Activity Data Structures

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Activity 1

a. O(n^2)

b. O(n)

c. O(n^2)

d. O(n)

Activity 2

a. [0, 1, 2, 3, 3, 3, 3, 3]

b. [0, 1, 2, 3, 3, 4, 5, 6]

Activity 3

a. O(n) – T(n) = n + 4

b. O(n^3) – T(n) = n^3 + 4

c. O(n) – T(n) = 3n + 4

d. O(n) – T(n) = n + 3

Activity 4

| Algorithm | Time Complexity |
| --- | --- |
| Linear Search | O(1) |
| Sequential Search | O(n) |
| Selection Sort | O(n^2) |
| Merge Sort | O(n log n) |

Activity 5

Abstract Data Type (ADT) is a class for objects whose behavior is defined by a set of values and set of operations.

Implementations:

* List data type
* Stack data type
* Queue data type

Activity 6

| List | ArrayList |
| --- | --- |
| Type of interface | Standard type collection class |
| Provides extension to collection framework | Provides framework to list interface |
| Can be used to create a list of various elements that stay associated with their index numbers | Can be used to create an dynamic array that consist of objects |

Activity 7

