|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data structure** | **Access** | **Search** | **Insertion** | **Deletion** |
| **Array** | O(1) | O(N) | O(N) | O(N) |
| **Stack** | O(N) | O(N) | O(1) | O(1) |
| **Queue** | O(N) | O(N) | O(1) | O(1) |
| **Singly Linked list** | O(N) | O(N) | O(1) | O(1) |
| **Doubly Linked List** | O(N) | O(N) | O(1) | O(1) |
| **Hash Table** | O(1) | O(1) | O(1) | O(1) |
| **Binary Search Tree** | O(log N) | O(log N) | O(log N) | O(log N) |
| **AVL Tree** | O(log N) | O(log N) | O(log N) | O(log N) |
| **B Tree** | O(log N) | O(log N) | O(log N) | O(log N) |
| **Red Black Tree** | O(log N) | O(log N) | O(log N) | O(log N) |

**Worst Case time complexity of different data structures for different operations**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data structure** | **Access** | **Search** | **Insertion** | **Deletion** |
| **Array** | O(1) | O(N) | O(N) | O(N) |
| **Stack** | O(N) | O(N) | O(1) | O(1) |
| **Queue** | O(N) | O(N) | O(1) | O(1) |
| **Singly Linked list** | O(N) | O(N) | O(1) | O(1) |
| **Doubly Linked List** | O(N) | O(N) | O(1) | O(1) |
| **Hash Table** | O(N) | O(N) | O(N) | O(N) |
| **Binary Search Tree** | O(N) | O(N) | O(N) | O(N) |
| **AVL Tree** | O(log N) | O(log N) | O(log N) | O(log N) |
| **Binary Tree** | O(N) | O(N) | O(N) | O(N) |
| **Red Black Tree** | O(log N) | O(log N) | O(log N) | O(log N) |