

1.

$$C_1 = \{BP, GG, P, FG S\} \text{ (Haupt)}$$

$$C_0 = \{AV, SP\} \text{ (Neben)}$$

$$Z_1 = \{AV, GG, P\} \text{ (Mehl)}$$

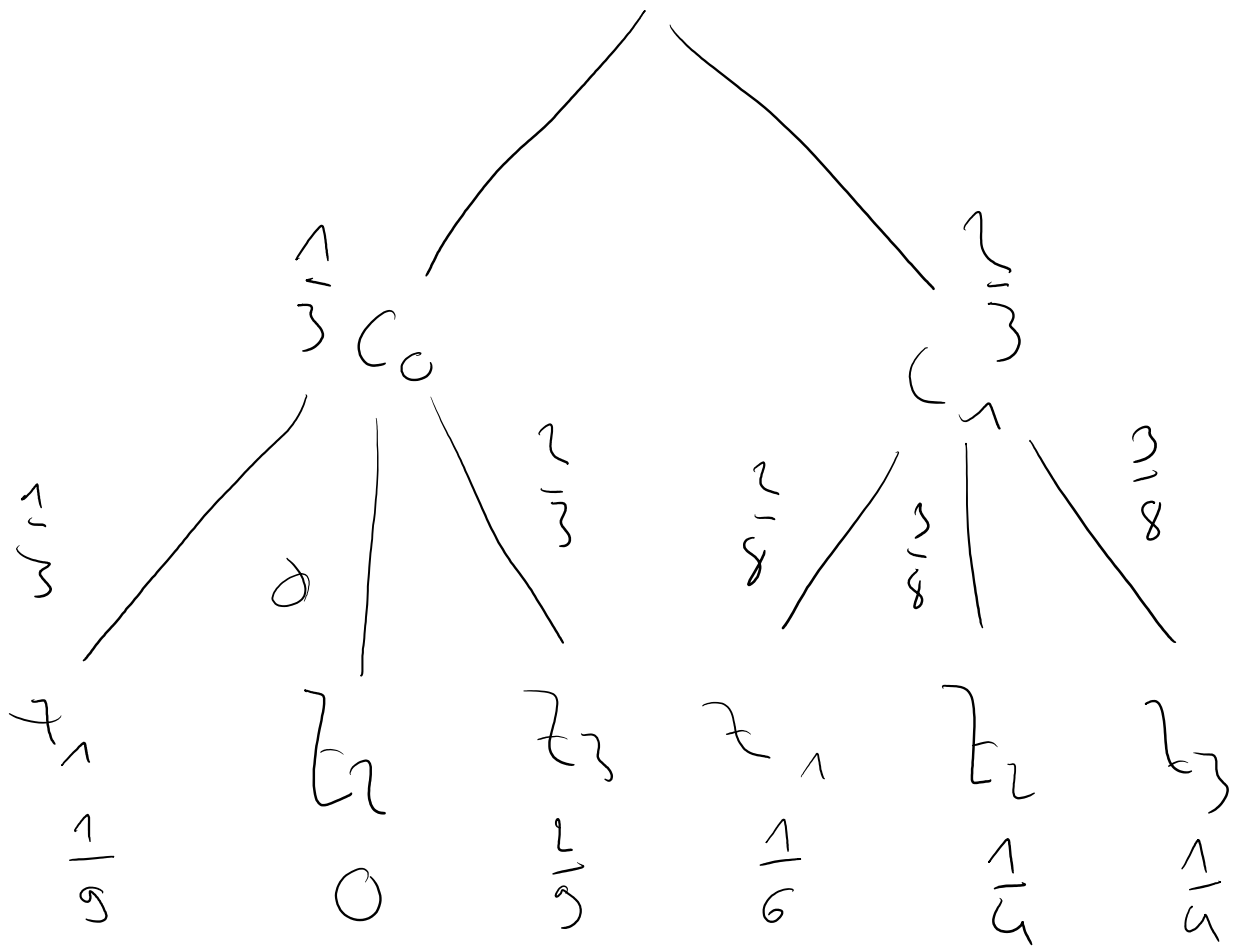
$$Z_2 = \{BP, GG, FG S\} \text{ (Kartoffel)}$$

$$Z_3 = \{AV, GG, SP, P, FG S\} \text{ (Milch)}$$

a) $P(Z_i | C_j)$

$$A = \begin{pmatrix} \frac{1}{3} & 0 & \frac{2}{3} \\ \frac{1}{6} & \frac{1}{4} & \frac{1}{4} \end{pmatrix} \begin{matrix} C_0 \\ C_1 \end{matrix}$$

Z_1
 Z_2
 Z_3



$$\text{sp } Z_1 = \frac{5}{18} ; Z_2 = \frac{1}{4} ; Z_3 = \frac{17}{36}$$

$$P(Z_1) = 0,5, P(Z_2) = \frac{1}{2}, P(Z_3) = \frac{5}{6}$$

$$P(C_0) = \frac{1}{3}, P(C_1) = \frac{2}{3}$$

$$A = \begin{pmatrix} Z_1 & Z_2 & Z_3 \\ \frac{1}{3} & \frac{3}{4} & \frac{3}{4} \\ \frac{2}{3} & 0 & 1 \end{pmatrix} \begin{matrix} C_1 \\ C_0 \end{matrix}$$

b)

$$c) P(z_1 | C_1) = \frac{1}{2}, P(C_1) = \frac{2}{3}, P(z_1) = \frac{1}{2}$$

$$P(C_1 | z_1) = \frac{P(C_1) \cdot P(z_1 | C_1)}{P(z_1)} = \frac{\frac{2}{3} \cdot \frac{1}{2}}{\frac{1}{2}} = \frac{2}{3}$$

$$P(C_1 | z_3) = \frac{P(C_1) \cdot P(z_3 | C_1)}{P(z_3)} = \frac{\frac{2}{3} \cdot \frac{3}{4}}{\frac{1}{2}} = \frac{6}{12} = \frac{1}{2}$$

2.

a) ... 2 ... 1

a)

$$P(M) = \frac{2}{3}; P(\bar{M}) = \frac{1}{3}$$

$$P(S|M) = 0,1; P(\bar{S}|M) = 0,9$$

$$P(S|\bar{M}) = 0,15; P(\bar{S}|\bar{M}) = 0,85$$

$$P(M|S) = \frac{P(M) \cdot P(S|M)}{P(S)}$$

$$= \frac{P(M) \cdot P(S|M)}{\underbrace{P(M) \cdot P(S|M)}_{P(S, M)} + \underbrace{P(\bar{M}) \cdot P(S|\bar{M})}_{P(S, \bar{M})}}$$

$$= \frac{\frac{2}{3} \cdot \frac{1}{10}}{\frac{2}{3} \cdot \frac{1}{10} + \frac{1}{3} \cdot \frac{15}{100}} = \frac{\frac{1}{15}}{\frac{1}{15} + \frac{5}{100}} = \frac{4}{7} //$$

$\Rightarrow m \approx 57,14\%$ männlich

b)

h | 1 2 3 4 5 6

b)

h	1	2	3	4	5	6
p_h	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$
w	$\frac{1}{8}$	0	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{8}$
u	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$
	p_h	p_h	p_h	w	p_h	w

x näher am Gezihten

z näher am Normalen

Doppelte Wahrs. für Gezihten