

Fixed Length Code

going going gone

g = 000
o = 001
i = 010
n = 011
e = 100
_ = 101

1

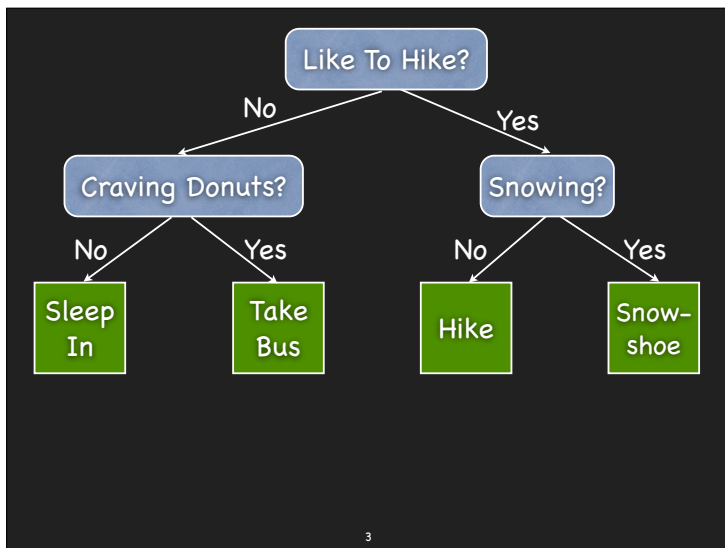
Variable Length Code

going going gone

g = 11
o = 01
i = 100
n = 101
e = 000
_ = 001

1101100101110011101100101110011101101000

2

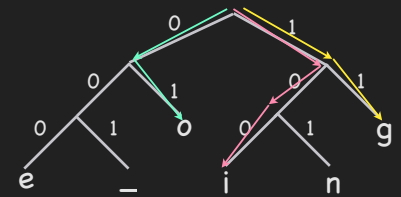


3

1101100101110011101100101110011101101000

going going gone

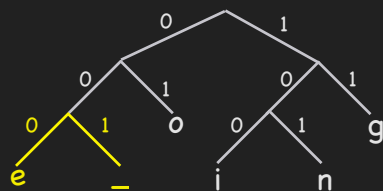
e = 000
_ = 001
o = 01
i = 100
n = 101
g = 11



4

Huffman Codes

going going gone




Symbol	g	o	i	n	e	space
occurrences	5	3	2	3	1	2



5

Symbol	g	o	i	n	e	space
occurrences	5	3	2	3	1	2



Symbol	g	o	i	n	e	space
occurrences	5	3	2	3	3	



6

Symbol	g	o	i	n	
occurrences	5	3	2	3	3



Symbol	g	o		
occurrences	5	3	5	3



7

Symbol	g	o		
occurrences	5	3	5	3



Symbol	g		
occurrences	5	6	5



8

Symbol	g		
occurrences	5	6	5

Symbol		
occurrences	10	6

9

Symbol		
occurrences	10	6

Symbol		
occurrences	16	

10

no engine no go

Symbol	e	g	i	n	o	space
occurrences	2	2	1	4	3	3

11

going going gone	no engine no go
<ul style="list-style-type: none"> e = 000 space = 001 o = 01 i = 100 n = 101 g = 11 	<ul style="list-style-type: none"> e = 000 space = 11 o = 001 i = 101 n = 01 g = 100

12

going going gone

inging ion

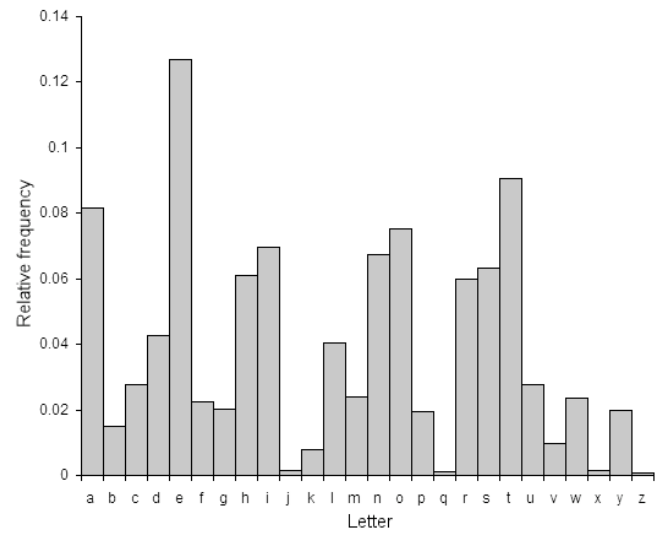
onion on egg

no engine no go

one eon on Io

inning nine ongoing

13



egg egging eggnog ego en engine eon gee
gene genie genii gi gig gin ginning go
going gone gong goo goon in ingoing inn
inning Io ion nee neo Neogene neon nine
ninon no nog noggin nogging non none noon
nooning ogee on one ongoing onion

15

Symbol	e	g	i	n	o	space	ALL
occurrences	28	42	26	58	35	46	235
frequency	0.12	0.18	0.11	0.25	0.15	0.19	1.00

