Review Test Submission: Week 05 Quiz

User	Dong Gao
Subject	Algorithms and Complexity
Test	Week 05 Quiz
Started	9/04/16 10:47 PM
Submitted	9/04/16 10:52 PM
Due Date	13/04/16 11:59 PM
Status	Completed
Attempt Score	5 out of 5 points
Time Elapsed	4 minutes
Instructions	You should attempt the quiz after the lecture and your tutorial. • The quiz is available for a period of 10 days. • You may attempt the quiz multiple times (if you happen to get a question wrong, you can do it again) • Your score on the quiz will be recorded in the grade book. The score is not used when determining your final mark in this subject • The quiz might not display equations correctly in some browsers. If you experience problems, we recommend that you use Firefox. **Note:** you must complete at least eight of the weekly quizzes to meet one of the hurdle requirements in this subject
Total Questions	5
Results Displayed	All Answers, Submitted Answers, Feedback

Question 1

1 out of 1 points

Assume we want to sort integers into ascending order. To sort a small array that contains 42, 17, selection sort will perform one swap, or three assignments. How many assignments will it perform to sort an array that contains these 10 elements: 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 ?

Selected Answer: a. 15

Answers: a. 15

b. 18

c. 24

d. 55

e. 63

Response Feedback: Yes, that's right. Just five swaps altogether. Selection sort does very little data movement.

Question 2

1 out of 1 points

Assume we want to sort integers into ascending order. To sort a small array that contains 42, 17, insertion sort will perform three assignments. How many assignments will insertion sort perform to sort an array that contains these 10 elements: 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 ?

Selected Answer: e. 63

Answers:

a. 15

b. 18

c. 24

d. 55

e. 63

Response Feedback: Yes, that's right. The number of assignments is 3 + 4 + ... + 11 = 63.

Question 3

1 out of 1 points

Assume we want to use shellsort to sort integers into ascending order. We want to apply 4-sorting, followed by 1-sorting, to an array that contains 9, 8, 7, 6, 5, 4, 3, 2, 1, 0. Just before the last round of sorting (which is insertion sort), what does the array look like?

Selected Answer: d. 1, 0, 3, 2, 5, 4, 7, 6, 9, 8

Answers:

a. 0, 2, 4, 6, 1, 3, 5, 7, 8, 9

b. 6, 7, 8, 9, 2, 3, 4, 5, 0, 1

c. 4, 3, 9, 8, 2, 1, 7, 6, 0, 5

d. 1, 0, 3, 2, 5, 4, 7, 6, 9, 8

e. 1, 5, 0, 4, 3, 7, 2, 6, 8, 9

Response Feedback: Yes, well done. Before the last round, the array is "almost-sorted".

Question 4

1 out of 1 points

Suppose we have an array A with 33,554,431 elements. We want to apply binary search to look for some element k. A test of the form "is k = A[i]?" is a probe. How many probes will be performed in the worst case?

Selected Answer: 25

Response Feedback: Yes, the number of elements is 2^{25} - 1. We have a worst-case instance if k is not in the array.

Question 5

1 out of 1 points

We wish to apply interpolation search as presented in Lecture 10. Suppose we have a large array of size *n* containing only one key *k* (repeated *n* times), and we are looking for a different key, *k′*. Which statement is correct?

Selected Answer: d.
Interpolation search will finish immediately, because of a division-by-zero error.

Answers:

a.
Interpolation search will take a long time, since this is a worst-case instance for interpolation search.

b.
Interpolation search will finish quickly, since this is a best-case instance for interpolation search.

c. Interpolation search will finish immediately, since *k′* is not in the array.

d.
Interpolation search will finish immediately, because of a division-by-zero error.

Response Feedback: Yes, this goes to show that care is needed when implementing interpolation search. If duplicate keys are possible, we need to include a check for whether we ever have A[lo] = A[hi].

Saturday, 4 June 2016 11:15:07 PM EST

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