Acq 1

2008-1

~~H(B)~~

$P_1 = \{0, 1\}$

$P_2 = \{V, F\}$

$P_3 = \{N, I, O\}$

formule d'entropie

$$H(X) = -\sum_i p_i \log_2 p_i$$

• P_1 :

$p_0 = \frac{6}{13}$

$p_1 = \frac{7}{13}$

$$H(P_1) = -\frac{6}{13}\log\frac{6}{13} - \frac{7}{13}\log\frac{7}{13}$$

• P_2 :

$p_V = \frac{7}{13}$

$p_F = \frac{6}{13}$

$$H(P_2) = -\frac{7}{13}\log\frac{7}{13} - \frac{6}{13}\log\frac{6}{13}$$

P_3 :

$p_N = \frac{4}{13}$

$p_I = \frac{4}{13}$

$p_O = \frac{5}{13}$

$$H(P_3) = -\frac{4}{13}\log\frac{4}{13} - \frac{4}{13}\log\frac{4}{13} - \frac{5}{13}\log\frac{5}{13}$$

P_1	A	B	Total
0	2	4	6
1	6	1	7
Total	8	5	13

P_2	A	B	Total
V	5	2	7
F	3	3	6
Total	8	5	13

P_3	A	B	Total
N	3	1	4
I	3	1	4
O	2	3	5
Total	8	5	13

Acq 1
2008-2

B $H(m/P_1) = \frac{6}{13} S(P_1=0) + \frac{7}{13} S(P_1=1)$

$S(P_1=0) = -\frac{2}{6}\log\frac{2}{6} - \frac{4}{6}\log\frac{4}{6}$

$S(P_1=1) = -\frac{6}{7}\log\frac{6}{7} - \frac{1}{7}\log\frac{1}{7}$

~~$\Rightarrow H(m/P_1) = \frac{6}{13}\left(-\frac{2}{7}\log\frac{6}{7}\right.$~~

$\Rightarrow H(m/P_1) = \frac{6}{13}\left(-\frac{2}{6}\log\frac{2}{6} - \frac{4}{6}\log\frac{4}{6}\right) + \frac{7}{13}\left(-\frac{6}{7}\log\frac{6}{7} - \frac{1}{7}\log\frac{1}{7}\right)$

$H(m/P_1) = 0,23$

$H(m/P_2) = \frac{7}{13} S(P_2=V) + \frac{6}{13} S(P_2=F)$

$S(P_2=V) = -\frac{5}{7}\log\frac{5}{7} - \frac{2}{7}\log\frac{2}{7}$

$S(P_2=F) = -\frac{3}{6}\log\frac{3}{6} - \frac{3}{6}\log\frac{3}{6} = -\log\frac{3}{6}$

$\Rightarrow H(m/P_2) = \frac{7}{13}\left(-\frac{5}{7}\log\frac{5}{7} - \frac{2}{7}\log\frac{2}{7}\right) + \frac{6}{13} \times -\log\frac{3}{6}$

$H(m/P_2) = 0,28$

$H(m/P_3) = \frac{4}{13} S(P_3=N) + \frac{4}{13} S(P_3=I) + \frac{5}{13} S(P_3=O)$

$S(P_3=N) = -\frac{3}{4}\log\frac{3}{4} - \frac{1}{4}\log\frac{1}{4} = 0,24$

$S(P_3=I) = S(P_3=N) = 0,24$

$S(P_3=O) = -\frac{2}{5}\log\left(\frac{2}{5}\right) - \frac{3}{5}\log\left(\frac{3}{5}\right) = 0,29$

$H(m/P_3) = \frac{4}{13} \times 0,24 + \frac{4}{13} \times 0,24 + \frac{5}{13} \times 0,29 = 0,26$

Acq1
2008-3

On choisit donc P_1 comme racine de l'arbre.

$P_1 = 0$

n°	P_2	P_3	classe
1	V	N	A
3	F	O	B
7	F	O	B
8	V	I	A
9	F	N	B
13	V	O	B

$P_1 = 1$

n°	P_2	P_3	classe
2	V	I	A
4	V	N	A
5	V	O	A
6	F	N	A
10	V	I	B
11	F	O	A
12	F	I	A

$P_1 = 0$:

P_2	A	B	Total
V	2	1	3
F	0	3	3
Total	2	4	6

$H(m|P_2) = 0,14$

P_3	A	B	Total
N	1	1	2
I	1	0	1
O	0	3	3
Total	2	4	6

$H(m|P_3) = 0,10$

$P_1 = 1$:

