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Huffman's Tree

BY

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Huffman's Tree

- Entropy encoding algorithm developed by David A. Huffman
- Lossless data compression.
- Uses Prefix Codes: Code assigned to one character is not the prefix of code assigned to any other character.
- a, b, c and d: variable length codes be 00, 01, 0 and 1 respectively.
  - Any problems ?? If the compressed bit stream is 0001.
- Uses variable length code on the basis of estimated probability of occurrence of the source character.

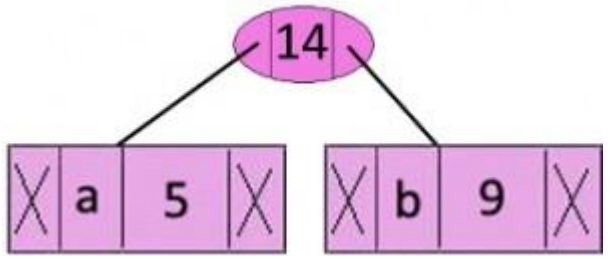
Huffman's Tree

- Huffman Coding
  - Build a Huffman Tree from input characters.
  - Traverse the Huffman Tree and assign codes to characters.
- Step 1:

character	Frequency
a	5
b	9
c	12
d	13
e	16
f	45

Huffman's Tree

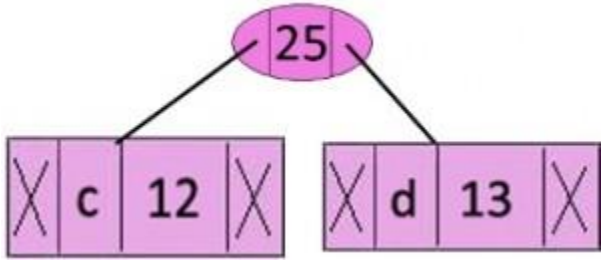
Step 2:



character	Frequency
a	5
b	9
c	12
d	13
e	16
f	45

Step 3

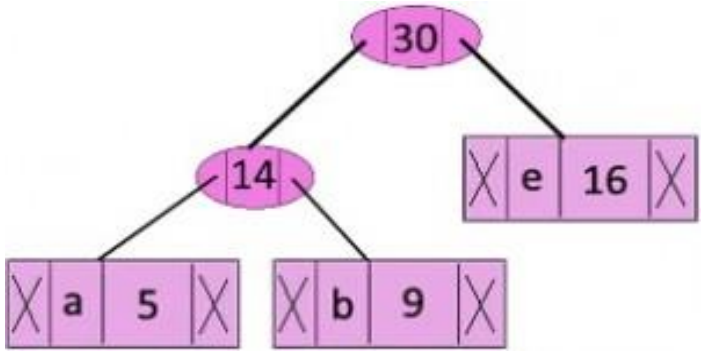
character	Frequency
c	12
d	13
Internal Node	14
e	16
f	45



Huffman's Tree

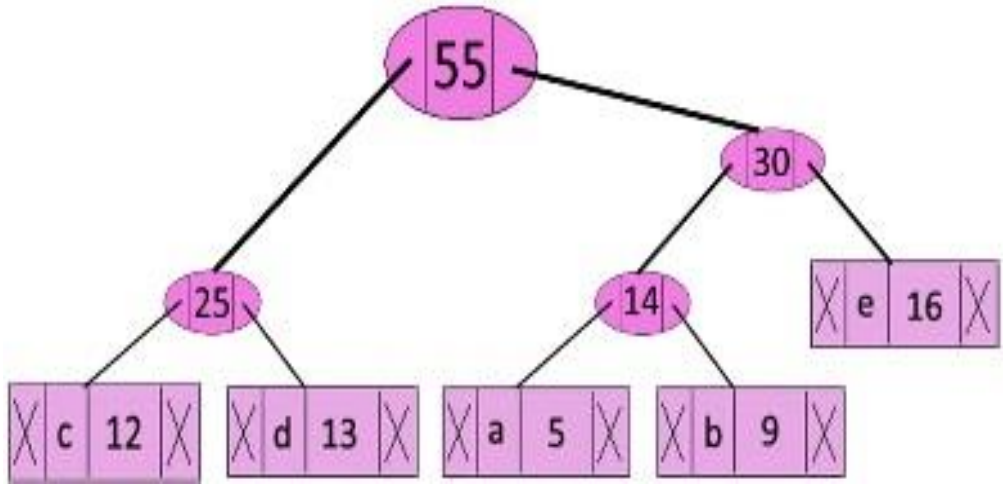
Step 4:

character	Frequency
Internal Node	14
e	16
Internal Node	25
f	45



Step 5

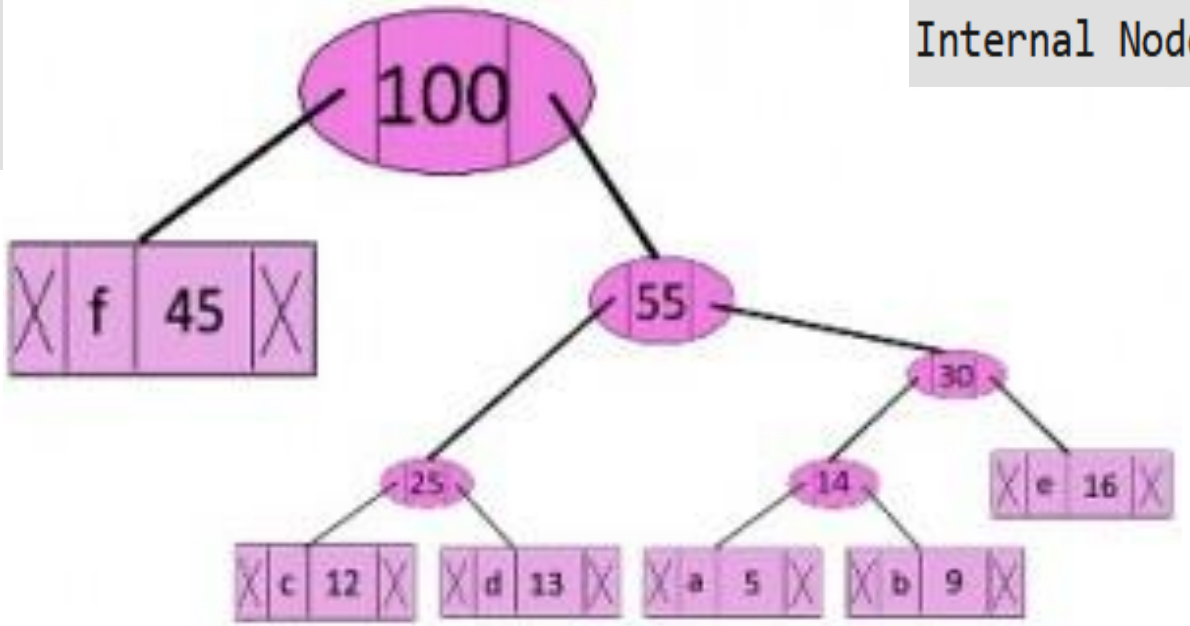
character	Frequency
Internal Node	25
Internal Node	30
f	45



Huffman's Tree

Step 6:

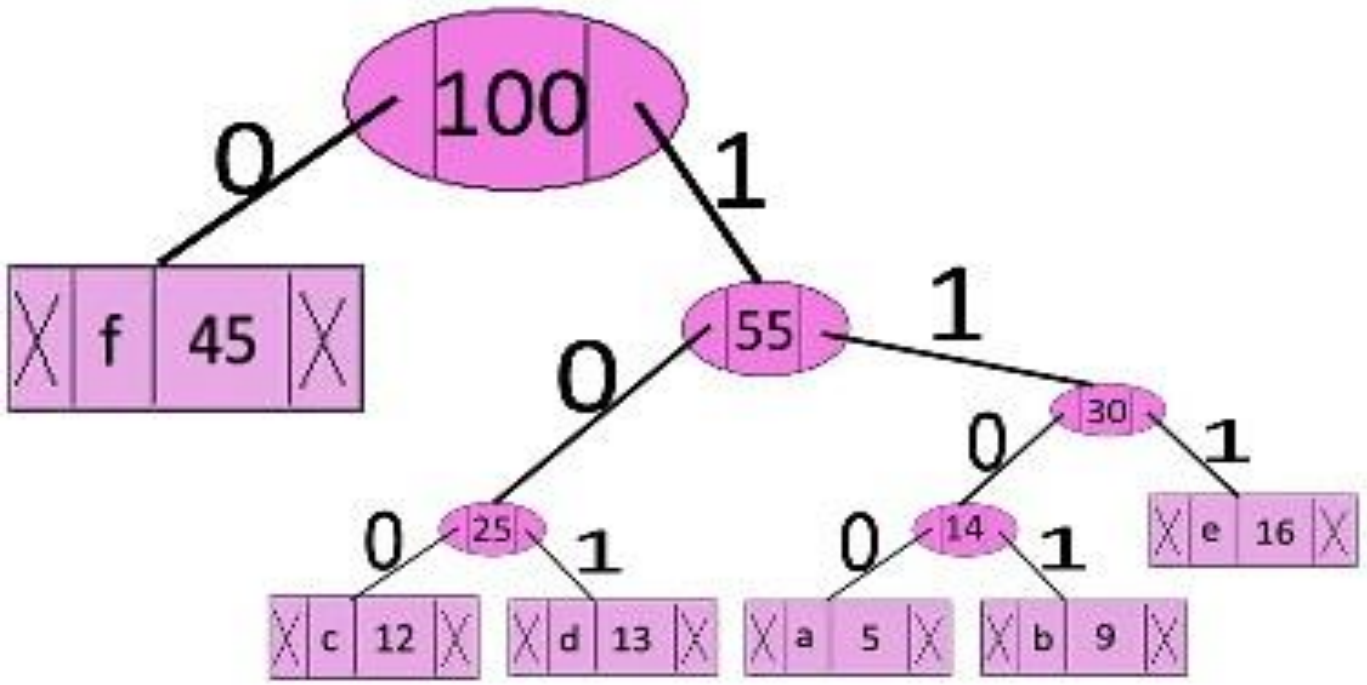
character	Frequency
f	45
Internal Node	55



character	Frequency
Internal Node	100

Huffman's Tree

- Printing the codes of the Huffman Tree



character	code-word
f	0
c	100
d	101
a	1100
b	1101
e	111