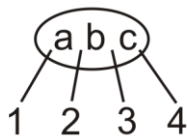
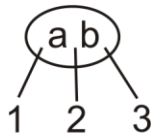
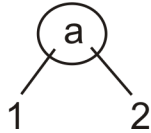


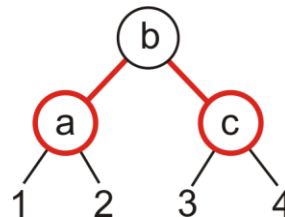
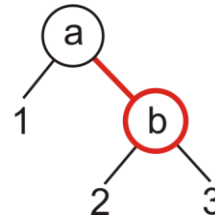
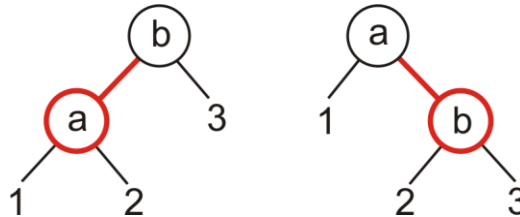
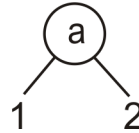
2-3-4 stromy → červeno-černé stromy

Nevýhoda 2-3-4 stromů jsou 3 různé typy uzlů ve stromu (2-uzel, 3-uzel, 4-uzel). Jejich implementaci by zjednodušilo, kdybychom měli jen jeden typ uzlů. To nám umožňují červeno-černé stromy.

2-3-4 strom

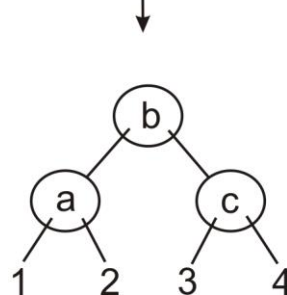
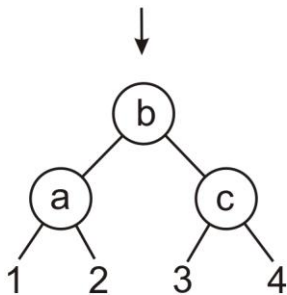
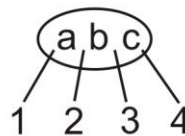
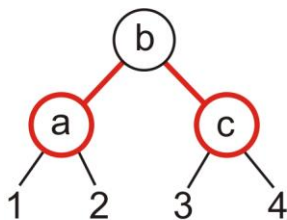


ČČ strom

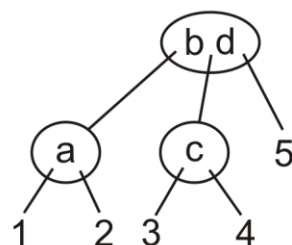
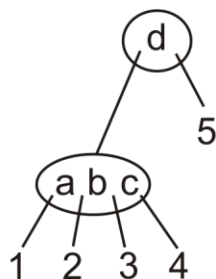
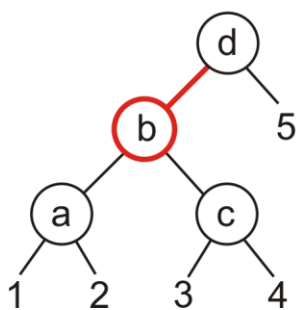
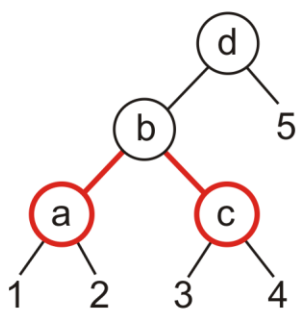


Štěpení 4-uzlu v červeno-černém stromu

- ♦ 4-uzel je kořen → přebarvení (vyjma kořene – ten zůstane černý)

