Quiz 1

시작됨: 3월 31일 오후 2:30

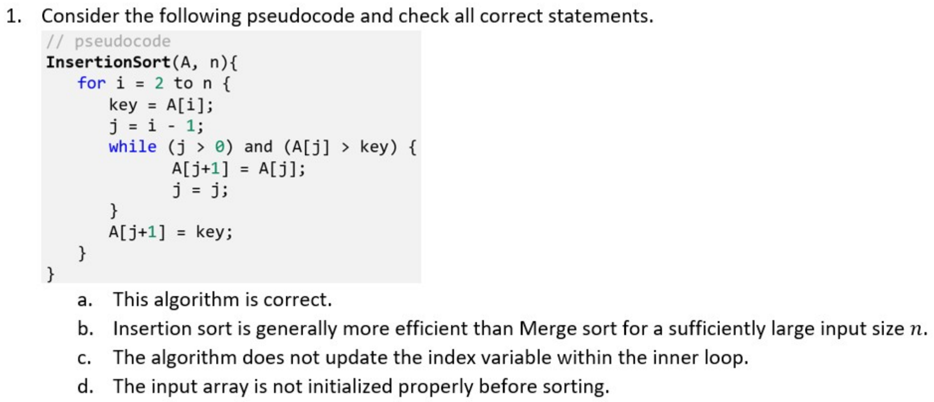
설명

Please submit your answer BEFORE 15:00. (You must click the submit button,)

Ignore the current auto-grading.

문제 1

4점



1. Consider the following pseudocode and check all correct statements.

```
// pseudocode
InsertionSort(A, n){
    for i = 2 to n {
        key = A[i];
        j = i - 1;
        while (j > 0) and (A[j] > key) {
                A[j+1] = A[j];
                j = j;
        }
        A[j+1] = key;
    }
}
```

a. This algorithm is correct.
b. Insertion sort is generally more efficient than Merge sort for a sufficiently large input size n.
c. The algorithm does not update the index variable within the inner loop.
d. The input array is not initialized properly before sorting.

□ a

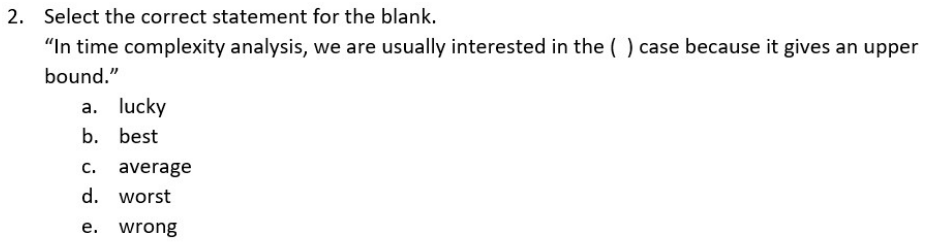
□ b

□ c

□ d

문제 2

4점



2. Select the correct statement for the blank.
"In time complexity analysis, we are usually interested in the ( ) case because it gives an upper bound."

a. lucky
b. best
c. average
d. worst
e. wrong

○ a

○ b

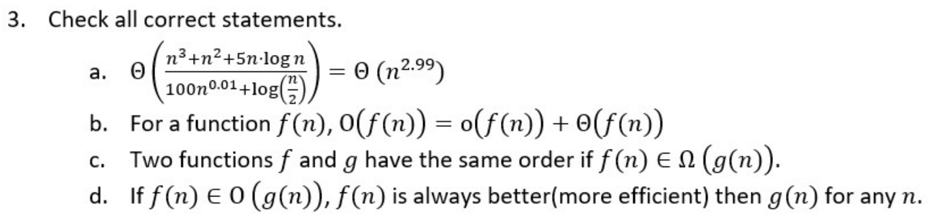
○ c

○ d

○ e

문제 3

4점



3. Check all correct statements.
   a. $\Theta\left(\frac{n^3+n^2+5n\cdot\log n}{100n^{0.01}+\log\left(\frac{n}{2}\right)}\right) = \Theta\left(n^{2.99}\right)$
   b. For a function $f(n)$, $O\big(f(n)\big) = o\big(f(n)\big) + \Theta\big(f(n)\big)$
   c. Two functions f and g have the same order if $f(n) \in \Omega\left(g(n)\right)$.
   d. If $f(n) \in O\left(g(n)\right)$, $f(n)$ is always better(more efficient) then $g(n)$ for any n.

