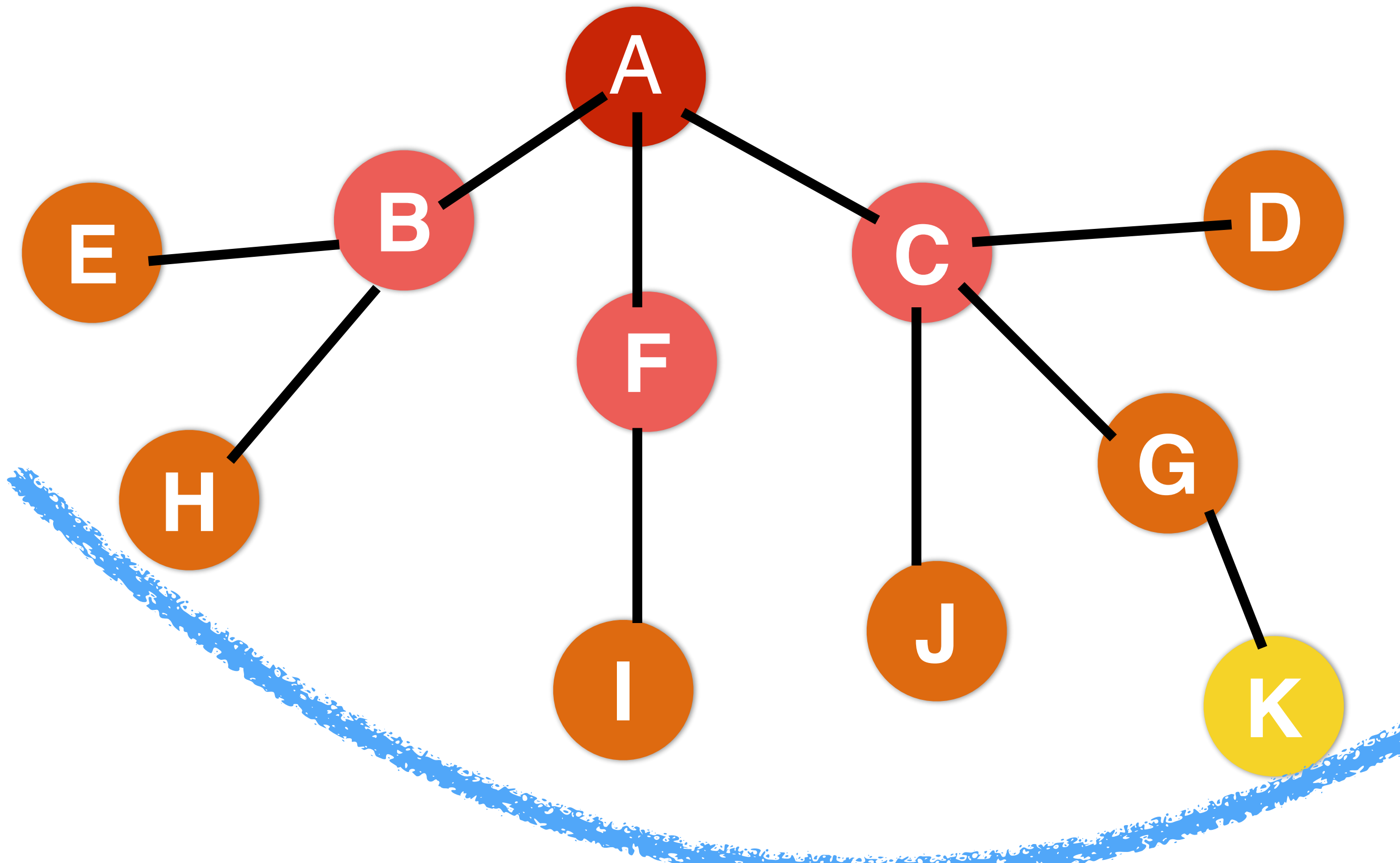
限制他的範圍！！深度4



一層一層推進....



這就是為什麼叫『迭代加深』



寫扣給大家看