

### Source Code Shannon-Fano

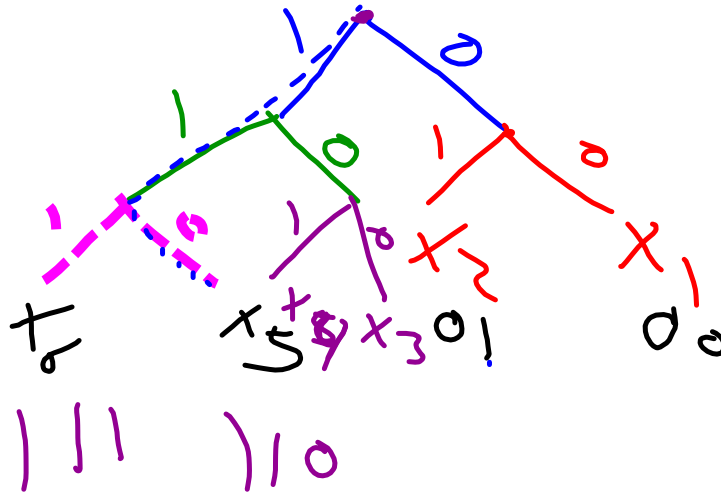
mass	$p(x_i)$	Codeword		$l_i$	$0_i$	$1_i$
$x_1$	0.25	00	(7)	2	2	0
$x_2$	0.2	01	(1)	2	1	1
$x_3$	0.18	100	(4)	3	2	0
$x_4$	0.15	101	(3)	3	1	1
$x_5$	0.12	110	(5)	3	1	0
$x_6$	0.1	111	(6)	3	0	1

