Data Modeling

The *Data Modeling* pattern creates elements and diagrams for modeling a database including conceptual, logical and physical data models. It provides a basic model and package structure and a number of pre-defined models and elements including database objects such as Tables and Views that will provide a starting point. The physical data models can then be used to generate DDL which can be executed using a defined connection to one or more live databases.

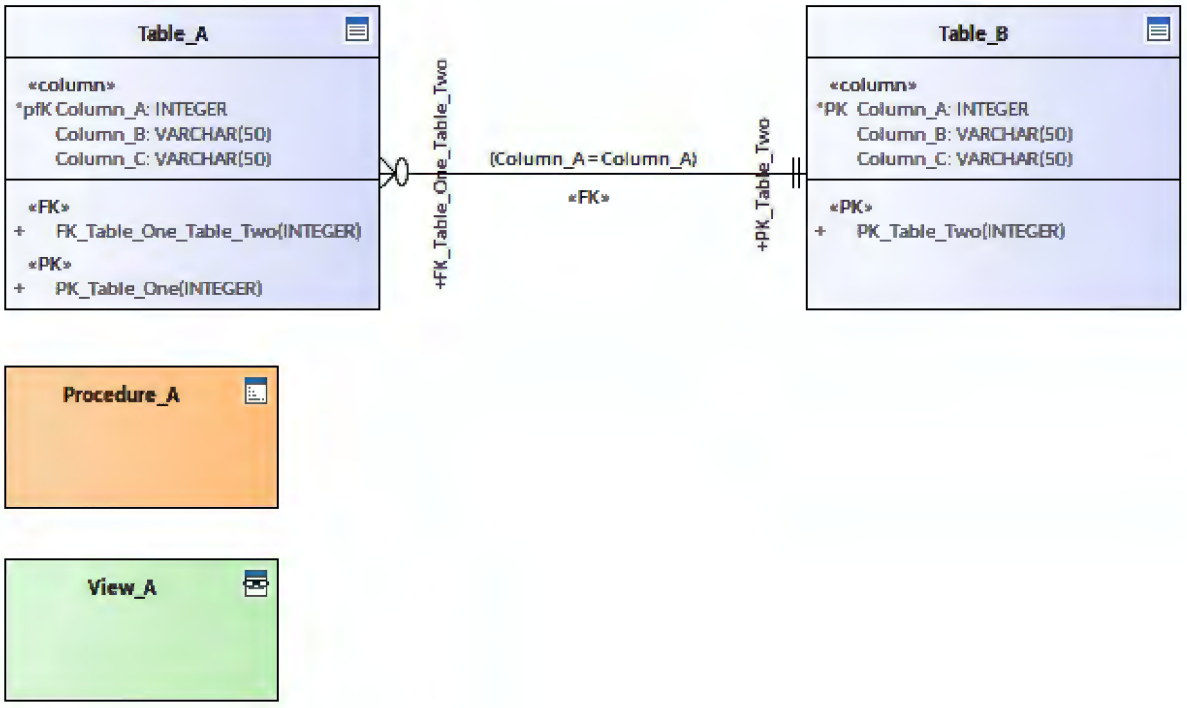

Figure 1. Data Modeling diagram showing two Tables connected by Foreign Key Relationships using the Information Engineering notation.

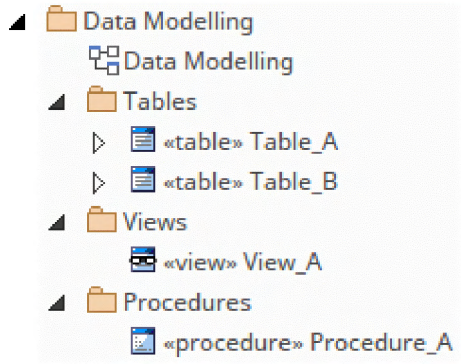

Figure 2. Project Browser structure showing the Packages that contain Database Objects.

Discussion

The purpose is to allow Database Engineers, Database Administrator and Owners to have a basic model that will act as a starting point for a database model including Conceptual, Logical and Physical data models and the definition of Tables, Views and other Database Objects. It provides a Project Browser structure that will be useful for organizing data models.

It is typically used during the analysis and design or testing phases of a project or iteration (sprint) when a Database Engineer or Information Architect needs to define a data layer for an application, subsystem or platform. It can be used right through the life cycle of a product's development and support allowing differential analysis of the models and the live databases and the synchronization of model and database.

The following is a list of some things you may want to do when working with this pattern.

- Open the Package stereotyped *DataModel* in the Database Builder and load the model.
- Change the Name of the database.
- Change the names of the Tables and Columns, Views and other database objects to suit your initiative.

- Add additional objects including Tables and their primary keys and foreign Key relationships, Views.
- Define the required connections to one or more environments (PROD, TEST or DEV) or define another connection.
- Generate the DDL T0 create DDL from the physical data model.
- Execute the DDL to run the script on one or more live databases.

The following is a list of some of the next steps available when applying the pattern.

- The Database Builder can be used to manage the relationship between the data models and the live database including determining differences between the model and the live database and differentially creating and executing DDL.
- Where they don't exist relationships can be created between database objects and elements in other parts of the repository including Components, Test Cases, Requirements and elements representing regulations or Business Rules.
- High quality documentation can be created for technical or business audiences using a flexible template system.

Reference

The following help topics will assist you learn about how to work with this pattern.

Database Models

Database Builder

Logical Data Model

Physical Data Model

Document Generation

Model Transformation

The following are some of the tools that will be helpful when working with this pattern.

Database Builder

The Database Builder is the primary tool for working with data models in Enterprise Architect. It is a purpose built tool that provides a custom interface for performing database-related modeling tasks. New data models and databases can be created or existing ones reverse engineered into the tool. Connections can be made to live databases including any number of environments such as Production, Pre-Production,

Test and Development allowing incremental updates to the models and databases. Once the pattern is imported into a model the data models can be loaded and opened in the Database Builder. For more details see the Database Builder help topic.

Model Transformation

The Model Transformation facility allows a modeler to transform a Conceptual data model to a Logical data model and in turn a Logical Data Model to a Physical Data Model. The transformations are driven by user-defined or built-in templates. This facility will save time and effort and reduce the possibility of errors. For more details see the Model Transformation help topic.

Pan and Zoom

The Pan and Zoom facility is one of the tools that can be used to navigate around a large diagram. Often the resolution of a diagram must be reduced to ensure it is wholly visible but by using the Pan and Zoom window you can leave the diagram at a readable resolution and pan around to areas of interest zooming in when necessary. For more details see the Pan and Zoom help topic.

Document Generator

The Document Generator is a powerful facility in Enterprise Architect that allows a Database Engineer or other stakeholder to create high quality corporate or technical documentation directly from the model, suitable for internal or external audiences. For more details see the Documentation help topic or the more general topic on Model Publishing.