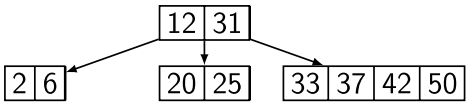
NetID: roatis2 QuizID: 872912 Score: 1 / 4 Answer Source: PrairieLearn

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

2. What is the maximum number of keys that can be stored in a B-Tree of order 6 and height 16?

A. None of the other options are correct
B. [Your Answer] $5 \times (6^{16} - 1)$
C. [Correct Answer] $6^{17} - 1$
D. $5 \times (16^{6} - 1)$
E. $16 \times 2^{6} - 1$

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

A. [Your Answer] $2^{25} + 1$
B. $2^{25} - 1$
C. [Correct Answer] $2^{26} - 1$
D. $2^{30} + 1$
E. $2^{30} - 1$

4. Which of the following statements is true for a B-tree of order m containing n items?

(i) The height of the B-tree is $O(\log_m n)$ and this bounds the total number of disk seeks.
(ii) A node contains a maximum of $m - 1$ keys, and this bounds the number of disk seeks at each level of the tree.
(iii) Every Binary Search Tree (or AVL tree) is also an order 1 B-Tree.

A. Only item (ii) is true.
B. [Correct Answer] Only item (i) is true.
C. Only item (iii) is true.
D. None of the statements are true.
E. [Your Answer] Two of the statements are true.