ME402 Assessment: "Unit 3 Discussion Questions"
Answer Key

1. The desirable characteristics of the database for a decision support system (DSS) depends on the design parameters of the DSS itself. According to the manual of IBM Red Brick Warehouse, the common desirable characteristics for decision support databases include the following:

- Easy to understand
- Relatively infrequent changes
- Simple and noncyclic join path (i.e., paths for joining different tables)
- Relational integrity
- Designed to accommodate unpredictable and complex SQL queries
- Support extensive and frequent browsing
- Enable regular backups, or snapshots, of the static database to ensure against data loss.

2. Modeling is the process of constructing an abstract representation of a real-world system. A model should be as simple as possible and omit unnecessary details while capturing the fundamental and essential relationships of the system. A model could be either qualitative or quantitative. In engineering design, it is preferable to construct quantitative models, in which the systems are characterized by logical, algebraic, or statistical variables. A model allows for the integration of knowledge and data from multiple sources and facilitates the analysis and weighing of different options. A model is as good as its assumptions. Therefore, the assumptions should be constantly examined and revised given new data.

3. Key components of a model include the following:

- Decision options
- Outcome of each decision option
- Preference (utility of outcome)
- Uncertainties

4. A decision support system includes a data management subsystem, a model management subsystem, and a dialog subsystem.

5. SQL stands for **Structured Query Language,** a programming language designed for managing data in relational database management systems.

6. Value can be modeled using ranking, quantifiable value functions, or the utility function.

7. The general guidelines for designing a user-centered dialog subsystem are as follows:

- Know who the users are
- Involve users early in the design process to get their feedback
- Reduce/prevent user errors
- Optimize user operations
- Keep locus of control with users
- Provide help to get users started

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