

CS 6364.002 ARTIFICIAL INTELLIGENCE
Programming Assignment – 3
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Case 1: Alarm is false, infer Burglary and JohnCalls being true

P (B=true | A = false)

Table 1 - Burglary given alarm is false			
Num Samples	Prior Sampling	Rejection	LW
10	0	0	0
50	0	0	0
100	0	0	0
200	0	0	0
500	0	0	0.000241147
1000	0	0	6.02E-05
5000	0.00020016	0	6.02E-05
10000	0	0	3.01E-05
Exact	6.01E-05	6.01E-05	6.01E-05

P (J=true | A = false)

Table 2 - JohnCalls given alarm is false			
Num Samples	Prior Sampling	Rejection	LW
10	0	0.1	0.1
50	0.04	0.04	0.06
100	0.05	0.020408163	0.07020309
200	0.045	0.05	0.070632251
500	0.068136273	0.062	0.048
1000	0.046092184	0.048	0.06078543
5000	0.049799197	0.052156469	0.052244126
10000	0.050130339	0.046597855	0.05209755
Exact	0.05	0.05	0.05

Case 2: JohnCalls is true, Earthquake is false, infer Burglary and MaryCalls being true

P (B=true | J=true, E=false)

Table 3 - Burglary given JohnCalls is true and EarthQuake is false			
Num Samples	Prior Sampling	Rejection	LW
10	0	0	0
50	0	0	0
100	0	0	0.153846154
200	0	0	0
500	0	0	0
1000	0.043478261	0.040816327	0
5000	0.019920319	0.018382353	0.010548935
10000	0.013888889	0.019298246	0.024444231
Exact	1.64E-02	1.64E-02	1.64E-02

P (M=true | J=true, E=false)

Table 4 - MaryCalls given JohnCalls is true and EarthQuake is false			
Num Samples	Prior Sampling	Rejection	LW
10	0	0	0
50	0	0	0
100	0	0	0
200	0.1	0	0.015
500	0.060606061	0.032258065	0.041198502
1000	0.090909091	0.021276596	0.042816365
5000	0.041322314	0.027777778	0.034073209
10000	0.038314176	0.031120332	0.042885733
Exact	0.033313884	0.033313884	0.033313884

Case 3: MaryCalls is true, JohnCalls is false, infer Burglary and Earthquake being true

P (B=true | M=true, J=false)

Table 5 - Burglary given MaryCalls is true and JohnCalls is false			
Num Samples	Prior Sampling	Rejection	LW
10	0	0	0
50	0	0	0
100	0	0	0
200	0	0	0
500	0	0	0.042067308
1000	0	0	0
5000	0	0.02173913	0.006025664
10000	0	0	0.005270624
Exact	0.006876246	0.006876246	0.006876246

P (E=true | M=true, J=false)

Table 6 - EarthQuake given MaryCalls is true and JohnCalls is false			
Num Samples	Prior Sampling	Rejection	LW
10	0	0	0
50	0	0	0
100	0	0	0
200	0	0	0
500	0	0	0.002
1000	0	0	0.012212868
5000	0.021276596	0.020833333	0.005076248
10000	0.018518519	0.00952381	0.006647821
Exact	0.005612152	0.005612152	0.005612152