

Huffman's Encoding

Q. Which of the following set of codes form a valid prefix code?

- 01,100,001,1001
- 10,010,110,1010
- 001,011,101,01
- 10,010,1101,1100

Q. Let a code c is defined on a set of symbols as $c(t) = 11$, $c(p) = 01$, $c(n) = 001$, $c(s) = 10$, $c(i) = 000$. What does the string 1001000001 represents?

Q. Let a code c is defined on a set of symbols as $c(t) = 11$, $c(p) = 01$, $c(n) = 001$, $c(s) = 10$, $c(i) = 000$ with the frequency of each symbol as $f(t) = 0.2$, $f(p) = 0.25$, $f(n) = 0.3$, $f(s) = 0.10$, $f(i) = 0.15$. If a text contains 100 characters from this symbol set, what will be the size of the encoded text?

Q. Let a code c is defined on a set of symbols as $c(t) = 11$, $c(p) = 01$, $c(n) = 001$, $c(s) = 10$, $c(i) = 000$. Which of the following pair of nodes will be the siblings of each other in the optimal prefix code tree?

- p, s
- t, p
- n, t
- s, t

Q. What is the minimum no. of bits needed for a fixed length encoding if the size of the character set is n ?

Q. What will be the length of encoded text for a given message "BQWWEER" using Huffman's encoding?

Q. The probability of occurrence of different symbols in a (20 character long) message are given as 0.2, 0.3, 0.2, 0.15, 0.15.

What is the length of encoded message using Huffman's encoding?

What is the ABL value of the encoding?

Q. The frequency of x , y and z in a message are given as f_x , f_y and f_z such that $f_x < f_y < f_z$. Which of the following set of codes are valid Huffman codes for the given message?

$c(x)=01, c(y)=001, c(z)=100$

$c(x)=100, c(y)=01, c(z)=001$

$c(x)=11, c(y)=011, c(z)=10$

$c(x)=110, c(y)=001, c(z)=10$

Q. The Huffman's code for three symbols x , y and z for a message are given as $c_x=010$, $c_y=10$ and $c_z=11$. Which of the following set of frequencies are valid for the symbols in the given message?

$f_x=0.42, f_y=0.33, f_z=0.25$

$f_x=0.25, f_y=0.33, f_z=0.42$

$f_x=0.42, f_y=0.25, f_z=0.33$

$f_x=0.33, f_y=0.42, f_z=0.25$

Q. The frequencies of the symbols in a message m is given as $f_a=0.15$, $f_b=0.12$, $f_c=0.20$, $f_d=0.34$, $f_e=0.19$. If the encoded message using Huffman's encoding is $c(m)=1011010001$, then find the original message m .

Q. Using Huffman's encoding, the string "abbaccbaaa" is encoded as _____.

Q. Frequencies are given as 0.19, 0.23, 0.03, 0.45, 0.05, 0.05. Construct the Huffman's tree and Find the ABL. Find the average save per bit over the fixed length encoding. (OR, the size of each character is given in the plain text message)

Q. If the length of the message is given as n then how many bytes are saved by Huffman's encoding.