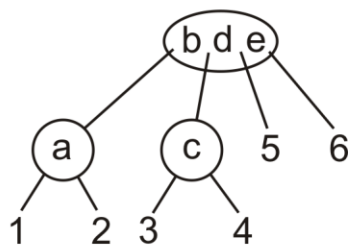
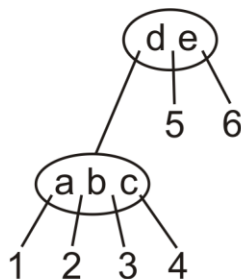
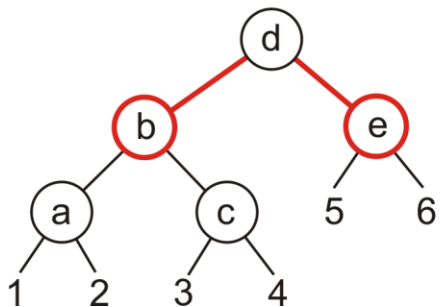
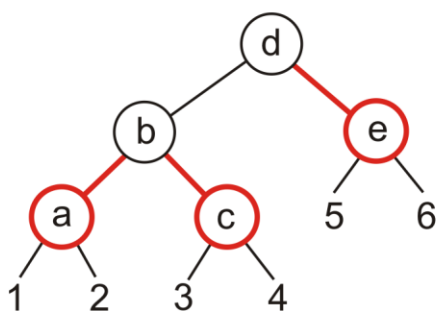


- ♦ předchůdce 4-uzlu je 2-uzel → přebarvení



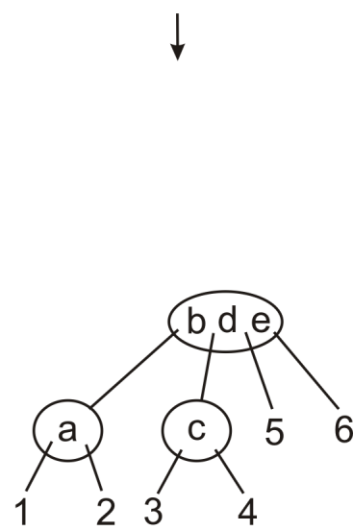
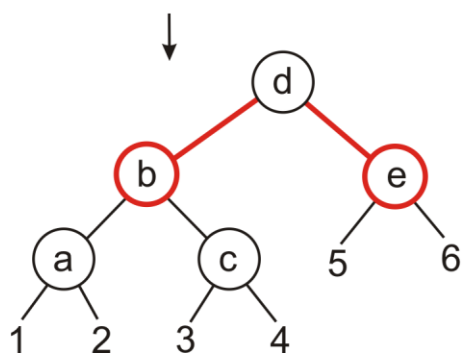
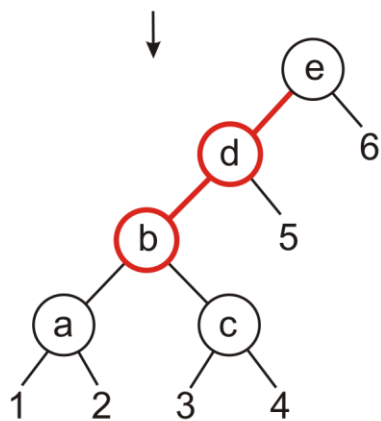
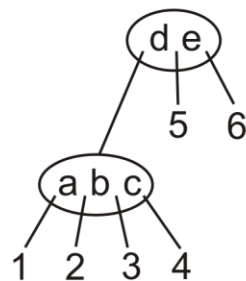
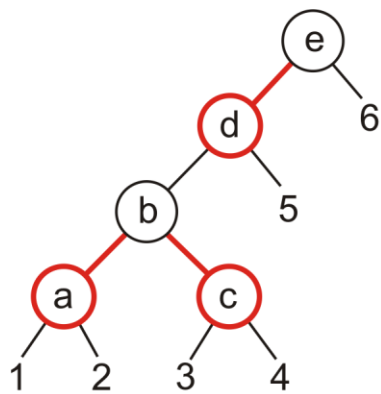
+ symetrický případ

