



Chapter 12

Utilities

Data Structures & Problem Solving
Using JAVA
Second Edition

Mark Allen Weiss

Figure 12.1

A standard coding scheme

Character	Code	Frequency	Total Bits
a	000	10	30
e	001	15	45
i	010	12	36
s	011	3	9
t	100	4	12
<i>sp</i>	101	13	39
<i>nl</i>	110	1	3
Total			174

Figure 12.2

Representation of the original code by a tree

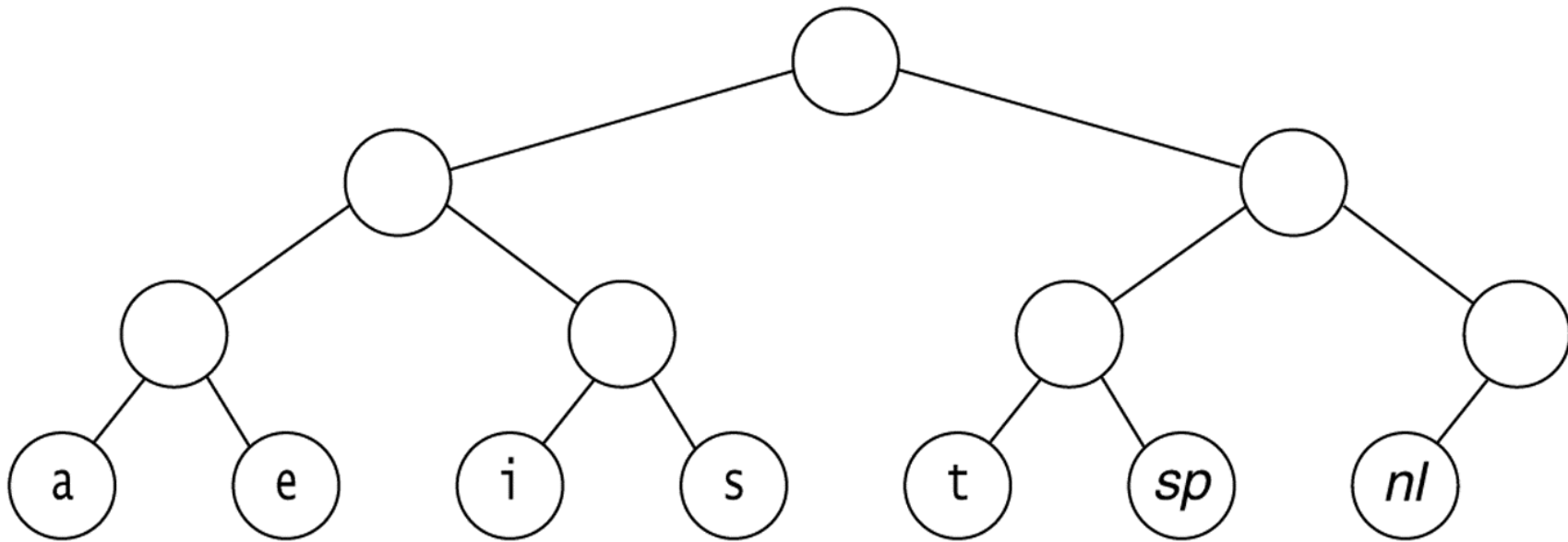


Figure 12.3

A slightly better tree

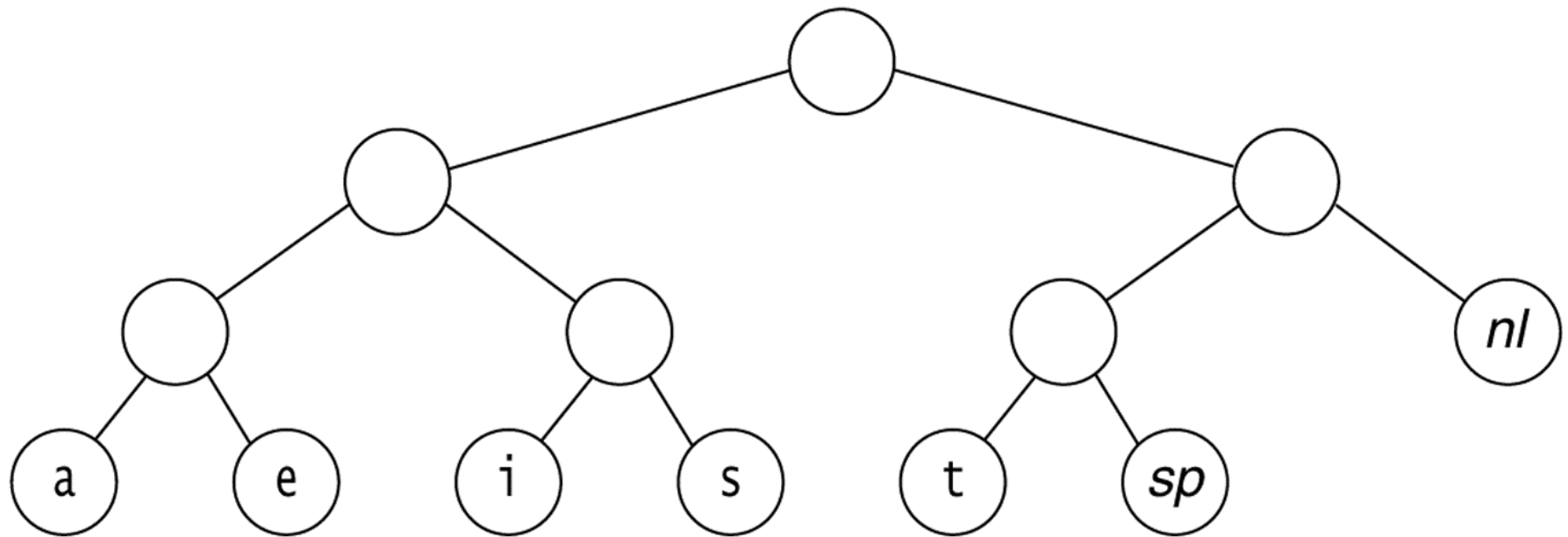


Figure 12.4

An optimal prefix code tree

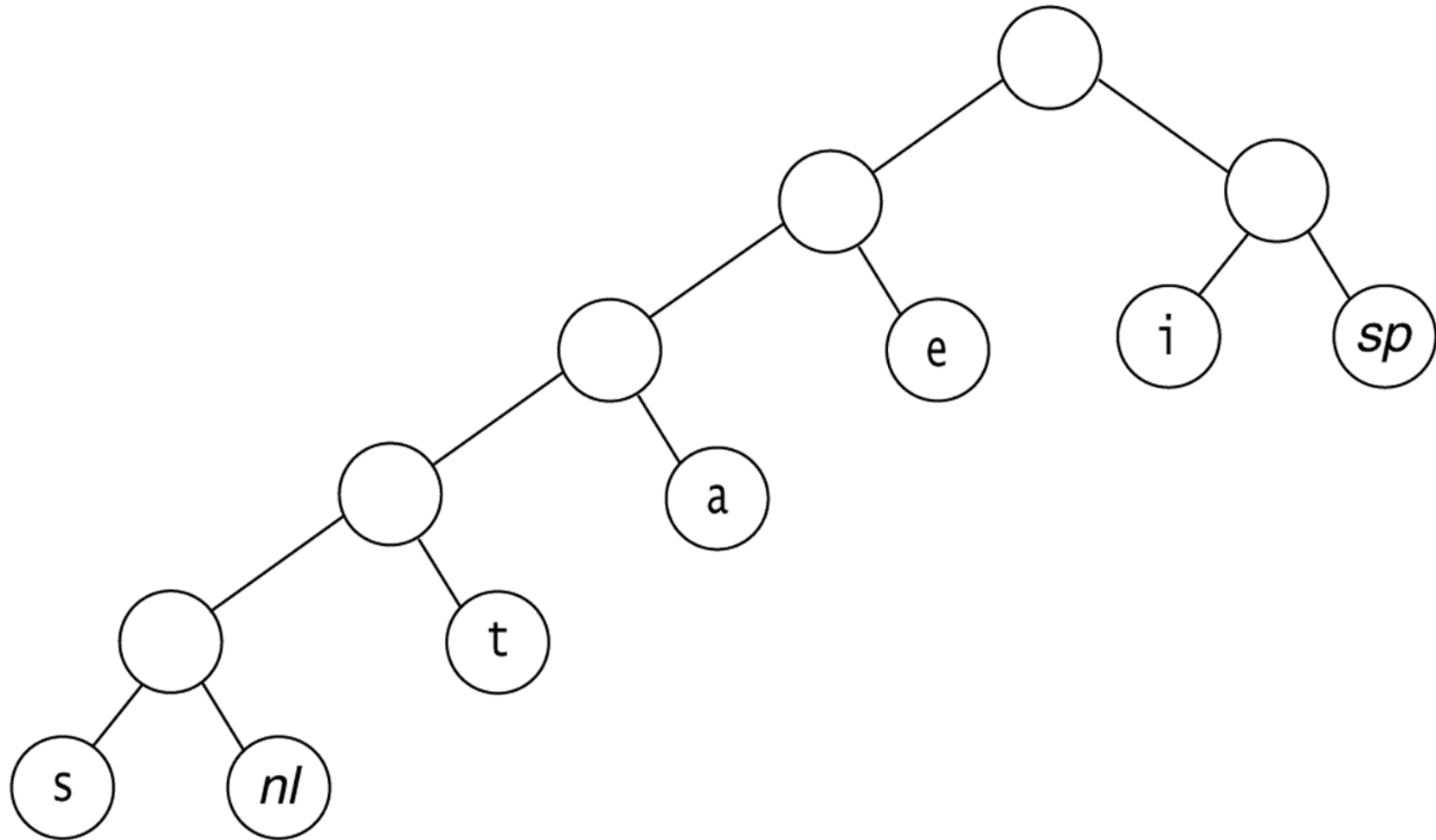


Figure 12.5
Optimal prefix code

Character	Code	Frequency	Total Bits
a	001	10	30
e	01	15	30
i	10	12	24
s	00000	3	15
t	0001	4	16
<i>sp</i>	11	13	26
<i>nl</i>	00001	1	5
Total			146

