

633573

Suppose you try to perform a binary search on a 5-element array sorted in the reverse order of what the binary search algorithm expects. How many of the items in this array will be found if they are searched for?

- a. 5
- b. 0
- *c. 1
- d. 2
- e. 3
- f. "
- g. "
- h. "
- i. "
- j. "

General Feedback:

Only the middle element will be found. The remaining elements will not be contained in the subranges that we narrow our search to.

632805

Which data structure used to implement Set yields the worst performance for Set.contains?

- a. Binary search tree
- *b. Linked list
- c. Sorted array
- d. Hashtable
- e.
- f. "
- g. "
- h. "
- i. "

General Feedback:

Implementing Set.contains involves a search of the data structure. A binary search tree and a sorted array are searched in $O(\lg n)$ time, and a hashtable in $O(1)$, assuming a sane hash function. A linked list is searched in $O(n)$ time.

633246

For a graph with N nodes, what's the minimum number of edges it must have for it to contain a cycle?

- a. $N + 1$
- b. N
- c. $N - 1$
- *d. 1
- e. 2
- f. "
- g. "
- h. "
- i. "
- j. "

General Feedback:

A vertex with an edge to itself is a cycle.