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**Assignment Lesson 6**

1) Draw a Huffman tree and calculate average codeword length? If we have:

* Input string: “ gotoyooggy ” (double quotation marks doesn’t)

2) Draw a Huffman tree and calculate average codeword length? If we have:

* Input string: “ alibaba bali la” (double quotation marks doesn’t count!)

**Answer**

1). Draw a Huffman tree and calculate average codeword length

Given: Input string: “gotoyooggy”

Root

o

g

g

o

y

t

g

t

o

Probability of each word:

+ P(g) = 3/10 = 0.3

+ P(o) = 4/10 = 0.4

+ P(t) = 1/10 = 0.1

+ P(y) = 2/10 = 0.2

So, we can get codeword from tree: + o = 0 => Io = 1  
+ g = 10 => Ig = 2  
+ y = 110 => Iy = 3

+ t = 111 => It = 3  
=> E = 0.4x1 + 0.3x2 + 0.2x3 + 0.1x3 = 1.9 bits

2). Draw a Huffman tree and calculate average codeword length? If we have:

Input string: “alibaba bali la” (double quotation marks doesn’t count!)

* Probability of each word: + P(a) = 5/15 = 0.33

+ P(l) = 3/15 = 0.2

+ P(i) = 2/15 = 0.13

+ P(b) = 3/15 = 0.2

+ P(space) = 2/15 = 0.13

- Draw a Huffman tree by probability above:

Root

1

0

1

a

1

0

1

b

l

0

ia

Space

So, we can get codeword from tree: + a = 0 => Ia = 1  
+ b = 10 => Ib = 2  
+ l = 110 => Il = 3

+ i = 1110 => Ii = 4

+ space = 1111 => Ispace = 4  
E = 0.33x1 + 0.2x2 + 0.2x3 + 0.13x4 + 0.13x4 = 2.37 bits