

4.22. The Ordered List Abstract Data Type



We will now consider a type of list known as an ordered list. For example, if the list of integers shown above were an ordered list (ascending order), then it could be written as 17, 26, 31, 54, 77, and 93. Since 17 is the smallest item, it occupies the first position in the list. Likewise, since 93 is the largest, it occupies the last position.

The structure of an ordered list is a collection of items where each item holds a relative position that is based upon some underlying characteristic of the item. The ordering is typically either ascending or descending and we assume that list items have a meaningful comparison operation that is already defined. Many of the ordered list operations are the same as those of the unordered list.

- `OrderedList()` creates a new ordered list that is empty. It needs no parameters and returns an empty list.
- `add(item)` adds a new item to the list making sure that the order is preserved. It needs the item and returns nothing. Assume the item is not already in the list.
- `remove(item)` removes the item from the list. It needs the item and modifies the list. Assume the item is present in the list.
- `search(item)` searches for the item in the list. It needs the item and returns a boolean value.
- `isEmpty()` tests to see whether the list is empty. It needs no parameters and returns a boolean value.
- `size()` returns the number of items in the list. It needs no parameters and returns an integer.
- `index(item)` returns the position of item in the list. It needs the item and returns the index. Assume the item is in the list.
- `pop()` removes and returns the last item in the list. It needs nothing and returns an item. Assume the list has at least one item.
- `pop(pos)` removes and returns the item at position `pos`. It needs the position and returns the item. Assume the item is in the list.

You have attempted 1 of 1 activities on this page

user not logged in

(Implementing an Unordered List Linked Lists.html)

(Implementing an Ordered List.html)