

What is the best case complexity of ordered linear search and worst case complexity of selection sort respectively?

- a) $O(1)$, $O(n^2)$
- b) $O(\log n)$, $O(1)$,
- c) $O(n)$, $O(\log n)$
- d) $O(n^2)$, $O(n \log n)$

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: a

Which of the following is/are correct?

- I. Binary search is applied when elements are sorted.
- II. Linear search can be applied when elements are in random order.
- III. Binary search can be categorized into divide and conquer rule.

- a) I & II
- b) Only I
- c) I and III
- d) I, II & III

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: d

What is the recurrence relation for the linear search recursive algorithm?

- a) $T(n-2)+c$
- b) $2T(n-1)+c$
- c) $T(n-1)+c$
- d) $T(n+1)+c$

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: d

Given an array $arr = \{20, 45, 77, 89, 91, 94, 98, 100\}$ and $key = 45$; what are the mid values (corresponding array elements) generated in the first and second iterations?

- a) 91 and 98
- b) 89 and 45
- c) 89 and 77
- d) 91 and 94

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: b

Consider an array of elements $A[7] = \{10, 4, 7, 23, 67, 12, 5\}$, what will be the resultant array A after third pass of insertion sort.

- a) 67, 12, 10, 5, 4, 7, 23
- b) 4, 7, 10, 23, 67, 12, 5
- c) 4, 5, 7, 67, 10, 12, 23
- d) 10, 7, 4, 67, 23, 12, 5

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: c

Which of the following input will give worst case time complexity for selection sort to sort an array in ascending order?

- I. 1, 2, 3, 4, 5, 6, 7, 8
- II. 8, 7, 6, 5, 4, 3, 2, 1,
- III. 8, 7, 5, 6, 3, 2, 1, 4

- a) I
- b) II
- c) II and III
- d) I, II and III

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: c

Consider the array $A[] = \{5, 4, 9, 1, 3\}$ apply the insertion sort to sort the array. Consider the cost associated with each sort is 25 rupees, what is the total cost of the insertion sort for sorting the entire array?

- a) 25
- b) 50
- c) 75
- d) 100

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: c

A sorting technique is called stable if:

- a) It takes $O(n \log n)$ time
- b) It maintains the relative order of occurrence of non-distinct elements
- c) It uses divide and conquer paradigm
- d) It takes $O(n)$ space

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: b

Select the code snippet which performs unordered linear search iteratively?

a) `intunorderedLinearSearch(intarr[], int size, int data)`
{
 int index;
 for(inti = 0; i< size; i++)
 {
 if(arr[i] == data)
 {
 index = i;
 break;
 }
 }
 return index;
}

b) `intunorderedLinearSearch(intarr[], int size, int data)`
{
 int index;
 for(inti = 0; i< size; i++)
 {
 if(arr[i] == data)
 {
 break;
 }
 }
 return index;
}

c) `intunorderedLinearSearch(intarr[], int size, int data)`
{
 int index;
 for(inti = 0; i<= size; i++)
 {
 if(arr[i] == data)
 {
 index = i;
 continue;
 }
 }
 return index;
}

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

d) None of the above

Answer: a

The average case occurs in the Linear Search Algorithm when

- a) The item to be searched is in some where middle of the Array
- b) The item to be searched is not in the array
- c) The item to be searched is in the last of the array
- d) The item to be searched is either in the last or not in the array

- a) Option (a)
- b) Option (b)
- c) Option (c)
- d) Option (d)

Answer: a