

delete
20
30
60
~~50~~

alphabet $a \dots z$, 26 letters

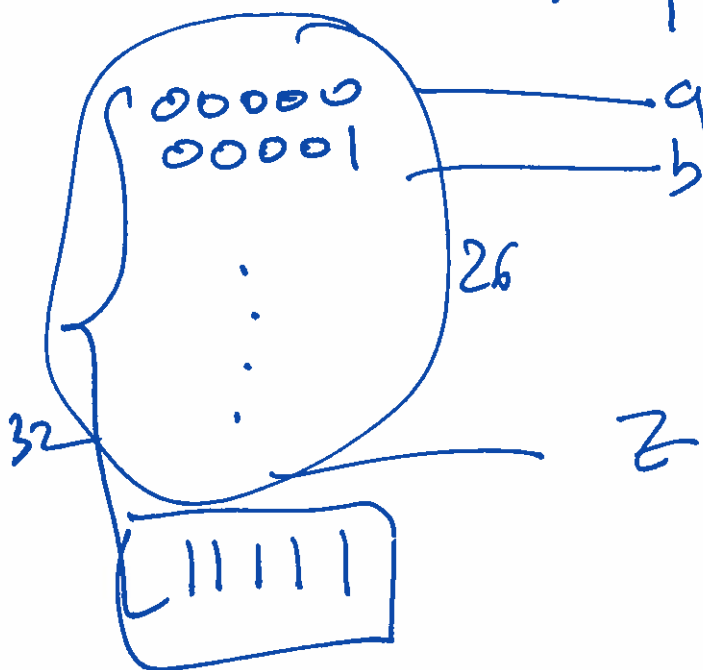
$a = 10101$

$b = 10101$

1 bit $\begin{cases} 0 \\ 1 \end{cases} \quad 2$

2 bits $\begin{cases} 00 \\ 01 \\ 10 \\ 11 \end{cases} \quad 4$

3 $\begin{cases} 000 \\ 001 \\ 010 \\ 011 \\ 100 \\ 101 \\ 110 \\ 111 \end{cases} \quad 8$



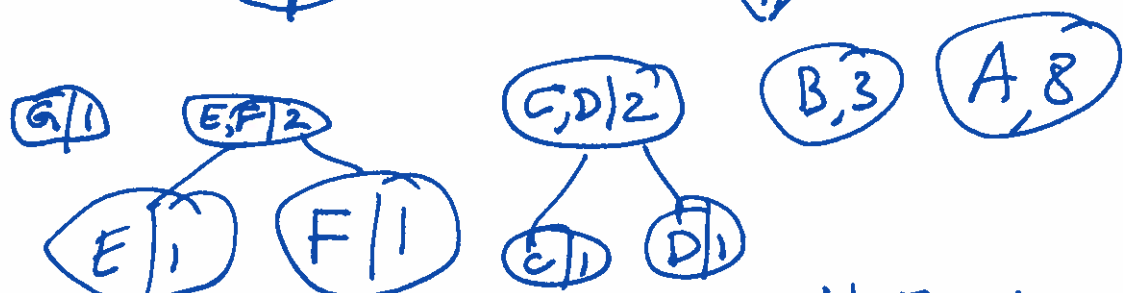
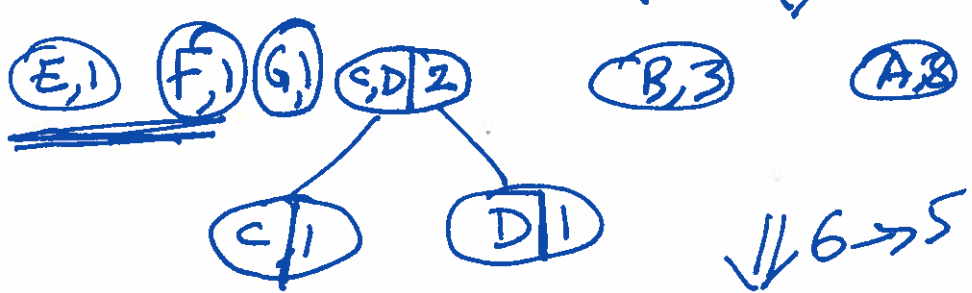
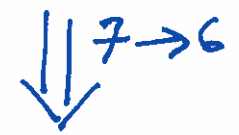
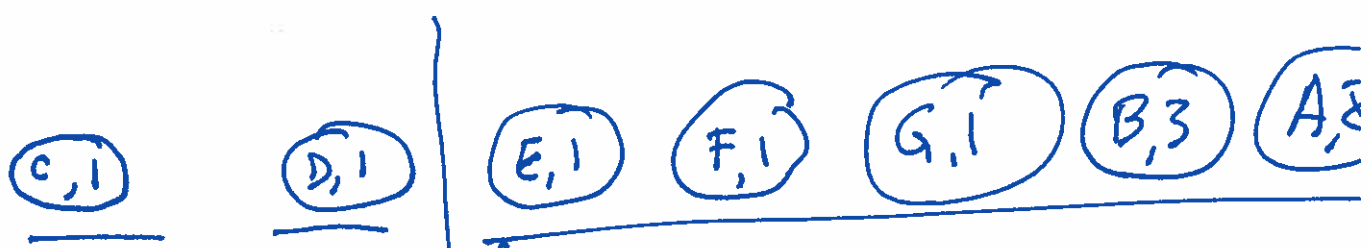
$[['A', 8], ['c', 1], ['B', 3], ['D', 1], ['E', 1], ['F', 1], ['G', 1]]$

