Given the binary tree to the right

Specify the output for the following traversals

Preorder traversal: ________________________________

Inorder traversal: ________________________________

Postorder traversal: ________________________________

Level-first traversal: ________________________________

Use the following letters for the next series of questions.
A) Brian Kernighan   B) Dennis Ritchie

_____ Coauthor of the AWK programming language?

_____ The father of the C programming language?

_____ Popularized outputting the string "hello, world" as a traditional first program to learn a language?

Match the associated recurrence relation with the algorithm description.

_____ recurses by dividing the resulting data in half and with each recursion performs operations not dependent on \( n \) on just one half of the resulting data

_____ recurses on a slightly smaller set of data and with each recursion performs operations that are dependent on \( n \)

_____ recurses by dividing the resulting data in half and with each recursion performs operations not dependent on \( n \) on both halves of the resulting data

_____ recurses on a slightly smaller set of data and with each recursion performs operations not dependent on \( n \)

_____ recurses by dividing the resulting data in half and with each recursion performs operations that are dependent on \( n \) on both halves of the resulting data

1) \( T(n) = T(n-1) + T(n-2) \)
2) \( T(n) = 2 \ T(n-1) + O(1) \)
3) \( T(n) = 2 \ T(n/2) + O(n) \)
4) \( T(n) = O(1) \)
5) \( T(n) = T(n-1) + O(1) \)
6) \( T(n) = 2 \ T(n/2) + O(1) \)
7) \( T(n) = T(n/2) + O(1) \)
8) \( T(n) = T(n-1) + O(n) \)
Construct a minimum spanning tree from the following network. Hint: 9 vertices so mst should have 8 edges.

What is the total weight of the minimum spanning tree? ______

Is there more than one minimum spanning tree in this graph (yes or no)? ______

Which of the following represents a …

_____ Top-Down recursion

_____ Divide-and-Conquer recursion

_____ Edges-and-Middle recursion

(Use the letters to the right to answer the questions below.)

Given an algorithm, when you double the number of elements it …

doubles the number of comparisons, this algorithm is most likely in what big-Oh complexity class? __________

squares the number of comparisons, this algorithm is most likely in what big-Oh complexity class? __________

does not change the number of comparisons, this alg. is most likely in what big-Oh complexity class? ________

increases the number of comparisons by 1, this alg. is most likely in what big-Oh complexity class? __________

quadruples the number of comparisons, this alg. is most likely in what big-Oh complexity class? ____________

it increases the number of comparisons by slightly more than double (2.x times) for sufficiently large n (say n >= 16), this algorithm is most likely in what big-Oh complexity class? ____________

Which of the following is the correct way to calculate a mid point based on index values of lo and hi? _____

1) mid = lo + (hi + lo) / 2  5) mid = lo + (lo - hi) / 2

2) mid = hi + (hi + lo) / 2  6) mid = hi + (lo - hi) / 2

3) mid = (hi + lo) / 2  7) mid = lo + (hi - lo) / 2

4) mid = (hi - lo) / 2  8) mid = hi + (hi - lo) / 2