

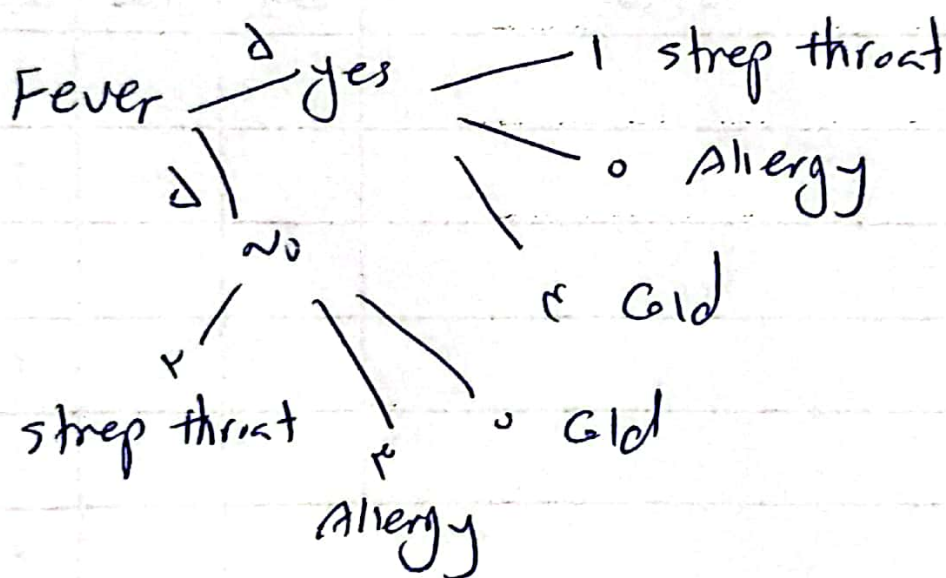


$$E(\text{yes}) = -\left(\frac{2}{3} \log_2 \frac{2}{3} + \frac{1}{3} \log_2 \frac{1}{3} + \frac{2}{3} \log_2 \frac{2}{3}\right) = 0.918$$

$$E(\text{no}) = 0.918$$

$$E(\text{Sore throat}) = \frac{2}{3} (0.918) + \frac{1}{3} (0.918) = 0.918$$

gain = 0.05



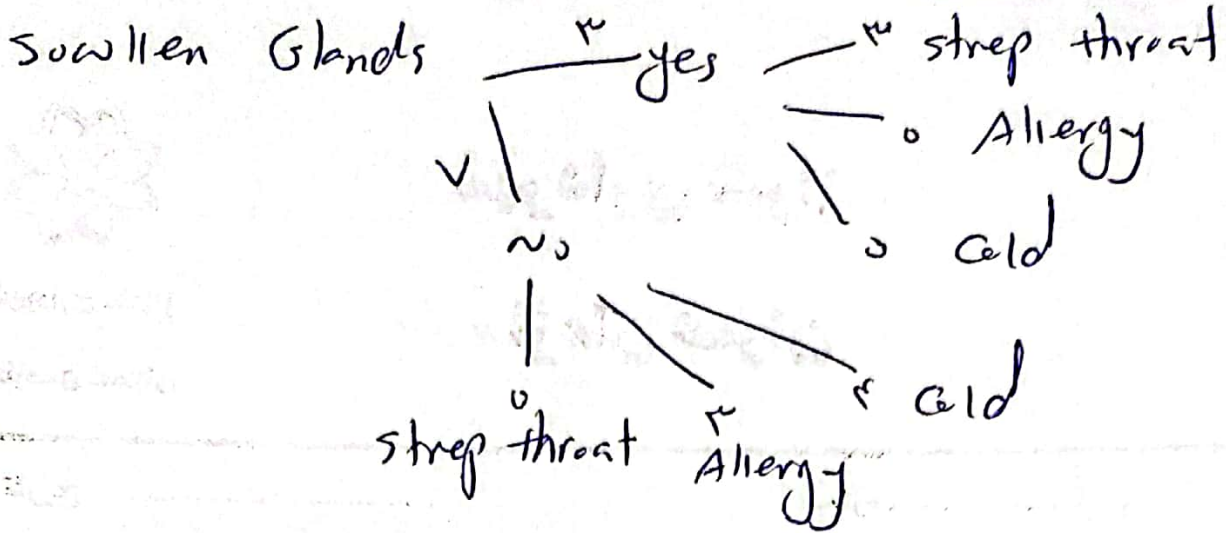
$$E(\text{yes}) = -\left(\frac{1}{2} \log_2 \frac{1}{2} + \frac{2}{3} \log_2 \frac{2}{3}\right) = 0.918$$

