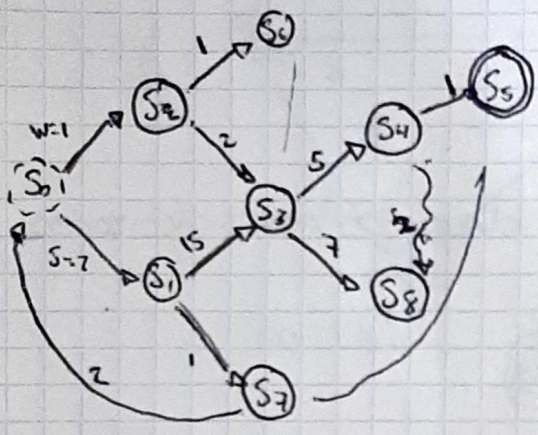
Examen Parcial Inteligencia Artificial

Pérez Jacome David

1- Consideré la sig gráfica



utilizar BFS para la solución y dibujar el árbol

- Int 1

F = (S0) // frontera
R = (S0) // Nodos alcanzados
N = (-) // Nodos guardados

- Int 1

F(-) → S0
N(S0)
R(S0, S1, S2)
F(S1, S2)(2, 1)

- Int 2

F(S1, S2) → S2
N(S0, S2)
R(S0, S1, S2, S6, S3)
F(S1, S6, S3)(2, 2, 3)

- Int 3

F(S1, S6, S3) → S6
N0(S0, S2, S6)
R(S0, S1, S2, S6)
F(S1, S3)(2, 3)

- Int 4

- F(S1, S3) → S1
- N(S0, S2, S6, S1)
- R(S0, S1, S2, S6, S3, S7)
- F(S3, S7)(3, 3)

- Int 5

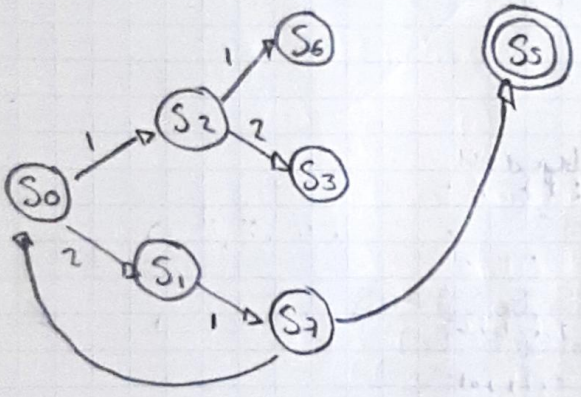
F(S3, S7) → S7
N(S0, S2, S6, S1, S7)
R(S0, S1, S2, S6, S3, S7, S5)
F(S3, S5)(3, 5)

• Int 6

F(S3, S9) → S3
N(S0, S2, S6, S1, S7, S9)
R(S0, S1, S2, S6, S3, S7, S5, S4, S8)
F(S5, S4, S8) (5, 8, 10)

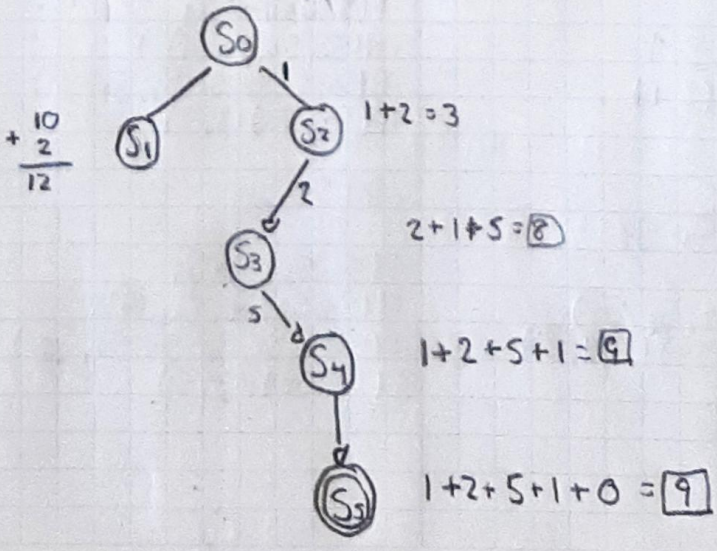
• Int 7

F(S5, S4, S8) → S5 // S5 es final, decidimos los nodos alcanzados.
N(S0, S2, S6, S1, S7, S3, S5)



