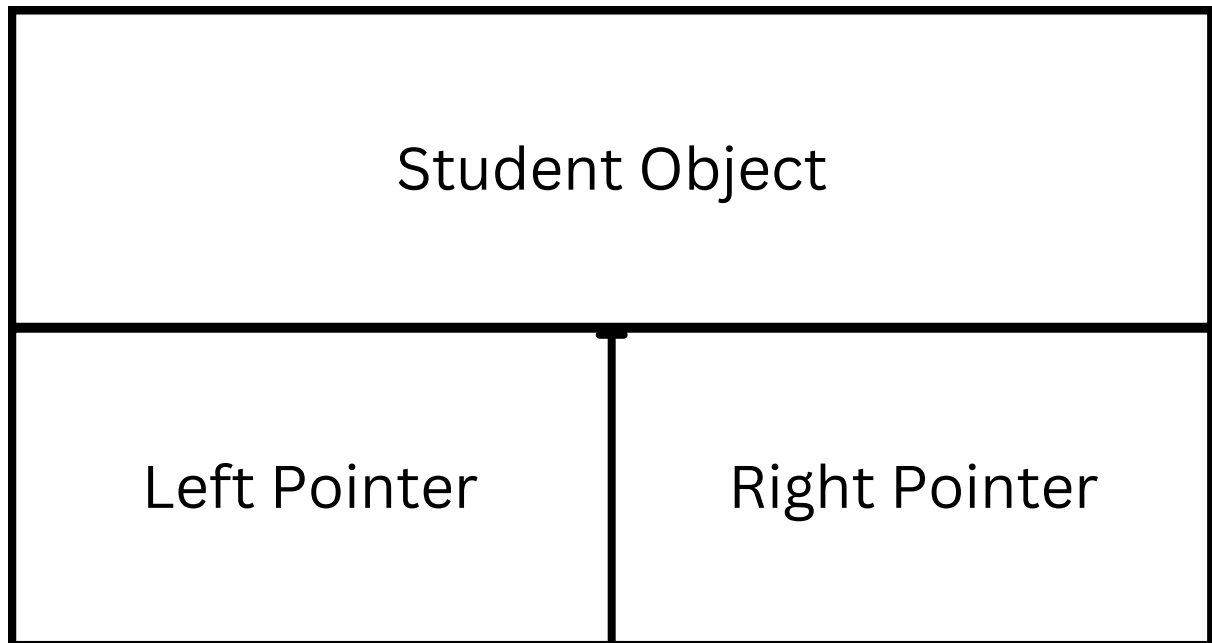


ICS-202 Project

**Data-Structure visualizations and complexities
analysis**

AVLTREE for IDs

Node Structure



-Time Complexity

-Insertion $O(\log(n))$

-Deletion $O(\log(n))$

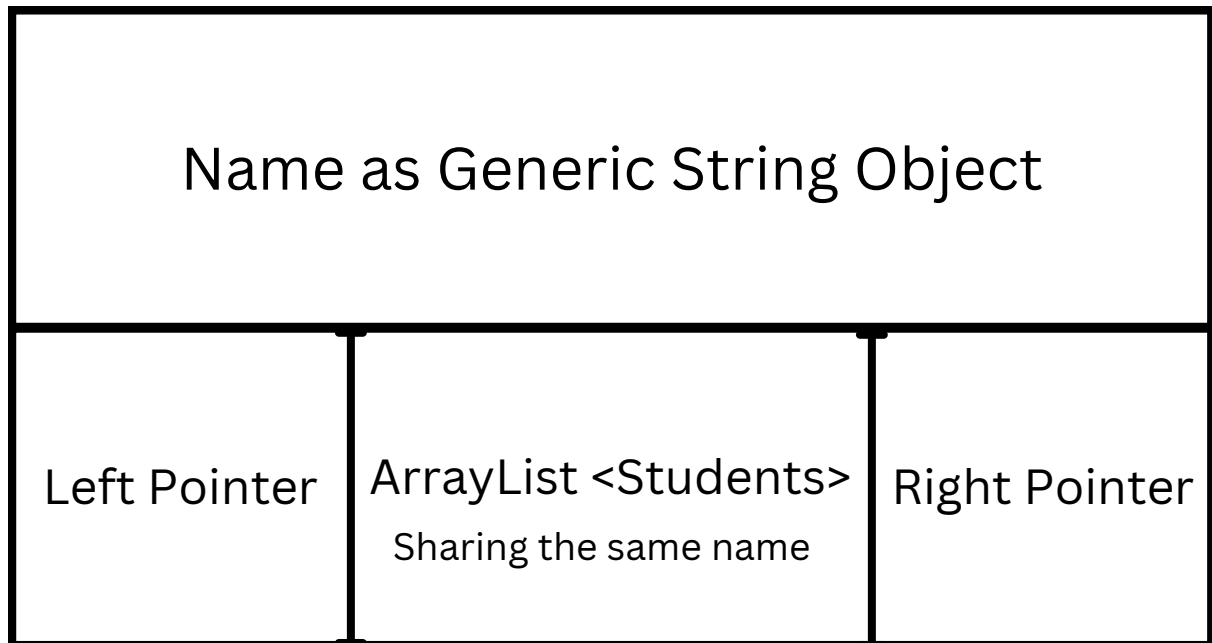
-Search $O(\log(n))$

-Space Complexity

- $O(n)$

AVLTREE for names

Node Structure



-Time Complexity

-Insertion $O(\log(n))$

-Deletion $O(\log(n))$

-Search $O(\log(n))$

-Space Complexity

- $O(n)$

HashTable for Academic Levels

| | |
|----|--------------------------------------|
| FR | LinkedList of Students in that level |
| SO | LinkedList of Students in that level |
| JR | LinkedList of Students in that level |
| SR | LinkedList of Students in that level |

-Time Complexity

- Insertion $O(1)$ because of the linked list implementation
- Deletion $O(n)$
- Search $O(1)$ through calling HashTable[Key]

-Space Complexity

- $O(n)$