

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

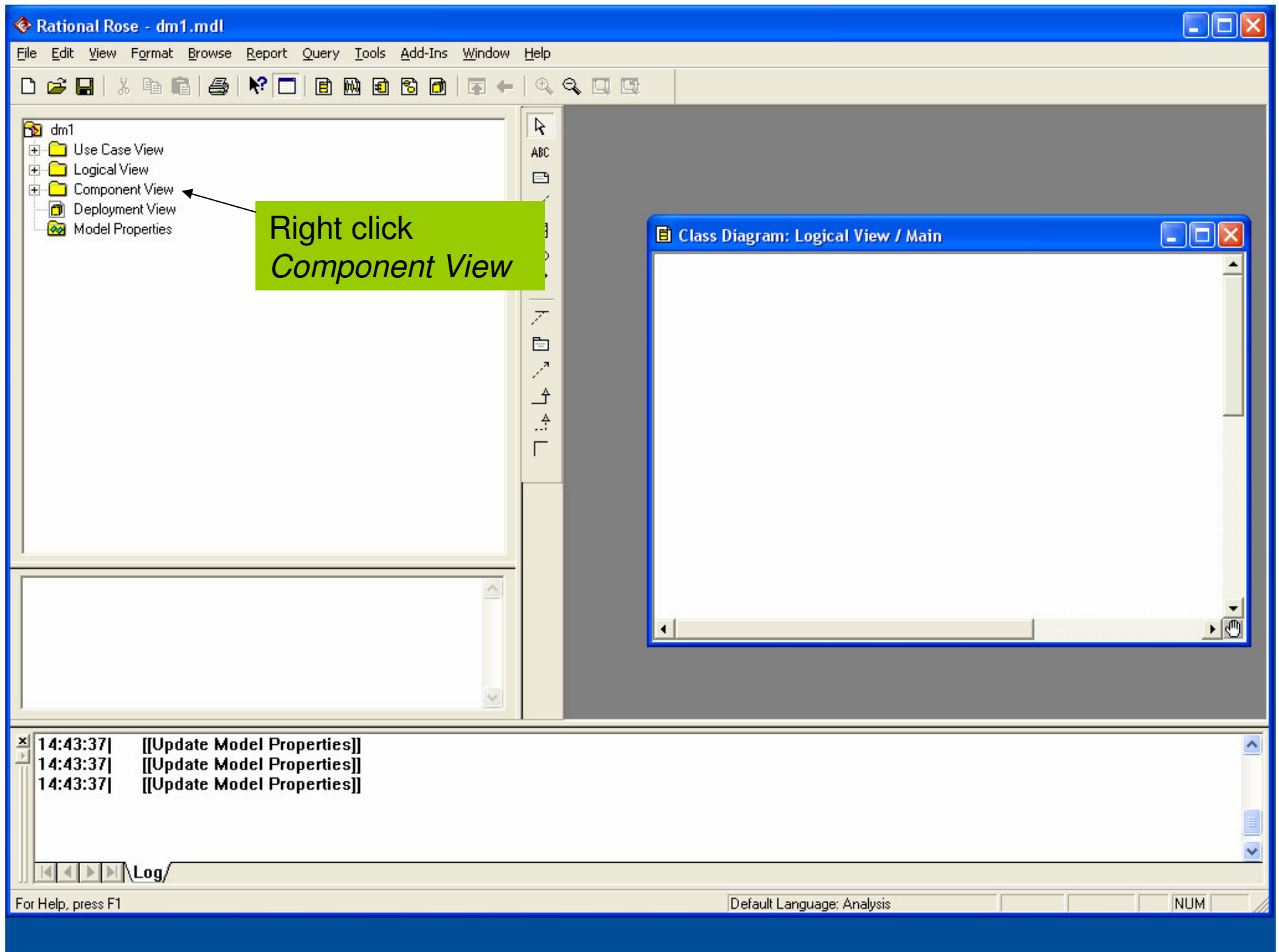
Customers : Table

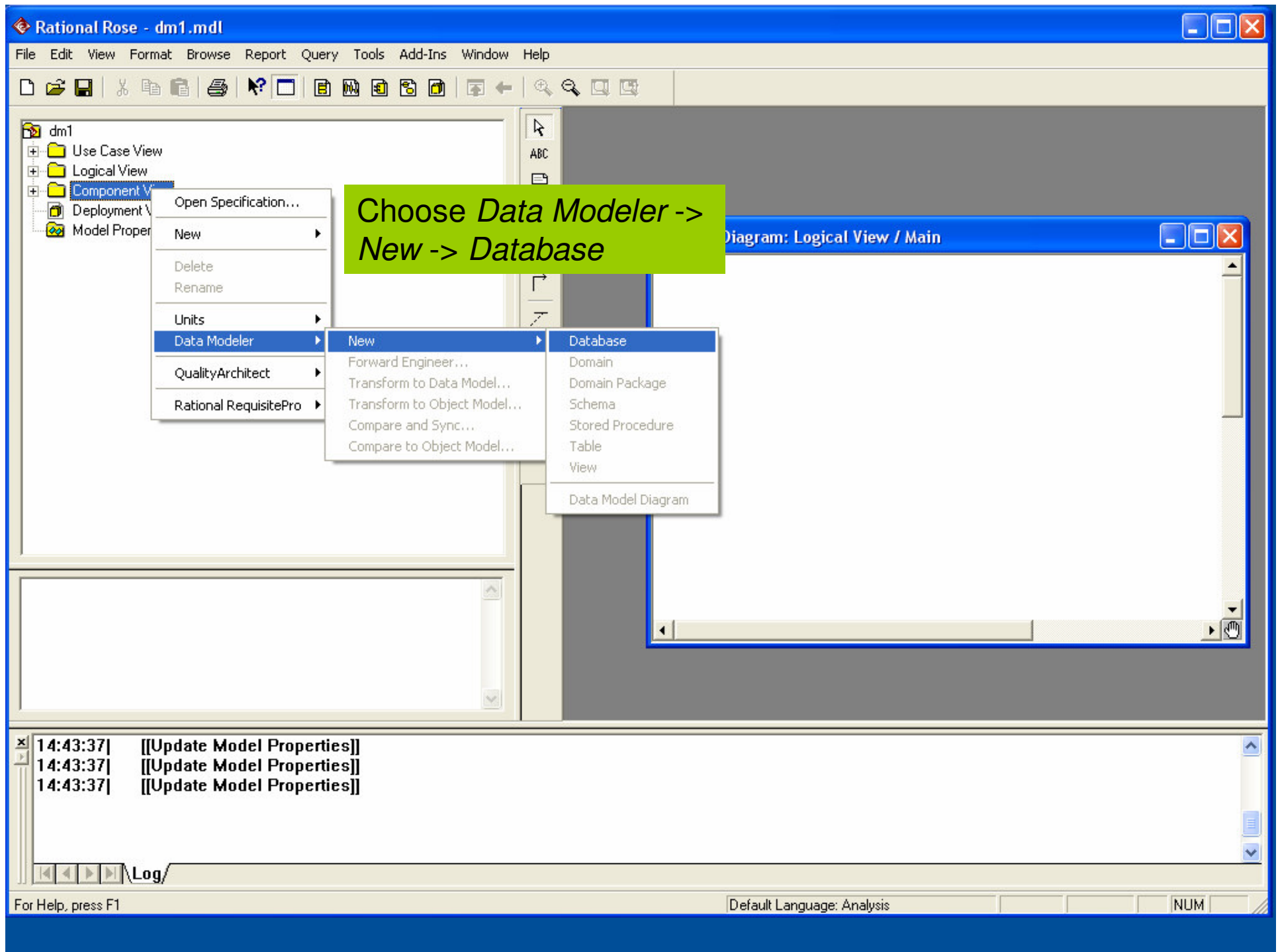
	Customer ID	Company Name	Contact Name	Contact Title	Address
▶ +	ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57
+	ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constitución 22
+	ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312
+	AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.
+	BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8
+	BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57
+	BLONP	Blondel père et fils		Marketing Manager	24, place Kléber
+	BOLID	Bólido Comidas preparadas		Owner	C/ Araquil, 67
+	BONAP	Bon app'		Owner	12, rue des Bouchers
+	BOTTM	Bottom-Dollar Markets		Marketing Manager	23 Tsawassen Blvd.
+	BSBEV	B's Beverages		Sales Representative	Fauntleroy Circus
+	CACTU	Cactus Comidas para llevar		Sales Agent	Cerrito 333
+	CENTC	Centro comercial Moctezuma	Francisco Chang	Marketing Manager	Sierras de Granada 9993
+	CHOPS	Chop-suey Chinese	Yang Wang	Owner	Hauptstr. 29
+	COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate	Av. dos Lusíadas, 23
+	CONSH	Consolidated Holdings	Elizabeth Brown	Sales Representative	Berkeley Gardens
+	DRACD	Drachenblut Delikatessen	Sven Ottlieb	Order Administrator	Walserweg 21
+	DUMON	Du monde entier	Janine Labrune	Owner	67, rue des Cinquante Otages
+	EASTC	Eastern Connection	Ann Devon	Sales Agent	35 King George
+	ERNSH	Ernst Handel	Roland Mendel	Sales Manager	Kirchgasse 6
+	FAMIA	Familia Arquibaldo	Aria Cruz	Marketing Assistant	Rua Orós, 92

