Project Report

Abstract:

In this Project, Phone Directory is implemented using BST which loads and stores the contact information of the person like Name, Phone Number and Email from an input text file.

Implementing Phonebook:

A class Phonebook is created in which three variables Name, Email and Number are declared which are of data type String. A default constructor is also declared.

Next a BSTNode class is declared in which three variables data, left and right are declared which are of data type String and BSTNode respectively. A constructor with one parameter p of data type phonebook is declared and the data is equal to p and then left and right are equated to null.

When the insert function in BSTNode class is called it checks whether the root is equal to null. If the root is equal to null then root will be equal to the new node with the variable p and then it returns root. And the given string is compared to the name present in the root and is stored n the variable result. If the result is less than zero then the value will be inserted at the left node of the root, else if it is greater than the root then it is inserted to the right of the root node and then the root value is returned.

When the Inorder function is called in the BSTNode class then it checks whether the left is equal to null or not, if left is equal to null then inorder is called for the left node of the BST and then it prints the Name, Number and Email. And next if right is not equal to null then inorder is call for the right subtree.

When search function is called in BSTNode class first it will compare the given data with the data present in the root node and it is stored in the variable result. If the result is zero it means the data is present in root so it returns the data in root else if the result is less than zero and the left subtree is not equal to null then

the search operation is done in left subtree or if the result is greater than zero and the right subtree not equal to null then the search operation is again called for the right subtree. And if the data is not present in the tree it returns null.

When minimum function is called it checks whether the left subtree is equal to null, if left subtree is equal to null then the minimum value is present in root so, it returns root value, else the minimum function is called for the left subtree until the minimum value is returned.

When maximum function is called it checks whether the right subtree is equal to null, if right subtree is equal to null then the maximum value is present in root so, it returns root value, else the maximum function is called for the right subtree until the maximum value is returned.

A BST class is created with one variable root of data type BSTNode and is initially equated to null. When insert function is called in the BST class if root is equal to null then the value will be inserted at the root node. Else the insert function if the BSTNode class is called and executed.

When search function is called in BST class first it checks whether the given string is present in root or not if it is not present in the root then it prints “Not Found”, else it calls the search function in the BSTNode class.

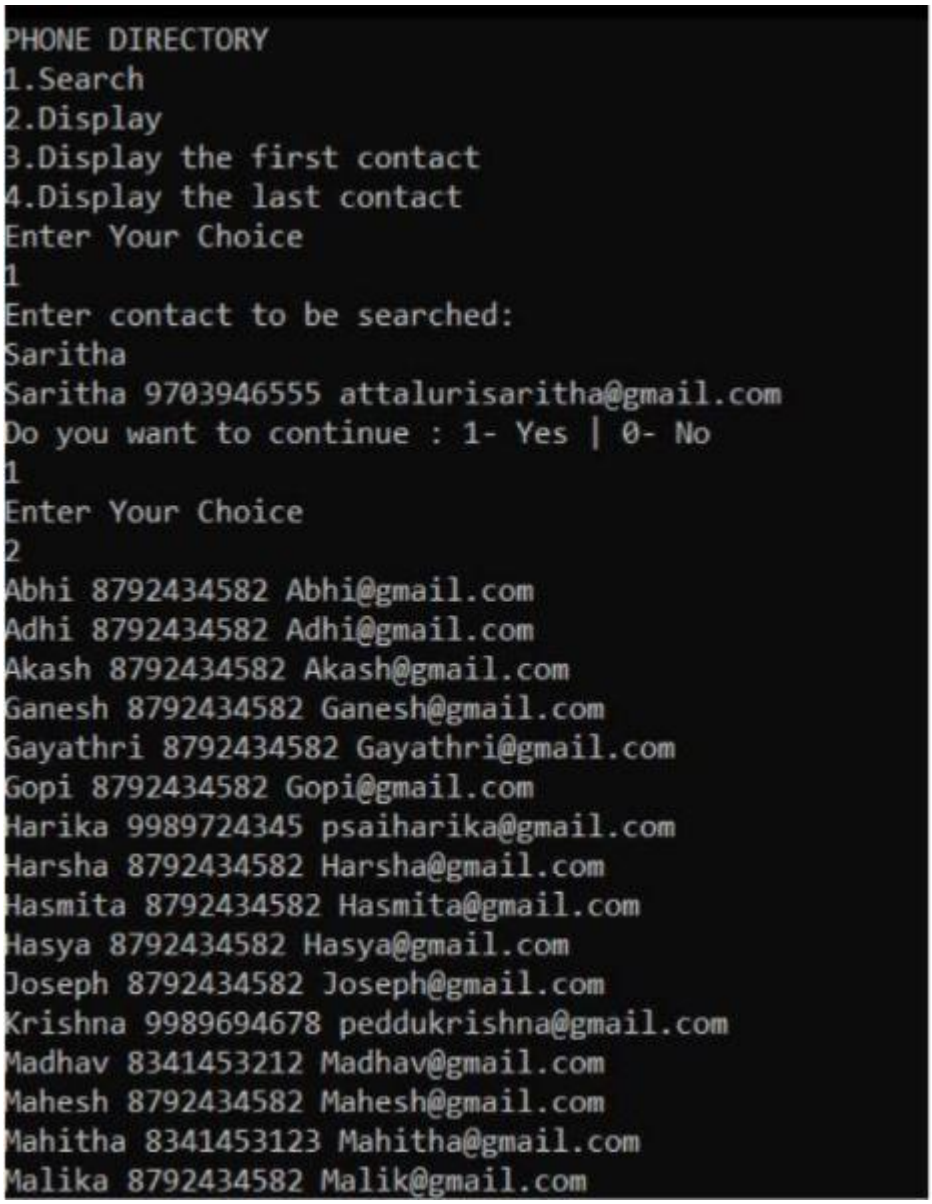
When the display function is called in BST class first it checks whether root is equal to null or not if root is equal to null then it returns that tree is empty else the inorder function in the BSTNode class is called.

When display first function is called first it checks whether root is equal to null or not if the root is equal to null then it returns that tree is empty , else the first contact name, number and email by calling the minimum function which is declared in the BSTNode class.

When display last function is called first it checks whether root is equal to null or not if the root is equal to null then it returns that tree is empty , else the last contact name, number and email by calling the maximum function which is declared in the BSTNode class.

In the main class a menu is created with the integers performing the following functionalities: 1 – search, 2- display, 3- display_first, 4- display_last.

Experimental Results :



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Enter Your Choice
3
First Contact: Abhi 8792434582 Abhi@gmail.com
Do you want to continue : 1- Yes | 0- No
1
Enter Your Choice
4
Last Contact: yeseswa 9989724345 pedduyeseswa@gmail.com
Do you want to continue : 1- Yes | 0- No
```