



ĐẠI HỌC  
BÁCH KHOA HÀ NỘI  
HANOI UNIVERSITY  
OF SCIENCE AND TECHNOLOGY

# BÁO CÁO MINI PROJECT MÔN LẬP TRÌNH HƯỚNG ĐỐI TƯỢNG

Team 21 Topic 1: Visualization of operations on tree data structures

Team members and assignment:

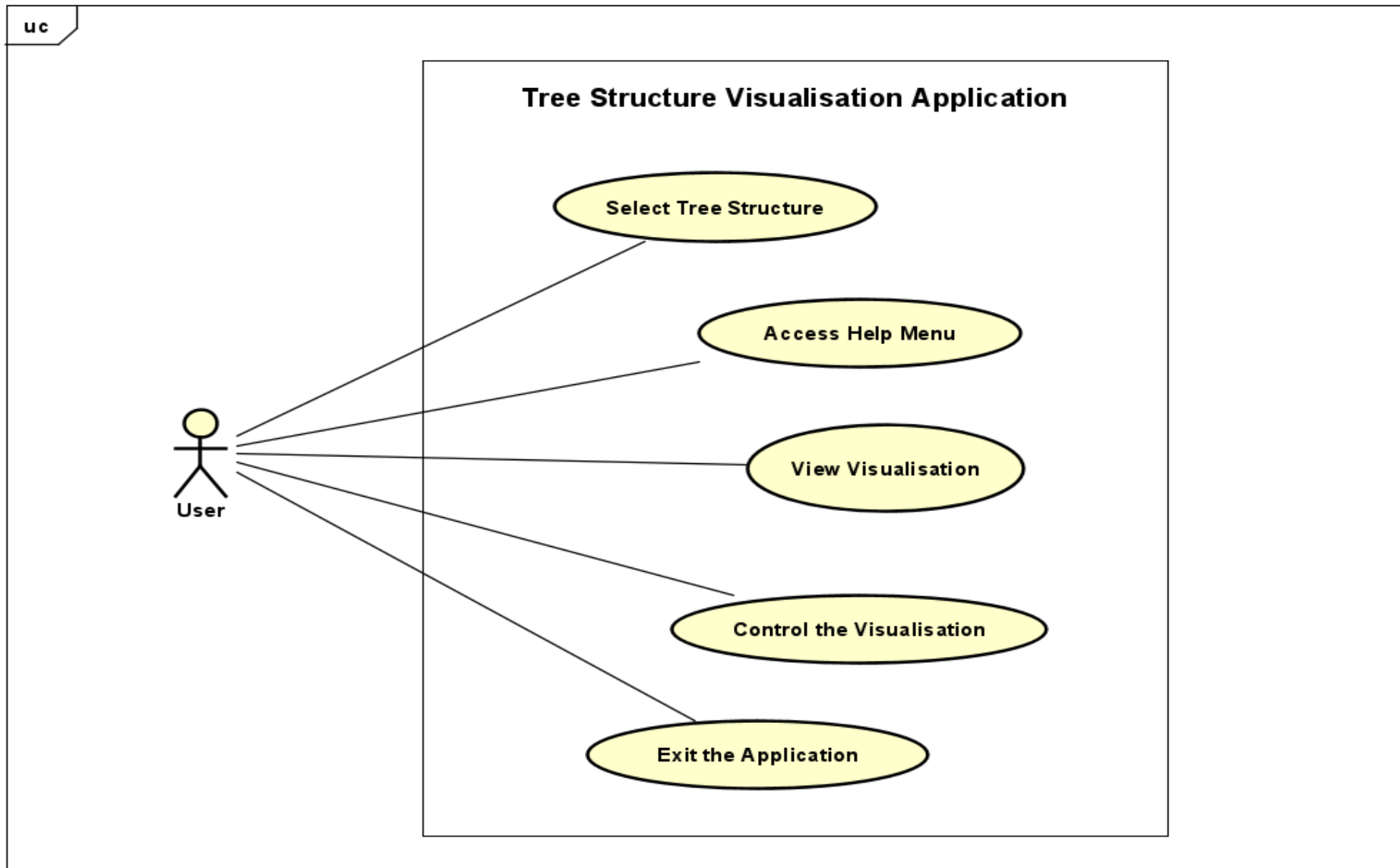
1. Lê Quang Minh 20215088 (Leader): Algorithm and UI
2. Nguyễn Phúc Mạnh 20215087: UI
3. Đoàn Quang Minh 20210606: UI
4. Hoàng Nhật Minh 20210607: UI

ONE LOVE. ONE FUTURE.

