

## CS211 ALGORITHMS & DATA STRUCTURES II

### 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.

66 67 78 92 74 98 41 32 25 20 17

##### Programming Exercise



Make yourself unbeatable at Boggle by writing a computer program that uses the letters to make the longest words possible and prints them out, adding up the points for all of them (**1 point** for 3 and 4 letter words, **2 points** for 5 letter word, **3 points** for 6 letter word, **5 points** for 7 letter word, **11 points** for longer than that).

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 for the Boggle board in the picture:

```
Enter the 16 letters row by row:
rhreypcswnsntego
```

```
Here are words you can make:
```

```
Ego
Son
Net
Ten
Cress
etc...
Total = 6 points
```

You can use the FileIO class as follows:

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

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