Neka je A_i, $i = 1..4$ događaj "*i*-ti lažov nije slagao". Prema uvjetima zadatka je

$$p(A_1) = p(A_2) = p(A_3) = p(A_4) = \frac{1}{3}$$

Neka je B_i, $i = 1..4$ događaj "*i*-ti lažov je rekao tačnu informaciju". Prema postavci zadatka, veza između događaja B_i, $i = 1..4$ i A_i, $i = 1..4$ data je sljedećim relacijama:

$$B_1 = A_1$$
$$B_2 = B_1 A_2 + \overline{B}_1 \overline{A}_2$$
$$B_3 = B_2 A_3 + \overline{B}_2 \overline{A}_3$$
$$B_4 = B_3 A_4 + \overline{B}_3 \overline{A}_4$$

Kako je ponašanje svakog lažova neovisno od ponašanja ostalih lažova, imamo:

$$p(B_1) = p(A_1) = \frac{1}{3}$$
$$p(B_2) = p(B_1)\, p(A_2) + p(\overline{B}_1)\, p(\overline{A}_2) = p(B_1)\, p(A_2) + (1 - p(B_1))\,(1 - p(A_2)) =$$
$$= \frac{1}{3} \cdot \frac{1}{3} + (1 - \frac{1}{3}) \cdot (1 - \frac{1}{3}) = \frac{5}{9}$$
$$p(B_3) = p(B_2)\, p(A_3) + p(\overline{B}_2)\, p(\overline{A}_3) = p(B_2)\, p(A_3) + (1 - p(B_2))\,(1 - p(A_3)) =$$
$$= \frac{5}{9} \cdot \frac{1}{3} + (1 - \frac{5}{9}) \cdot (1 - \frac{1}{3}) = \frac{13}{27}$$
$$p(B_4) = p(B_3)\, p(A_4) + p(\overline{B}_3)\, p(\overline{A}_4) = p(B_3)\, p(A_4) + (1 - p(B_3))\,(1 - p(A_4)) =$$
$$= \frac{13}{27} \cdot \frac{1}{3} + (1 - \frac{13}{27}) \cdot (1 - \frac{1}{3}) = \frac{41}{81}$$

Mi zapravo tražimo vjerovatnoću $p(B_1/B_4)$, koja po Bayesovoj teoremi iznosi

$$p(B_1/B_4) = p(B_1)\, p(B_4/B_1) \,/\, p(B_4)$$

Nedostaje nam još vjerovatnoća $p(B_4/B_1)$, koju ćemo izračunati ovako:

$$p(B_2/B_1) = p(A_2) = 1/3$$
$$p(B_3/B_1) = p(B_2/B_1)\, p(A_3) + p(\overline{B}_2/B_1)\, p(\overline{A}_3) = p(B_2/B_1)\, p(A_3) + (1 - p(B_2/B_1))\,(1 - p(A_3)) =$$
$$= \frac{1}{3} \cdot \frac{1}{3} + (1 - \frac{1}{3}) \cdot (1 - \frac{1}{3}) = \frac{5}{9}$$
$$p(B_4/B_1) = p(B_3/B_1)\, p(A_4) + p(\overline{B}_3/B_1)\, p(\overline{A}_4) = p(B_3/B_1)\, p(A_4) + (1 - p(B_3/B_1))\,(1 - p(A_4)) =$$
$$= \frac{5}{9} \cdot \frac{1}{3} + (1 - \frac{5}{9}) \cdot (1 - \frac{1}{3}) = \frac{13}{27}$$

Konačno je:

$$p(B_1/B_4) = (\frac{1}{3} \cdot \frac{13}{27}) \,/\, \frac{41}{81} = \frac{13}{41} \approx 31.7\,\%$$