Figure 12.6

Initial stage of Huffman's algorithm

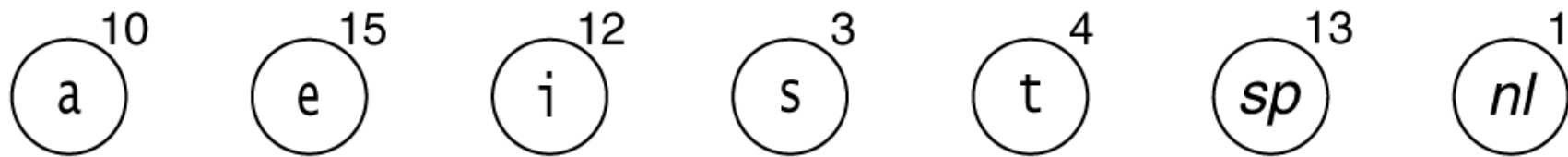


Figure 12.7

Huffman's algorithm after the first merge

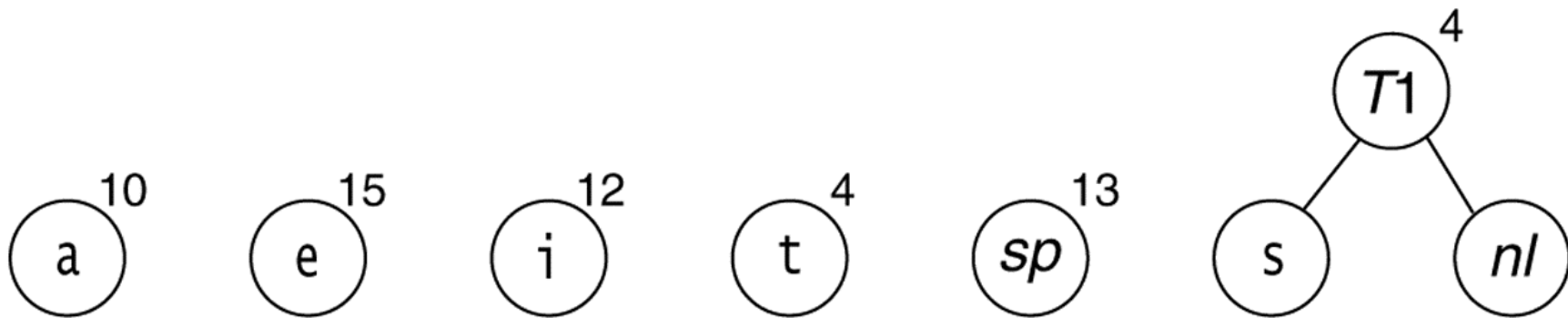


Figure 12.8

Huffman's algorithm after the second merge

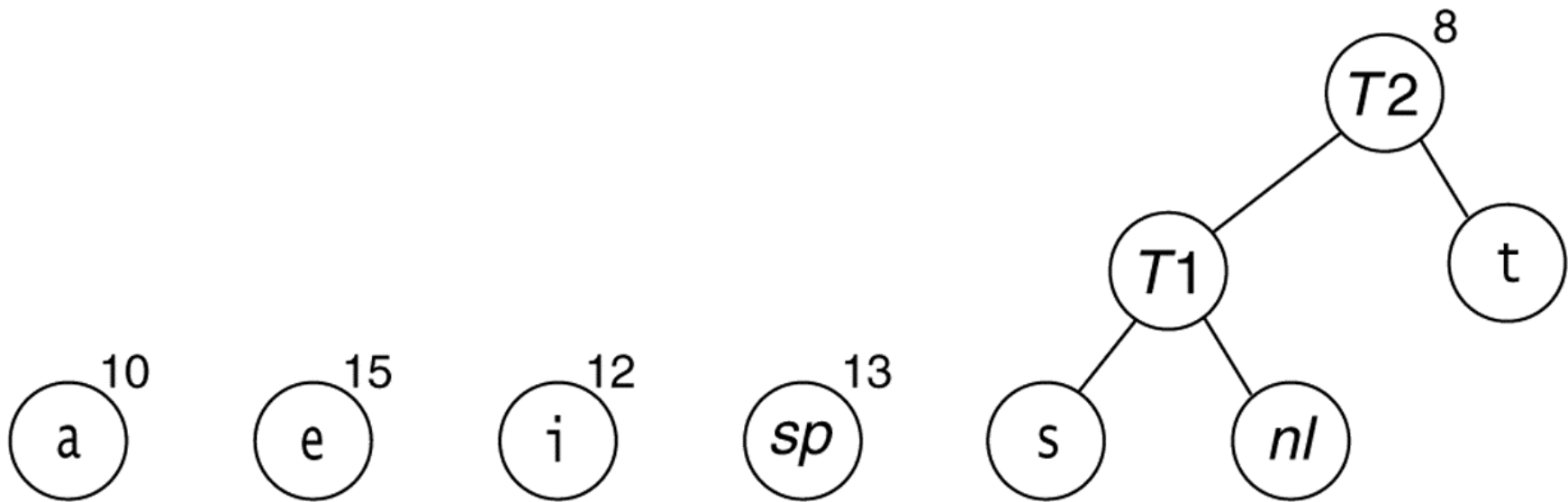


Figure 12.9

