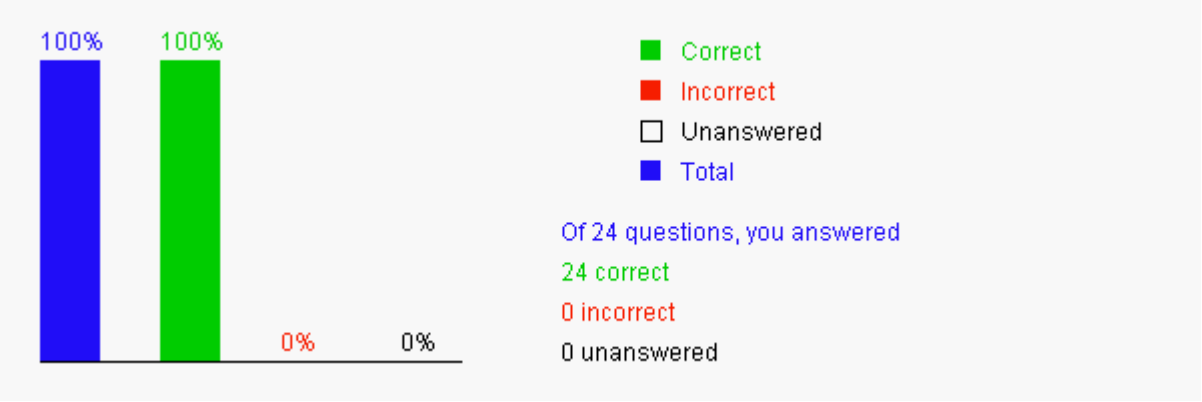
This quiz is for students to practice. A large number of additional quiz is available for instructors using Quiz Generator from the Instructor's Resource Website.
Videos for Java, Python, and C++ can be found at https://yongdanielliang.github.io/revelvideos.html.

Chapter 23 Sorting



Please send suggestions and errata to Dr. Liang at y.daniel.liang@gmail.com. Indicate which book and edition you are using. Thanks!

Section 23.2 Insertion Sort

23.1 The best-time complexity for insertion sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n) ✓
- D. O(nlogn)
- E. O(n*n)

Your answer is correct

23.2 The worst-time complexity for insertion sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n)
- D. O(nlogn)
- E. O(n*n) ✓

Your answer is correct

Section 23.3 Bubble Sort

23.3 Suppose a list is {2, 9, 5, 4, 8, 1}. After the first pass of bubble sort, the list becomes

- A. 2, 9, 5, 4, 8, 1
- B. 2, 9, 5, 4, 1, 8
- C. 2, 5, 9, 4, 8, 1
- D. 2, 5, 4, 8, 1, 9 ✓
- E. 2, 1, 5, 4, 8, 9

Your answer is correct

23.4 The best-time complexity for bubble sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n) ✓
- D. O(nlogn)
- E. O(n*n)

Your answer is correct

23.5 The worst-time complexity for bubble sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n)
- D. O(nlogn)
- E. O(n*n) ✓

Your answer is correct

Section 23.4 Merge Sort

23.6 The time to merge two sorted lists of size n is _____.

- A. O(1)
- B. O(logn)
- C. O(n)
- D. O(nlogn)
- E. O(n*n)

Your answer is correct

23.7 The worst-time complexity for merge sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n)
- D. O(nlogn)
- E. O(n*n)

Your answer is correct

23.8 The average-time complexity for merge sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n)
- D. O(nlogn)
- E. O(n*n)

Your answer is correct

Section 23.5 Quick Sort

23.9 What is correct about a pivot?

- [ ] A. A pivot divides a list into two sublists of equal size.
- [x] B. A pivot can be chosen arbitrarily.
- [x] C. A pivot divides a list into two sublists, the elements in the first list are no larger than the pivot and the elements in the second list are larger than the pivot.
- [ ] D. You should always choose a pivot that divides the list evenly.

