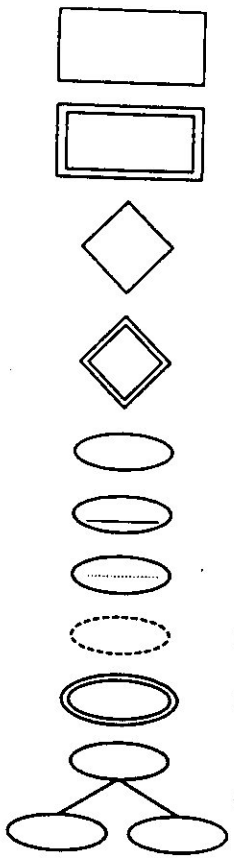

FIGURE 2.7
Symbols used in ER diagrams

Data Model

- Conceptual: initial spec of database → C. schema (ER diagram
- logical : table definition → l. " (definition of table → used to create database)
- physical relational, network object-oriented

Integrity Constraints

- Key constraints : key should be unique
- entity integrity constraints : key cannot be null
- referential integrity constraints : refers to existing tuple.

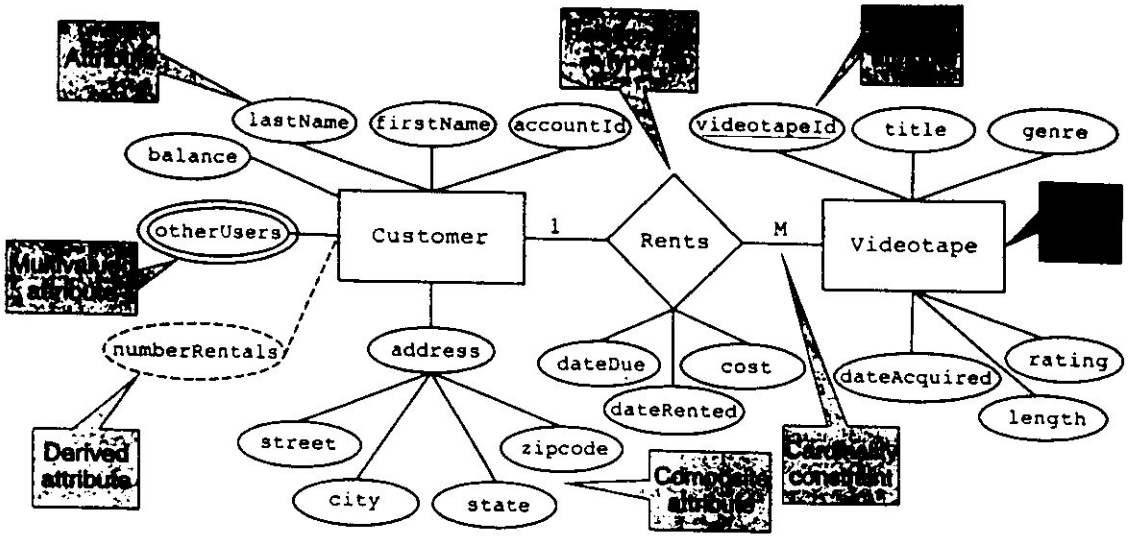

FIGURE 2.4
Entity classes `Customer` *and* `Videotape` *and relationship type* `Rents`

