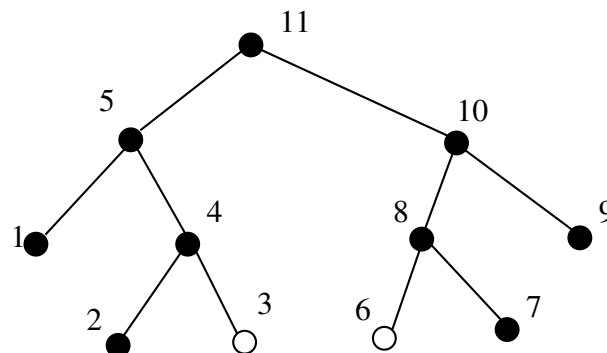26. January 2012

Exercise 1:   Compute the transition probabilities between the states $\frac{B}{-}$, $\frac{-}{B}$ and $\frac{B}{B}$ for the simplified TKF92 model (with $\lambda = \mu$ and fragments of geometrically distributed length).

Exercise 2:   The black filled circles in the following tree are the active nodes, and the numbers show the priority order.

Let a branch length t_i for each branch i be given. Assume the simplified TKF91 model (with $\lambda = \mu$, only single positions are inserted or deleted at a time).

- Compute the probability that the next "tihl" places a B to node 10.

- If this happens, how probable is it then that this tihl has an N at nodes 6 and 8, an E at node 7, and a H at node 9?

- Which nodes are then active in the next step?

Exercise 3:   Simulate data with the program indelible use it to analyze the accuracy of phylogenies and alignments estimated by BAli-Phy compared to the standard approach with separate steps for the alignment and the phylogeny estimation.