ICS-202 Project

Data-Structure visualizations and complexities analysis

AVLTREE for IDs

Node Structure

Student Object

Left Pointer

Right Pointer

-Time Complexity

- -Insertion O(log(n))
- -Deletion O(log(n))
- -Search O(log(n))

-Space Complexity

-O(n)

AVLTREE for names

Node Structure

Name as Generic String Object

Left Pointer

ArrayList <Students>
Sharing the same name

Right Pointer

-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)