Programming Assignment 2

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Table 1. Query Alarm is False, Infer Burglary P(B='t'|A='f')

Number of Samples	Prior Sampling	Rejection Sampling	Likelihood weighting
10	0.0	0	0
50	0.0	0	0
100	0.0	0	3.30E-05
200	0.00033	0	4.90E-05
500	0.000166	0	7.50E-05
1000	0.00012	0	6.70E-05
10000	8.00068546243e-05	4.00E-05	6.00E-05
Exact	6e-05		

Table 2. Query Alarm is False, Infer John Call is True P(J='t'|A='f')

Number of Samples	Prior Sampling	Rejection Sampling	Likelihood weighting
10	0.086194	0.07637	0.086254
50	0.065504	0.058991	0.071609
100	0.05155	0.044636	0.059137
200	0.045608	0.047157	0.054272
500	0.051138	0.048315	0.05364
1000	0.053902	0.049521	0.051187
10000	0.051563	0.049832	0.050186
Exact	0.05		

Table 3. Infer Burglary, given JohnCalls is true & Earthquake is false P(B='t'| J='t', E='f')

Number of Samples	Prior Sampling	Rejection Sampling	Likelihood weighting
10	0.0	0	0
50	0.0	0.014123	0
100	0.0	0.02574	0.00109
200	0.006892	0.01851	0.007418
500	0.008531	0.017625	0.008499
1000	0.014529	0.016503	0.015428
10000	0.014862	0.016433	0.016893
Exact	0.016438		

Table 4. Infer MaryCall, given JohnCalls is true & Earthquake is false P(M='t'| J='t', E='f')

Number of Samples	Prior Sampling	Rejection Sampling	Likelihood weighting
10	0	0	0.008151
50	0	0.071936	0.043476
100	0.008399	0.070929	0.030197
200	0.015895	0.037806	0.040716
500	0.028407	0.03123	0.038513
1000	0.025083	0.034688	0.037439
10000	0.033801	0.033213	0.029785
Exact	0.033314		

Table 5. Infer Burglary, given MaryCalls is true & JohnCalls is false P(B='t'| M='t', J='f')

Number of Samples	Prior Sampling	Rejection Sampling	Likelihood weighting
10	0	0	0
50	0	0	0
100	0	0	0.002036
200	0	0	0.006426
500	0	0	0.005135
1000	0	0	0.005831
10000	0.00473	0.004878	0.00571
Exact	0.006876		

Table 6. Infer Earthquake, given MaryCalls is true & JohnCalls is false P(E='t'| M='t' J='f')

Number of Samples	Prior Sampling	Rejection Sampling	Likelihood weighting
10	0	0	0
50	0	0	0.001937
100	0	0	0.004828
200	0	0	0.010337
500	0.006295	0.006531	0.008388
1000	0.008844	0.007311	0.007918
10000	0.010523	0.004448	0.007666

Exact	0.005612		