Architecture of Expert System
Materials

- Component of ES
- Architecture of ES
Basic Components

- ES has been structured in many ways
  - The various ES architecture include different components

- Basic components:
  1. User interface
  2. Knowledge base
  3. Inference engine
Basic Components (2)

1. User interface:
   - A software that provides for the communication exchange between user and the system
   - User: input facts, ask the system
   - System: ask new facts, give answer or advice

2. Knowledge base:
   - Contains expert-level knowledge on a particular subject
   - Stored in a knowledge representational form

3. Inference engine:
   - A software that performs the inference reasoning tasks
   - It uses the knowledge in the knowledge base and information provided by the user to infer new knowledge
Architecture of Expert System
A simple architecture

- User Interface
  - Facts, Queries
  - Advice, Consultation, Justification

- Inference Engine

- Knowledge Base

- Working memory
The Other Components

1. Working memory:
   - A global database of facts used by the rules

2. Knowledge database:
   - Contains rules about the behavior of the elements of a particular subject

3. Domain database:
   - Contains facts about the ES’s subject
Architecture of Expert System
An extended architecture

- User Interface
  - Facts, Queries
  - Advice, Consultation, Justification

- Inference Engine

- Working memory

- DBMS
  - Domain Database (facts)
  - Knowledge Database (rules)
The Other Components (2)

1. Explanation facility:
   - Explain the reasoning of the system to a user

2. Knowledge acquisition facility:
   - An automatic way for the expert to enter knowledge in the system rather than by having the knowledge engineer explicitly code the knowledge

3. Self-training facility:
   - An automatic way of the system to add new facts and/or rules in the system
Architecture of Expert System

The complex architecture

- User
  - Facts, Queries
  - Advice, Consultation, Justification
- User Interface
- Inference Engine
- Explanation Facility
- Working memory
- DBMS
  - Domain Database (facts)
    - Knowledge Database (rules)
- Self-Training Facility

Knowledge Acquisition Facility

Expert

The complex architecture
Summary

• ES has been structured in many ways
  ➢ The various ES architecture include different components

• There are three basic components of the ES