

b) Software specification - What functions are there?

Data Structure Management:

- `createList()`: Predefined list is added.
- `addData()`: This function adds a new element to the existing list.
- `deleteData()`: This function removes a specified element from the list.
- `updateData()`: This function updates an existing element in the list with a new value.
- `restoreData()`: This function might be used to restore the list from a previous state (exact functionality depends on implementation).

Data Access and Display:

- `displayStatus()`: This function retrieves the size and elements of the list and displays them to the user.
- `toArray()`: This function (potentially in the `DataStructure` class) might convert the internal list representation to an array format for easier manipulation.
- `get(index)`: This function (potentially in the `DataStructure` class) might retrieve an element from the list based on its index.

Sorting:

- `selectionSort(arr)`: This function implements the selection sort algorithm to sort an array of elements in-place.
- `mergeSort(arr)`: This function implements the merge sort algorithm to sort an array of elements in-place.

Searching:

- `linearSearch(arr, key)`: This function performs a linear search on an array to find a specific element (key).
- `binarySearch(arr, key)`: This function performs a binary search on a sorted array to find a specific element (key).
- `hashSearch(table, key)`: This function (potential) might implement a hash search using a hash table to find an element based on its key.

Menu and Input/Output:

- `main(args)`: This function is the program's entry point. It likely handles displaying a menu, prompting the user for input, and calling other functions based on user selections.
- `displayMenu()`: This function might display a menu of available options to the user.

Analysis:

- `getSelectionSortComparisons()`: This function might retrieve the number of comparisons made during the selection sort operation.
- `getMergeSortComparisons()`: This function might retrieve the number of comparisons made during the merge sort operation.