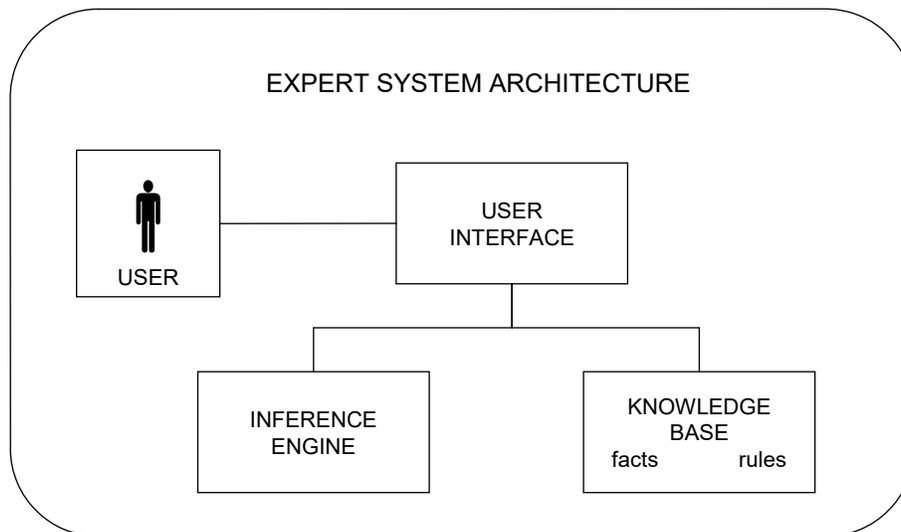


## EXPERT SYSTEMS

Expert systems are computer programs that give the appearance of human-like reasoning for problems ordinarily requiring expertise.

Knowledge consists of facts, an understanding of the relationships between the facts, and their implications.

Reason is the ability to draw deductions and inferences from knowledge with the purpose of achieving a goal or solving a problem.



### Example of a Knowledge Base

#### *Facts:*

- John is a certified public accountant.
- John has four years' accounting experience.
- John has a computer science degree.
- John is familiar with the tax laws of UK.

#### *Rules:*

1. If an employee is a certified public accountant and has more than three years' accounting experience, then he/she is qualified as an auditor.
2. If an employee is qualified as an auditor and is familiar with the tax laws of UK, then he/she can be assigned to audit a UK subsidiary's accounts.
3. If an employee has a degree in computer science, then he/she is qualified as a system analyst.
4. If an employee is qualified as an auditor and as a system analyst, then he/she is qualified as an EDP auditor.

### Economic Considerations in Choosing an Expert Systems Topic

- Does the knowledge provide a Competitive advantage?
- Are workers bogged down doing trivial or repetitive tasks?
- Are costly mistakes made?
- Is a more consistent decision-making process needed?
- Is there a need for training an expert system might meet?
- Would the company benefit from a better understanding of the problem?
- Can the system become a centralized repository for knowledge?

### Expert Need Considerations in Choosing an Expert Systems Topic

- Is there a large difference between best and worst performers?
- Is the problem poorly structured?
- Is non-expert performance inadequate?
- Are a few key individuals in short supply?
- Is an expert available?

### Considerations for Evaluating the Suitability of the Topic

- Is the domain well-defined?
- Is the problem's solution dependent on common sense?
- Does solving the problem depend on sense data?
- Is the domain stable?
- Are performance standards realistic?
- Does solving the problem rely more on heuristics than algorithms?
- Does the expert deal more in symbols than in numbers?
- Can results be evaluated?