

Candidate Generation

Size 1

C1 Initially all possible attributes and their possible values are candidates.

Min Song

Candidate Attribute
cap-surface = fibrous
cap-surface = grooves
cap-surface = scaly
cap-surface = smooth
bruises? = bruises
bruises? = no
gill-size = broad
gill-size = narrow
Habitat = grasses
Habitat = leaves
Habitat = meadows
Habitat = paths
Habitat = urban
Habitat = waste
Habitat = woods
Poisonous = edible
Poisonous = poisonous

F1 Now the actual supports are calculated from counting the matched instances in the dataset. Note that boldface denotes satisfactory supports.

Candidate	SUPPORTS
cap-surface = fibrous	6/20
cap-surface = grooves	0/20
cap-surface = scaly	9/20
cap-surface = smooth	5/20
bruises? = bruises	7/20
bruises? = no	13/20
gill-size = broad	13/20

gill-size = narrow	7/20
Habitat = grasses	5/20
Habitat = leaves	4/20
Habitat = meadows	0/20
Habitat = paths	3/20
Habitat = urban	0/20
Habitat = waste	1/20
Habitat = woods	7/20
Poisonous = edible	10/20
Poisonous = poisonous	10/20

11 attribute stays as they meet least 25% supports.

Size 2

(C2) Now each combination of two attributes is a possible candidate. Also (F2) In order to prune a lot of these, their support is calculated.

Candidate	SUPPORTS
cap-surface = fibrous, cap-surface = scaly	0/20
cap-surface = fibrous, cap-surface = smooth	0/20
cap-surface = fibrous, bruises? = bruises	1/20
cap-surface = fibrous, bruises? = no	5/20
cap-surface = fibrous, gill-size = broad	6/20
cap-surface = fibrous, gill-size = narrow	0/20
cap-surface = fibrous, Habitat = grasses	3/20
cap-surface = fibrous, Habitat = woods	1/20
cap-surface = fibrous, Poisonous = edible	4/20
cap-surface = fibrous, Poisonous = poisonous	2/20
cap-surface = scaly, cap-surface = smooth	0/20
cap-surface = scaly, bruises? = bruises	4/20
cap-surface = scaly, bruises? = no	5/20
cap-surface = scaly, gill-size = broad	5/20
cap-surface = scaly, gill-size = narrow	4/20
cap-surface = scaly, Habitat = grasses	0/20
cap-surface = scaly, Habitat = woods	5/20

cap-surface = scaly, Poisonous = edible	4/20
cap-surface = scaly, Poisonous = poisonous	5/20
cap-surface = smooth, bruises? = bruises	2/20
cap-surface = smooth, bruises? = no	3/20
cap-surface = smooth, gill-size = broad	2/20
cap-surface = smooth, gill-size = narrow	3/20
cap-surface = smooth, Habitat = grasses	2/20
cap-surface = smooth, Habitat = woods	2/20
cap-surface = smooth, Poisonous = edible	2/20
cap-surface = smooth, Poisonous = poisonous	3/20
bruises? = bruises, bruises? = no	0/20
bruises? = bruises, gill-size = broad	5/20
bruises? = bruises, gill-size = narrow	2/20
bruises? = bruises, Habitat = grasses	2/20
bruises? = bruises, Habitat = woods	3/20
bruises? = bruises, Poisonous = edible	5/20
bruises? = bruises, Poisonous = poisonous	2/20
bruises? = no, gill-size = broad	8/20
bruises? = no, gill-size = narrow	5/20
bruises? = no, Habitat = grasses	3/20
bruises? = no, Habitat = woods	4/20
bruises? = no, Poisonous = edible	5/20
bruises? = no, Poisonous = poisonous	8/20
gill-size = broad, gill-size = narrow	0/20
gill-size = broad, Habitat = grasses	3/20
gill-size = broad, Habitat = woods	4/20
gill-size = broad, Poisonous = edible	10/20
gill-size = broad, Poisonous = poisonous	3/20
gill-size = narrow, Habitat = grasses	2/20
gill-size = narrow, Habitat = woods	3/20
gill-size = narrow, Poisonous = edible	0/20
gill-size = narrow, Poisonous = poisonous	7/20
Habitat = grasses, Habitat = woods	0/20
Habitat = grasses, Poisonous = edible	3/20
Habitat = grasses, Poisonous = poisonous	2/20

