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Query Optimization

12. Exercise, Winter 2007/2008

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1. Given a B^+ -tree with 3 levels and a fanout of 10 (i.e., 11 inner nodes and 100 leaf nodes) and a database buffer with space for 20 pages and a random replacement strategy. Estimate the number of page faults (i.e., physical reads) when performing 10,000 randomly chosen lookups in the B^+ -tree. You can assume that only pages belonging to the B^+ -tree are read, and that a large number of random queries has already been executed before. (8)
2. Given the same setup as above, what is the expected number of page faults when leaf nodes are not buffered? (2)