

# KR-IST - Lecture 8a

## Knowledge Test

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# Question

Use FOL to represent the information contained in the lyric to 'When a man loves a woman'.

When a man loves a woman  
Can't keep his mind on nothing else  
He'll trade the world  
For the good things he's found  
If she's bad, he can't see it  
She can do no wrong  
Turn his back on his best friend  
If he put her down

When a man loves a woman  
Spend his very last time  
Tryin' to hold on to what he needs  
He'd give up all his comfort  
Sleep out in the rain  
If she says that's the way it ought to be

## Question

In this rule set, each line is a rule constructed from a conclusion (the word after 'implies') and one or more conditions (words before 'implies').

```
unexpectedBehaviour and dataCorruption --> diskOverflow
unexpectedBehaviour and networkExposure --> virusInfection
broadband --> networkExposure
broadband --> intenseNetworkUsage
attachmentsOpened --> networkExposure
gamesDownloads --> networkExposure
ADSLConnection --> broadband
cableConnection --> broadband
networkExposure --> firewallNeeded
networkExposure --> emailCapture
crashing --> unexpectedBehaviour
freezing --> unexpectedBehaviour
```

Estimate the branching factor for the search space for (a) forwards-reasoning, and (b) backwards reasoning.

Using backwards reasoning, show whether 'virusInfection' may be concluded on the basis of the facts 'ADSLConnection', 'gamesDownloads' and 'freezing'.

Show all the conclusions which can be established using forwards reasoning from the fact 'ADSLConnection'.

Identify a minimal alteration of the rules which will enable the conclusion 'diskOverflow'.