Your answer is correct

23.10 Suppose you choose the first element as a pivot in the list {5 2 9 3 8 4 0 1 6 7}. Using the partition algorithm in the book, what is the new list after the partition?

- A. 5 2 9 3 8 4 0 1 6 7
- B. 4 2 3 0 1 5 6 7 9 8
- C. 4 2 1 3 0 5 8 9 6 7
- D. 2 3 4 0 1 5 9 8 6 7
- E. 2 3 4 0 1 5 6 7 8 9

Your answer is correct

23.11 The worst-time complexity for quick sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n)
- D. O(nlogn)
- E. O(n*n)

Your answer is correct

23.12 The average-time complexity for quick sort is _____.

- A. O(1)
- B. O(logn)
- C. O(n)

- (●) D. O(nlogn)
- ( ) E. O(n*n)

Your answer is correct 

23.13 Using the partition algorithm to partition an array {5, 8, 10, 3, 4, 19, 2} for a quick sort, what is the resulting array after the partition?

- ( ) A. {5, 8, 10, 3, 4, 19, 2}
- ( ) B. {2, 3, 4, 5, 8, 10, 19}
- ( ) C. {2, 3, 4, 5, 10, 19, 8}
- (●) D. {3, 2, 4, 5, 10, 19, 8}
- ( ) E. {3, 2, 4, 5, 8, 10, 19}

Your answer is correct 

Section 23.6 Heap Sort

23.14 Which of the following statements are true?

- [x] A. A heap is a complete binary tree.
- [x] B. Each node is greater than or equal to any of its children.
- [x] C. A binary tree is complete if every level of the tree is full except that the last level may not be full and all the leaves on the last level are placed left-most.
- [ ] D. A heap is a full binary tree.

Your answer is correct 

23.15 To remove the root, you need to start a process by first placing _____ to the place of the root and move it down to maintain the heap property.

- ( ) A. one of the root's children
- ( ) B. the larger child of the root
- ( ) C. the smaller child of the root
- (●) D. the last node in the heap

Your answer is correct 

23.16 To add a new node, you need to start a process by first placing it as _____ and move it up to maintain the heap property.

- ( ) A. the new root
- (●) B. the last node in the heap
- ( ) C. the left child of the root
- ( ) D. the right child of the root

Your answer is correct 

23.17 A heap is represented using an array. Is the array {1 2 4 5 9 3} a heap?

- ( ) A. Yes
- (●) B. No

Your answer is correct 

23.18 A heap is represented using an array. Is the array {64 42 59 32 39 44} a heap?

- (●) A. Yes
- ( ) B. No

Your answer is correct 

23.19 The worst-time complexity for heap sort is _____

- ( ) A. O(1)
- ( ) B. O(logn)
- ( ) C. O(n)
- (●) D. O(nlogn)
- ( ) E. O(n*n)

Your answer is correct 

23.20 The average-time complexity for heap sort is _____

- ( ) A. O(1)
- ( ) B. O(logn)

C. O(n)
D. O(nlogn)
E. O(n*n)

Your answer is correct

23.21 Suppose a heap is stored in an array list as follows: {100, 55, 92, 23, 33, 81}. The parent of 81 is _____.

A. 100
B. 55
C. 92
D. 23
E. 33

Your answer is correct

23.22 Suppose a heap is stored in an array list as follows: {100, 55, 92, 23, 33, 81}. After inserting 103, what is the content of the array list?

A. {100, 55, 92, 23, 33, 81, 103}
B. {100, 55, 103, 23, 33, 92, 81}
C. {103, 55, 92, 23, 33, 81, 92}
D. {103, 55, 100, 23, 33, 81, 92}
E. {103, 55, 92, 23, 33, 81, 100}

Your answer is correct

Section 23.7 Bucket Sort and Radix Sort

23.23 The most efficient algorithm for sorting integer keys is _____.

A. quick sort
B. merge sort
C. heap sort
D. radix sort

Your answer is correct

23.24 The _____ algorithm does not compare keys.

A. quick sort
B. merge sort
C. heap sort
D. radix sort

Your answer is correct