

Table 4

Database Modeling Expanded Construct Set

Modeling Constructs	Justification
Aggregate and composite entities	Aggregate and composite entities are those created by constituent elements, the difference being the existence of the sub-element (child) independent of the super-element (parent). If independent, then aggregate, else composite. These are advanced modeling techniques to associate seemingly disparate tuples. For instance, a surgery can be modeled as an aggregation of personnel, equipment, facilities, and medication. The human body, however, is a composition of elements that alone cannot exist (e.g., a hand does not exist absent a body).
Super- and sub-types	A topic beyond basic introduction, super-types and sub-types allow for specialization of entities. For instance, a generic Providers table can be subclassified into surgeons, primary care providers, specialists, and nurses. This is necessary when a sub-portion of an entity is involved in additional modeling (e.g., relationships) in order to support data integrity and optimize storage requirements.
<ul style="list-style-type: none">• Constraints: completeness and disjointedness	Completeness and disjointedness specify the minimum and maximum sub-type membership, which is a data integrity control.