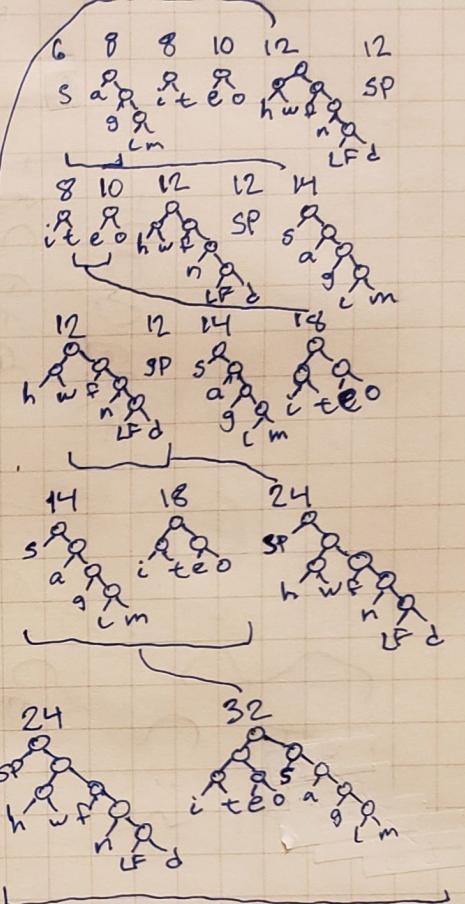


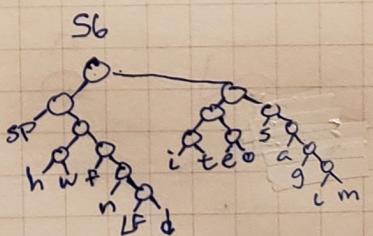
#1 "it was the age of wisdom - it was the age of foolishness" if

SP	111111111111	12	1 1 1 1 1 2 3 3 3 4 4 4 5 5 6 12
i	1111	4 ✓	LFD Lm n g f h w a i t e o s SP
t	1111	4 ✓	<u>LFD</u>
w	111	3 ✓	1 1 1 2 2 3 3 3 4 4 4 5 5 6 12
a	1111	4 ✓	Lm n g f h w a i t e o s SP
s	1111	6 ✓	<u>LFD</u>
h	111	3 ✓	1 2 2 2 3 3 3 4 4 4 5 5 6 12
e	1111	5 ✓	n g f h w a i t e o s SP
g	11	2 ✓	<u>LFD</u> Lm
o	111	5 ✓	2 2 3 3 3 3 4 4 4 5 5 6 12
f	111	3 ✓	n g f h w a i t e o s SP
d	1	1 ✓	<u>LFD</u>
m	1	1 ✓	3 3 3 3 4 4 4 4 5 5 6 12
l	1	1 ✓	n g f h w g a i t e o s SP
n	1	1 ✓	<u>LFD</u> cm
LF	1	1 ✓	3 3 4 4 4 4 5 5 6 6 12 h w g a i t e o s SP
			<u>Lm</u> n g f h w s SP
			4 4 4 4 5 5 6 6 6 12 g a i t e o s SP
			<u>Lm</u> n g f h w s SP
			4 4 5 5 6 6 6 8 12 i t e o s SP
			<u>LFD</u> n g f h w a i t e o s SP
			5 5 6 6 6 8 8 12 e o s SP
			<u>LFD</u> n g f h w a i t e o s SP
			6 6 6 8 . 10 12 n g f h w s a i t e o s SP
			<u>LFD</u> n g f h w a i t e o s SP



