



SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF CSE-IoT ENGINEERING



Artificial Intelligence & Natural Language Processing

Inference Engine

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Inference Engine

- ❑ Use of efficient procedures and rules by the Inference Engine is essential in deducting a correct, flawless solution.
- ❑ In case of knowledge-based ES, the Inference Engine acquires and manipulates the knowledge from the knowledge base to arrive at a particular solution.

In case of rule based ES, it –

- Applies rules repeatedly to the facts, which are obtained from earlier rule application.
- Adds new knowledge into the knowledge base if required.
- Resolves rules conflict when multiple rules are applicable to a particular case.

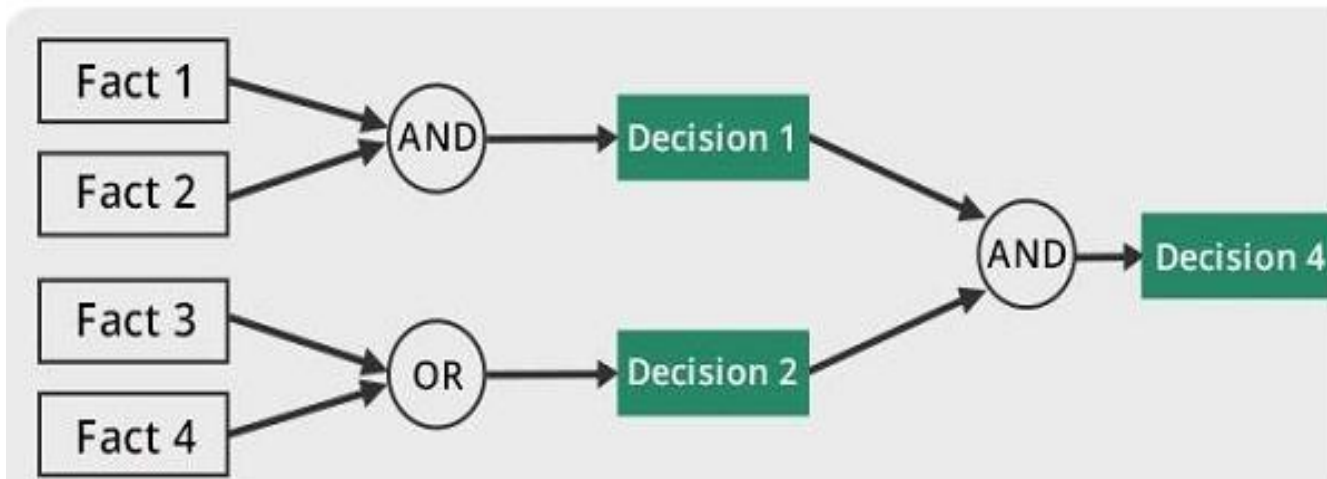
To recommend a solution, the Inference Engine uses the following strategies –

- Forward Chaining**
- Backward Chaining**



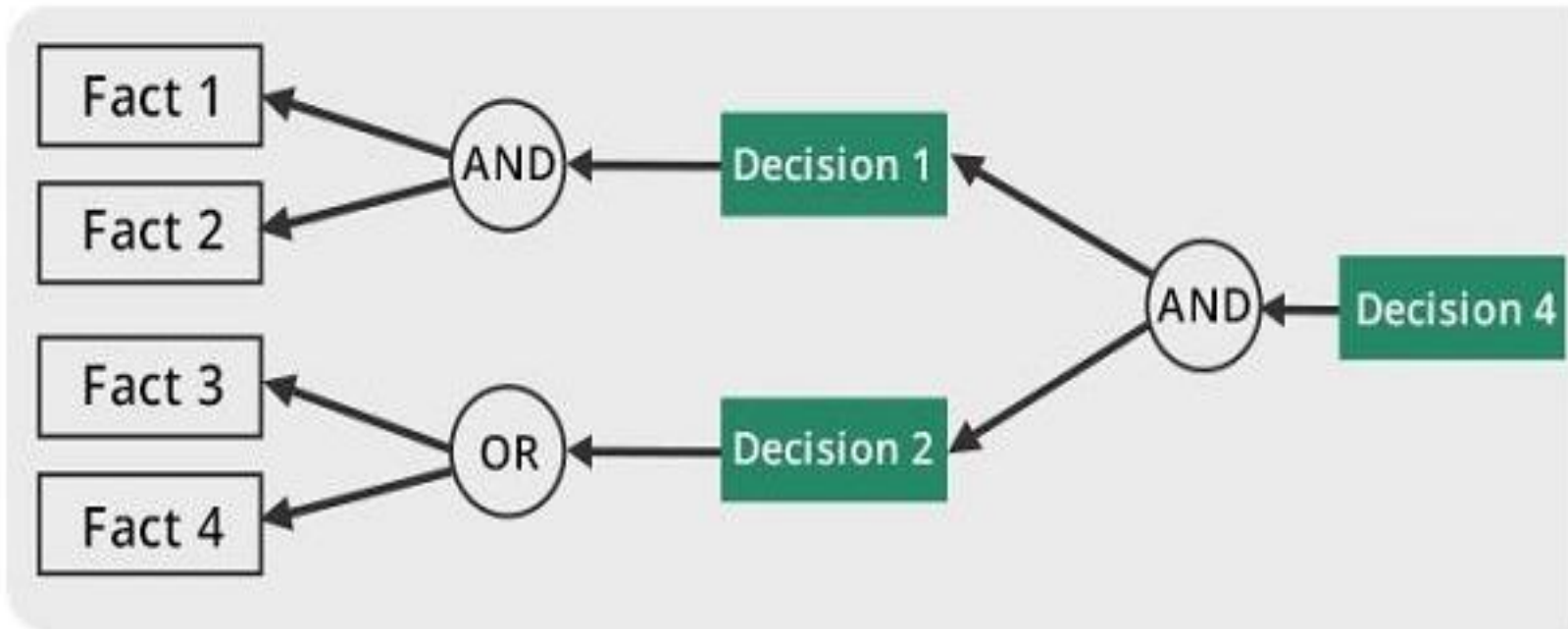
Forward Chaining

- ❑ It is a strategy of an expert system to answer the question, “**What can happen next?**”
- ❑ Here, the Inference Engine follows the chain of conditions and derivations and finally deduces the outcome. It considers all the facts and rules and sorts them before concluding to a solution.
- ❑ This strategy is followed for working on conclusion, result, or effect. For example, prediction of share market status as an effect of changes in interest rates.



Backward Chaining

- With this strategy, an expert system finds out the answer to the question, “Why this happened?”
- On the basis of what has already happened, the Inference Engine tries to find out which conditions could have happened in the past for this result. This strategy is followed for finding out cause or reason. For example, diagnosis of blood cancer in humans.



User interface

- ❑ User interface provides interaction between user of the ES and the ES itself. It is generally Natural Language Processing so as to be used by the user who is well-versed in the task domain. The user of the ES need not be necessarily an expert in Artificial Intelligence.
- ❑ It explains how the ES has arrived at a particular recommendation. The explanation may appear in the following forms –
 - ❑ **Natural language displayed on screen.**
 - ❑ **Verbal narrations in natural language.**
 - ❑ **Listing of rule numbers displayed on the screen.**
- ❑ The user interface makes it easy to trace the credibility of the deductions.



Requirements of Efficient ES User Interface

- ☐ It should help users to accomplish their goals in shortest possible way.
- ☐ It should be designed to work for user's existing or desired work practices.
- ☐ Its technology should be adaptable to user's requirements; not the other way round.
- ☐ It should make efficient use of user input.



thank
you