Habitat = woods, Poisonous = edible	3/20
Habitat = woods, Poisonous = poisonous	4/20
Poisonous = edible, Poisonous = poisonous	0/20

After removing sets that don't have enough support, only things left are,

Candidate	SUPPORTS
cap-surface = fibrous, bruises? = no	5/20
cap-surface = fibrous, gill-size = broad	6/20
cap-surface = scaly, bruises? = no	5/20
cap-surface = scaly, gill-size = broad	5/20
cap-surface = scaly, Habitat = woods	5/20
cap-surface = scaly, Poisonous = poisonous	5/20
bruises? = bruises, gill-size = broad	5/20
bruises? = bruises, Poisonous = edible	5/20
bruises? = no, gill-size = broad	8/20
bruises? = no, gill-size = narrow	5/20
bruises? = no, Poisonous = edible	5/20
bruises? = no, Poisonous = poisonous	8/20
gill-size = broad, Poisonous = edible	10/20
gill-size = narrow, Poisonous = poisonous	7/20

Size 3

C3 Now to produce candidates of 3 elements, one considers all possible pairs sets from F2 that differ only in their last elements. Also, support is calculated once more. The result is :

Candidate	SUPPORTS
cap-surface = fibrous, bruises? = no, gill-size = broad	5/20
cap-surface = scaly, bruises? = no, gill-size = broad	1/20
cap-surface = scaly, bruises? = no, Habitat = woods	3/20
cap-surface = scaly, bruises? = no, Poisonous = poisonous	5/20
cap-surface = scaly, gill-size = broad, Habitat = woods	3/20
cap-surface = scaly, gill-size = broad, Poisonous = poisonous	1/20
cap-surface = scaly, Habitat = woods, Poisonous = poisonous	3/20
bruises? = bruises, gill-size = broad, Poisonous = edible	5/20

bruises? = no, gill-size = broad, Poisonous = edible	5/20
bruises? = no, gill-size = broad, Poisonous = poisonous	3/20
bruises? = no, gill-size = narrow, Poisonous = edible	0/20
bruises? = no, gill-size = narrow, Poisonous = poisonous	5/20

Removing the candidates that did not meet the minimum support give following.

Candidate	SUPPORTS
cap-surface = fibrous, bruises? = no, gill-size = broad	5/20
cap-surface = scaly, bruises? = no, Poisonous = poisonous	5/20
bruises? = bruises, gill-size = broad, Poisonous = edible	5/20
bruises? = no, gill-size = broad, Poisonous = edible	5/20
bruises? = no, gill-size = narrow, Poisonous = poisonous	5/20

Also, there are no more candidates possible, So I stop here.

Associate Rule Generation

2 Element Frequent Set

- **{cap-surface = fibrous, bruises? = no}**

- {bruises? = no} -> {cap-surface = fibrous}

$$\frac{\{cap-surface = fibrous, bruises? = no\}}{\{bruises? = no\}} = \frac{(5/20)}{(13/20)} = 0.3846$$

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- {cap-surface = fibrous} -> {bruises? = no}

$$\frac{\{cap-surface = fibrous, bruises? = no\}}{\{cap-surface = fibrous\}} = \frac{(5/20)}{(6/20)} = 0.83333$$

- **{cap-surface = fibrous, gill-size = broad}**

- {gill-size = broad} -> {cap-surface = fibrous}

$$\frac{\{cap-surface = fibrous, gill-size = broad\}}{\{gill-size = broad\}} = \frac{(6/20)}{(13/20)} = 0.4615$$

- {cap-surface = fibrous}-> {gill-size = broad}

$$\{\text{cap-surface} = \text{fibrous}, \text{gill-size} = \text{broad}\} / \{\text{cap-surface} = \text{fibrous}\} \\ = (6/20) / (6/20) = 1$$

- **{cap-surface = scaly, bruises? = no}**

- { bruises? = no } -> {cap-surface = scaly}

$$\{\text{cap-surface} = \text{scaly}, \text{bruises?} = \text{no}\} / \{\text{bruises?} = \text{no}\} \\ = (5/20) / (13/20) = 0.3846$$

- {cap-surface = scaly} -> { bruises? = no}

$$\{\text{cap-surface} = \text{scaly}, \text{bruises?} = \text{no}\} / \{\text{cap-surface} = \text{scaly}\} \\ = (5/20) / (9/20) = 0.5555$$

