

**Gebze Technical University
Computer Engineering**

CSE 222 - 2018 Spring

HOMEWORK 6 REPORT

**UĞURKAN ATEŞ
150144012**

Course Assistant: Fatma Nur Esirci

1 Worst RedBlack Tree

This part about Question1 in HW6

1.1 Problem Solution Approach

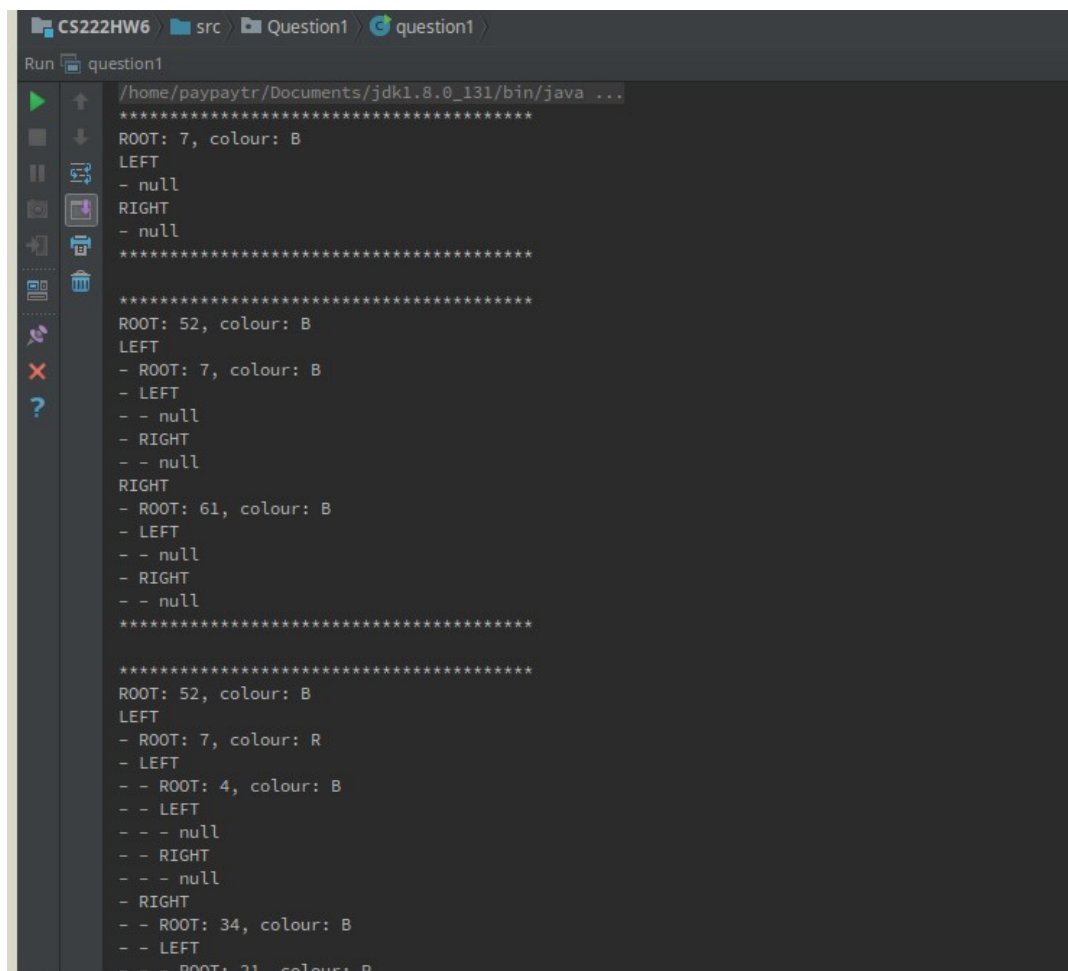
I needed RBNode class for moving elements when inserting to Rtree.
Insert methods checks errors and exceptions and then sends to put method.
Put method checks conflicts red-red outside of Gchild, red-red rightside of gchild,
red-red conflict(left-right) inside and right -left version of this.
Then it colourFlips().

In Test enviroment it inserts given structure to make it height 6 RBTree. After each few element insertion tree displayed on terminal. After removal of elements tree displayed again.

1.2 Test Cases

Test cases given in Screenshots of HEIGHT6 with insertino of Integers.

