Q2) (a)

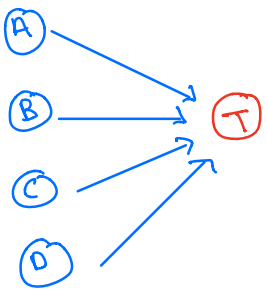
A -> It is raining

B -> want to walk outside

C -> feel sick

D -> Day of the week

T -> wear Top



(b)

B -> want to walk outside

Q -> wear green Hoodie

$P(B|C) = 0.1$, $P(B|\neg C) = 0.6$

$P(C|A) = 0.7$, $P(C|\neg A) = 0.15$

$P(T|A) = 0.3$

$$P(G) = P(G|B)\left[P(B|C) * P(C|A) + P(B|\neg C) * P(\neg C|A)\right]$$

$$= 1 * \left[(0.1 * 0.7) + (0.6 \times 0.3)\right]$$

$$= 1 * \left[0.07 + 0.18\right] = 0.25$$

$\boxed{P(G) = 0.25}$ → Probability of wearing a green hoodie

(C) TT → Tank Top

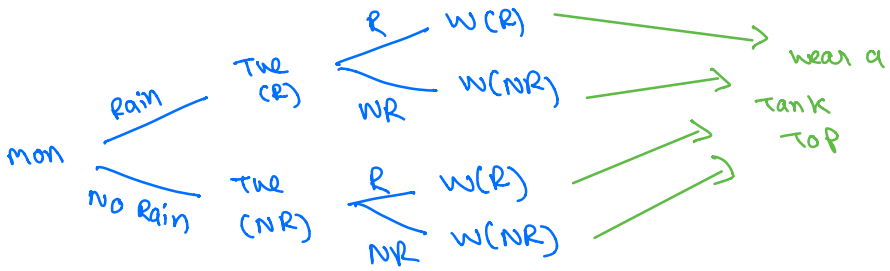
$P(TT|A) = 0.75$, $P(TT|\neg A) = 0.25$

D → Monday

today, previous day

$P(A|A) = 0.7$, $P(\neg A|A) = 0.3$

$P(A|\neg A) = 0.1$ $P(\neg A|\neg A) = 0.9$



$= (0.7 \times 0.7 * 0.75) +$

$(0.7 \times 0.3 \times 0.25) +$

$(0.3 \times 0.1 \times 0.75) +$

$(0.3 \times 0.9 \times 0.25)$

$= 0.3675 + 0.0525 + 0.0225 + 0.0675$

$= 0.51$

$$P(\text{wearing tank top on wednesday} \mid \text{monday was raining}) = 0.51$$