□ a

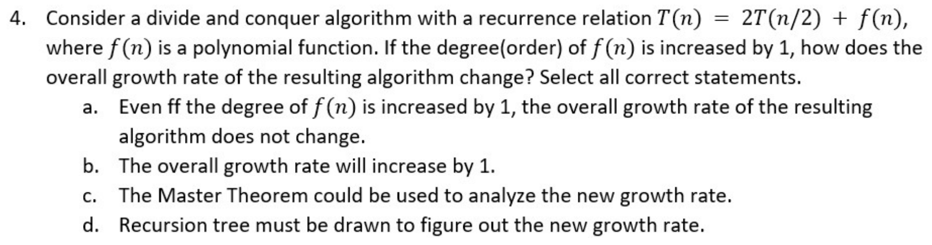
□ b

□ c

□ d

문제 4

4점



4. Consider a divide and conquer algorithm with a recurrence relation $T(n) = 2T(n/2) + f(n)$, where $f(n)$ is a polynomial function. If the degree(order) of $f(n)$ is increased by 1, how does the overall growth rate of the resulting algorithm change? Select all correct statements.
   a. Even ff the degree of $f(n)$ is increased by 1, the overall growth rate of the resulting algorithm does not change.
   b. The overall growth rate will increase by 1.
   c. The Master Theorem could be used to analyze the new growth rate.
   d. Recursion tree must be drawn to figure out the new growth rate.

□ a

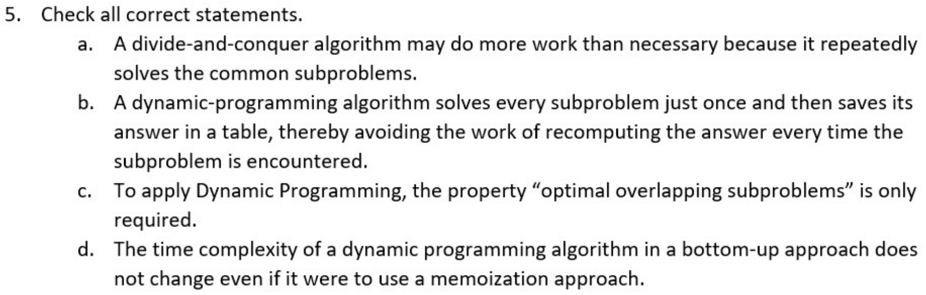
□ b

□ c

□ d

문제 5

4점



5. Check all correct statements.
   a. A divide-and-conquer algorithm may do more work than necessary because it repeatedly solves the common subproblems.
   b. A dynamic-programming algorithm solves every subproblem just once and then saves its answer in a table, thereby avoiding the work of recomputing the answer every time the subproblem is encountered.
   c. To apply Dynamic Programming, the property “optimal overlapping subproblems” is only required.
   d. The time complexity of a dynamic programming algorithm in a bottom-up approach does not change even if it were to use a memoization approach.

□ a

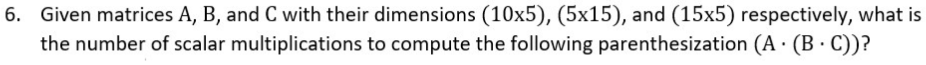
□ b

□ c

□ d

문제 6

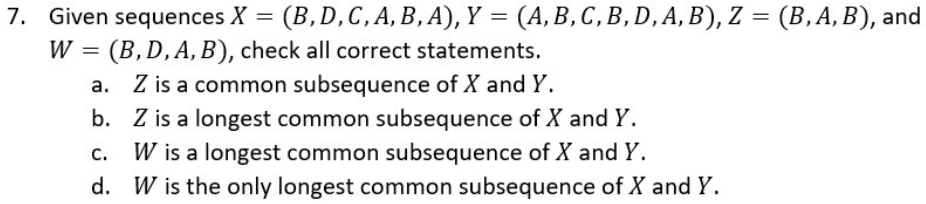
4점



6. Given matrices A, B, and C with their dimensions (10x5), (5x15), and (15x5) respectively, what is the number of scalar multiplications to compute the following parenthesization $(A \cdot (B \cdot C))$?

문제 7

4점



7. Given sequences $X = (B, D, C, A, B, A)$, $Y = (A, B, C, B, D, A, B)$, $Z = (B, A, B)$, and $W = (B, D, A, B)$, check all correct statements.
   a. Z is a common subsequence of X and Y.
   b. Z is a longest common subsequence of X and Y.
   c. W is a longest common subsequence of X and Y.
   d. W is the only longest common subsequence of X and Y.

□ a

□ b

□ c

□ d

문제 8

1점

Please tell me the difficulty level of this quiz. (0: very easy, 5: very difficult)

○ 0

○ 1

○ 2

● 3

○ 4

○ 5

문제 9

1점

How much did you use ChatGPT to solve this quiz? (0: Not used at all. 5: Used to solve all problems)

○ 0

○ 1

○ 2

○ 3

○ 4

○ 5

문제 10

0점

If you used ChatGPT, how useful was it? (0: Not useful at all, 5: Very useful)

○ 0

○ 1

○ 2

○ 3

○ 4

● 5

문제 11

0점

If you did not use ChatGPT, please write why you did not use it. (한글로 작성 가능)

수정 보기 삽입 포맷 도구 테이블

12pt Paragraph

p

0 words

pm 2:31에 저장됨

퀴즈 제출