Huffman's algorithm after the third merge

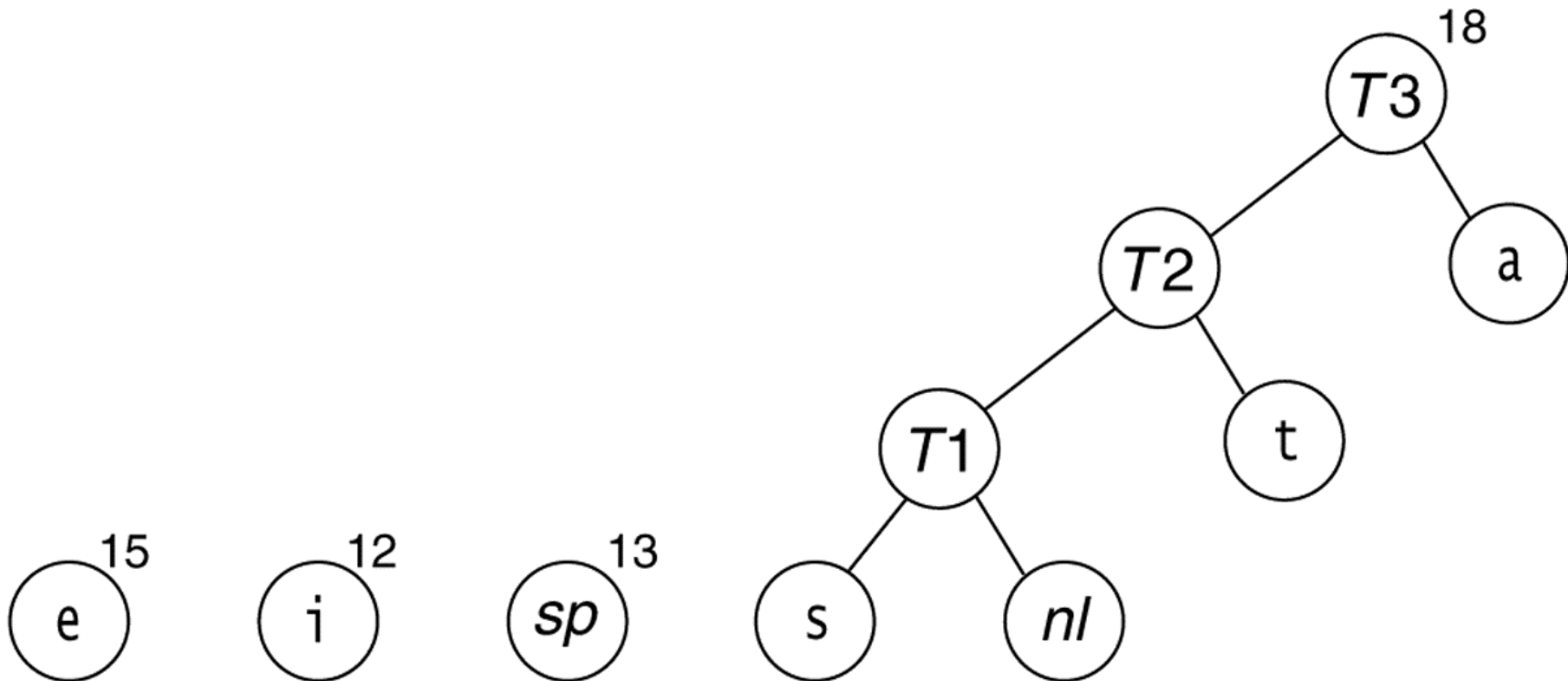


Figure 12.10

Huffman's algorithm after the fourth merge

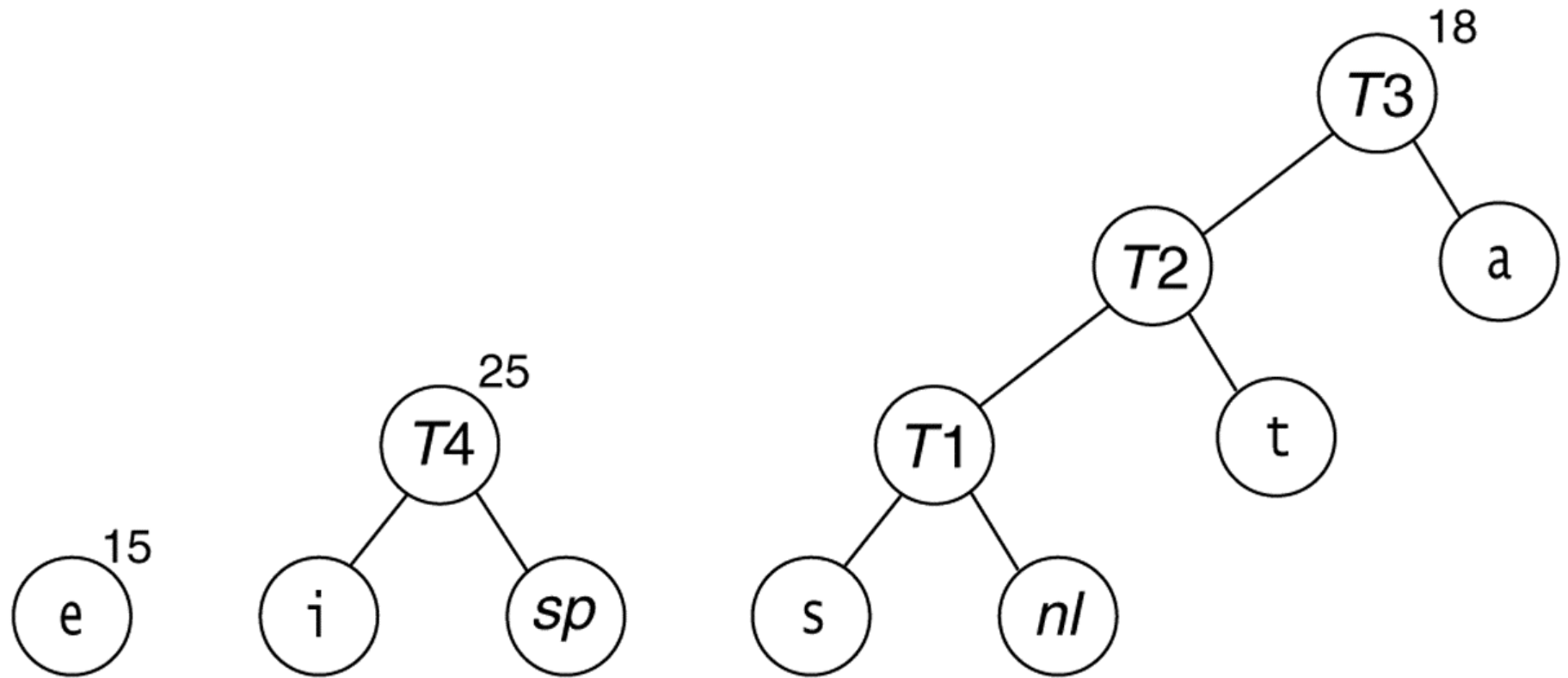