$H(m|P_2) = 0{,}14$ $H(m|P_3) = 0{,}12$

$P_1 = 0$ $P_2 = V$

n°	P3	classe
1	N	A
8	I	A
13	O	B

$P_1 = 1$ $P_2 = V$

n°	P_3	classe
2	I	A
4	N	A
5	O	A
10	I	B

$P_1 = 0$ $P_2 = F$

no	P_3	classe
3	O	B
7	O	B
9	N	B

$P_1 = 1$ $P_2 = F$

n°	P_3	classe
6	N	A
11	O	A
12	I	A

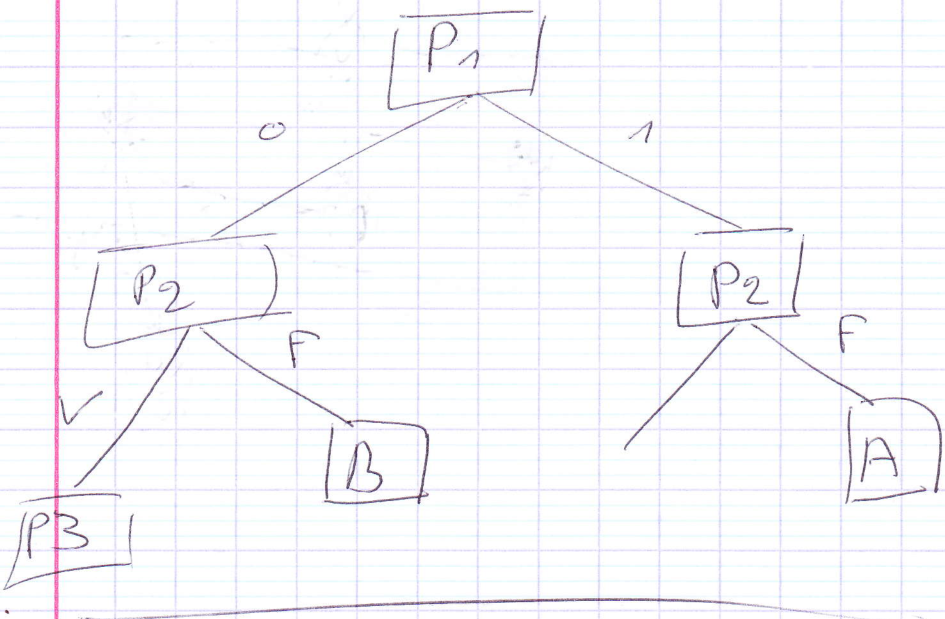
Il fallait prendre P3 en 2ème

~~T_2 Perr = ...~~

T_1 $P_{err} = \frac{3}{9} = \frac{1}{3}$

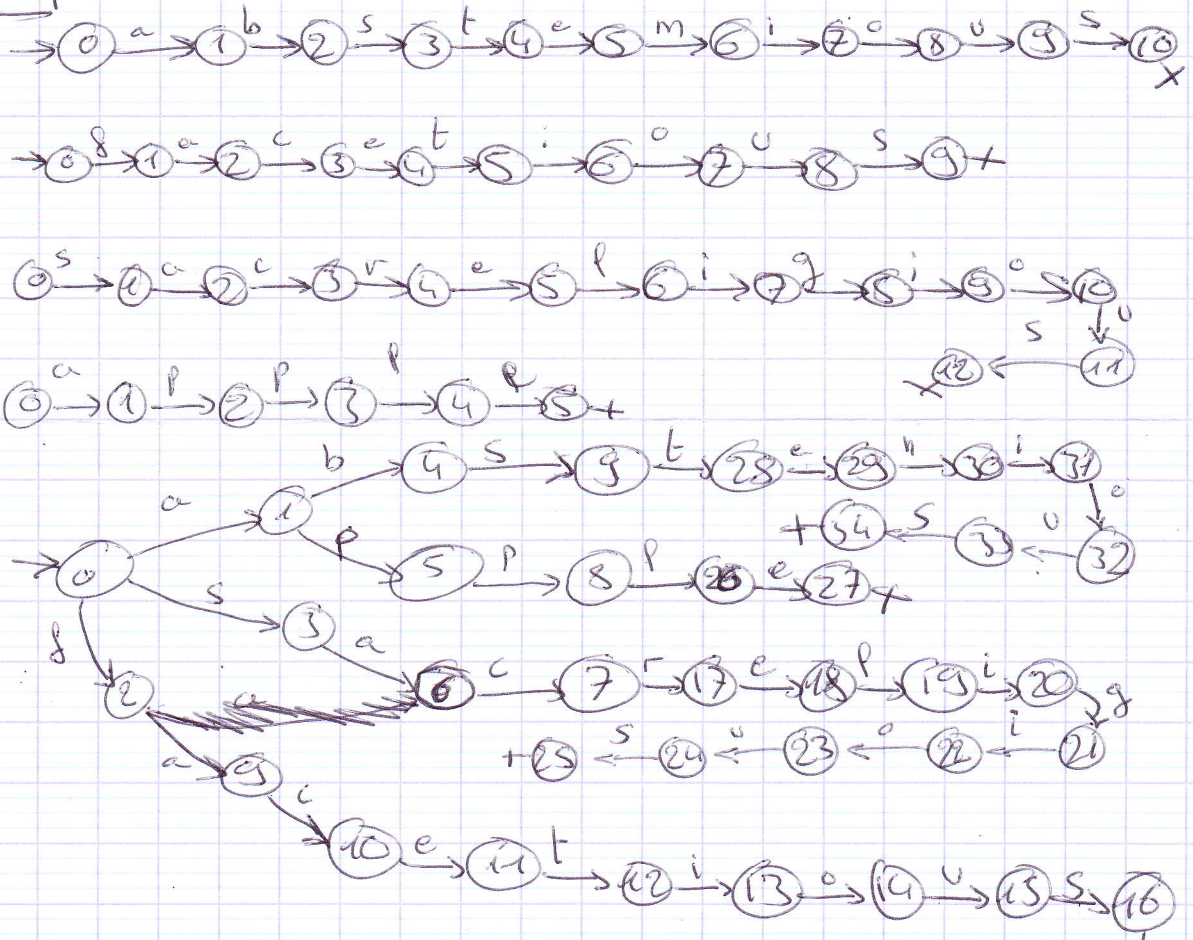
T_2 $P_{err} = \frac{2}{9} + $ ~~...~~

Acq. 1
2008-5



Q4

/!\ continuer la numérotation entre les mots



A-4)
2008-6