$$E(\text{no}) = -\left(\frac{2}{3} \log_2 \frac{2}{3} + \frac{2}{3} \log_2 \frac{2}{3}\right) = 0.918$$

$$E(\text{Fever}) = \frac{1}{2} (0.918) + \frac{1}{2} (0.918) = 0.918$$

gain = 0.05

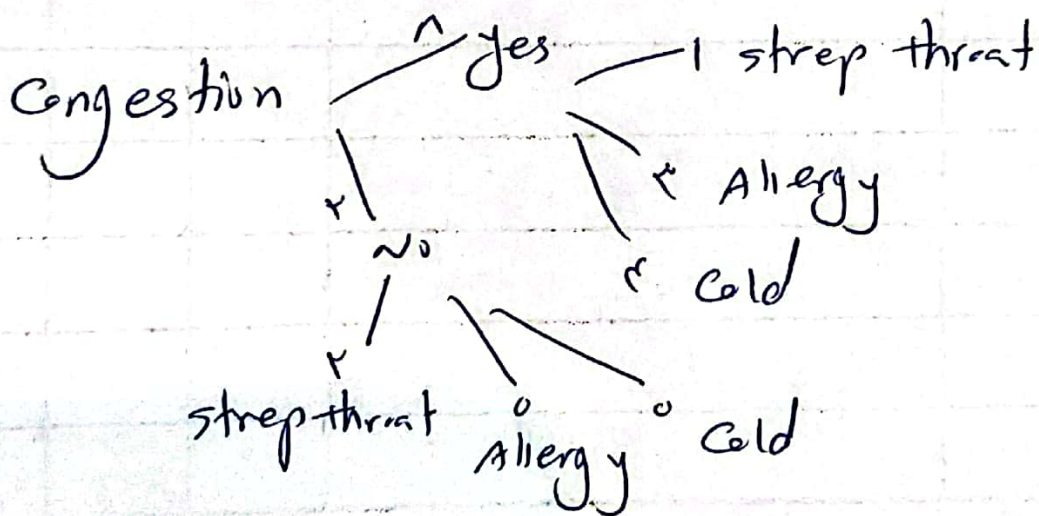
11



$$E(\text{yes}) = -\frac{3}{4} \log_2 \frac{3}{4} = 0.918 \quad \text{gain } 0.082$$

$$E(\text{no}) = -\left(\frac{1}{2} \log_2 \frac{1}{2} + \frac{1}{4} \log_2 \frac{1}{4}\right) = 0.75$$

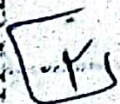
$$E(\text{swollen glands}) = \frac{3}{4} \cdot (0.918) + \frac{1}{4} \cdot (0.75) = 0.844$$



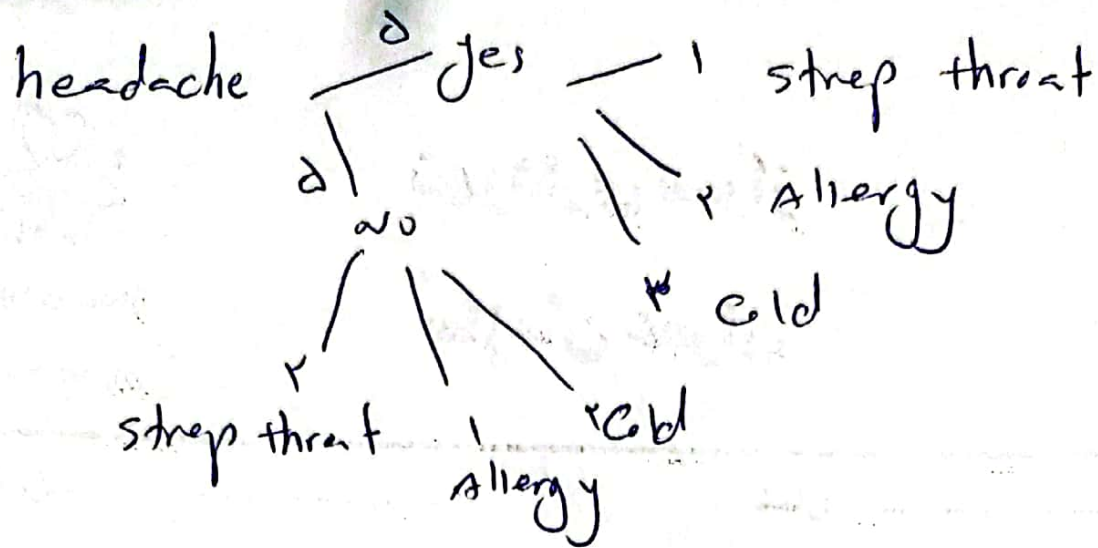
$$E(\text{yes}) = -\left(\frac{1}{2} \log_2 \frac{1}{2} + \frac{1}{2} \log_2 \frac{1}{2}\right) = 1.0$$