Figure 12.11

Huffman's algorithm after the fifth merge

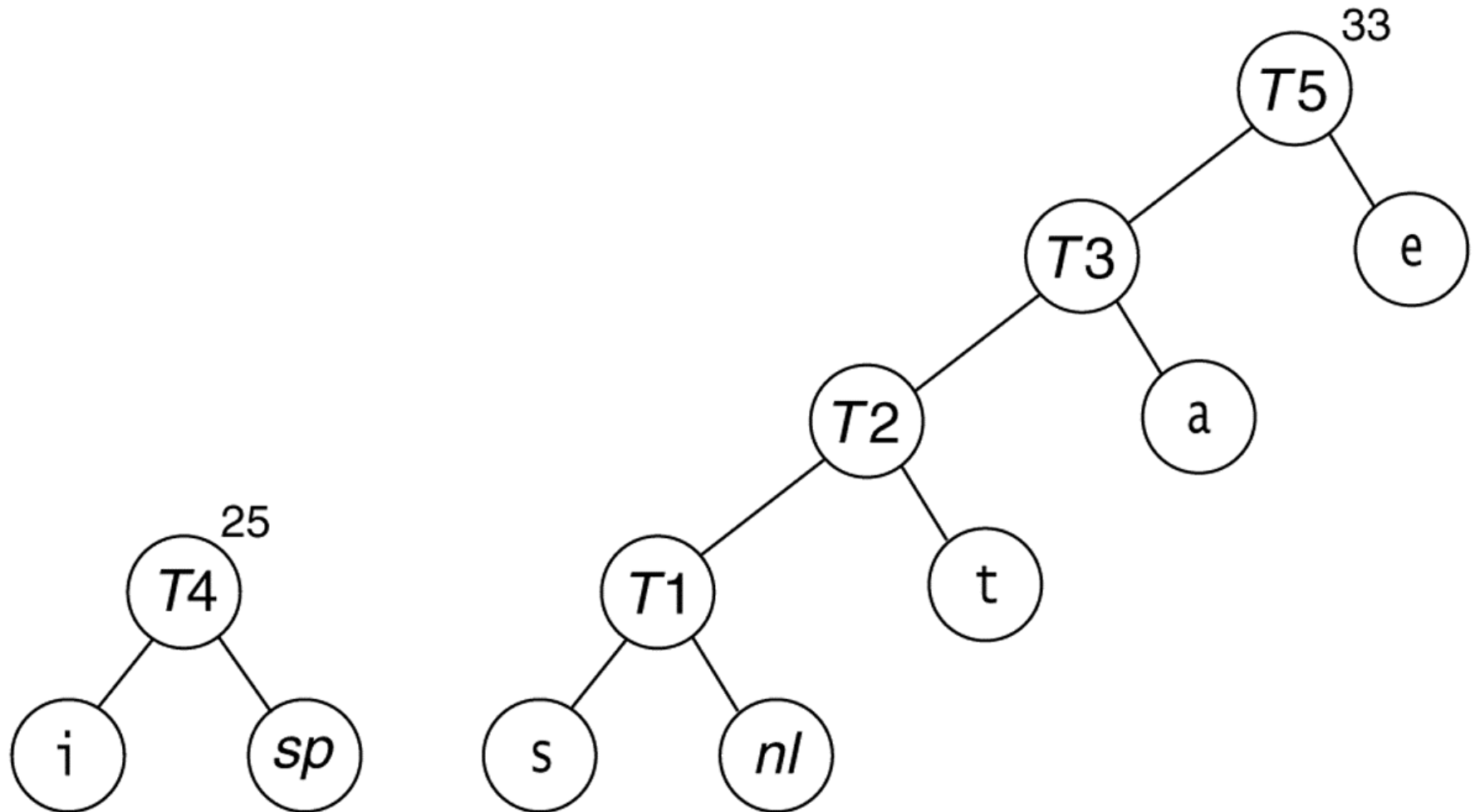


Figure 12.12

Huffman's algorithm after the final merge

