CS202 Lab/Programming Assignment 6

Due: Before the class on Thursday, April 16, 2015

In this assignment you are to implement the **Huffman coding** (zip). Assume the message consists of uppercase letters only. Your program should read from data file which contains only one line of message, such as

    DABDABBDBBBDBACADDDB

The output of this program would contain the code of each character and the encoded message. Here is a possible interaction of such a program:

    Please enter the data file name: Lab6.data1

    Here is the code of each character:

    Character   Code

    A   101
    B   0
    C   100
    D   11

    The encoded message is 111010111010011000110101100101111110

Two data files, **Lab6.data1** and **Lab6.data2**, are available on **Kodiak**. Each data file has only one line of input, consisting of uppercase letters only. Run your program first on **Lab6.data1** which is short and very easy to check whether your program is correct. You need then run your program on **Lab6.data2.**

BONUS

1.   20 points

Modify your program slightly so it can also do decoding (unzip). Some data structures may have to be changed or added in order to do this. Run your program on **Lab6.data3** and **Lab6.data4.**   This is what a data file would look like:

```
DABDABBDBBBDBACADDDB
1010001001011111100100101001100
```

Use the first line of the data file to create Huffman code. Your program should print the code of each symbol, and the encoded message. Then use the code that you have created to decode the second line and print the decoded message.

2.   100 points

Write a GUI component so the program can actually display the Huffman tree with appropriate labels of 0, 1, etc.