NetID: penggu2 QuizID: 731312 Score: 1 / 4 Answer Source: PrairieLearn

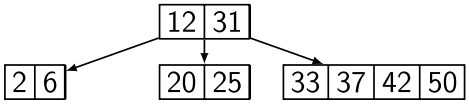
1. What is the minimum number of keys that can be stored in a B-Tree of order 64 and height 5?

A. $2^{30} - 1$
B. $2^{35} + 1$
C. $2^{30} + 1$
D. [Correct Answer] [Your Answer] $2^{35} - 1$
E. $2^{35} - 1$

2. What is the maximum number of keys that can be stored in a B-Tree of order 16 and height 4?

A. [Correct Answer] $16^5 - 1$
B. $15 \times (16^4 - 1)$
C. $4 \times 2^{16} - 1$
D. $15 \times (4^{16} - 1)$
E. [Your Answer] None of the other options are correct

3. Consider this B-Tree:



How many disk seeks are required during the execution of `Find(42)`? Assume that none of the data exists in memory when the call is made.

A. 4
B. [Your Answer] 1
C. [Correct Answer] 2
D. The number of disk seeks cannot be determined because we do not know the order of the tree.
E. 5

4. Suppose a B-tree of order m contains n items. In the worst case, which expression gives the tightest upper bound on the number of disk seeks in one call to the `Find` function?

A. [Your Answer] $O(m \log_m n)$
B. $O(m \log_2 m)$
C. $O(\log_2 n)$
D. $O(m \log_2 n)$
E. [Correct Answer] $O(\log_m n)$