



Module 5

Decision Support and Expert Systems

▼ What are expert systems (ES)?

rule-based systems that assist human decision making by using these rules to parse knowledge that, at the time, had to be manually entered in a physical symbol system format

▼ Knowledge-based systems are based on what?

All KBS software is based on two types of subsystems: the knowledge base and the inference engine

▼ What is the knowledge base of an expert system?

- The knowledge base uses object-based programming concepts such as classes, subclasses, instances and assertions of variables.
- This object-based knowledge structure allows domain-specific knowledge to be parsed in a sensible way.

▼ What is the inference engine of an expert system?

- The inference engine in traditional expert systems are based on if-then statements rather than procedural programming.
- Inference engines work in two modes: forward chaining and backward chaining.
- In forward chaining, the antecedent fires and asserts a consequent, in other words, the system begins with the data that is available and uses inference rules to extrapolate further data.

- Backward chaining starts from the desired goal and works backwards, using inference once again to determine if it has satisfied the goal.
- In the future, inference engines will increasingly utilize heuristics, ML and deep learning techniques.

▼ What are decision support systems (DSS)?

- DSS software are knowledge representation systems that collect and visualize data to improve human decision making efficiency
- DSS aims to assist you in decision-making by providing access to the data and models

▼ DSS vs. ES

- DSS helps the user to make the best decision by providing data in a way that can be efficiently utilized
- ES attempts to provide the best decision for you

▼ What is business intelligence (BI)?

Business intelligence is the practice of using software and predictive and prescriptive analytics techniques to derive actionable insight from collected data.