♦ předchůdce 4-uzlu je 3-uzel → přebarvení



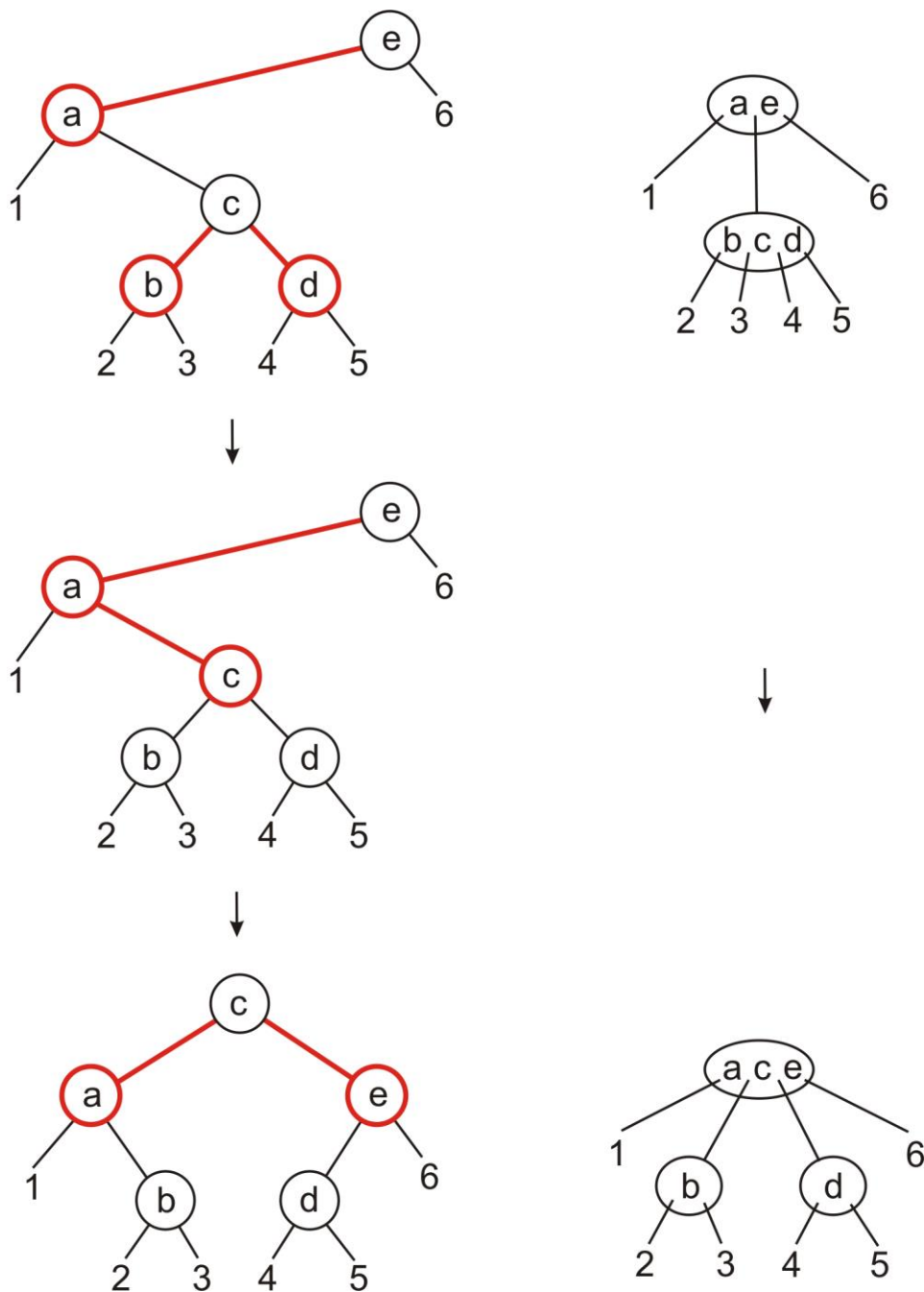
+ symetrický případ

♦ předchůdce 4-uzlu je 3-uzel → přebarvení + jednoduchá rotace



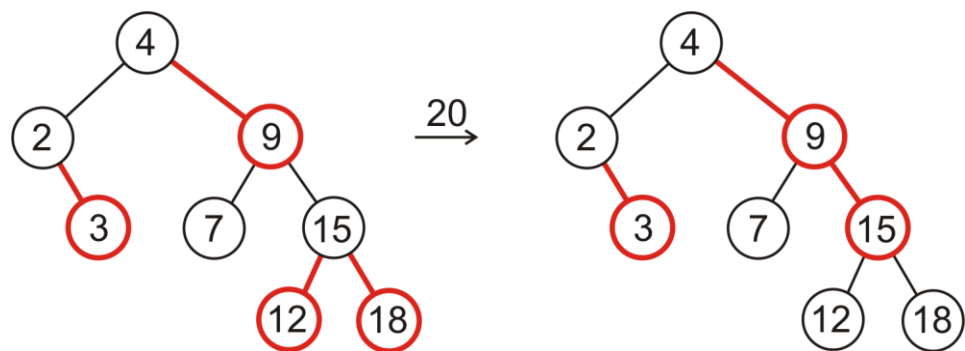
+ symetrický případ