1.3 Running Commands and Results



```
CS222HW6 src Question1 question1
Run question1
/home/paypaytr/Documents/jdk1.8.0_131/bin/java ...
*****
ROOT: 7, colour: B
LEFT
- null
RIGHT
- null
*****
*****
ROOT: 52, colour: B
LEFT
- ROOT: 7, colour: B
- LEFT
- - null
- RIGHT
- - null
RIGHT
- ROOT: 61, colour: B
- LEFT
- - null
- RIGHT
- - null
*****
*****
ROOT: 52, colour: B
LEFT
- ROOT: 7, colour: R
- LEFT
- - ROOT: 4, colour: B
- - LEFT
- - - null
- - RIGHT
- - - null
- RIGHT
- - ROOT: 34, colour: B
- - LEFT
- - - ROOT: 21, colour: B
```

```

CS222HW6 > src > Question1 > question1 >
Run question1
- RIGHT
- - null
*****
*****
ROOT: 52, colour: B
LEFT
- ROOT: 7, colour: R
- LEFT
- - ROOT: 4, colour: B
- - LEFT
- - - null
- - - RIGHT
- - - null
- RIGHT
- - ROOT: 34, colour: B
- - LEFT
- - - ROOT: 21, colour: R
- - - LEFT
- - - - null
- - - RIGHT
- - - - null
- - RIGHT
- - - null
RIGHT
- ROOT: 61, colour: B
- LEFT
- - null
- RIGHT
- - null
*****
*****
ROOT: 34, colour: B
LEFT
- ROOT: 7, colour: B
- LEFT
- - ROOT: 4, colour: B
- - LEFT

```

2 binarySearch method

This part about Question2 in HW6

2.1 Problem Solution Approach

Balanced highs are constant. If not binary tries to change it BST but not always successful.

