Ch 1 Quiz

Started: Sep 6 at 7:07pm

Quiz Instructions

Question 1 — 1 pts

18.1 Estimating algorithm efficiency is _____

- ○ A. to measure their actual execution time.
- ◉ B. to estimate their execution time.
- ○ C. to estimate their growth function.

Question 2 — 1 pts

18.3 Why is the analysis often for the worst case?

- ☑ A. Best-case is not representative.
- ☑ B. Worst-case is not representative, but worst-case analysis is very useful. You can show that the algorithm will never be slower than the worst-case.
- ☑ C. Average-case analysis is ideal, but difficult to perform, because it is hard to determine the relative probabilities and distributions of various input instances for many problems.

Question 3 — 1 pts

18.4 Which of the following complexity is O(nlogn)

- [ ] A. 300n + 400n*n
- [x] B. 23nlogn + 50
- [x] C. 45n + 45nlogn + 503
- [ ] D. n*n*n + nlogn

Question 4

1 pts

18.6 What is the number of iterations in the following loop:

```
int count = 5;
while (count < n) {
  count = count + 3;
}
```

- ○ A. n - 5
- ○ B. n - 3
- ○ C. n / 3 - 1
- ○ D. (n - 5) / 3
- ◉ E. the ceiling of (n - 5) / 3

Question 5

1 pts

18.10 The time complexity for the selection sort algorithm in the text is _____.

- ○ A. O(nlogn)
- ◉ B. O(n^2)

- C. O(logn)
- D. O(2^n)

Question 6 — 1 pts

18.11 The time complexity for the insertion sort algorithm in the text is _____.

- A. O(nlogn)
- B. O(n^2) (selected)
- C. O(logn)
- D. O(2^n)

Question 7 — 1 pts

18.12 _____ approach is the process of solving subproblems, then combining the solutions of the subproblems to obtain an overall solution. This naturally leads to a recursive solution. However, it would be inefficient to use recursion, because the subproblems overlap. The key idea behind dynamic programming is to solve each subproblem only once and store the results for subproblems for later use to avoid redundant computing of the subproblems.

- A. Divide-and-conqure
- B. Dynamic programming (selected)
- C. Brutal-force
- D. Backtracking

Question 8

1 pts

18.13 The time complexity for the recursive Fibnacci algorithm in the text is _____.

- ○ A. O(nlogn)
- ○ B. O(n^2)
- ○ C. O(logn)
- ◉ D. O(2^n)

Question 9

1 pts

18.15 The time complexity for the Euclid?s algorithm is _____.

- ○ A. O(n)
- ○ B. O(n^2)
- ◉ C. O(logn)
- ○ D. O(2^n)

Question 10

1 pts

18.17 The time complexity for the the closest pair of points problem using divide-and-conquer is _____.

- ○ A. O(n)

- (●) B. O(nlogn)
- ( ) C. O(logn)
- ( ) D. O(2^n)

Question 11 1 pts

18.18 _____ approach divides the problem into subproblems, solves the subproblems, then combines the solutions of the subproblems to obtain the solution for the entire problem. Unlike the _____ approach, the subproblems in the divide-and-conquer approach don?t overlap. A subproblem is like the original problem with a smaller size, so you can apply recursion to solve the problem.

- (●) A. Divide-and-conqure/dynamic programming
- ( ) B. Dynamic programming/divide-and-conqure
- ( ) C. Brutal-force/divide-and-conqure
- ( ) D. Backtracking/dynamic programming

Question 12 1 pts

18.20 The gift-wrapping algorithm for finding a convex hull takes _____ time.

- ( ) A. O(n)
- ( ) B. O(nlogn)
- ( ) C. O(logn)
- (●) D. O(n^2)

Question 13 1 pts

18.21 The Graham's algorithm for finding a convex hull takes _____ time.

- A. O(n)
- B. O(nlogn)
- C. O(logn)
- D. O(n^2)

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