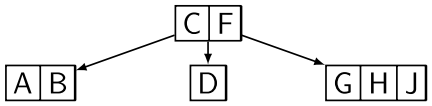
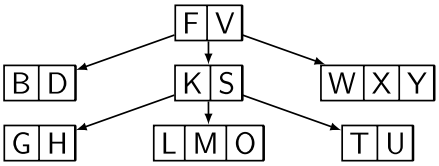
NetID: thouchi2 QuizID: 553712 Score: 1 / 4 Answer Source: PrairieLearn

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

1.



2.



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

2. What is the minimum number of keys that can be stored in a B-Tree of order 32 and height 8?

A. $2^{30} + 1$
B. $2^{25} + 1$
C. [Your Answer] $2^{26} - 1$
D. $2^{30} - 1$
E. [Correct Answer] None of the other options is correct.

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

(i) The height of the B-tree is $O(\log_m n)$.
(ii) A node contains a maximum of $m - 1$ keys, and this is an upper bound on the number of key comparisons at each level of the tree during a search.
(iii) For fixed n, decreasing m increases the number of disk seeks.

A. [Correct Answer] [Your Answer] None of these characteristics is false.
B. Only (ii) is false.
C. Only (i) is false.
D. Only (iii) is false.
E. At least two of (i), (ii) and (iii) are false.

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

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