- **{cap-surface = scaly, gill-size = broad}**

- {gill-size = broad} -> {cap-surface = scaly}

$$\{\text{cap-surface} = \text{scaly}, \text{gill-size} = \text{broad}\} / \{\text{gill-size} = \text{broad}\} \\ = (5/20) / (13/20) = 0.3846$$

- {cap-surface = scaly} -> {gill-size = broad}

$$\{\text{cap-surface} = \text{scaly}, \text{gill-size} = \text{broad}\} / \{\text{cap-surface} = \text{scaly}\} \\ = (5/20) / (9/20) = 0.5555$$

- **{cap-surface = scaly, Habitat = woods}**

- {Habitat = woods} -> {cap-surface = scaly}

$$\{\text{cap-surface} = \text{scaly}, \text{Habitat} = \text{woods}\} / \{\text{Habitat} = \text{woods}\} \\ = (5/20) / (7/20) = 0.7142$$

- {cap-surface = scaly} -> {Habitat = woods}

$$\{\text{cap-surface} = \text{scaly}, \text{Habitat} = \text{woods}\} / \{\text{cap-surface} = \text{scaly}\} \\ = (5/20) / (9/20) = 0.5555$$

- **{cap-surface = scaly, Poisonous = poisonous}**

$$\begin{aligned}
 & - \{ \text{Poisonous} = \text{poisonous} \} \rightarrow \{ \text{cap-surface} = \text{scaly} \} \\
 & \{ \text{cap-surface} = \text{scaly}, \text{Poisonous} = \text{poisonous} \} / \{ \text{Poisonous} = \text{poisonous} \} \\
 & = (5/20) / (10/20) = 0.5
 \end{aligned}$$

$$\begin{aligned}
 & - \{ \text{cap-surface} = \text{scaly} \} \rightarrow \{ \text{Poisonous} = \text{poisonous} \} \\
 & \{ \text{cap-surface} = \text{scaly}, \text{Poisonous} = \text{poisonous} \} / \{ \text{cap-surface} = \text{scaly} \} \\
 & = (5/20) / (9/20) = 0.5555
 \end{aligned}$$

- **{bruises? = bruises, gill-size = broad}**

$$\begin{aligned}
 & - \{ \text{gill-size} = \text{broad} \} \rightarrow \{ \text{bruises?} = \text{bruises} \} \\
 & \{ \text{bruises?} = \text{bruises}, \text{gill-size} = \text{broad} \} / \{ \text{gill-size} = \text{broad} \} \\
 & = (5/20) / (13/20) = 0.3846
 \end{aligned}$$

$$\begin{aligned}
 & - \{ \text{bruises?} = \text{bruises} \} \rightarrow \{ \text{gill-size} = \text{broad} \} \\
 & \{ \text{bruises?} = \text{bruises}, \text{gill-size} = \text{broad} \} / \{ \text{bruises?} = \text{bruises} \} \\
 & = (5/20) / (7/20) = 0.7142
 \end{aligned}$$

- **{bruises? = bruises, Poisonous = edible}**

$$\begin{aligned}
 & - \{ \text{Poisonous} = \text{edible} \} \rightarrow \{ \text{bruises?} = \text{bruises} \} \\
 & \{ \text{bruises?} = \text{bruises}, \text{Poisonous} = \text{edible} \} / \{ \text{Poisonous} = \text{edible} \} \\
 & = (5/20) / (10/20) = 0.5
 \end{aligned}$$

$$\begin{aligned}
 & - \{ \text{bruises?} = \text{bruises} \} \rightarrow \{ \text{Poisonous} = \text{edible} \} \\
 & \{ \text{bruises?} = \text{bruises}, \text{Poisonous} = \text{edible} \} / \{ \text{bruises?} = \text{bruises} \} \\
 & = (5/20) / (7/20) = 0.7142
 \end{aligned}$$

- **{bruises? = no, gill-size = broad}**

$$\begin{aligned}
 & - \{ \text{gill-size} = \text{broad} \} \rightarrow \{ \text{bruises?} = \text{no} \} \\
 & \{ \text{bruises?} = \text{no}, \text{gill-size} = \text{broad} \} / \{ \text{gill-size} = \text{broad} \} \\
 & = (8/20) / (13/20) = 0.6153
 \end{aligned}$$

$$\begin{aligned}
 & - \{ \text{bruises?} = \text{no} \} \rightarrow \{ \text{gill-size} = \text{broad} \}
 \end{aligned}$$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{broad}\} / \{\text{bruises?} = \text{no}\}$$
$$= (8/20) / (13/20) = 0.6153$$