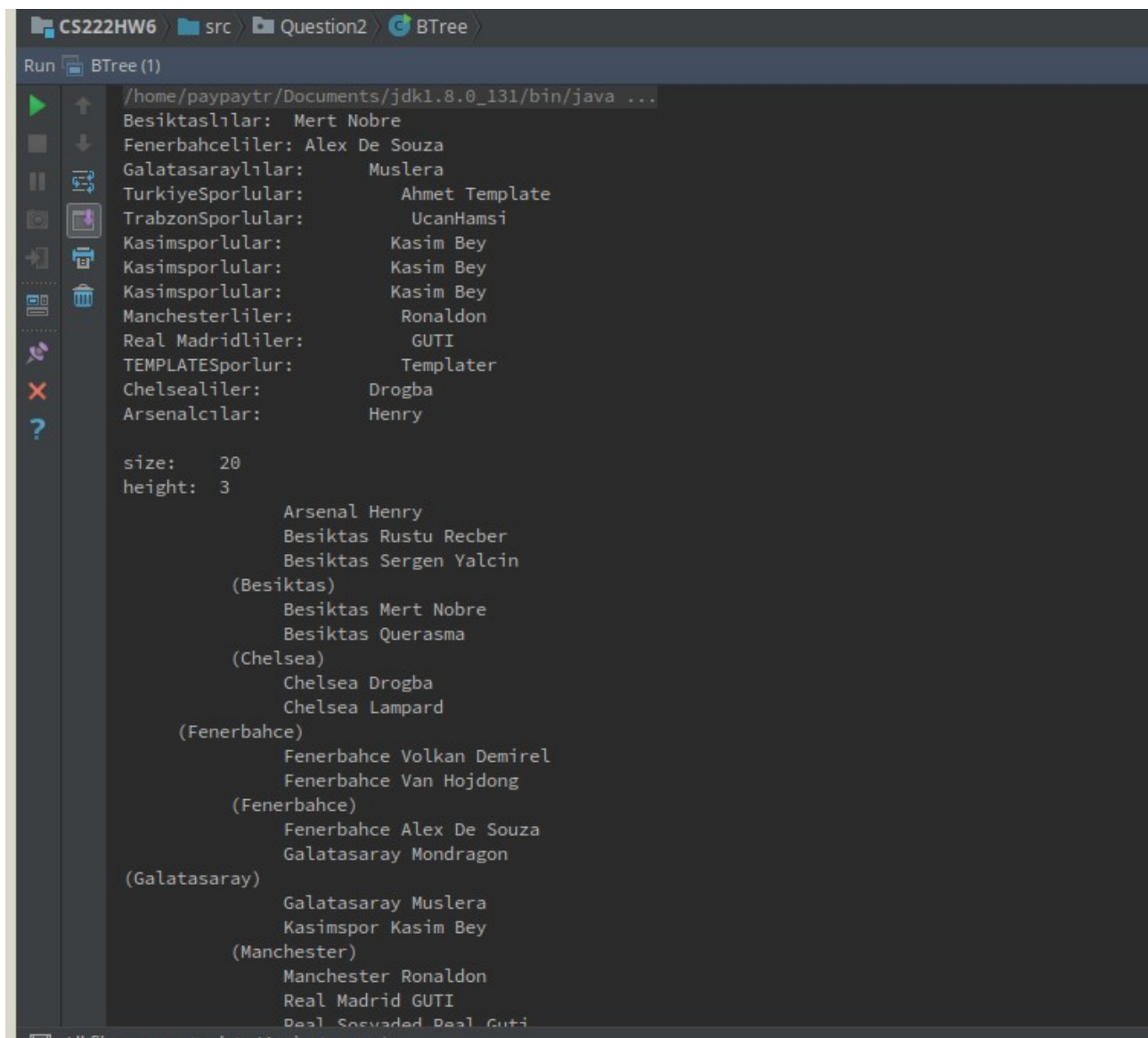
2.2 Test Cases

For test cases i tried football teams with different players.

Height was similar to 3 and tried with near 20 players.

Printed out contents and removed some of them and printed again.

2.3 Running Commands and Results



```
CS222HW6 > src > Question2 > BTree
Run BTree (1)
/home/paypaytr/Documents/jdk1.8.0_131/bin/java ...
Besiktaslılar: Mert Nobre
Fenerbahceliler: Alex De Souza
Galatasaraylılar: Muslera
TurkiyeSporlular: Ahmet Template
TrabzonSporlular: UcanHamsi
Kasimsporlular: Kasim Bey
Kasimsporlular: Kasim Bey
Kasimsporlular: Kasim Bey
Manchesterliler: Ronaldon
Real Madridliler: GUTI
TEMPLATESporlur: Templater
Chelsealiler: Drogba
Arsenalcılar: Henry

size: 20
height: 3

    Arsenal Henry
    Besiktas Rustu Recber
    Besiktas Sergen Yalcin
  (Besiktas)
    Besiktas Mert Nobre
    Besiktas Querasma
  (Chelsea)
    Chelsea Drogba
    Chelsea Lampard
  (Fenerbahce)
    Fenerbahce Volkan Demirel
    Fenerbahce Van Hojdong
  (Fenerbahce)
    Fenerbahce Alex De Souza
    Galatasaray Mondragon
  (Galatasaray)
    Galatasaray Muslera
    Kasimspor Kasim Bey
  (Manchester)
    Manchester Ronaldon
    Real Madrid GUTI
    Real Sociedad Real Guti

All files are up to date (4 minutes ago)
```