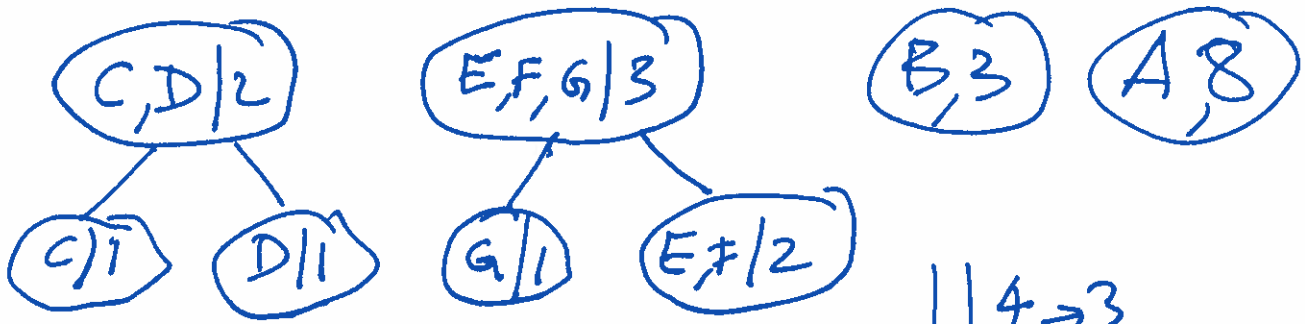


binary tree - Huffman Tree

Sort

$[['E', 1], ['D', 1], ['E', 1], ['F', 1], ['G', 1], ['B', 3], ['A', 8]]$

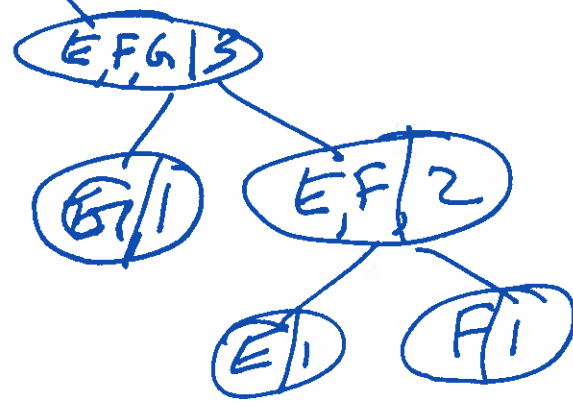
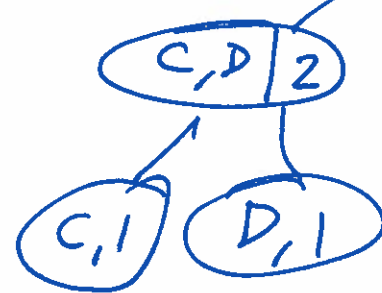
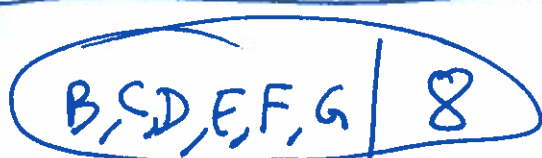


