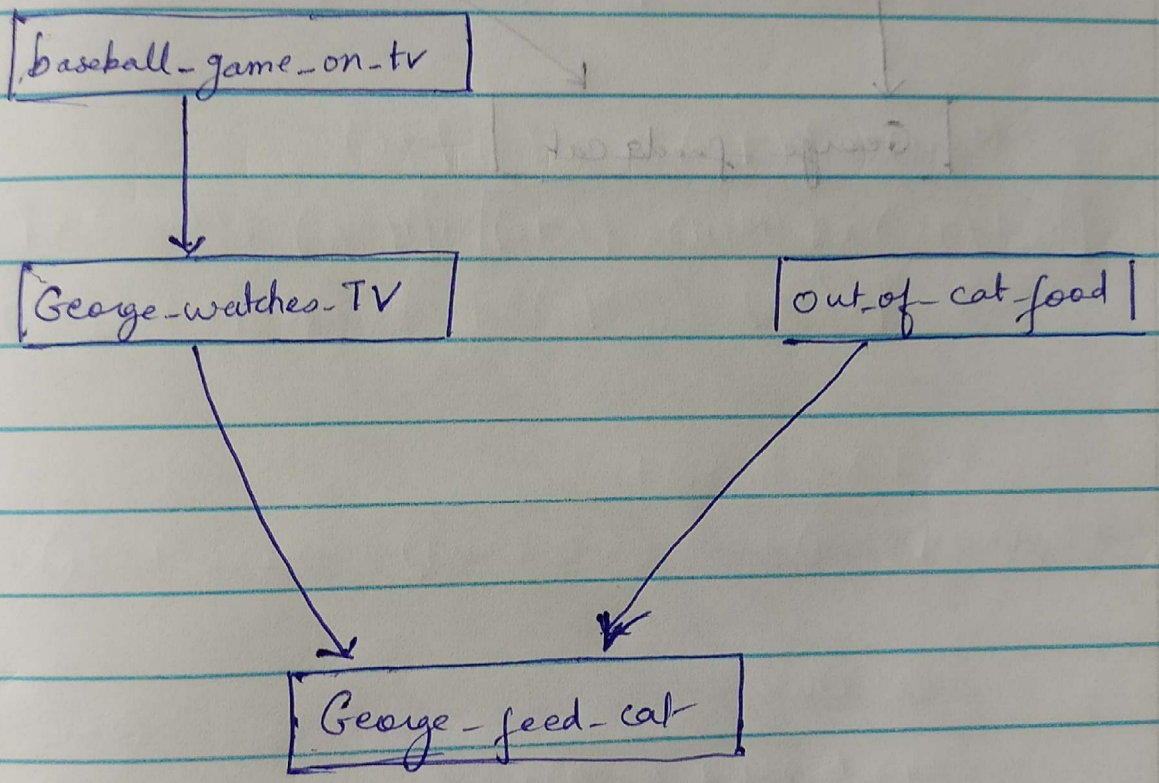
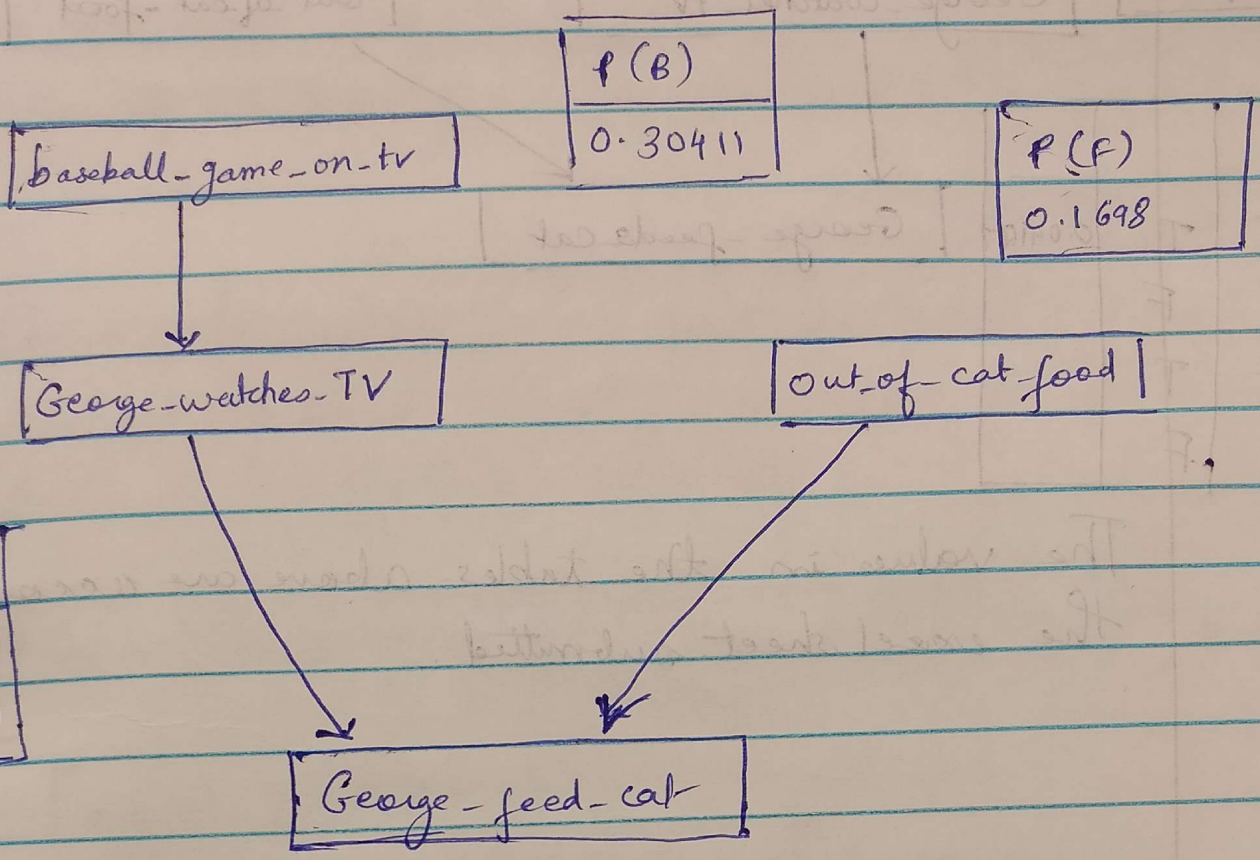
Assignment - 9

