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’.