- **{bruises? = no, gill-size = narrow}**

- {gill-size = narrow} -> {bruises? = no}

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}\} / \{\text{gill-size} = \text{narrow}\}$$
$$= (5/20) / (7/20) = 0.7142$$

- {bruises? = no} -> {gill-size = narrow}

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}\} / \{\text{bruises?} = \text{no}\}$$
$$= (5/20) / (13/20) = 0.3846$$

- **{bruises? = no, Poisonous = edible}**

- {Poisonous = edible} -> {bruises? = no}

$$\{\text{bruises?} = \text{no}, \text{Poisonous} = \text{edible}\} / \{\text{Poisonous} = \text{edible}\}$$
$$= (5/20) / (10/20) = 0.5$$

- {bruises? = no} -> {Poisonous = edible}

$$\{\text{bruises?} = \text{no}, \text{Poisonous} = \text{edible}\} / \{\text{bruises?} = \text{no}\}$$
$$= (5/20) / (13/20) = 0.3846$$

- **{bruises? = no, Poisonous = poisonous}**

- {Poisonous = poisonous} -> {bruises? = no}

$$\{\text{bruises?} = \text{no}, \text{Poisonous} = \text{poisonous}\} / \{\text{Poisonous} = \text{poisonous}\}$$
$$= (8/20) / (10/20) = 0.8$$

- {bruises? = no} -> {Poisonous = poisonous}

$$\{\text{bruises?} = \text{no}, \text{Poisonous} = \text{poisonous}\} / \{\text{bruises?} = \text{no}\}$$
$$= (8/20) / (13/20) = 0.6153$$

- **{gill-size = broad, Poisonous = edible}**

$$\begin{aligned}
 & - \{ \text{Poisonous} = \text{edible} \} - > \{ \text{gill-size} = \text{broad} \} \\
 & \{ \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{Poisonous} = \text{edible} \} \\
 & = (10/20) / (10/20) = 1
 \end{aligned}$$

$$\begin{aligned}
 & - \{ \text{gill-size} = \text{broad} \} - > \{ \text{Poisonous} = \text{edible} \} \\
 & \{ \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{gill-size} = \text{broad} \} \\
 & = (10/20) / (13/20) = 0.7692
 \end{aligned}$$

- **{gill-size = narrow, Poisonous = poisonous}**

$$\begin{aligned}
 & - \{ \text{Poisonous} = \text{poisonous} \} - > \{ \text{gill-size} = \text{narrow} \} \\
 & \{ \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous} \} / \{ \text{Poisonous} = \text{poisonous} \} \\
 & = (7/20) / (10/20) = 0.7
 \end{aligned}$$

$$\begin{aligned}
 & - \{ \text{gill-size} = \text{narrow} \} - > \{ \text{Poisonous} = \text{poisonous} \} \\
 & \{ \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous} \} / \{ \text{gill-size} = \text{narrow} \} \\
 & = (7/20) / (7/20) = 1
 \end{aligned}$$

Rules so far

The frequent set of 2 elements have so far generated 3 rules.

- {cap-surface = fibrous} - > {gill-size = broad}
- {Poisonous = edible} - > {gill-size = broad}
- {gill-size = narrow} - > {Poisonous = poisonous}

3 Elements Frequent Set

Candidate	SUPPORTS
cap-surface = fibrous, bruises? = no, gill-size = broad	5/20
cap-surface = scaly, bruises? = no, Poisonous = poisonous	5/20
bruises? = bruises, gill-size = broad, Poisonous = edible	5/20
bruises? = no, gill-size = broad, Poisonous = edible	5/20
bruises? = no, gill-size = narrow, Poisonous = poisonous	5/20

- {cap-surface = fibrous, bruises? = no, gill-size = broad}

1 consequents

- {bruises? = no, gill-size = broad} - > {cap-surface = fibrous}
{cap-surface = fibrous, bruises? = no, gill-size = broad} / {bruises? = no, gill-size = broad} = (5/20) / (8/20) = 0.625

- {cap-surface = fibrous, gill-size = broad} - > {bruises? = no}
{cap-surface = fibrous, bruises? = no, gill-size = broad} / {cap-surface = fibrous, gill-size = broad} = (5/20) / (6/20) = 0.8333

