BLG 335E – Analysis of Algorithm I, Fall 2017
Project 4 Report

Assignment Date: 7 Dec 2017 Thursday

Due Date: 23 Dec 2017 Friday– 20:00

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Code Analysis

In this assignment, you were asked to implement a basic Red–Black Tree insert operation and then augment your data structure with extra operations for order statistics.

Compilation Command: g++ kod.cpp -o kod -O2 -std=c++11
Running Command: ./kod input.txt

Screenshot of Output with given input file


```
[otok@ssh ~]$ g++ kod.cpp -o kod -O2 -std=c++11
[otok@ssh ~]$ ./kod input.txt
                    ┌──(R)Alex-13-M
            ┌──(B)Blair-11-F
            │     └──(R)Casey-35-F
    ┌──(B)Dane-14-F
    │       └──(B)Evan-18-M
    │       └──(R)Fran-30-M
(B)Glen-29-F
    │           ┌──(B)Hayden-28-M
    │       ┌──(B)Izzy-27-M
    │       │   └──(B)Jude-26-F
    │       │       └──(R)Kelly-24-F
    └──(R)Leah-23-F
    │           ┌──(B)Morgan-22-M
    │       └──(B)Naomi-21-F
    │               ┌──(R)Ogden-20-M
    │           ┌──(B)Parker-19-M
    │           │   └──(R)Quinn-18-M
    │       └──(R)Ryan-17-F
    │               ┌──(R)Shane-16-M
    │           └──(B)Taylor-14-F


3rd woman: Dane
4th man: Hayden
[otok@ssh ~]$
```

Question 1: Briefly explain what you would do to correctly update the name of a person as a node in the Red– Black Tree.

To update the name of a person as a not in RB Tree, I would delete the node first, and change the name of the node and reinsert it.

Question 2: Briefly explain what you would do to correctly increment (by 1) the ages of all people in the Red– Black Tree.

With a single Depth First Search (DFS), we can simple increment the ages of all nodes.