3 Project 9.5 in book

This part about Question3 in HW6

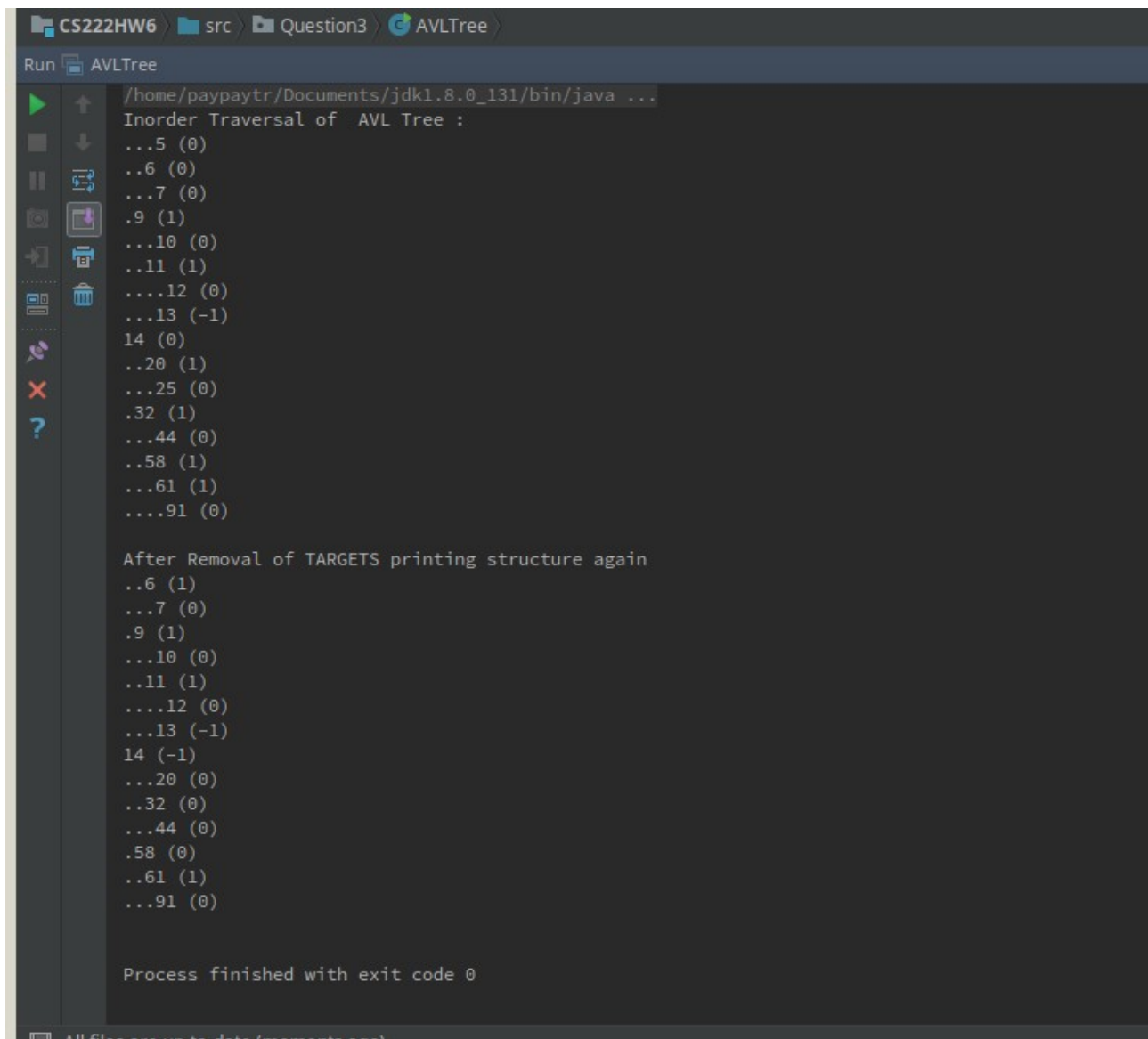
3.1 Problem Solution Approach

rotateLeft(was missing) but used in Student code somehow,
reBalanceRight,incrementBalans,deletion and display methods were missing or corrupt nor working.

3.2 Test Cases

Show that all methods your implemented run correctly. Report all of situations. Elements added and shown with removal and before it.

3.3 Running Commands and Results



The screenshot shows an IDE window with the file path `CS222HW6 > src > Question3 > AVLTree`. The Run console for `AVLTree` displays the following output:

```
/home/paypaytr/Documents/jdk1.8.0_131/bin/java ...  
Inorder Traversal of AVL Tree :  
...5 (0)  
..6 (0)  
...7 (0)  
.9 (1)  
...10 (0)  
..11 (1)  
....12 (0)  
...13 (-1)  
14 (0)  
..20 (1)  
...25 (0)  
.32 (1)  
...44 (0)  
..58 (1)  
...61 (1)  
....91 (0)  
  
After Removal of TARGETS printing structure again  
..6 (1)  
...7 (0)  
.9 (1)  
...10 (0)  
..11 (1)  
....12 (0)  
...13 (-1)  
14 (-1)  
...20 (0)  
..32 (0)  
...44 (0)  
.58 (0)  
..61 (1)  
...91 (0)  
  
Process finished with exit code 0
```

At the bottom of the console, a status bar indicates: `All files are up to date (moments ago)`.