CS211 ALGORITHMS & DATA STRUCTURES II

LAB 5

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RED BLACK TREES / CRYPTOGRAPHY

Pen and Paper Exercise

Add the following numbers into red-black tree. To make sure you get it right you should show clearly the colour changes and the rotations involved.

```
26 15 54 66 58 83 90 70 96 75 72
```

Programming Exercise

Write a program that takes *encoded.txt* as input and outputs the European language that it is in. It is one of these languages: http://practicalcryptography.com/cryptanalysis/letter-frequencies-various-languages/

Put the text through your Huffman frequency code to get a frequency profile, and then compare it against these European languages to see which one is the best match. Come up with some metric for quantifying how good the fit is.

encrypt.java shows how the ciphertext was generated.

Advanced Programming Exercise

Write a program that decrypts *encoded.txt* as much as possible, so it becomes apparent what famous piece of text this is. 2% bonus CA will be awarded to the first to crack it.