- {cap-surface = fibrous, bruises? = no} - > {gill-size = broad}
{cap-surface = fibrous, bruises? = no, gill-size = broad} / {cap-surface = fibrous, bruises? = no} = (5/20) / (5/20) = 1

2 consequents

- {gill-size = broad} - > {cap-surface = fibrous, bruises? = no}
{cap-surface = fibrous, bruises? = no, gill-size = broad} / {gill-size = broad} = (5/20) / (13/20) = 0.3846

- {bruises? = no} - > {cap-surface = fibrous, gill-size = broad}
{cap-surface = fibrous, bruises? = no, gill-size = broad} / {bruises? = no} = (5/20) / (13/20) = 0.3846

- {cap-surface = fibrous} - > {bruises? = no, gill-size = broad}
{cap-surface = fibrous, bruises? = no, gill-size = broad} / {cap-surface = fibrous} = (5/20) / (6/20) = 0.8333

- {cap-surface = scaly, bruises? = no, Poisonous = poisonous}

1 consequents

- {bruises? = no, Poisonous = poisonous} -> {cap-surface = scaly}
{cap-surface = scaly, bruises? = no, Poisonous = poisonous} / {bruises? = no, Poisonous = poisonous} = (5./20) / (8/20) = 0.625

- {cap-surface = scaly, Poisonous = poisonous} -> {bruises? = no}
 {cap-surface = scaly, bruises? = no, Poisonous = poisonous} / {cap-surface = scaly,
 Poisonous = poisonous} = (5/20) / (5/20) = 1

- {cap-surface = scaly, bruises? = no} -> {Poisonous = poisonous}
 {cap-surface = scaly, bruises? = no, Poisonous = poisonous} / {cap-surface = scaly,
 bruises? = no} = (5/20) / (5/20) = 1

2 consequents

- {Poisonous = poisonous}-> {cap-surface = scaly, bruises? = no}
 {cap-surface = scaly, bruises? = no, Poisonous = poisonous} / {Poisonous = poisonous}
 = (5/20) / (10/20) = 0.5

- {bruises? = no} -> {cap-surface = scaly, Poisonous = poisonous}
 {cap-surface = scaly, bruises? = no, Poisonous = poisonous} / {bruises? = no}
 = (5/20) / (13/20) = 0.3846

- {cap-surface = scaly} -> {bruises? = no, Poisonous = poisonous}
 {cap-surface = scaly, bruises? = no, Poisonous = poisonous} / {cap-surface = scaly}
 = (5/20) / (9/20) = 0.5555

- **{bruises? = bruises, gill-size = broad, Poisonous = edible}**

1 consequents

- {gill-size = broad, Poisonous = edible} -> {bruises? = bruises,}
 {bruises? = bruises, gill-size = broad, Poisonous = edible} / {gill-size = broad,
 Poisonous = edible} = (5/20) / (10/20) = 0.5

- {bruises? = bruises, Poisonous = edible} -> {gill-size = broad}
 {bruises? = bruises, gill-size = broad, Poisonous = edible} / {bruises? = bruises,
 Poisonous = edible} = (5/20) / (5/20) = 1

- {bruises? = bruises, gill-size = broad} -> {Poisonous = edible}
 {bruises? = bruises, gill-size = broad, Poisonous = edible} / {bruises? = bruises, gill-

$$\text{size} = \text{broad} \} = (5/20) / (5/20) = 1$$

2 consequents

$$\begin{aligned} & - \{ \text{Poisonous} = \text{edible} \} \rightarrow \{ \text{bruises?} = \text{bruises}, \text{gill-size} = \text{broad} \} \\ & \{ \text{bruises?} = \text{bruises}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{Poisonous} = \text{edible} \} \\ & = (5/20) / (10/20) = 0.5 \end{aligned}$$

$$\begin{aligned} & - \{ \text{gill-size} = \text{broad} \} \rightarrow \{ \text{bruises?} = \text{bruises}, \text{Poisonous} = \text{edible} \} \\ & \{ \text{bruises?} = \text{bruises}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{gill-size} = \text{broad} \} \\ & = (5/20) / (13/20) = 0.3846 \end{aligned}$$

$$\begin{aligned} & - \{ \text{bruises?} = \text{bruises} \} \rightarrow \{ \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} \\ & \{ \text{bruises?} = \text{bruises}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{bruises?} = \text{bruises} \} \\ & = (5/20) / (7/20) = 0.7142 \end{aligned}$$

