Default Reasoning

Default Reasoning is very common form of non-monotonic reasoning. Here we want to draw conclusions based on what is most likely to be true.

Approaches to Default Reasoning

- o Non-Monotonic Logic
- o Default Logic

* Non-Monotonic Logic

- o This is basically an extension of first Order predicate logic to include a [modal] operator, M.

- o The Purpose of this is to allow for consistency.

Modal Operator (M)
↳ Consistent with everything we know.

[Example]

$\forall x$: Plays instrument (x) $\wedge$
M manages (x) → jazz musician (x)
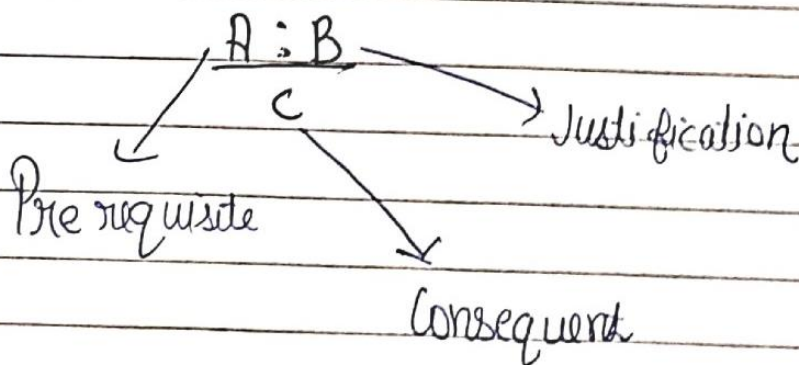
∴ x Can manage it Consistent with all other

knowledge then we can can conclude that x is jazz musician.

Consistency :- One common solution (consistent with PROLOG notation) is
-to show that fact P is true attempt.
-to prove ~P.

If we fail we may say that P is consistent (since ~P is false).

* ## Default Logic

It introduces a new inference Rule.

$$\frac{A : B}{C}$$

Prerequisite — A

Justification — B

Consequent — C

If A and if it is consistent with the rest of what is known to assume that B, then conclude that C.

Example

$$\frac{BIRD(X) : FLIES(X)}{FLIES(X)}$$