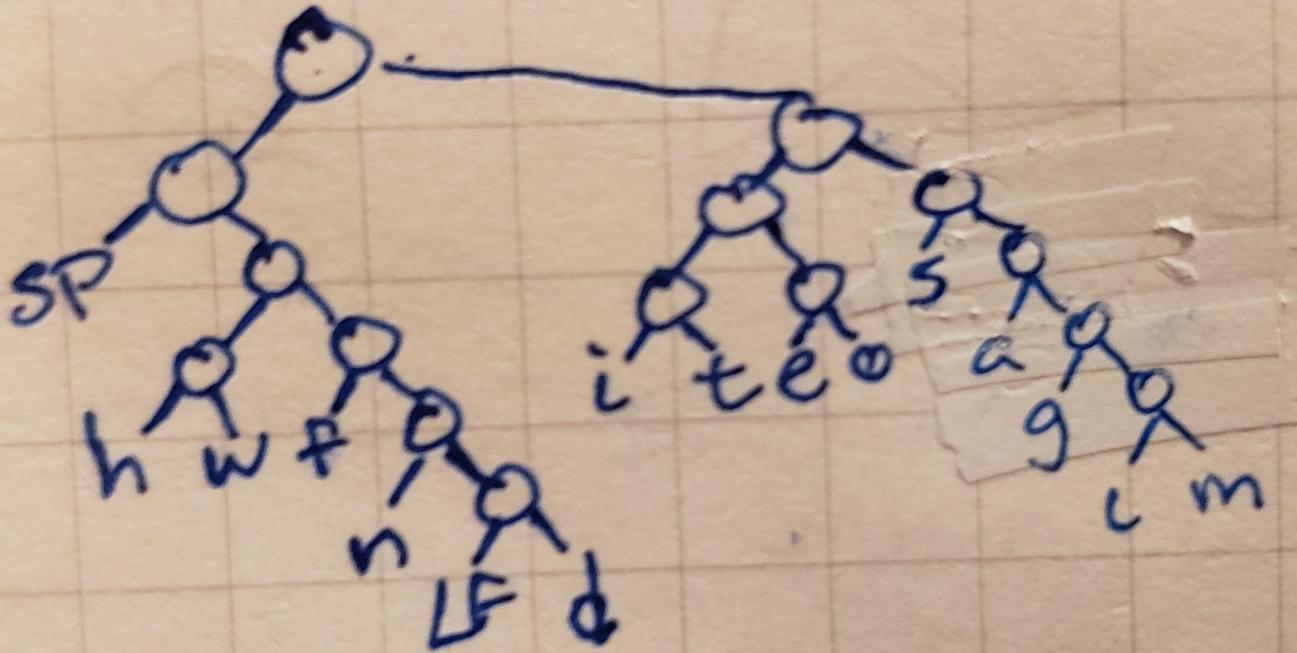
Codeword Table:	
S	00
i	1000
t	1001
w	0101
a	1110
s	110
h	0100
e	1010
g	11110
o	1011
f	0110
d	011111
m	111111
l	111110
n	01110
lf	011110

ASCII:	
0010	0000
0110	1001
0111	0100
0111	0111
0110	0001
0111	0011
0110	1000
0110	0101
0110	0111
0110	1111
0110	0110
0110	0100
0110	1101
0110	1100
0110	1110
0000	1010



trie representation

S6



trie representation

"\_it\_was\_the\_age\_of\_wisdom\_it\_was\_the\_age\_of\_foolishness"

