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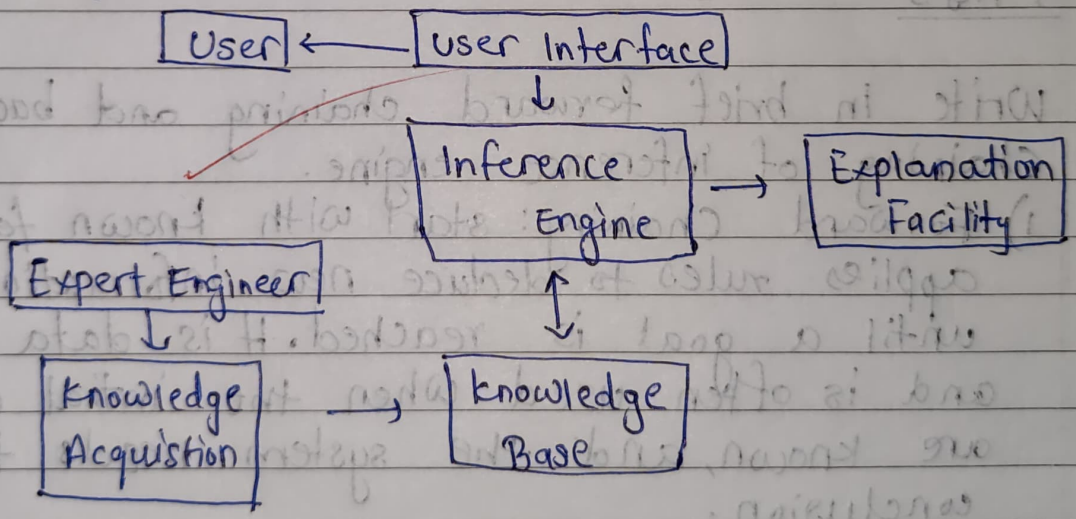
AIES Lab Assignment 7

Aim: Implementation of Expert System.

Requirements: SWI Prolong, Turbo Prolong

Objective: To study concepts of expert system and inference engine.

Theory:



Expert System Architecture.

Knowledge Base :- Contains facts, rules and heuristics
Inference Engine :- Processes information from KB to draw conclusions.
User Interface :- Facilitates interaction between the user and system.

Explanation Facility:- Provides reasoning behind system conclusion.

Knowledge Acquisition System:- Gathers and encorporates new knowledge into the system.

Main Players of Expert System:
1) Knowledge Engineer
2) Domain Expert
3) End User

Input - Run the program on SWI Prolong.

Output - Give decisions based on the rules provid-ed in program.

FAQ's

1) Write in brief forward chaining and backward chaining of inference engine.

→ 1) Forward Chaining: start with known facts and applies rules to deduce new information until a goal is reached. It is data-driven and is often used when the intial conditions are known, and the system needs to find a conclusion.

2) Backward chaining:- Begins with a goal works backward to find data or rules that support the goal. It is the goal-driven aim and is effective when theres specific conclusion or diagnosis to be ~~reduced~~ reached.

2) List down application of Expert System.

→ 1) Medical Diagnosis
2) Financial Planning
3) Troubleshooting
4) Quality Control.

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CODE:

```
% Define facts and rules
mammal(dog).
mammal(cat).
mammal(human).

has_fur(dog).
has_fur(cat).
has_fur(human).

gives_birth_to_live_young(dog).
gives_birth_to_live_young(cat).
gives_birth_to_live_young(human).

% Define the rule for determining if an animal is a mammal
is_mammal(Animal) :-
    mammal(Animal),
    has_fur(Animal),
    gives_birth_to_live_young(Animal).

% Sample Input and Output
% Query: is_mammal(dog).
% Output: true

% Query: is_mammal(snake).
% Output: false
```

INPUT

```
?- is_mammal(dog).
```

OUTPUT

```
true.
```