$$L_c = \sum_{i=1}^n l_i p(x_i) =$$

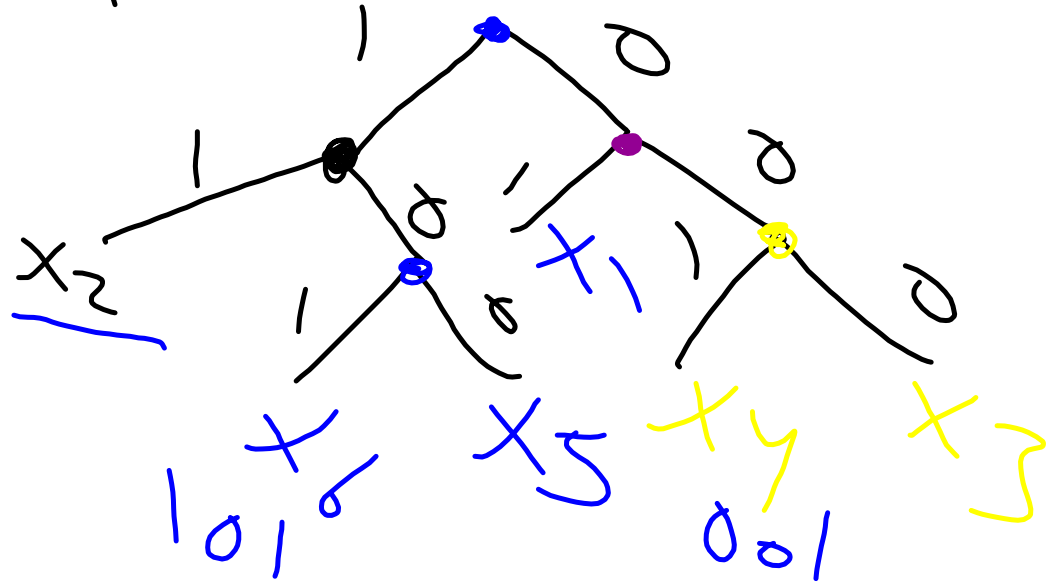
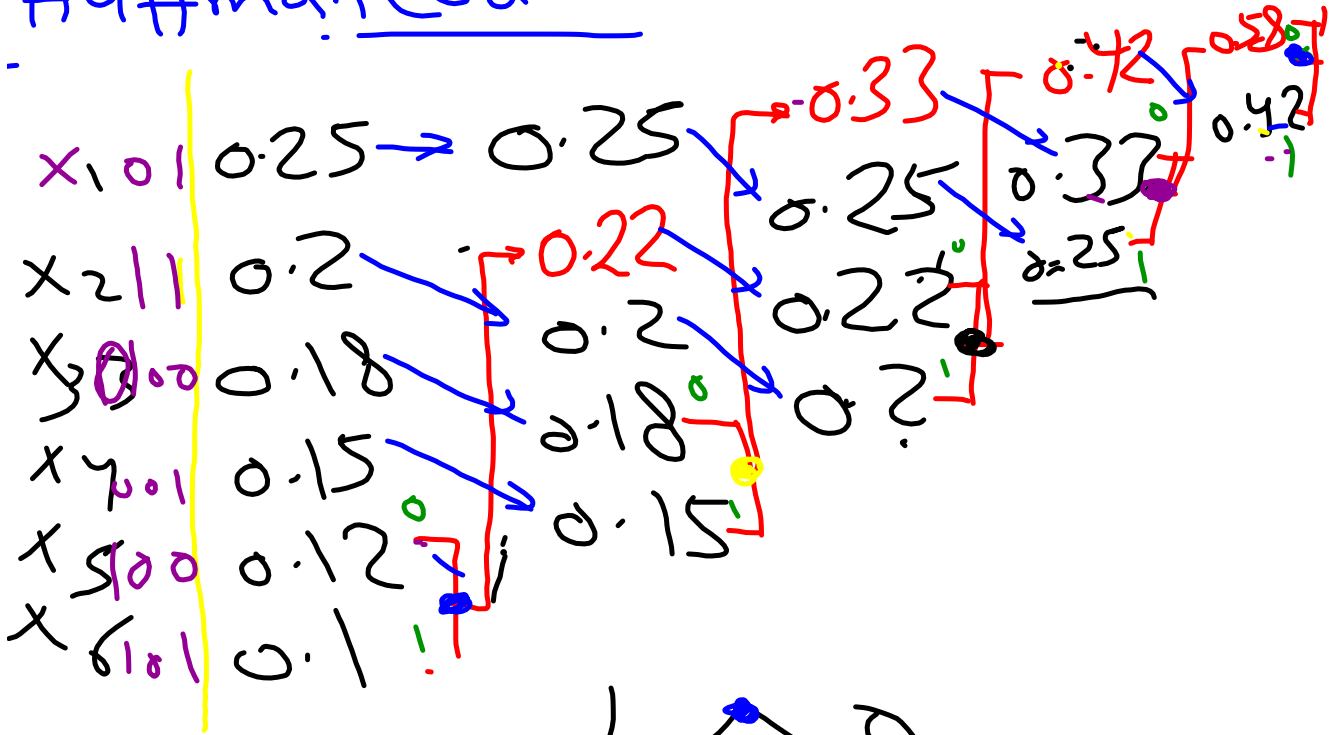
$$H(x) = - \sum_{i=1}^n p(x_i) \log_2 p(x_i)$$

$$\eta = \frac{H(x)}{L_c} * 100\%$$

### Draw Tree Code



# Huffman Code



Q4 / {m m m m a a q h h o o d}

msg. no.	PG <sub>i</sub>	Code word	Tree Code
m	0.333	00	10
a	0.25	10	110
h	0.167	11	01
o	0.167	110	00
d	0.083	111	111

Code Efficiency =  $\eta = \frac{H(x)}{L_c}$

$L_c = [2 \times 0.33 + 2 \times 0.25 + 2 \times 0.167 + 3 \times 0.167 + 3 \times 0.083]$

$H(x) = -\sum p(x_i) \log_2 p(x_i)$

$\eta = \frac{H(x)}{L_c} \times 100\% =$

# Huffman

