

What are Expert Systems?

The expert systems are the computer programs developed to solve complex problems in a particular domain at the level of extra-ordinary human intelligence and expertise.

Characteristics of Expert Systems

- High performance
- Understandable
- Reliable
- Highly accurate

Capabilities of Expert Systems

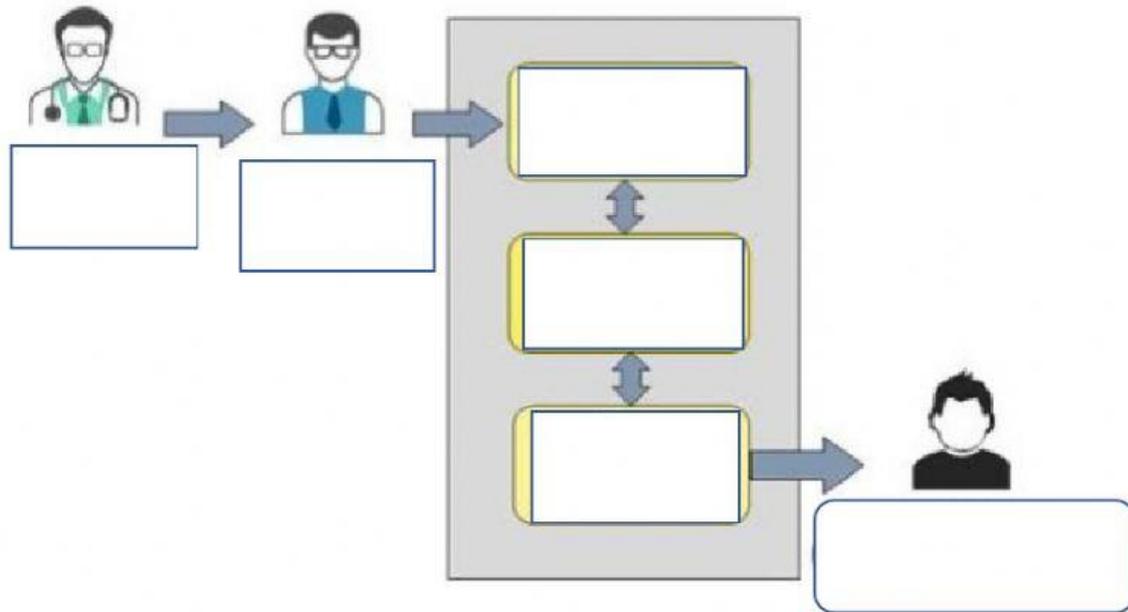
The expert systems are capable of –

- Advising
- Instructing and assisting human in decision making
- Demonstrating
- Deriving a solution
- Diagnosing
- Explaining
- Accepting user input
- Producing results
- Justifying the conclusion
- Suggesting alternative options to a problem

Components of Expert Systems

The components of ES include –

- Knowledge Base
- Inference Engine
- User Interface



Knowledge Base - It contains and high-quality knowledge.

Inference Engine - It applies inference rules to the base to derive a conclusion or deduce new .

User Interface - User interface provides between user of the ES and the ES itself

Applications of Expert System

The following table shows where ES can be applied.

Application	Description
Design Domain	lens design, automobile design.
Domain	Diagnosis Systems to deduce cause of disease from observed data, conduction medical operations on humans.
Monitoring Systems	Comparing data continuously with observed system or with prescribed behavior such as monitoring in long petroleum pipeline.
Process Control Systems	Controlling a physical process based on monitoring.
Knowledge Domain	Finding out in vehicles, computers.
/Commerce	of possible fraud, suspicious transactions, stock market trading, Airline scheduling, cargo scheduling.

Benefits of Expert Systems

- **Availability** – They are easily available due to mass production of software.
- **Less Cost** – Production cost is reasonable. This makes them affordable.
- **Speed** – They offer great speed. They reduce the amount of work an individual puts in.
- **Less Error Rate** – Error rate is low as compared to human errors.
- **Reducing Risk** – They can work in the hazardous areas, which are dangerous to humans.
- **Steady response** – They work steadily without getting stressed, nervous, tensed or fatigued.