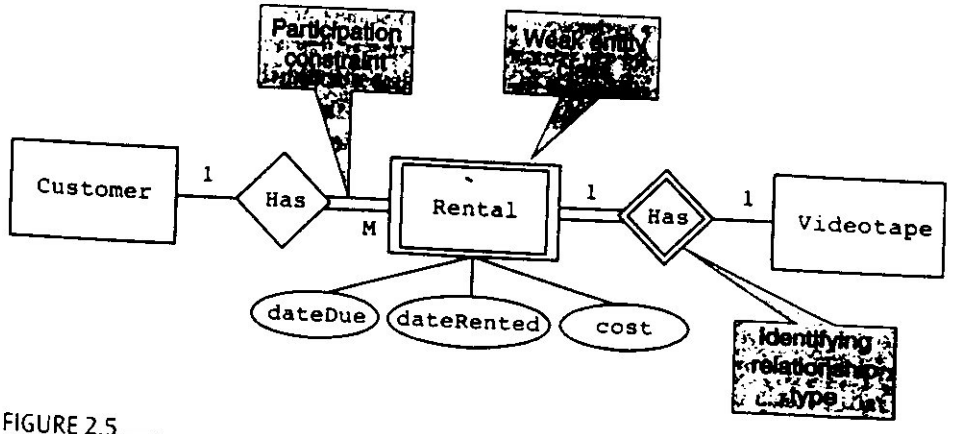

FIGURE 2.5
Representation of entity class `Rental` *and its relationship types*

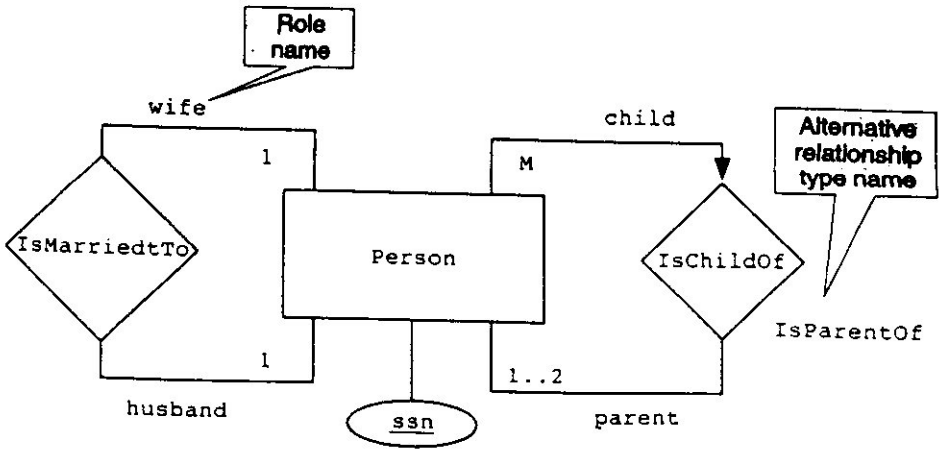

FIGURE 2.6
Relationship types `IsMarriedTo` *and* `IsChildOf` *with role names*

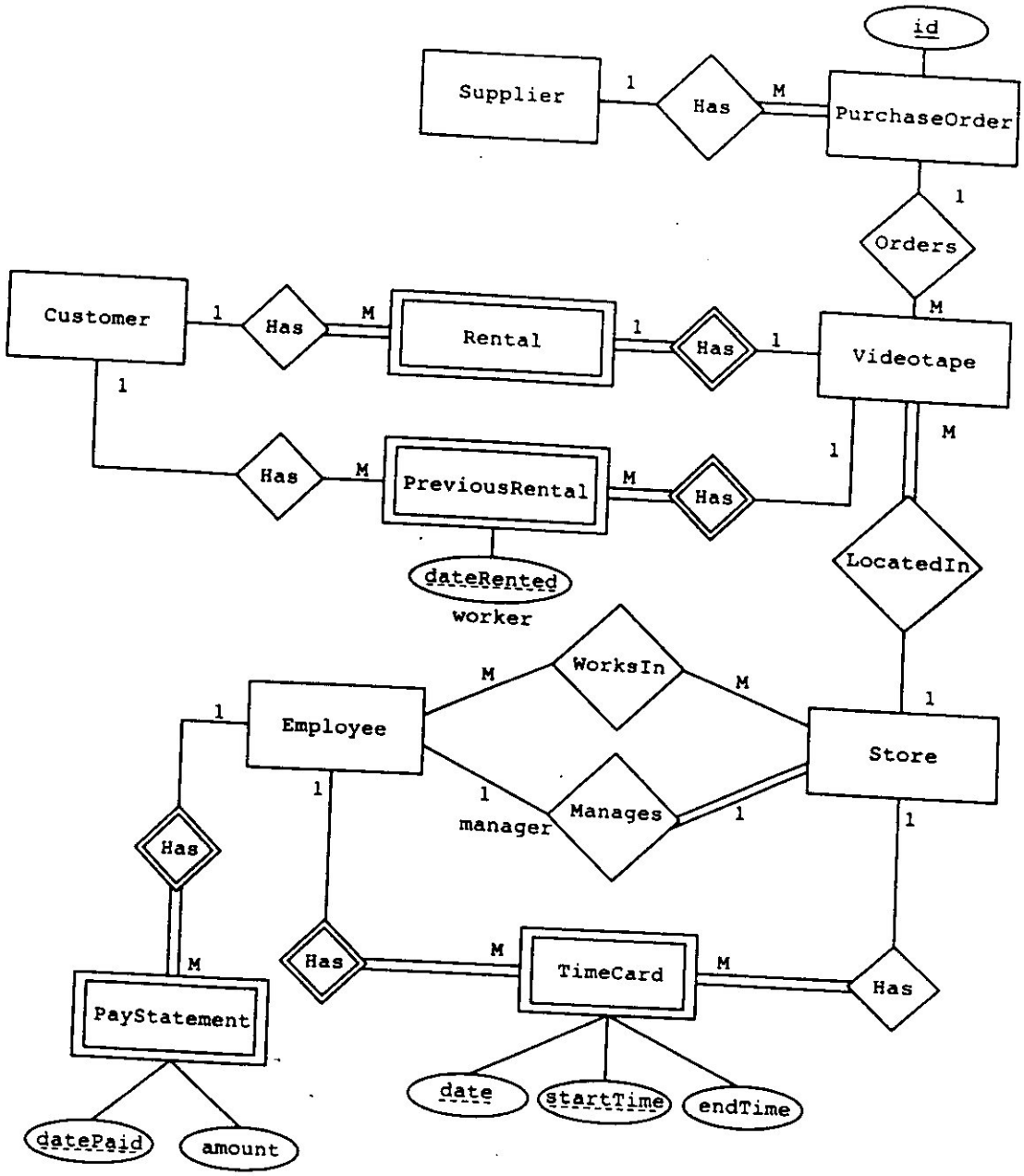

FIGURE 2.8
ER diagram for BigHit Video

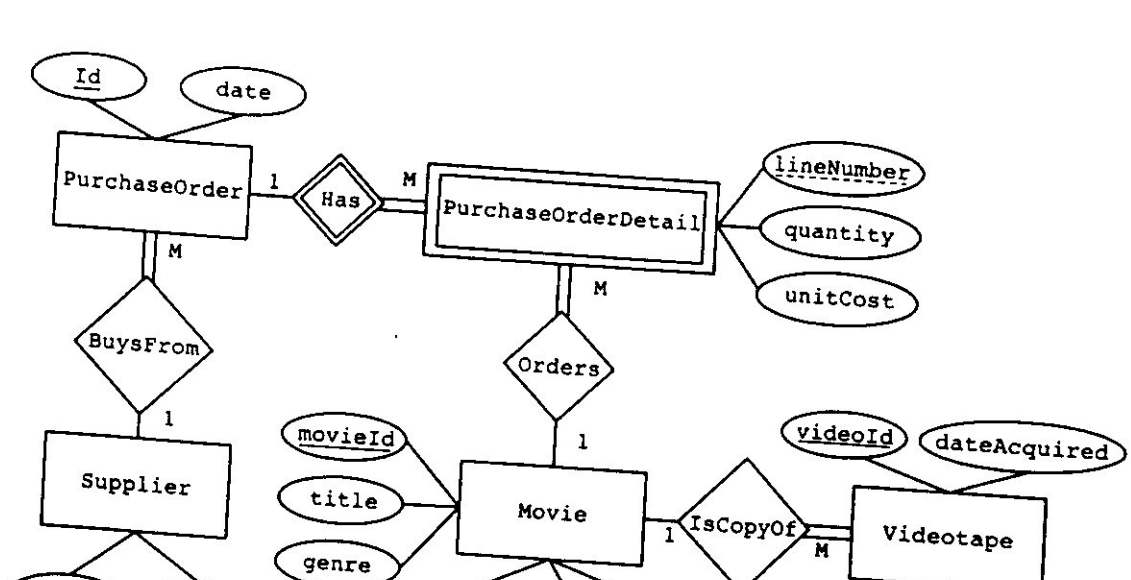

FIGURE 2.10
ER diagram for suppliers, purchases, movies, and videotapes

Key Terms

Attribute value. The values of a specific attribute for one entity.
Attributes (properties). The characteristics that describe an entity.
Cardinality constraint. A restriction on the cardinality of a role of a relationship. Typical constraints are *to-one*, in which an entity may be related to no more than one entity of the related type, and *to-many*, in which an entity may be related to an unlimited number of entities of the related class. A cardinality constraint may specify a minimum or maximum number of related entities.
Cardinality ratio constraint. A combination of two cardinality constraints, one on each role of a relationship. The four basic types of cardinality ratios are *one-to-one*, *one-to-many*, *many-to-one*, and *many-to-many*.
Composite attribute. An attribute whose value is composed of a collection of individual fields.
Conceptual schema. A precise definition of the data requirements of a system that is understandable to both users and developers of a database. This model includes detailed descriptions of data types, relationships, and constraints and is often represented as an ER model, ER diagram, or object-oriented model.