- **{bruises? = no, gill-size = broad, Poisonous = edible}**

1 consequents

$$\begin{aligned} & - \{ \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} \rightarrow \{ \text{bruises?} = \text{no} \} \\ & \{ \text{bruises?} = \text{no}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{gill-size} = \text{broad}, \text{Poisonous} = \\ & \text{edible} \} = (5/20) / (10/20) = 0.5 \end{aligned}$$

$$\begin{aligned} & - \{ \text{bruises?} = \text{no}, \text{Poisonous} = \text{edible} \} \rightarrow \{ \text{gill-size} = \text{broad} \} \\ & \{ \text{bruises?} = \text{no}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{bruises?} = \text{no}, \text{Poisonous} = \\ & \text{edible} \} = (5/20) / (5/20) = 1 \end{aligned}$$

$$\begin{aligned} & - \{ \text{bruises?} = \text{no}, \text{gill-size} = \text{broad} \} \rightarrow \{ \text{Poisonous} = \text{edible} \} \\ & \{ \text{bruises?} = \text{no}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible} \} / \{ \text{bruises?} = \text{no}, \text{gill-size} = \\ & \text{broad} \} \\ & = (5/20) / (8/20) = 0.625 \end{aligned}$$

2 consequents

- {Poisonous = edible} → {bruises? = no, gill-size = broad}

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible}\} / \{\text{Poisonous} = \text{edible}\}$$

$$= (5/20) / (10/20) = 0.5$$

- $\{\text{gill-size} = \text{broad}\} \rightarrow \{\text{bruises?} = \text{no}, \text{Poisonous} = \text{edible}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible}\} / \{\text{gill-size} = \text{broad}\}$$

$$= (5/20) / (13/20) = 0.3846$$

- $\{\text{bruises?} = \text{no}\} \rightarrow \{\text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{broad}, \text{Poisonous} = \text{edible}\} / \{\text{bruises?} = \text{no}\}$$

$$= (5/20) / (13/20) = 0.3846$$

- **$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\}$**

1 consequents

- $\{\text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} \rightarrow \{\text{bruises?} = \text{no}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} / \{\text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} = (5/20) / (7/20) = 0.7142$$

- $\{\text{bruises?} = \text{no}, \text{Poisonous} = \text{poisonous}\} \rightarrow \{\text{gill-size} = \text{narrow}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} / \{\text{bruises?} = \text{no}, \text{Poisonous} = \text{poisonous}\} = (5/20) / (8/20) = 0.625$$

- $\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}\} \rightarrow \{\text{Poisonous} = \text{poisonous}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} / \{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}\} = (5/20) / (5/20) = 1$$

2 consequents

- $\{\text{Poisonous} = \text{poisonous}\} \rightarrow \{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} / \{\text{Poisonous} = \text{poisonous}\}$$

$$= (5/20) / (10/20) = 0.5$$

- $\{\text{gill-size} = \text{narrow}\} \rightarrow \{\text{bruises?} = \text{no}, \text{Poisonous} = \text{poisonous}\}$

$$\{\text{bruises?} = \text{no}, \text{gill-size} = \text{narrow}, \text{Poisonous} = \text{poisonous}\} / \{\text{gill-size} = \text{narrow}\}$$

$$= (5/20) / (7/20) = 0.7142$$

- {bruises? = no} -> { gill-size = narrow, Poisonous = poisonous}
{bruises? = no, gill-size = narrow, Poisonous = poisonous} / {bruises? = no}
= (5/20) / (13/20) = 0.3846

Total

- {cap-surface = fibrous} -> {gill-size = broad}
- {Poisonous = edible} -> {gill-size = broad}
- {gill-size = narrow} -> {Poisonous = poisonous}
- {cap-surface = fibrous, bruises? = no} -> {gill-size = broad}
- {cap-surface = scaly, Poisonous = poisonous} -> {bruises? = no}
- {cap-surface = scaly, bruises? = no} -> {Poisonous = poisonous}
- {bruises? = bruises, Poisonous = edible} -> {gill-size = broad}
- {bruises? = bruises, gill-size = broad} -> {Poisonous = edible}
- {bruises? = no, Poisonous = edible} -> {gill-size = broad}
- {bruises? = no, gill-size = narrow} -> {Poisonous = poisonous}

There are 10 rules generated just like Weka. However, the order was different from Weka.