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Department of Computer Engineering

BLG 335E
ANALYSIS OF ALGORITHMS REPORT

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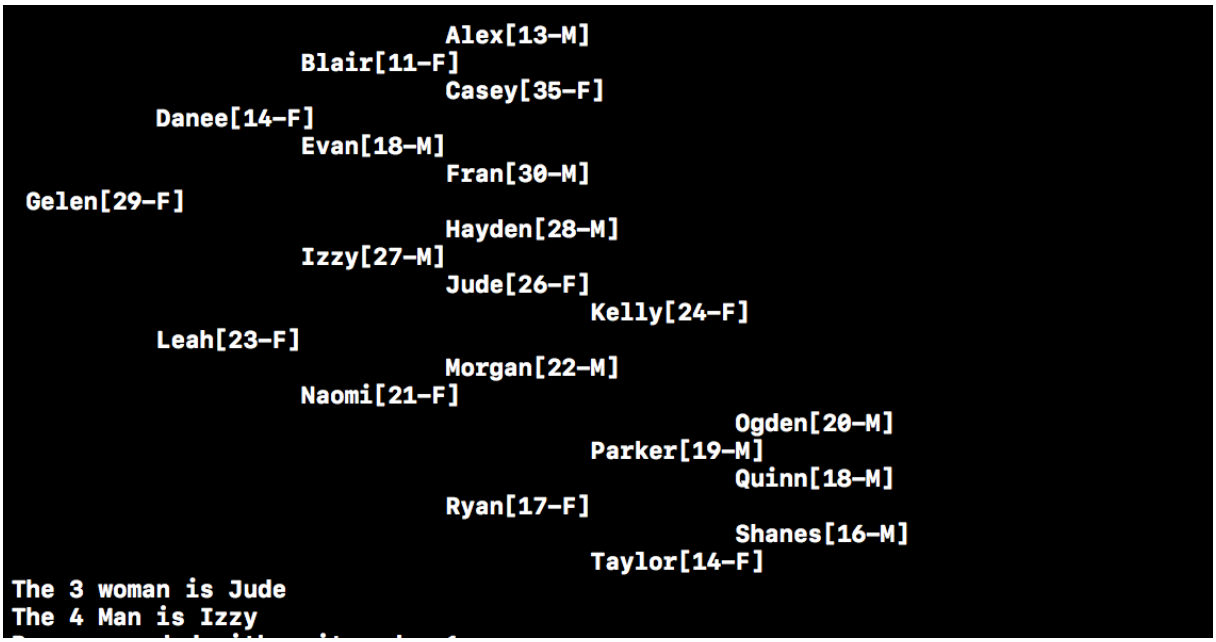
HOMEWORK-4 RED AND BLACK TREES

OUTPUT



QUESTION 1

The way we can update the name of a person as a node in the tree is, first search the tree to find the node that will be updated, we can achieve this by traversing the tree and comparing every key value to the key that we want to search for, as soon as we find it we copy the values in the node to a new node except the name, then in the new node we will set the preferred new name value. Then we delete the old node and insert the newly created node. Lastly since we have added a new node to the tree, we have to recolor and rotate in order to meet the constraints and rebalance the tree.

QUESTION 2

This solution is easier to be implemented because when we update ages, we wont need to recolor and rotate the tree, this is because the tree does not belong to ages. So we can implement this solution by creating a function which recursively traverse every node and update its age, this traversal can be an in-order, pre-order or a post-order traversal.