NetID: zeruiw2 QuizID: 166912 Score: 3 / 4 Answer Source: PrairieLearn

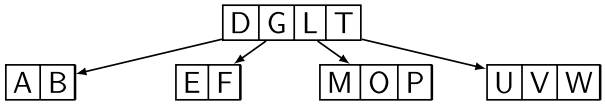
1. Which of the following statements is true for a B-tree of order m containing n items?

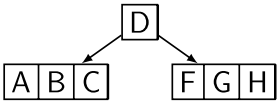
(i) The height of the B-tree is $O(\log_m n)$ and this bounds the total number of disk seeks in a search for a key.
(ii) A node contains a maximum of $m-1$ keys, and this bounds the number of disk seeks at each level of the tree in a search for a key.
(iii) An order 2 B-tree is also a Binary Search Tree.

Make one of the following choices.

A. Only item (ii) is true.
B. [Correct Answer] [Your Answer] Two of the other choices are true.
C. All choices (i), (ii), and (iii) are true.
D. Only item (iii) is true.
E. [Correct Answer] Only item (i) is true.

2. Which of these two trees are valid B-Trees of order 4?

1.


2.


A. Only (1) is valid.
B. Both (1) and (2) are valid.
C. Neither (1) nor (2) is valid.
D. [Correct Answer] [Your Answer] Only (2) is valid.

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

A. $15 \times (6^{16} - 1)$
B. $15 \times (16^{6} - 1)$
C. [Your Answer] None of the other options are correct
D. $6 \times 2^{16} - 1$
E. [Correct Answer] $16^{7} - 1$

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

A. [Correct Answer] [Your Answer] $2^{36} - 1$
B. $2^{30} - 1$
C. $2^{30} + 1$
D. $2^{35} - 1$
E. $2^{35} + 1$