Rational Rose

Jump Start Tutorial
Types of Diagrams

- Use Case Diagram
- Class Diagram
- Data Model Diagram
- State Machine Diagram
- Interaction Diagram
- Component Diagram
- Deployment Diagram
Data Model

☐ Similar to Object Model
☐ Focus on data storage in database
Terminology

- Database
  - The DBMS which manages the data
Terminology

- **Tablespace**
  - Logical unit of storage for the tables
  - Analogous to “folder” or “directory” in file systems

- **Schema**
  - Container for the data model
  - Contains the tables, columns, etc.
  - Analogous to the “File Association Table” in file systems
Terminology

<table>
<thead>
<tr>
<th>Customer ID</th>
<th>Company Name</th>
<th>Contact Name</th>
<th>Contact Title</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALFK</td>
<td>Alfred Futterkiste</td>
<td>Maria Anders</td>
<td>Sales Rep.</td>
<td>Obere Str. 57</td>
</tr>
<tr>
<td>ANTR</td>
<td>Ana Trujillo Emparedados y</td>
<td>Ana Trujillo</td>
<td>Owner</td>
<td>Avda. de la Constitución 22</td>
</tr>
<tr>
<td>ANTON</td>
<td>Antonio Moreno Taquería</td>
<td>Antonio Moreno</td>
<td>Owner</td>
<td>Mataderos 2312</td>
</tr>
<tr>
<td>AROUT</td>
<td>Around the Horn</td>
<td>Thomas Hardy</td>
<td>Sales Rep.</td>
<td>120 Hanover Sq.</td>
</tr>
<tr>
<td>BERGS</td>
<td>Berglunds snabköp</td>
<td>Christina Berglund</td>
<td>Order Admin.</td>
<td>Bergvuevägen 8</td>
</tr>
<tr>
<td>BLAUS</td>
<td>Blauer See Delikatessen</td>
<td>Hanka Mont</td>
<td>Sales Rep.</td>
<td>Forsterstr. 57</td>
</tr>
<tr>
<td>BLONP</td>
<td>Blondel père et fils</td>
<td>Harry</td>
<td>Marketing Mgr</td>
<td>24, place Kléber</td>
</tr>
<tr>
<td>BOLID</td>
<td>Bólido Comidas preparadas</td>
<td>Eric</td>
<td>Owner</td>
<td>C1 Araquil, 67</td>
</tr>
<tr>
<td>BONAP</td>
<td>Bon app'</td>
<td>Eric</td>
<td>Sales Rep.</td>
<td>12, rue des Bouchers</td>
</tr>
<tr>
<td>BOTTM</td>
<td>Bottom-Dollar Markets</td>
<td>Walter</td>
<td>Accounting Mgr</td>
<td>23 Tsawassen Blvd.</td>
</tr>
<tr>
<td>BSBEV</td>
<td>B's Beverages</td>
<td>Steve</td>
<td>Sales Rep.</td>
<td>Fauntleroy Circus</td>
</tr>
<tr>
<td>CACTU</td>
<td>Cactus Comidas para llev</td>
<td>Jack</td>
<td>Sales Agent</td>
<td>Carito 333</td>
</tr>
<tr>
<td>CENTC</td>
<td>Centro comercial Moctezuma</td>
<td>Francisco Chang</td>
<td>Marketing Mgr</td>
<td>Sierras de Granada 9993</td>
</tr>
<tr>
<td>CHOPS</td>
<td>Chop'suey Chinese</td>
<td>Yang Wang</td>
<td>Owner</td>
<td>Hauptstr. 29</td>
</tr>
<tr>
<td>COMM1</td>
<td>Comércio Mineiro</td>
<td>Pedro Afonso</td>
<td>Sales Associate</td>
<td>Av. dos Lusitânia, 23</td>
</tr>
<tr>
<td>CDNSH</td>
<td>Consolidated Holdings</td>
<td>Elizabeth Brown</td>
<td>Sales Rep.</td>
<td>Berkeley Gardens</td>
</tr>
<tr>
<td>DRACD</td>
<td>Drachenblut Delikatessen</td>
<td>John</td>
<td>Order Admin.</td>
<td>Walsenweg 21</td>
</tr>
<tr>
<td>DUMON</td>
<td>Du monde entier</td>
<td>Janine Labrune</td>
<td>Sales Agent</td>
<td>57, rue des Cinquante Otago</td>
</tr>
<tr>
<td>EASTC</td>
<td>Eastern Connection</td>
<td>Ann Devon</td>
<td>Sales Agent</td>
<td>35 King George</td>
</tr>
<tr>
<td>ERNSH</td>
<td>Ernst Handel</td>
<td>Roland Mendel</td>
<td>Sales Manager</td>
<td>Kirchgasse 6</td>
</tr>
<tr>
<td>FAMIA</td>
<td>Familia Arquibaldo</td>
<td>Alia Cruz</td>
<td>Marketing Ass.</td>
<td>Rua Urs, 92</td>
</tr>
</tbody>
</table>
Creating a Data Model
Right click Component View
Choose Data Modeler -> New -> Database
Rename it db_Library
Double-click db_Library and open the Specification.
Click the drop-down box
Select IBM DB2 7.x
Then click OK
Right-click db_Library
Choose Data Modeler -> New -> Tablespace
Rename it tsp_Library
Right click **Logical View**
Choose Data Modeler -> New -> Schema
Right-click S_0
Choose Rename
Right-click s_Library, Choose Data Modeler -> New -> Table
Rename T_0 to T_Book
Double-click T_Book to open Specification
Select the *Columns* tab
Click the New Column button
Click **COL_0** to rename it
Click **SMALLINT** to change the type
<table>
<thead>
<tr>
<th>Name</th>
<th>PK</th>
<th>Domain</th>
<th>Type</th>
<th>Not Null</th>
<th>Unique</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td></td>
<td></td>
<td>VARCHAR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Select VARCHAR
Click **Specification** button.
Click **Type** tab
Change the length to 80
Click OK
Add the remaining column as shown in the screen, with these be the length of the columns:

**Author**: VARCHAR(50)
**ISBN**: VARCHAR(10)
**Publisher**: VARCHAR(30)
**Status**: VARCHAR(20)
Click here and select PK (Primary Key) in the dropdown for the ISBN column.

Check the Unique box.

Then click OK.
Right-click s_Library, Choose Data Modeler -> New -> Data Model Diagram
Rename NewDiagram to LibraryDataModel
Double-click it to bring up the Data Model Diagram, and maximize it.
Drag T_Book to the diagram
Follow the steps of creating **T_Book** to create another table **T_Patron**

**Name**: VARCHAR(50)

**Gender**: VARCHAR(1)

**Address**: VARCHAR(100)

**LibraryCardNumber**: VARCHAR(10)

PK, Unique
Click the **Non-Identifying Association** button and drag from **T_Patron** to **T_Book**.
Click Format Menu
Select Layout Diagram
Double-click the Non-Identifying Association line to open the Specification.
Select 0..1 in the **Cardinality** dropdown.
Click OK
Types of Diagrams

- Use Case Diagram
- Class Diagram
- Data Model Diagram
- State Machine Diagram
- Interaction Diagram
- Component Diagram
- Deployment Diagram
State Machine Diagram

- Show the dynamic behavior of an object
  - Statechart Diagram
    - Shows the states an object goes through, and the events that causes the transition
  - Activity Diagram
    - Models the workflow business process
Statechart Diagram

- Shows the states and the events causing the transitions of states
Activity Diagram

- Shows the workflow of a specific task
Interaction Diagram

- Shows interactions between different objects
  - Sequence Diagram
    - Shows the object interactions in a time-based manner
  - Collaboration Diagram
    - Provides a view of interactions between objects
Sequence Diagram

- Shows the interactions between objects in a time-based sequence
Collaboration Diagram

- Shows the interactions between objects
- Can be generated from an sequence diagram
Component diagram

- Shows the physical dependency relationships between components
Deployment Diagram

- Shows how different pieces of an application is deployed to different machines