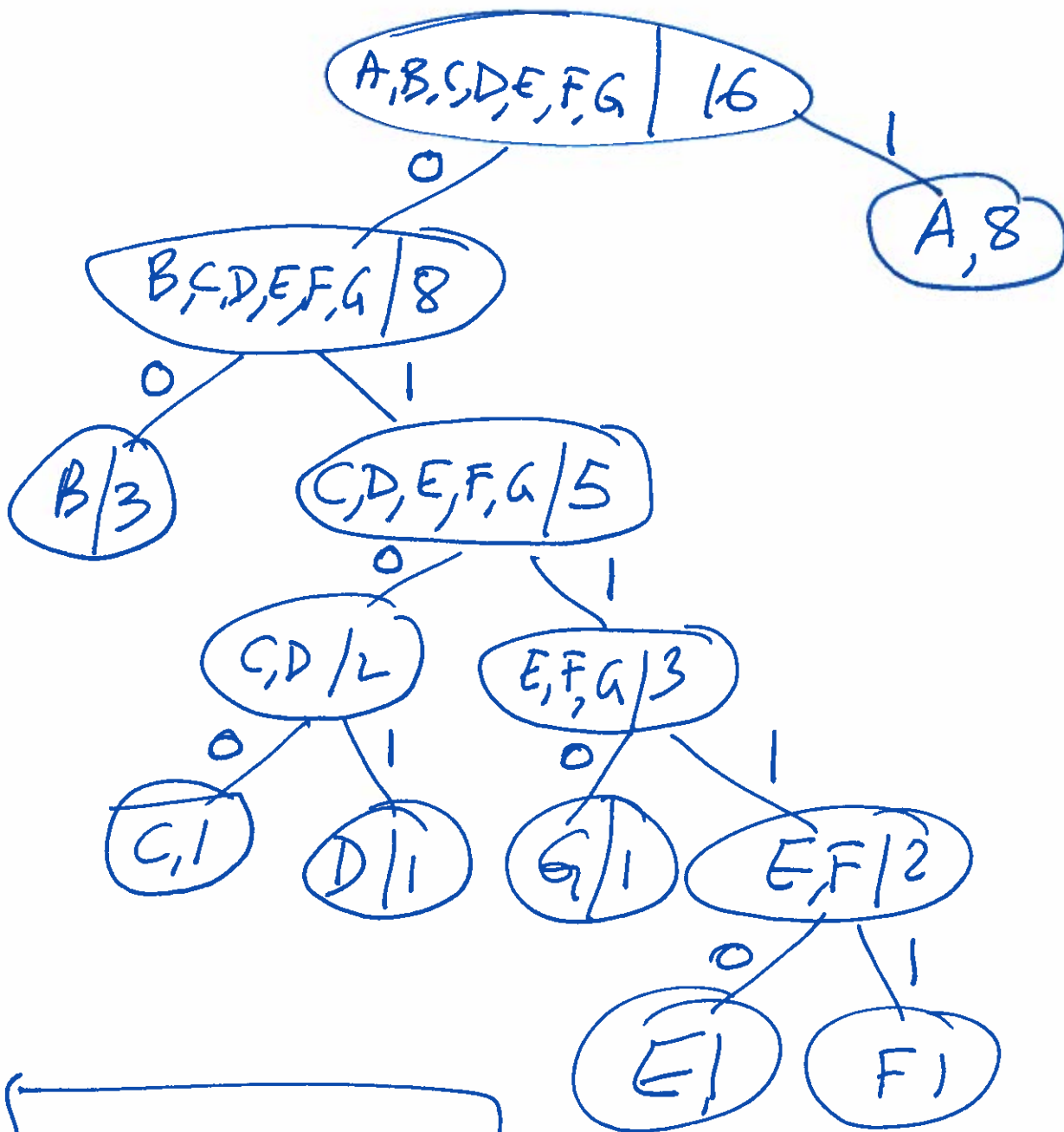


$\Downarrow 4 \Rightarrow 3$



$\Downarrow 3 \Rightarrow 2$





A	1	4 3 2 1
B	00	
C	0100	
D	0101	
E	01110	
F	01111	
G	0110	

7 symbols - 3 bits

BADGE
 ↓ code

'01... - - - - 01'
 ↓ decode