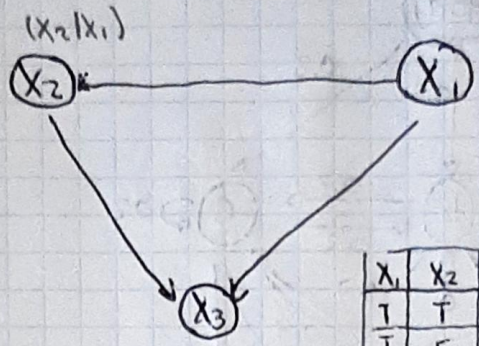
② Del problema anterior y de la heurística Aplica A* y da el árbol de bús-

	S0	S1	S2	S3	S4	S5	S6	S7	S8
h	1	10	2	5	1	0	∞	30	1



③ Observa la Red Bayesiana y obtén las cosultas

X_1	T	F
T	.5	.5
F	.3	.7



T	F
.2	.8

X_1	X_2	T	F
T	T	.2	.8
T	F	.3	.7
F	T	.4	.6
F	F	0	1

a) $p(X_1=T, X_2=T, X_3=T) = p(X_1=T) \cdot p(X_2=T|X_1=T) \cdot p(X_3=T|X_1=T, X_2=T)$

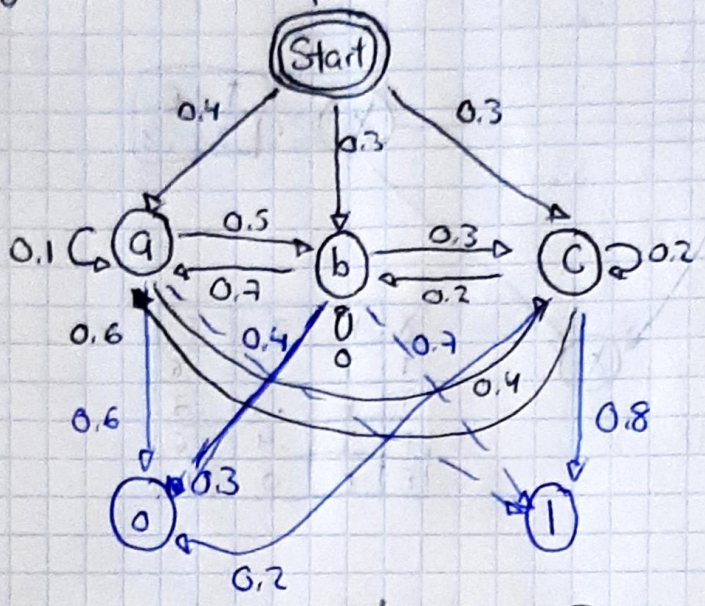
$= (0.2)(0.5)(.2) = \boxed{0.02}$

b) $p(X_3=T) = p(X_3=T|X_1=T, X_2=T) \cdot p(X_2=T|X_1=T) \cdot p(X_1=T) +$
$p(X_3=T|X_1=T, X_2=F) \cdot p(X_2=F|X_1=T) \cdot p(X_1=T) +$
$p(X_3=T|X_1=F, X_2=T) \cdot p(X_2=T|X_1=F) \cdot p(X_1=F) +$
$p(X_3=T|X_1=F, X_2=F) \cdot p(X_2=F|X_1=F) \cdot p(X_1=F)$

$= (0.2)(0.5)(0.2) + (0.3)(0.5)(0.2) + (0.4)(0.3)(0.8) + (0)(0.7)(0.8)$

$= \boxed{0.146}$

De la gratica obtn el proceso oculto de Markov.



HMM(S, Σ, A, B, π)

S={a, b c}

Σ={0, 1}

A= (rows: a, b, c; columns: a, b, c)

$$\begin{bmatrix} 0.1 & 0.7 & 0.6 \\ 0.5 & 0 & 0.2 \\ 0.4 & 0.3 & 0.2 \end{bmatrix}$$

B= (rows: 0, 1; columns: a, b, c)

$$\begin{bmatrix} 0.6 & 0.3 & 0.2 \\ 0.4 & 0.7 & 0.8 \end{bmatrix}$$

$\pi = [\overset{a}{0.4} \quad \overset{b}{0.3} \quad \overset{c}{0.3}]$

X={1 1 0}

$\alpha_a(1) = P(1|a) \cdot \pi_a = (0.4)(0.4) = 0.16$

$\alpha_b(1) = P(1|b) \cdot \pi_b = (0.7)(0.3) = 0.21$

$\alpha_c(1) = P(1|c) \cdot \pi_c = (0.8)(0.3) = 0.24$