

Homework 21

1. Spring 2008 Final Question 4

How many bits are in the Huffman encoding of the following message? (Do not count the bits to encode the table.)

a b a a b a c a b a a b a c d a b a a b a c a b a a b a c d e

For reference, the frequency of each symbol is given in the table below.

a	b	c	d	e
4	16	8	2	1

57 bits

2. Fall 2008 Final Question 7

You receive the following message encoded using LZW compression.

97

98

128

129

131

132

130

Finish decoding the message.

a b a b b a b a b b a b b a b b

3. Fall 2011 Final Question 10b

Decode each of the following LZW-encoded messages or explain briefly why it is not a valid LZW-encoded message. (Recall that codeword 80 is reserved to signify end of file.)

<i>encoded message</i>	<i>decoded message or brief explanation of why invalid</i>
41 42 43 44 80	A B C D
42 41 4E 82 41 80	B A N B A A
42 41 83 80	Invalid - codeword 83 can't have been defined yet
41 42 81 82 80	A B A B B A
41 42 81 83 80	A B A B A B A
42 41 4E 44 41 4E 41 80	Invalid - 41 4E would be replaced by 81 the second time it appears

4. Question 5.5.3

Give an example of a uniquely decodable code that is not prefix free or suffix free.

0011, 011, 11, 1110