16

Symbol	e	g	i	n	o	space
frequency	0.12	0.18	0.11	0.25	0.15	0.19

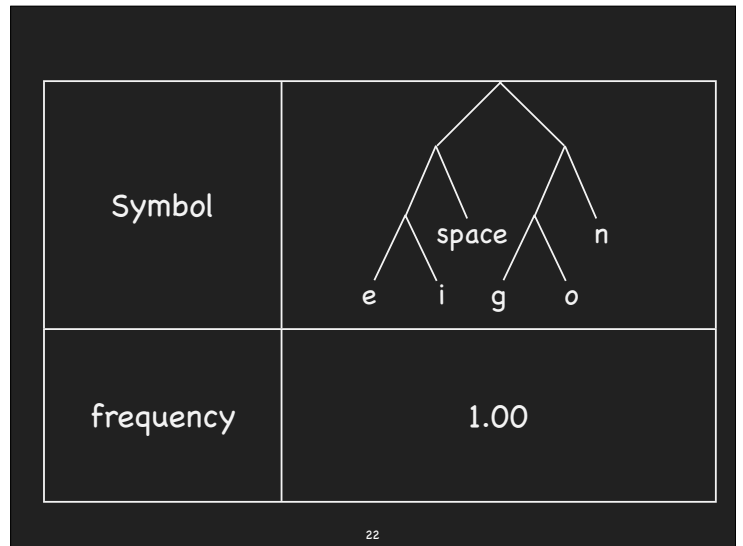
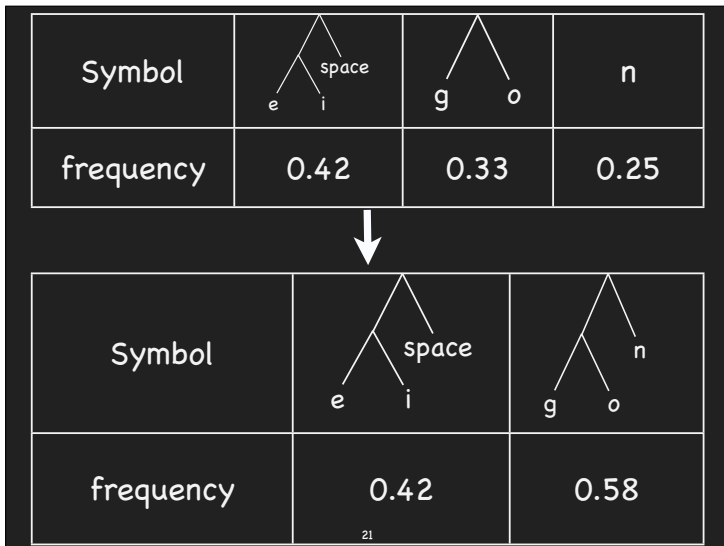
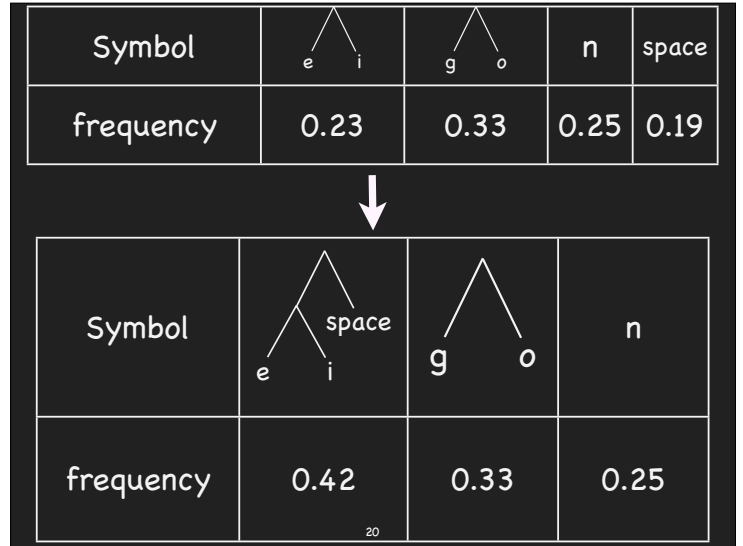
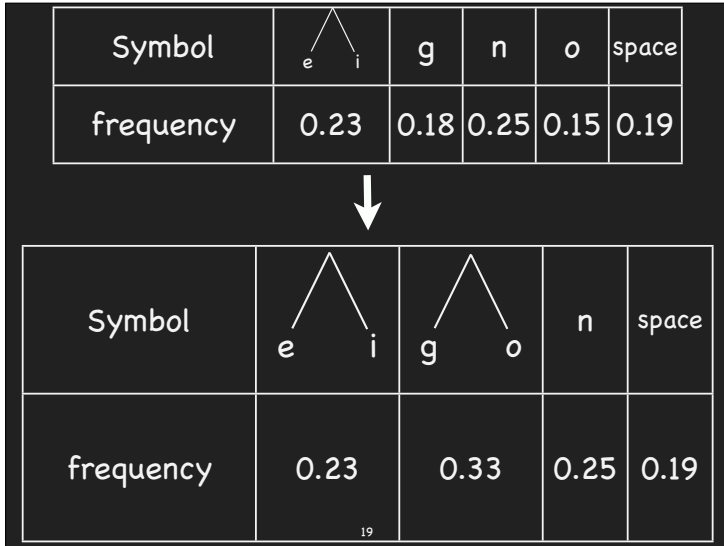
17

Symbol	e	g	i	n	o	space
frequency	0.12	0.18	0.11	0.25	0.15	0.19



Symbol	e i	g	n	o	space
frequency	0.23	0.18	0.25	0.15	0.19

18



Code For Messages

Symbol	e	g	i	o	n	space
frequency	0.12	0.18	0.11	0.15	0.25	0.19
codeword	000	100	001	101	11	01

23

Expected Bits per Symbol

Symbol	e	g	i	o	n	space
frequency	0.12	0.18	0.11	0.15	0.25	0.19
codeword	000	100	001	101	11	01
code length	3	3	3	3	2	2

24

Expected Bits per Symbol

Symbol	e	g	i	o	n	space
frequency	0.12	0.18	0.11	0.15	0.25	0.19
codeword	000	100	001	101	11	01
code length	3	3	3	3	2	2

$$3 * 0.56 + 2 * 0.44 = 1.68 + .88 = 2.56$$