1. **The initial phase** of database design is to characterize fully the data needs of the prospective database users. The outcome of this phase is a specification of user requirements.

**Next**, the designer chooses a data model and, by applying the concepts of the chosen data model, translates these requirements into a conceptual schema of the database. The schema developed at this conceptual-design phase provides a detailed overview of the enterprise. The conceptual-design phase results in the creation of an entity-relationship diagram that provides a graphic representation of the schema. A fully developed conceptual schema also indicates the functional requirements of the enterprise. In a specification of functional requirements, users describe the kinds of operations (or transactions) that will be performed on the data.

**In the logical-design phase**, the designer maps the high-level conceptual schema onto the implementation data model of the database system that will be used. Finally, the designer uses the resulting system-specific database schema in the subsequent physical-design phase, in which the physical features of the database are specified

**The entity-relationship (E-R)** data model was developed to facilitate database design by allowing specification of an enterprise schema that represents the overall logical structure of a database. The E-R model is very useful in mapping the meanings and interactions of real-world enterprises onto a conceptual schema. The E-R data model employs three basic concepts: entity sets, relationship sets, and attributes. The E-R model also has an associated diagrammatic representation, the E-R diagram.

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