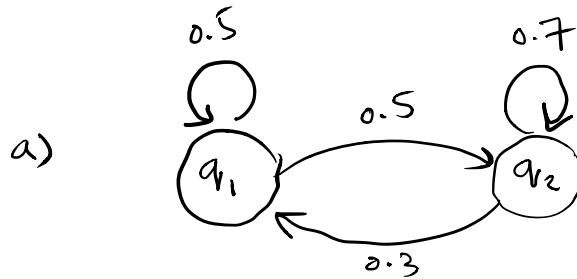


Q1

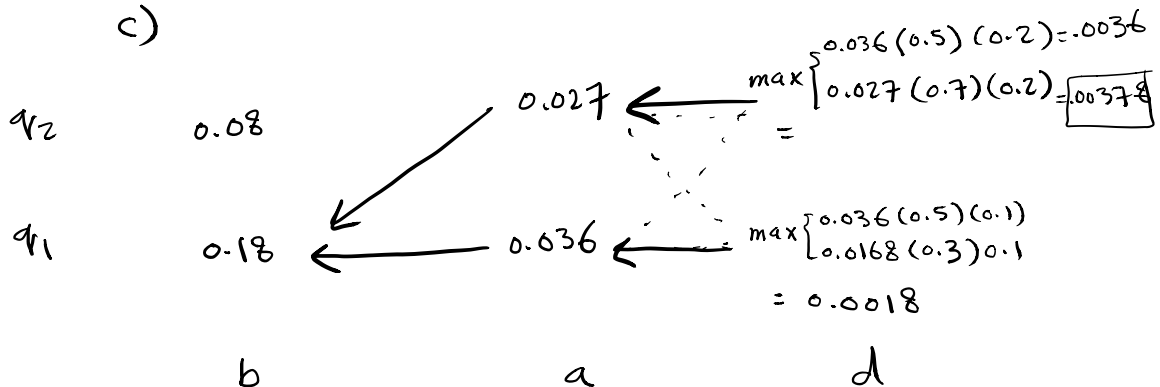


b)

$$\begin{array}{lcl}
 q_2 & P(q_2|q_0)P(b|q_2) & \begin{array}{l} 0.08(0.7)(0.3) \\ + 0.18(0.5)(0.3) \\ = 0.0168 + 0.027 \\ = 0.0438 \end{array} & \begin{array}{l} = 0.0438(0.7)(0.2) + 0.0456 \\ (0.5)(0.2) \\ = 0.006132 + 0.00456 \\ = 0.010692 \end{array} \\
 q_1 & P(q_1|q_0)P(b|q_1) & \begin{array}{l} 0.18(0.5)(0.4) \\ + 0.08(0.3)(0.4) \\ = 0.036 + 0.0096 = 0.0456 \end{array} & \begin{array}{l} 0.0456(0.5)(0.1) + 0.0438(0.3)(0.1) \\ = 0.00228 + 0.001314 \\ = 0.003594 \end{array} \\
 & b & a & d
 \end{array}$$

$$p(bad) = 0.010692 + 0.003594 = 0.014286$$

c)



most likely hidden sequence: q_1, q_2, q_2

$$P(q_1, q_2, q_3 | bad) = 0.00378$$