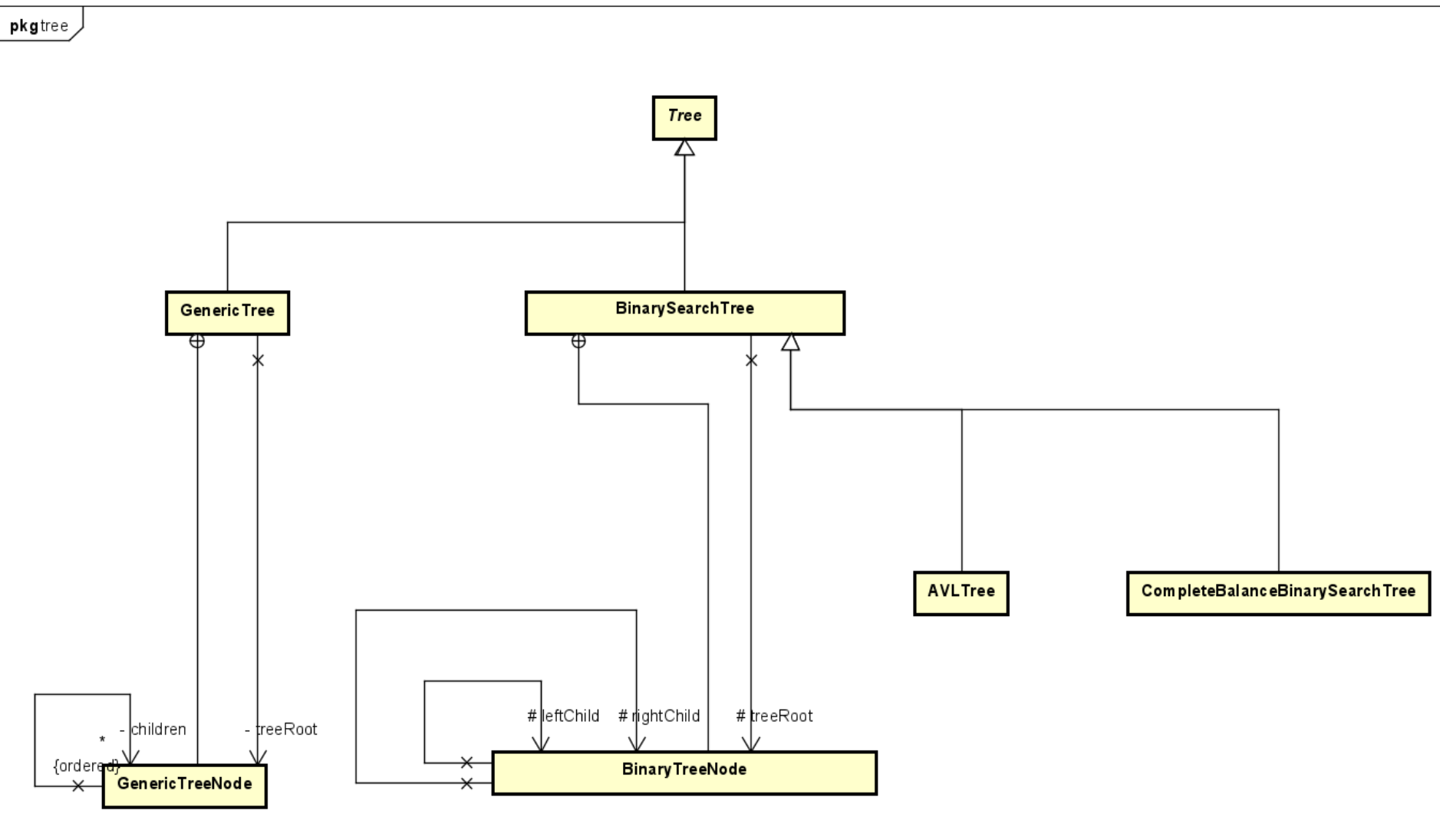
# Problem statement

- Tree data structures are interesting and useful, yet not many students can study tree structure that well.
- A tree visualization application can help with that
- Demonstrate step by step of any operations of a tree.