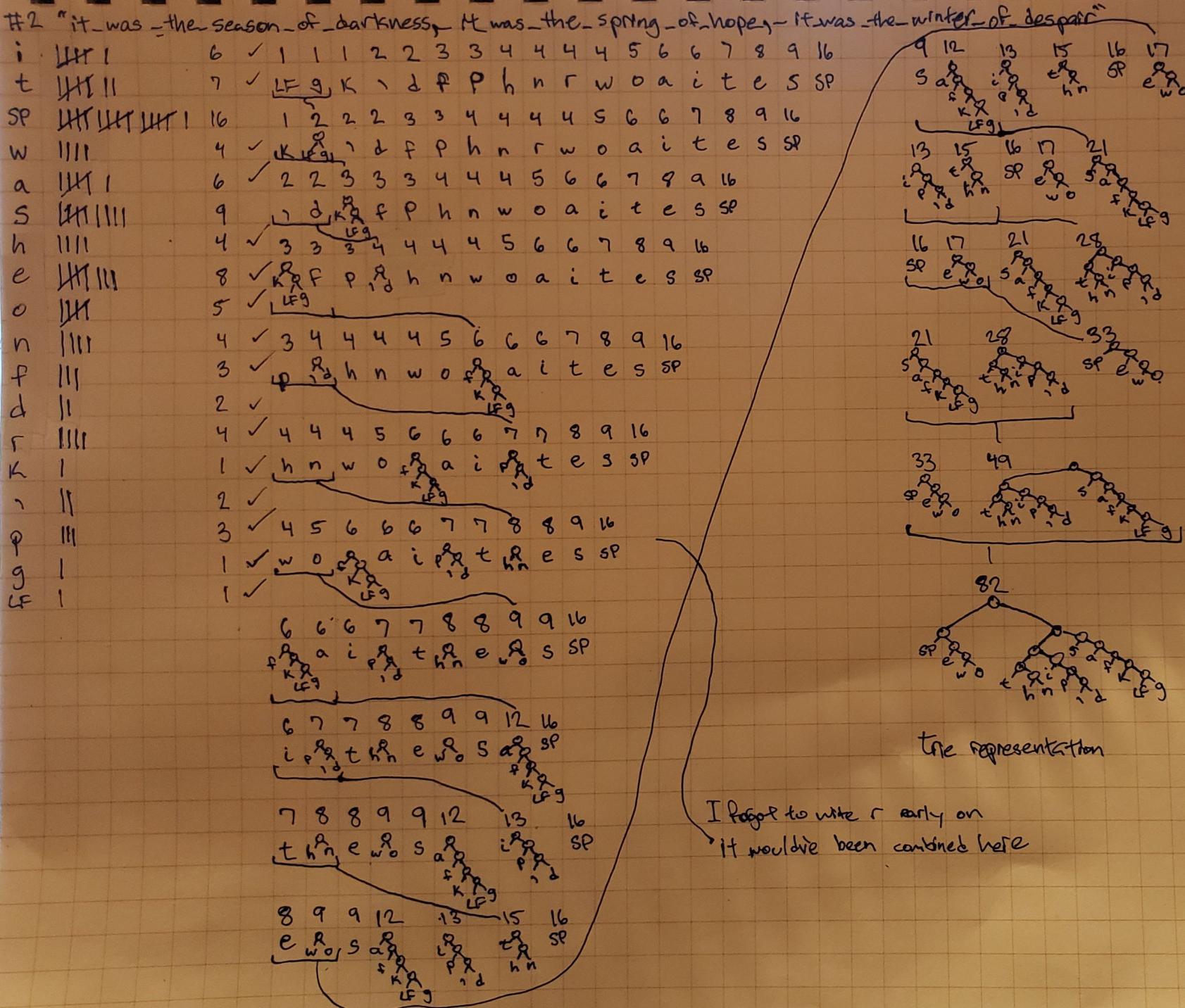
00 1000 100 100 0101 1110 110 00 1001 0100 1010 00 1110 1110 1010 00 1011 0110 00 0101 1000 110 01111 1011  
SP i t SP w a s SP t h e SP a g e SP o F SP w i s d o  
11111 00 1000 1001 00 0101 1110 110 00 1001 0100 1010 00 1110 1110 1010 00 1011 0110 00 0110 000 0110 1011 1011 11110 1000110  
m SP i t SP w a s SP t h e SP a g e SP o F SP f o o L i s  
010001 110 1010 110 110 011110  
h n e s s LF

$$\begin{array}{r}
 85 \\
 95 \\
 + 25 \\
 \hline
 205 \text{ bits}
 \end{array}$$

Trie as bitstream:

