Elementary Data Structures and Algorithms

Sorting

Always choose the best or most general answer, unless otherwise instructed.

Concept: sorting

1. The following strategy is employed by which sort: *find the most extreme value in the unsorted portion and place it at the boundary of the sorted and unsorted portions*?

    A. selection sort

    B. mergesort

    C. quicksort

    D. bubble sort

    E. insertion sort

    F. heapsort

2. The following strategy is employed by which sort: *sort the lower half of the items to be sorted, then sort the upper half, then arrange things such that the largest item in the lower half is less than or equal to the smallest item in the upper half* ?

    A. mergesort

    B. heapsort

    C. bubble sort

    D. quicksort

    E. selection sort

    F. insertion sort

3. The following strategy is employed by which sort: *take the first value in the unsorted portion and place it where it belongs in the sorted portion*?

    A. insertion sort

    B. selection sort

    C. mergesort

    D. bubble sort

    E. heapsort

    F. quicksort

4. The following strategy is employed by which sort: *pick a value and arrange things such that the largest item in the lower portion is less than or equal to the value and that the smallest item in the upper portion is greater than or equal to the value, then sort the lower portion, then sort the upper* ?

A. bubble sort

B. mergesort

C. heapsort

D. selection sort

E. insertion sort

F. quicksort

5. Which sort optimizes the worst case behavior of bubble sort?

A. stooge sort

B. mergesort

C. quicksort

D. heapsort

E. insertion sort

F. selection sort

Concept: *space and time complexity*

6. What is the best time case complexity for classical mergesort?

A. linear

B. quadratic

C. cubic

D. log n

E. n log n

7. What is the worst case complexity for classical mergesort?

A. log n

B. n log n

C. cubic

D. quadratic

E. linear

8. If quicksort is implemented such that the pivot is chosen to be the first element in the array, the worst case behavior of the sort is:

A. exponential

B. linear

C. quadratic

D. log linear

9. If quicksort is implemented such that the a random element is chosen to be the pivot, the worst case behavior of the sort is:

A. linear

B. log linear

C. quadratic

D. exponential

10. What is the best case complexity for quicksort?

A. quadratic

B. log *n*

C. linear

D. cubic

E. *n* log *n*

11. What is the best case complexity for classical selection sort?

A. quadratic

B. log *n*

C. linear

D. *n* log *n*

E. cubic

12. What is the worst case complexity for classical selection sort?

A. *n* log *n*

B. quadratic

C. linear

D. cubic

E. log *n*

13. What is the best case complexity for classical insertion sort?

A. *n* log *n*

B. linear

C. log *n*

D. cubic

E. quadratic

14. What is the worst case complexity for classical insertion sort?

A. log *n*

B. *n* log *n*

C. quadratic

D. linear

E. cubic