Task 1



Task 02



P(B)
0.30411

P(F)
0.1698

B	P(T)
T	0.9279
F	0.1181

T	F	P(C=T)	P(C=F)
T	T	0.0416	0.9583
T	F	0.7064	0.2935
F	T	0.3157	0.6842
F	F	0.9587	0.04124

T = george watches tv

F: out of cat food

P(B) - Probabity of baseball game on tv.

P(F) - Probability of out of cat food.

P(T) - Probability of george watc Tv.

P(C) - Probability of george feeds cat.

Task 4

(a) Markovian Blanket of node L

Parent of L : G

Children of L is P, Q

Parents of children of L is K, M.

(b) P(A, F) ?

$$P(A,F) = P(A,F,K) + P(A,F,\neg K)$$

$$= \left[P(A) * P(F|A) * P\left(\frac{K}{F}\right)\right] + \left[P(A) * P\left(\frac{F}{A}\right) * P\left(\frac{\neg K}{F}\right)\right]$$

$$= [0.8 \times 0.8 \times 0.3] + [0.8 \times 0.8 \times 0.7]$$

$$= 0.192 + 0.448$$

$$= 0.640 = 0.64.$$

(c) $P(M, \text{not}(c) / H)$

$$= \frac{P(M, \text{not}(c), H)}{P(H)}$$

$$= \frac{P(M) * P(\text{not}(c)) * P(H)}{P(H, M, \neg c) + P(H, M, c) + P(H, \neg M, c) + P(H, \neg M, \neg c)}$$

$$= \frac{P(M/H) * P(\neg c) * P(H/\neg c)}{\left[P(H/\neg c) * P(M/H) * P(\neg c)\right] + \left[P(H/c) * P(M/H) * P(c)\right] + \left[P(H/c) * P(\neg M/H) * P(c)\right] + \left[P(H/\neg c) * P(\neg M/H) * P(\neg c)\right]}$$

$$= \frac{0.1 \times 0.4 \times 0.1}{(0.1 \times 0.1 \times 0.4) + (0.6 \times 0.6 \times 0.1) + (0.6 \times 0.9 \times 0.6) + (0.1 \times 0.9 \times 0.4)}$$

$$= \frac{0.004}{0.004 + 0.036 + 0.324 + 0.036} = \frac{0.004}{0.4}$$

$$= 0.01.$$