

[yes,no]

$$H(5,9) = -\left[\frac{5}{14}\log_2\left(\frac{5}{14}\right) + \frac{9}{14}\log_2\left(\frac{9}{14}\right)\right] = 0,9403$$

Split at Temperature:

$$\text{Temp} = \text{high: } H(2,5) = -\left[\frac{2}{7}\log_2\left(\frac{2}{14}\right) + \frac{5}{7}\log_2\left(\frac{5}{7}\right)\right] = 0,8631$$

$$\text{Temp} = \text{low: } H(3,4) = -\left[\frac{3}{7}\log_2\left(\frac{3}{14}\right) + \frac{4}{7}\log_2\left(\frac{4}{7}\right)\right] = 0,9852$$

$$\text{Gain: } H(5,9) - H\left[\frac{7}{14}H(2,5) + \frac{7}{14}H(3,4)\right] = \mathbf{0,01615}$$

Split at Rain:

$$\text{Rain} = \text{yes: } H(0,7) = -\left[\frac{0}{7}\log_2\left(\frac{0}{14}\right) + \frac{7}{7}\log_2\left(\frac{7}{7}\right)\right] = 0$$

$$\text{Rain} = \text{no: } H(5,2) = -\left[\frac{5}{7}\log_2\left(\frac{5}{14}\right) + \frac{2}{7}\log_2\left(\frac{2}{7}\right)\right] = 0,8631$$

$$\text{Gain: } H(5,9) - H\left[\frac{7}{14}H(0,7) + \frac{7}{14}H(5,2)\right] = \mathbf{0,50875}$$

Split at Windy:

$$\text{Windy} = \text{True: } H(1,6) = -\left[\frac{1}{7}\log_2\left(\frac{1}{14}\right) + \frac{6}{7}\log_2\left(\frac{6}{7}\right)\right] = 0,5917$$

$$\text{Windy} = \text{False: } H(4,3) = -\left[\frac{4}{7}\log_2\left(\frac{4}{7}\right) + \frac{3}{7}\log_2\left(\frac{3}{7}\right)\right] = 1,3781$$

$$\text{Gain: } H(5,9) - H\left[\frac{7}{14}H(1,6) + \frac{7}{14}H(4,3)\right] = \mathbf{0,0446}$$

Split at Humidity:

$$\text{Humidity} = \text{High: } H(2, 5) = - \left[\frac{2}{7} \log_2 \left(\frac{2}{14} \right) + \frac{5}{7} \log_2 \left(\frac{5}{7} \right) \right] = 0,8631$$

$$\text{Humidity} = \text{Low: } H(3, 4) = - \left[\frac{3}{7} \log_2 \left(\frac{3}{14} \right) + \frac{4}{7} \log_2 \left(\frac{4}{7} \right) \right] = 0,9852$$

$$\text{Gain: } H(5, 9) - H \left[\frac{7}{14} H(2, 5) + \frac{7}{14} H(3, 4) \right] = 0,01615$$

RAIN: No

$$H(5, 2) = - \left[\frac{5}{7} \log_2 \left(\frac{5}{7} \right) + \frac{2}{7} \log_2 \left(\frac{2}{7} \right) \right] = 0,8631$$

Split at Temperature:

$$\text{Temperature} = \text{High: } H(2, 0) = - \left[\frac{2}{2} \log_2 \left(\frac{2}{2} \right) + \frac{0}{2} \log_2 \left(\frac{0}{2} \right) \right] = 0$$

$$\text{Temperature} = \text{Low: } H(3, 2) = - \left[\frac{3}{5} \log_2 \left(\frac{3}{5} \right) + \frac{2}{5} \log_2 \left(\frac{2}{5} \right) \right] = 0,910$$

$$\text{Gain: } H(5, 2) - H \left[\frac{2}{7} H(2, 0) + \frac{5}{7} H(3, 2) \right] = 0,2131$$

Split at Windy:

$$\text{Windy} = \text{True: } H(1, 2) = - \left[\frac{1}{3} \log_2 \left(\frac{1}{3} \right) + \frac{2}{3} \log_2 \left(\frac{2}{3} \right) \right] = 0,9183$$

$$\text{Windy} = \text{False: } H(4, 0) = - \left[\frac{4}{4} \log_2 \left(\frac{4}{4} \right) + \frac{0}{4} \log_2 \left(\frac{0}{4} \right) \right] = 0$$

$$\text{Gain: } H(5, 2) - H \left[\frac{3}{7} H(1, 2) + \frac{4}{7} H(4, 0) \right] = 0,4695$$

Split at Humidity:

$$\text{Humidity} = \text{High: } H(2, 1) = - \left[\frac{2}{3} \log_2 \left(\frac{2}{3} \right) + \frac{1}{3} \log_2 \left(\frac{1}{3} \right) \right] = 0,9183$$

$$\text{humidity} = \text{Low: } H(3, 1) = - \left[\frac{3}{4} \log_2 \left(\frac{3}{4} \right) + \frac{1}{4} \log_2 \left(\frac{1}{4} \right) \right] = 0,8113$$

$$\text{Gain: } H(5, 2) - H \left[\frac{3}{7} H(2, 1) + \frac{4}{7} H(3, 1) \right] < 0,1$$