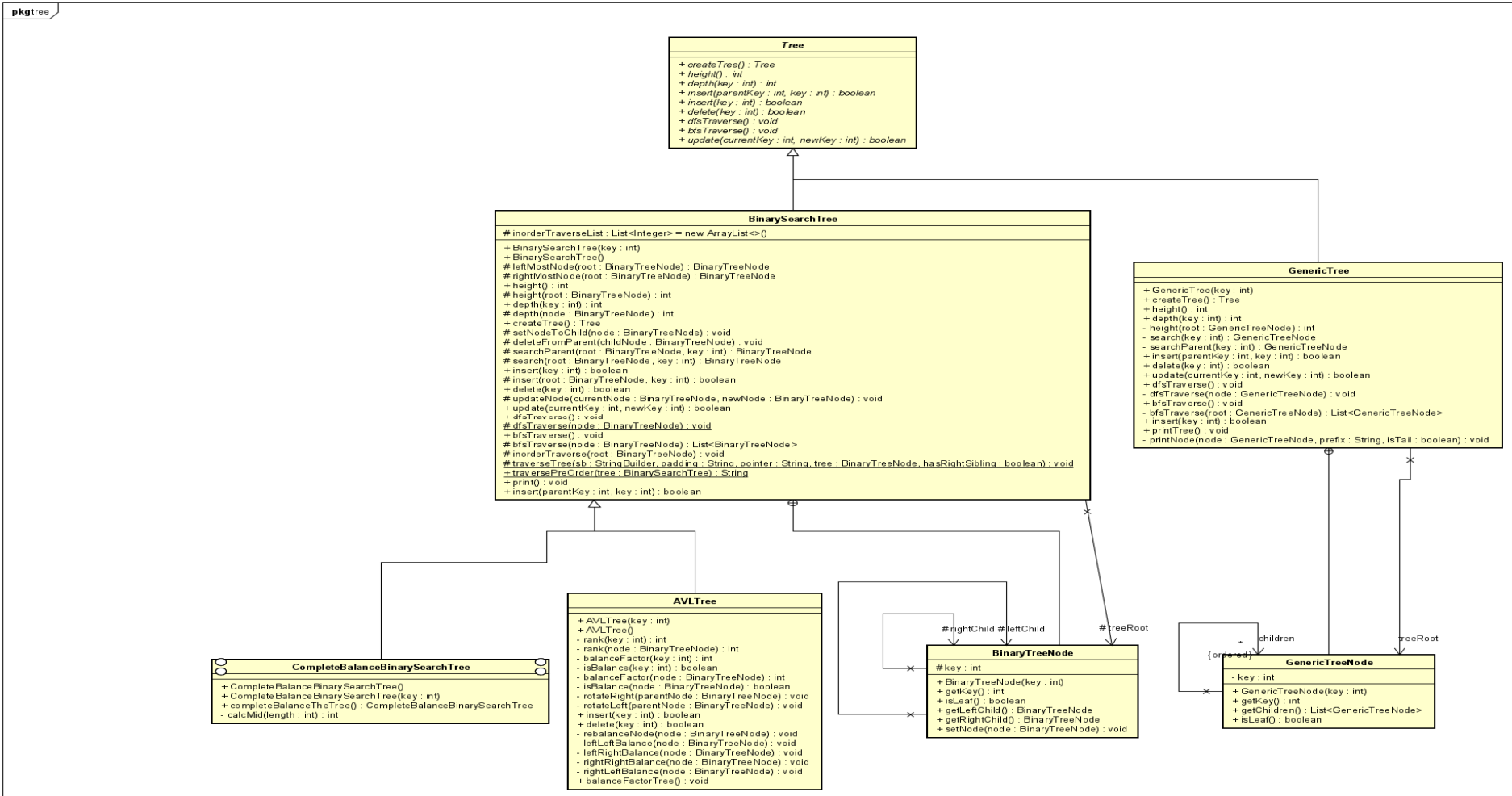
# Use case diagram



# General class diagram



# Class diagrams for packages/modules

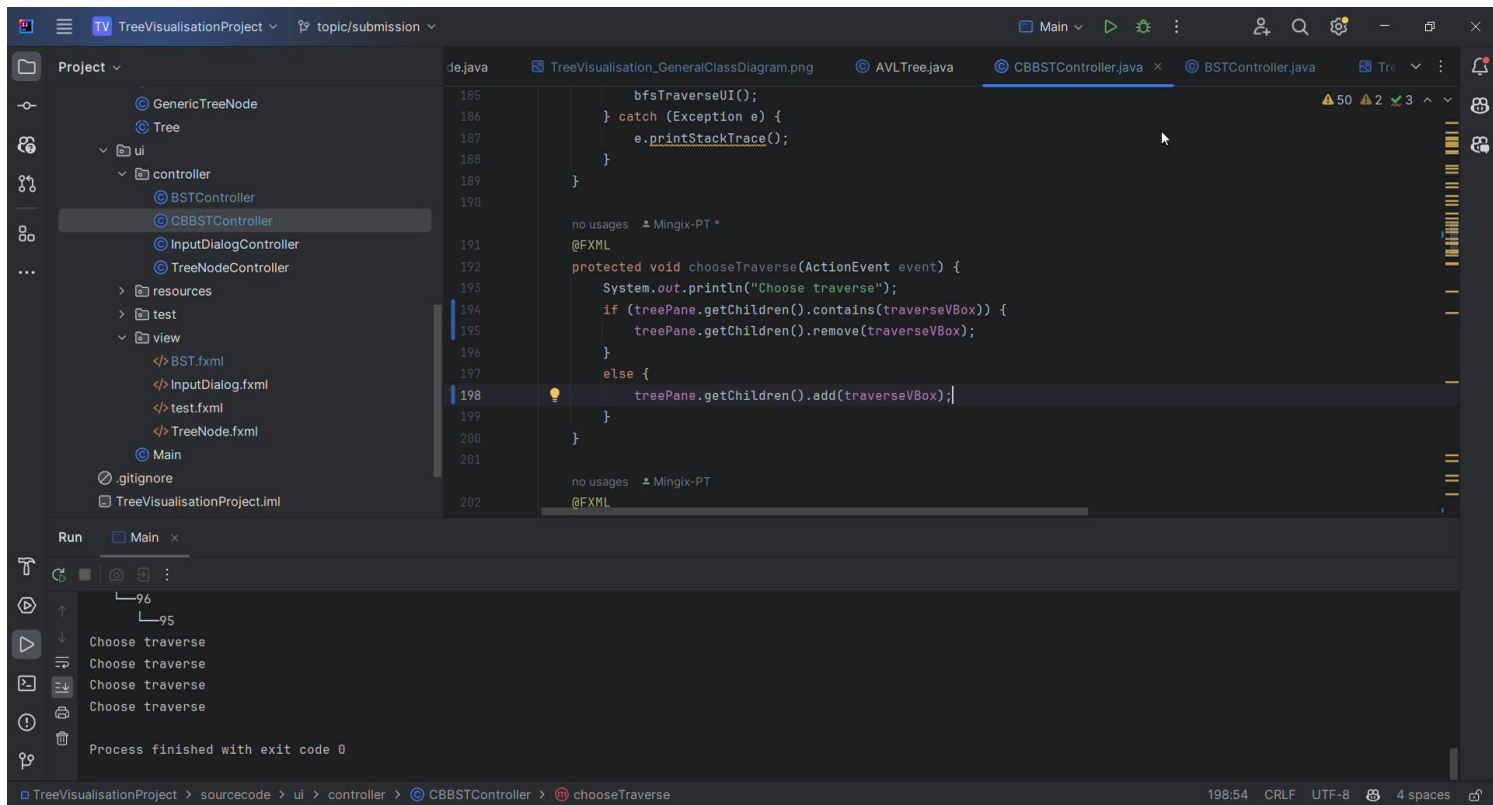


- GenericTree, BinarySearchTree inherit abstract Tree
- AVLTree, CBBST inherit BinarySearchTree

- GenericTree contains GenericTreeNode (Aggregation)
- BinarySearchTree, AVLTree, CBBST contain BinaryTreeNode (Aggregation)

# Demo scenario

- [https://husteduvn-my.sharepoint.com/:f:/g/personal/minh\\_lq215088\\_sis\\_hust\\_edu\\_vn/EmYWON1QnCReroOsiEsDZTEByajtv1NTOWhlrd37D0mjHA?e=yA453V](https://husteduvn-my.sharepoint.com/:f:/g/personal/minh_lq215088_sis_hust_edu_vn/EmYWON1QnCReroOsiEsDZTEByajtv1NTOWhlrd37D0mjHA?e=yA453V)





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```
180 @FXML
181 protected void bfsTraverse(ActionEvent event) {
182
183     e.printStackTrace();
184 }
185
186
187
188
189
190
191 no usages  Mingix-PT *
192 @FXML
193 protected void chooseTraverse(ActionEvent event) {
194     System.out.println("Choose traverse");
195     if (treePane.getChildren().contains(traverseVBox)) {
196         treePane.getChildren().remove(traverseVBox);
197     }
198     else {
199         treePane.getChildren().add(traverseVBox);
200     }
201 }
202
203 no usages  Mingix-PT
204 @FXML
```

Run Main x

at tree.CompleteBalanceBinarySearchTree.completeBalanceTheTree(CompleteBalanceBinarySearchTree.java:27)  
at ui.controller.CBBSTController.createRandomTree(CBBSTController.java:96) <1 internal line>  
... 53 more

Process finished with exit code 0

TreeVisualisationProject > sourcecode > ui > controller > CBBSTController > bfsTraverse 189:6 CRLF UTF-8 4 spaces

A large, stylized graphic on the left side of the slide. It consists of a red background with a circular pattern of white dots of varying sizes, creating a sense of depth and movement. The word "HUST" is written in white, bold, sans-serif capital letters in the center of this graphic.

**HUST**

**THANK YOU !**