Capitulo 20

This activity contains 10 questions.

1. *Section 20.2 Searching Algorithms*

20.2 Q1: Which of the following is not true about searching algorithms and their efficiency?

- *Big O notation is one way to describe how likely it is that a searching algorithm will find its target.*
- *A more efficient searching algorithm is usually more complex and difficult to implement.*
- *The major difference between various searching algorithms is the amount of effort they require to complete the search.*
- *The effort required to perform a search or a sort is particularly dependent on the number of data elements.*

2. *Section 20.2.1 Efficiency of Linear Search*

20.2.1 Q1: Which of the following is not a valid runtime description according to Big O notation?

- *O(1/n).*
- *O(1).*
- *O(n).*
- *O(n2).*

3. *20.2.1 Q2: An algorithm that requires _____ operations to complete its task on n data elements is said to have a linear runtime.*

- $3\,n^2 + 3\,n + 2$.
- *6.*
- $n^3 + 9$.
- $2\,n + 1$.

4. *Section 20.2.2 Binary Search*

20.2.2 Q1: The first step performed by the binary search algorithm at each iteration is to:

- *Compare the search key with the middle element in the current subvector.*

- *Compare the search key with the lowest element in the current subvector.*
- *Count the number of elements in the current subvector.*
- *Compare the search key with the highest element in the current subvector.*

5. *20.2.2 Q2: At most, how many comparisons are required to search a sorted vector of 1023 elements using the binary search algorithm?*

- *30.*
- *20.*
- *10.*
- *15.*

6. *Section 20.3 Sorting Algorithms*

20.3 Q1: The choice of which sorting algorithm to use does not affect:

- *How thoroughly sorted the vector will be.*
- *The amount of memory used by the program.*
- *The time it takes for the sorting operation to complete.*
- *All of the above will be affected by the choice of sorting algorithm.*

7. *Section 20.3.1 Efficiency of Selection Sort*

20.3.1 Q1: Selection sort has a Big O of:

- *O(n_2 – n)/2).*
- *O(½n).*
- *O(2n).*
- *O(n^2).*

8. *Section 20.3.2 Efficiency of Insertion Sort*

20.3.2 Q1: Suppose an algorithm contains three repetition statements, the second nested within the first and the third nested within the second. The first loop performs O(n) iterations, the second loop performs O(n^2) iterations and the third loop performs O(n^4) iterations. What is the Big O of the entire algorithm?

- *O(n).*
- *O(n^4).*

- $O(n^8)$.
- $O(n^7)$.

9. *Section 20.3.3 Merge Sort (A Recursive Implementation)*

20.3.3 Q1: The merge sort algorithm:

- *Works by merging two sorted vectors into one larger sorted vector.*
- *Can only be used on vectors of even length.*
- *Cannot be implemented recursively.*
- *Works by reducing vectors down to the base case of a two-element vector.*

10. *20.3.3 Q2: A merge sort operation runs in:*

- *O(n) time.*
- $O(n^2)$ *time.*
- *O(n log n) time.*
- *O(log n) time.*

Clear Answers / Start Over Submit Answers for Grading

Answer choices in this exercise appear in a different order each time the page is loaded.