LAB 4

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BALANCED BINARY TREES

Pen and Paper Exercise

Add the following numbers into an AVL tree. To make sure you get it right you should show clearly the balance factors for each node and the rotations involved.

26 15 54 66 58 83 90 70 96 75 72

Programming Exercise

Make yourself unbeatable at Scrabble by writing a computer program that uses your letters to make the longest words possible and gives you the top 10 suggestions.

You will need to load and use the file *dictionary.txt* which contains all of the words in the English language.

The output of your program might look something like this:

```
Enter your letters:
sdreletw

Here are the top 10 suggestions:

lewdster
wrestled
rewelds
strewed
swelted
swelter
welders
welters
wrested
wrestle
lewdest
```

You can use the FileIO class as follows:

```
public static void main(String[] args){

        FileIO reader = new FileIO();
        String[] contents = reader.load("dictionary.txt");
}
```

Advanced Programming Exercise

Add in more features to make the program more usable for Scrabble, such as specifying letters that MUST be used, thus allowing the word to be connected with another on the board.