```
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
overcast,hot,normal,FALSE,yes
rainy,mild,high,TRUE,no

A = outlook, Entropy(S) = 0.9402859586706307
v = sunny, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
sunny,mild,normal,TRUE,yes

|S_v| = 5, |S| = 14, Entropy(S_v) =
0.9709505944546684
v = overcast, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
overcast,hot,high,FALSE,yes
overcast,cool,normal,TRUE,yes
overcast,mild,high,TRUE,yes
overcast,hot,normal,FALSE,yes

|S_v| = 4, |S| = 14, Entropy(S_v) = 0.0
v = rainy, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
rainy,mild,normal,FALSE,yes
rainy,mild,high,TRUE,no

|S_v| = 5, |S| = 14, Entropy(S_v) = 0.9709505944546684
Gain(S,outlook)=0.24674981977443894
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
overcast,hot,normal,FALSE,yes
rainy,mild,high,TRUE,no

A = temperature, Entropy(S) = 0.9402859586706307
v = hot, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
overcast,hot,normal,FALSE,yes

|S_v| = 4, |S| = 14, Entropy(S_v) = 1.0
v = mild, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
rainy,mild,high,FALSE,yes
sunny,mild,high,FALSE,no
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
rainy,mild,high,TRUE,no

|S_v| = 6, |S| = 14, Entropy(S_v) = 0.9182958340544893
v = cool, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
```

```
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,cool,normal,FALSE,yes

|S_v| = 4, |S| = 14, Entropy(S_v) =
0.8112781244591327
Gain(S,temperature)=0.029222565658954536
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
overcast,hot,normal,FALSE,yes
rainy,mild,high,TRUE,no

A = humidity, Entropy(S) = 0.9402859586706307
v = high, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
sunny,mild,high,FALSE,no
overcast,mild,high,TRUE,yes
rainy,mild,high,TRUE,no

|S_v| = 7, |S| = 14, Entropy(S_v) =
0.9852281360342514
v = normal, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,hot,normal,FALSE,yes

|S_v| = 7, |S| = 14, Entropy(S_v) = 0.5916727785823275
Gain(S,humidity)=0.15183550136234125
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
sunny,hot,high,TRUE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
overcast,hot,normal,FALSE,yes
rainy,mild,high,TRUE,no

A = windy, Entropy(S) = 0.9402859586706307
v = TRUE, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,TRUE,no
rainy,cool,normal,TRUE,no
overcast,cool,normal,TRUE,yes
sunny,mild,normal,TRUE,yes
overcast,mild,high,TRUE,yes
rainy,mild,high,TRUE,no

|S_v| = 6, |S| = 14, Entropy(S_v) = 0.9999999999999998
v = FALSE, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
sunny,hot,high,FALSE,no
overcast,hot,high,FALSE,yes
rainy,mild,high,FALSE,yes
rainy,cool,normal,FALSE,yes
sunny,mild,high,FALSE,no
sunny,cool,normal,FALSE,yes
rainy,mild,normal,FALSE,yes
overcast,hot,normal,FALSE,yes
```

```
|S_v| = 8, |S| = 14, Entropy(S_v) =
0.8112781244591329
Gain(S,windy)=0.04812703040826921


Legmagasabb Gain az outlook esetén!
outlook=sunny

Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
hot,high,TRUE,no
mild,high,FALSE,no
cool,normal,FALSE,yes
mild,normal,TRUE,yes

A = temperature, Entropy(S) = 0.9709505944546684
v = hot, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
hot,high,TRUE,no

|S_v| = 2, |S| = 5, Entropy(S_v) = 0.0
v = mild, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,no
mild,normal,TRUE,yes

|S_v| = 2, |S| = 5, Entropy(S_v) = 1.0
v = cool, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
cool,normal,FALSE,yes

|S_v| = 1, |S| = 5, Entropy(S_v) = 0.0
Gain(S,temperature)=0.5709505944546683
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
hot,high,TRUE,no
mild,high,FALSE,no
cool,normal,FALSE,yes
mild,normal,TRUE,yes

A = humidity, Entropy(S) = 0.9709505944546684
v = high, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
hot,high,TRUE,no
mild,high,FALSE,no

|S_v| = 3, |S| = 5, Entropy(S_v) = 0.0
v = normal, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
cool,normal,FALSE,yes
mild,normal,TRUE,yes

|S_v| = 2, |S| = 5, Entropy(S_v) = 0.0
Gain(S,humidity)=0.9709505944546684
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
hot,high,TRUE,no
mild,high,FALSE,no
cool,normal,FALSE,yes
mild,normal,TRUE,yes

A = windy, Entropy(S) = 0.9709505944546684
v = TRUE, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,TRUE,no
mild,normal,TRUE,yes

|S_v| = 2, |S| = 5, Entropy(S_v) = 1.0
v = FALSE, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
```

```
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
mild,high,FALSE,no
cool,normal,FALSE,yes

|S_v| = 3, |S| = 5, Entropy(S_v) =
0.9182958340544897
Gain(S,windy)=0.019973094021974558

Legmagasabb Gain az humidity esetén!

@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,no
hot,high,TRUE,no
mild,high,FALSE,no

cool,normal,FALSE,yes
mild,normal,TRUE,yes

2 levél node jön!
humidity=high -> no
humidity=normal -> yes
humidity visszatér!
outlook=overcast

@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
hot,high,FALSE,yes
cool,normal,TRUE,yes
mild,high,TRUE,yes
hot,normal,FALSE,yes

1 levél node jön!
outlook=overcast -> yes

outlook=rainy

Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,yes
cool,normal,FALSE,yes
cool,normal,TRUE,no
mild,normal,FALSE,yes
mild,high,TRUE,no

A = temperature, Entropy(S) = 0.9709505944546684
v = hot, S_v = üres, |S_v| = 0, |S| = 5,
Entropy(S_v) = 0.0
v = mild, S_v =
@relation weather.symbolic

@attribute outlook {sunny,overcast,rainy}
@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,yes
mild,normal,FALSE,yes
mild,high,TRUE,no

|S_v| = 3, |S| = 5, Entropy(S_v) = 0.9182958340544897
v = cool, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
cool,normal,FALSE,yes
cool,normal,TRUE,no

|S_v| = 2, |S| = 5, Entropy(S_v) = 1.0
Gain(S,temperature)=0.019973094021974558
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,yes
cool,normal,FALSE,yes
cool,normal,TRUE,no
mild,normal,FALSE,yes
mild,high,TRUE,no

A = humidity, Entropy(S) = 0.9709505944546684
v = high, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,yes
mild,high,TRUE,no

|S_v| = 2, |S| = 5, Entropy(S_v) = 1.0
v = normal, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
cool,normal,FALSE,yes
cool,normal,TRUE,no
mild,normal,FALSE,yes
```