$$\begin{array}{r}
 82 \\
 + 77 \\
 \hline
 159 \text{ bits}
 \end{array}$$

364 bits

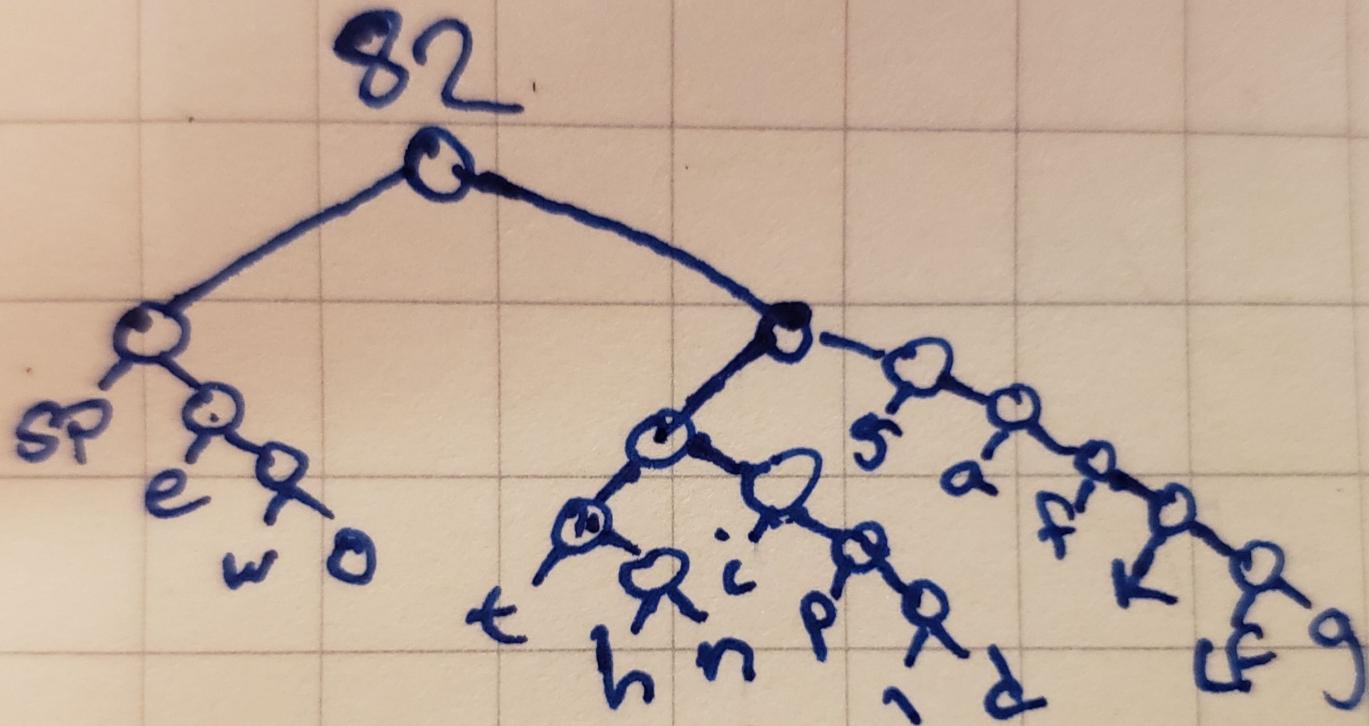


Codeword Table	ASCII
i	1010
t	1000
sp	00
w	0110
a	1110
s	110
h	10010
e	010
o	0111
n	10011
f	0110
d	11110
r	101111
K	111110
~	101110
P	10110
g	111111
LF	1111110

r (it was at this point I realized I forgot r)

tree representation

I forgot to write r early on  
it would've been contained here



tree representation

"it was the season of darkness, - it was the spring of hope, - it was the winter of despair"

i t sp w a s sp t h e sp s e a s o n sp o f sp d a r k n e s s  
i t sp w a s sp t h e sp s p r i n g s p o f sp h o p e ,  
i t sp w a s sp t h e sp s p a t i a l

$$\begin{array}{r} 102 + \frac{1}{7} \\ 107 + \frac{1}{7} \\ + 102 + 2 \cdot \frac{1}{7} \\ \hline 311 + 4 \cdot \frac{1}{7} \text{ bits} \end{array}$$

"it was the season of darkness, it was the spring of hope, it was the winter of despair"

Trie as bitstream:

00100100000 01011001010101110111 101101111 00010111010000101101000101101110 01011010010101110000010010110  
sf e w o t h n i p ,  
1011001000 01011100110101100010101100101011010101100111  
d s a f k lf g

$$\begin{array}{r} 101 \\ + \quad 68 \\ \hline 169 \end{array}$$

+ at least 8 more bits  
for r

$$\begin{array}{r} 311 + 4 \cdot f \text{ bits} \\ + 169 + 8 + \hline \end{array}$$

$$\boxed{488 + 4 \cdot r + x c}$$

# of bits in  
r's codeword value

bits in trie R  
r was included