Constraint. A limitation on the contents of a database. Data models include constraints on the values of attributes and the cardinality of relationships, among others.
Data dictionary. A table that contains the descriptions of classes and the types, descriptions, and constraints on attributes of an information system.
Discriminator. An attribute of a weak entity class that identifies an entity from among all of those with the same identifying entities. A discriminator is part of the key of the weak entity class.
Domain. The set of allowable values of an attribute.
Domain constraint. A requirement that the values of an attribute must come from a specific domain.
Entity. An object in the real world that is of interest to the application.
Entity class. The common characteristics that represent a collection of entities.
Entity–Relationship (ER) model. A strategy for constructing conceptual data models using diagrams that focus on entity classes, relationship types, and attributes.
External schema. A definition of a user's or application's view of the information content of a system.
Identifying relationship type. A to-one relationship type between a weak entity class and a strong entity class that helps to uniquely identify an object of the weak class.
Key. A set of attributes of an entity class whose values uniquely identify an entity.
Key constraint. A constraint on the entities of a class such that no two different entities can have the same values for a specific set of attributes. This set of attributes acts as a key for the class.
Logical schema. The definition of the information content of a system in a manner that can be used to create a database.
Multivalued attribute. An attribute with a set of values.
Null value. A special attribute value that is different from any value in the domain of the attribute. The meaning of a null attribute value of an entity is ambiguous. It may represent a missing value, one that is unknown, or an attribute that is not applicable to the entity.
Owner entity class. The entity class that is related by an identifying relationship to a weak entity class.
Partial key. See *Discriminator*.
Participation constraint. A cardinality constraint on a role in a relationship that requires an entity to be related to at least one entity of the related class.
Physical schema. The definition of the information content of a system in physical terms.
Relationship (instance). An association between two or more entities.
Relationship type. A representation of the possibility that entities of two or more entity classes may be associated.
Role. The function of an entity in a relationship.
Schema. A precise description of one or more aspects of a database system.
Single-valued attribute. An attribute with a single, indivisible value.
Weak entity class. An entity class with no key. It must have at least one identifying relationship type.