|S_v| = 3, |S| = 5, Entropy(S_v) = 0.9182958340544897
Gain(S,humidity)=0.019973094021974558
Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,yes
cool,normal,FALSE,yes
cool,normal,TRUE,no
mild,normal,FALSE,yes
mild,high,TRUE,no

A = windy, Entropy(S) = 0.9709505944546684
v = TRUE, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
cool,normal,TRUE,no
mild,high,TRUE,no

|S_v| = 2, |S| = 5, Entropy(S_v) = 0.0
v = FALSE, S_v =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
mild,high,FALSE,yes
cool,normal,FALSE,yes
mild,normal,FALSE,yes

|S_v| = 3, |S| = 5, Entropy(S_v) = 0.0
Gain(S,windy)=0.9709505944546684

Legmagasabb Gain az windy esetén!

Computing Gain(S,A), where S =
@relation weather.symbolic

@attribute temperature {hot,mild,cool}
@attribute humidity {high,normal}
@attribute windy {TRUE,FALSE}
@attribute play {yes,no}

@data
cool,normal,TRUE,no
mild,high,TRUE,no

mild,high,FALSE,yes
cool,normal,FALSE,yes
mild,normal,FALSE,yes

2 levél node jön!
windy=TRUE -> no
windy=FALSE -> yes
windy visszatér!

outlook visszatér!