$$E(\text{no}) = -\left(\frac{1}{2} \log_2 \frac{1}{2} + \frac{1}{4} \log_2 \frac{1}{4} + \frac{1}{4} \log_2 \frac{1}{4}\right) = 0.918$$

$$E(\text{congestion}) = \frac{1}{2} \cdot (1.0) + \frac{1}{2} \cdot (0.918) = 0.959$$





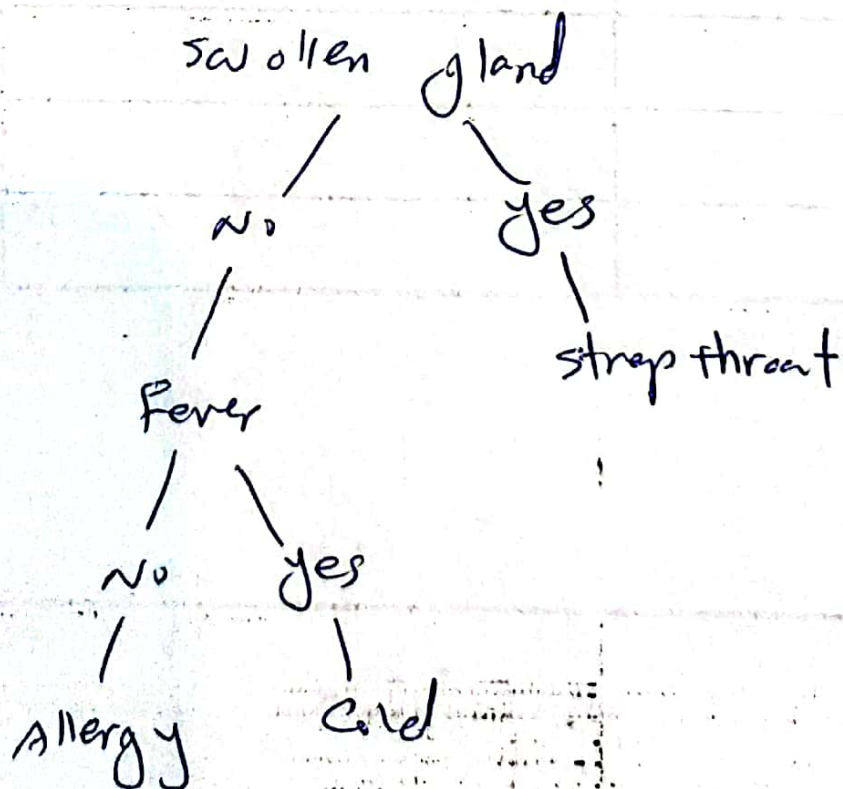


$$E(\text{yes}) = -\left(\frac{1}{8} \log_2 \frac{1}{8} + \frac{2}{8} \log_2 \frac{2}{8} + \frac{2}{8} \log_2 \frac{2}{8}\right) = 0.92$$

$$E(\text{no}) = -\left(\frac{2}{8} \log_2 \frac{2}{8} + \frac{1}{8} \log_2 \frac{1}{8} + \frac{2}{8} \log_2 \frac{2}{8}\right) = 0.92$$

$$E(\text{headache}) = \frac{1}{2} (0.92) + \frac{1}{2} (0.92) = 0.92$$

gains 0.112



13

