

CENG 202 Data Structures

Lab 6 Questions: Binary Search Tree

Aim: Implement a Binary Search Tree with using other data structures

Cell phones are **forbidden**. Please put your cell phones in your bags. Otherwise, you won't get grades.

You **can't leave** class early unless you finished the tasks.

Question: You are going to implement a Family Binary Search Tree to insert, search and delete people to that Tree.

You can **download** Test.java.

Each node of the Family Binary Search Tree will have the following:

- **familyName:** surnames / family names
 - **memberList:** The members who has the same surnames.
 - This is a LinkedList which you will implement some of its functions.
 - **insertNode(String name, int age):** Inserts a node into the FamilyLinkedList
 - **search(String name):** Searches a name into the FamilyLinkedList and returns true if found false otherwise
 - **deleteNode(String name):** Deletes the node from FamilyLinkedList, return true if delete is succesful, false otherwise.
 - **insert()**
 - This method mainly inserts the family members to the Tree
 - **search()**
 - An iterative search function to look a specific person is in the Tree or not.
 - **delete()**
 - An iterative delete method to delete a specific person which is in the Tree.
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Output

```
run:
```

```
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1)INSERT Operations
```

FAMILIES TREE

Fremantle		Malling		Stagge		Tiddeman	
Billington		Kirkhouse		McDavitt			
----	Cancellieri	----	----	----	----	----	----

Family Name: Billington
Family Members:
Name=Tracie, Age=65
Name=Derril, Age=6

Family Name: Cancellieri
Family Members:
Name=Viviana, Age=25

Family Name: Fremantle
Family Members:
Name=Sibyl, Age=44
Name=Veradis, Age=50

Family Name: Kirkhouse
Family Members:
Name=Niko, Age=55

Family Name: Malling
Family Members:
Name=Noel, Age=30
Name=Oralia, Age=25
Name=Cathrine, Age=68
Name=Abey, Age=43

Family Name: McDavitt
Family Members:
Name=Bryce, Age=64

Family Name: Stagge
Family Members:
Name=Irvin, Age=22
Name=Patton, Age=20
Name=Josephina, Age=88

Family Name: Tiddeman
Family Members:
Name=Phaidra, Age=12
Name=Salome, Age=42

2)SEARCH Operations

Oralia Mallingis found in the Tree
Malling family is found BUT Veradisis not inside the Family
Hamilton family is not in the BST
Abey Mallingis found in the Tree

3)DELETE Operations

Tracie Billington is deleted!
Oralia Malling is deleted!
Abey Malling is deleted!
Hamilton family is not in the Tree
Abey Malling is not Found in his/her family!
Veradis Malling is not Found in his/her family!

Family Name: Billington
Family Members:
Name=Derril, Age=6

Family Name: Cancellieri
Family Members:
Name=Viviana, Age=25

Family Name: Fremantle
Family Members:
Name=Sibyl, Age=44
Name=Veradis, Age=50

Family Name: Kirkhouse
Family Members:
Name=Niko, Age=55

 Family Name: Malling
 Family Members:
 Name=Noel, Age=30
 Name=Cathrine, Age=68

 Family Name: McDavitt
 Family Members:
 Name=Bryce, Age=64

 Family Name: Stagge
 Family Members:
 Name=Irvin, Age=22
 Name=Patton, Age=20
 Name=Josephina, Age=88

 Family Name: Tiddeman
 Family Members:
 Name=Phaidra, Age=12
 Name=Salome, Age=42

Logic of Insert Steps

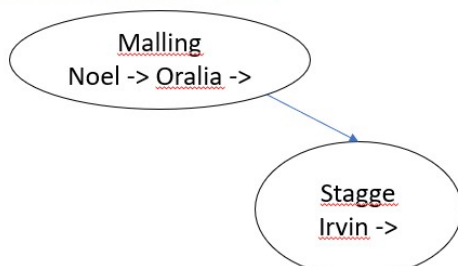
`bst.insert("Malling", "Noel", 30);`



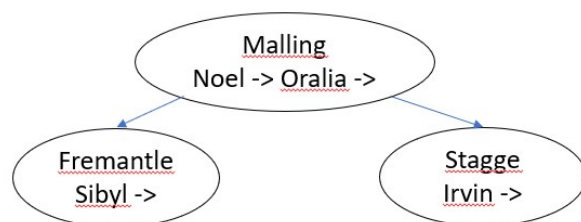
`bst.insert("Malling", "Oralia", 25);`



`bst.insert("Stagge", "Irvin", 22);`



`bst.insert("Fremantle", "Sibyl", 44);`



`bst.insert("Billington", "Tracie", 65);`