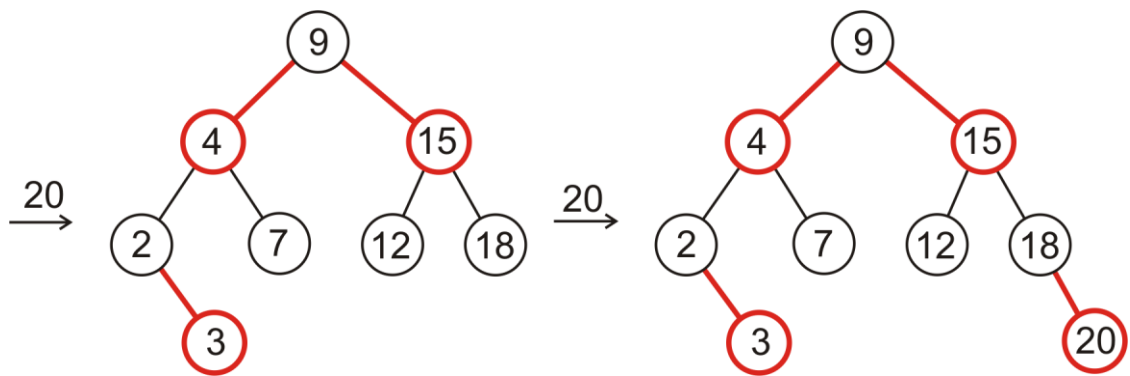
♦ předchůdce 4-uzlu je 3-uzel → přebarvení + dvojitá rotace



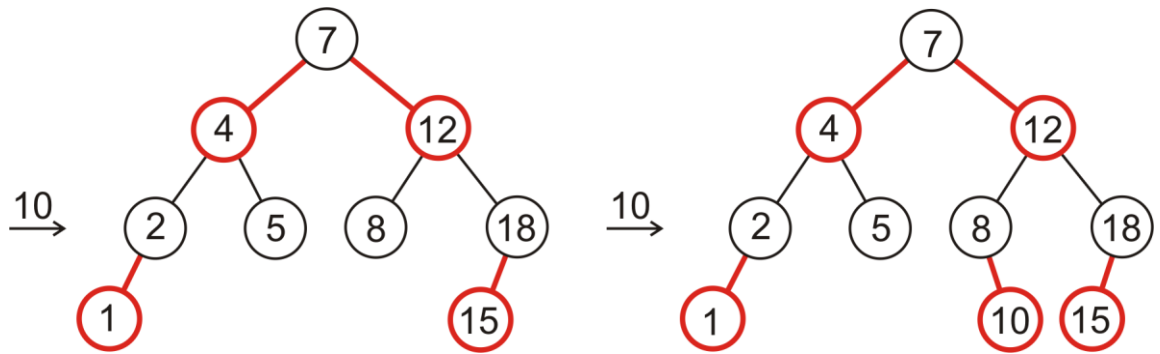
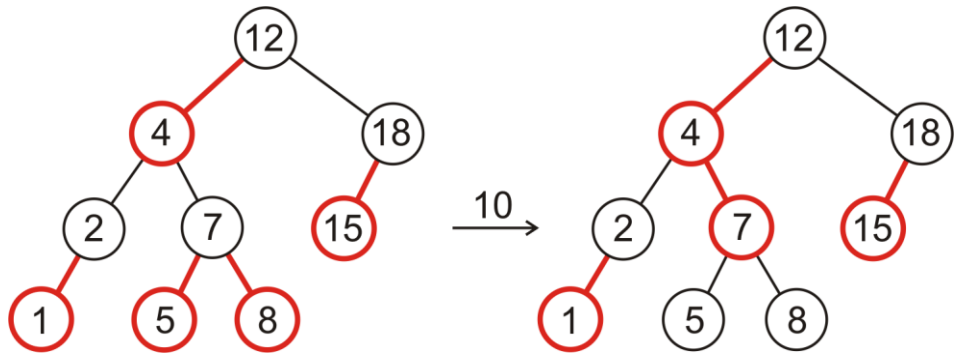
Příklady.

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