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CS 2400.01

Project 1:

Efficiency of Implementations of a Bag

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Operation:** | **Resizable Array:** | | **Linked:** | |
|  | **Best Case:** | **Worst Case:** | **Best Case:** | **Worst Case:** |
| **getCurrentSize()** | O(1) | O(1) | O(1) | O(1) |
| Explanation: | Return statement | Return Statement | Return Statement | Return Statement |
| **isEmpty()** | O(1) | O(1) | O(1) | O(1) |
| Explanation: | Return Statement | Return Statement | Return Statement | Return Statement |
| **add(newEntry)** | O(1) | O(1) | O(1) | O(1) |
| Explanation: | Assignments, updating variable, and return | Assignments, updating variable, and return | Assignments, updating variable, and return | Assignments, updating variable, and return |
| **remove()** | O(1) | O(1) | O(1) | O(1) |
| Explanation: | Assignments, updating variable, and return | Assignments, updating variable, and return | Assignments, updating variable, and return | Assignments, updating variable, and return |
| **clear()** | O(n) | O(n) | O(n) | O(n) |
| Explanation: | While loop to clear every entry | While loop to clear every entry | While loop to clear every entry | While loop to clear every entry |
| **getFrequencyOf(anEntry)** | O(n) | O(n) | O(n) | O(n) |
| Explanation: | Loop through entire bag | Loop through entire bag | Loop through entire bag | Loop through entire bag |
| **contains(anEntry)** | O(1) | O(n) | O(1) | O(n) |
| Explanation: | Could be the first element | Loop through entire bag to search entry | Could be the first element | Loop through entire bag to search entry |
| **toArray()** | O(n) | O(n) | O(n) | O(n) |
| Explanation: | Copy entire array with for loop | Copy entire array with for loop | Copy entire array with while loop | Copy entire array with while loop |