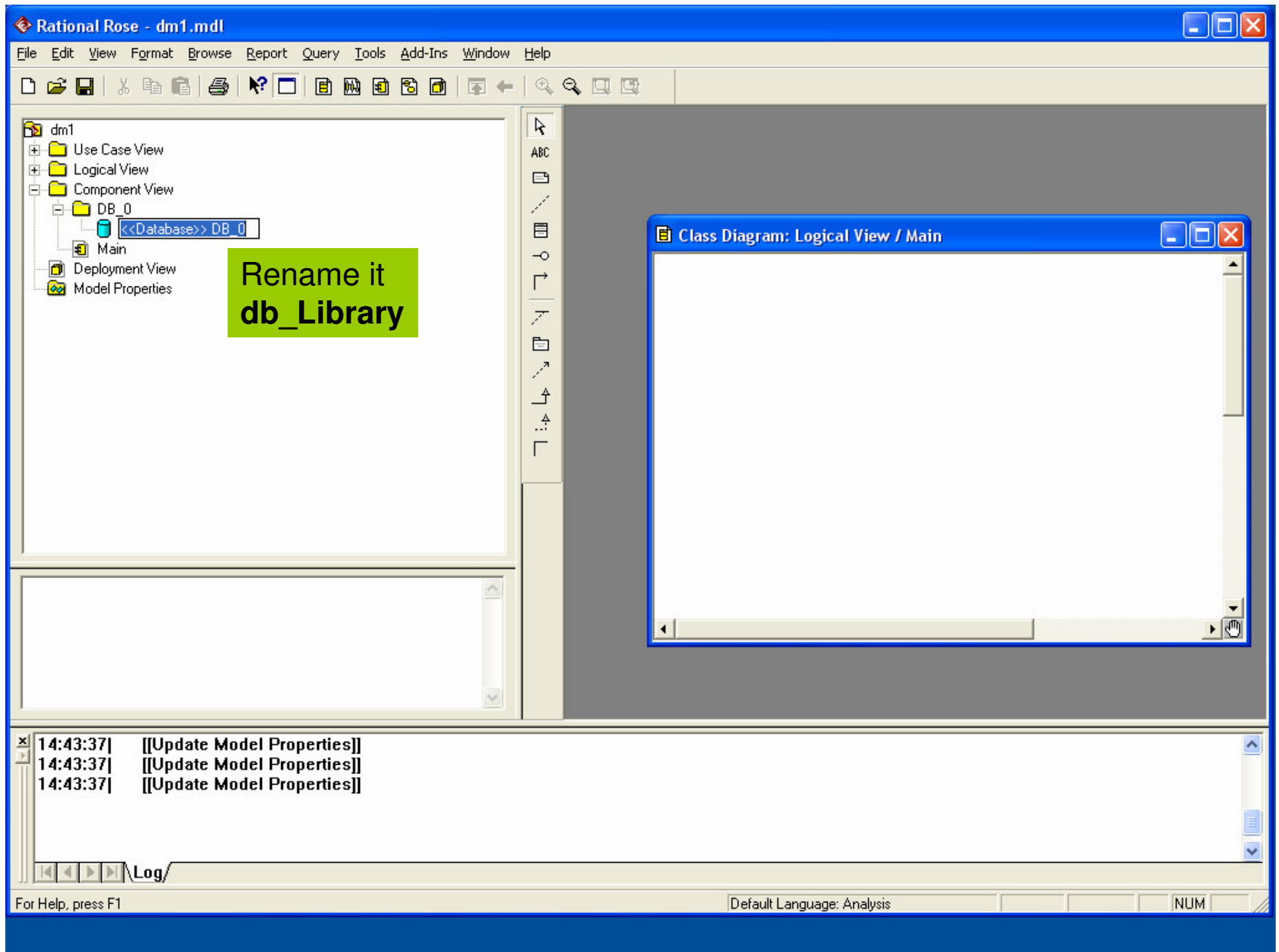
Record: 1 of 91

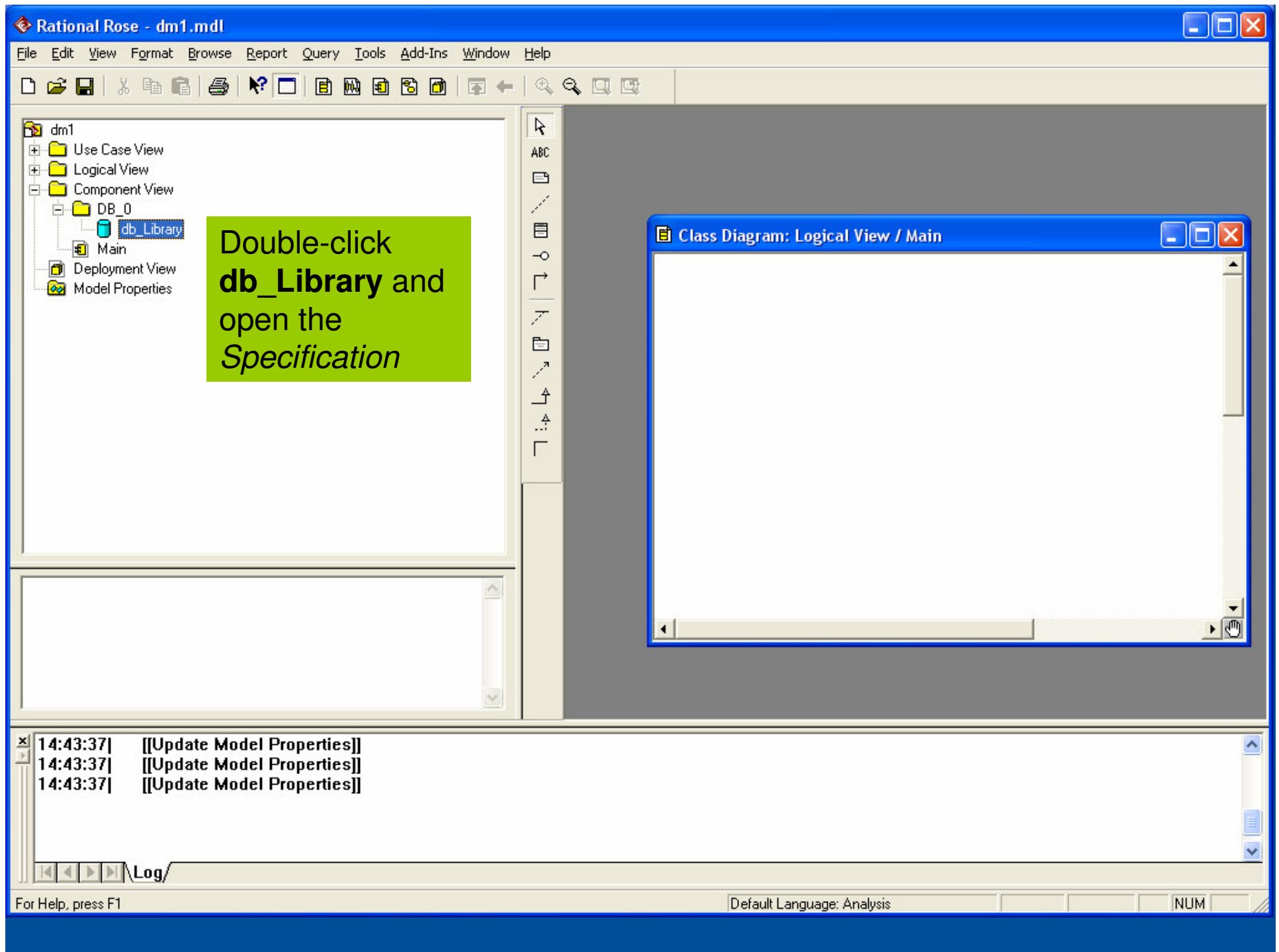
Columns

Creating a Data Model









Database Specification for db_Library

General

Name: db_Library

SQL Name:

Target: ANSI SQL 92

Comment:

OK Cancel Apply Help

Click the drop-down box

Database Specification for db_Library

General

Name: db_Library

SQL Name:

Target: ANSI SQL 92

Comment:

- ANSI SQL 92
- IBM DB2 5.x
- IBM DB2 6.x
- IBM DB2 7.x
- IBM DB2 OS390 5.x
- IBM DB2 OS390 6.x & 7.x
- Microsoft SQL Server 6.x
- Microsoft SQL Server 7.x

OK Cancel Apply Help

Select IBM DB2 7.x

Database Specification for db_Library

General

Name: db_Library

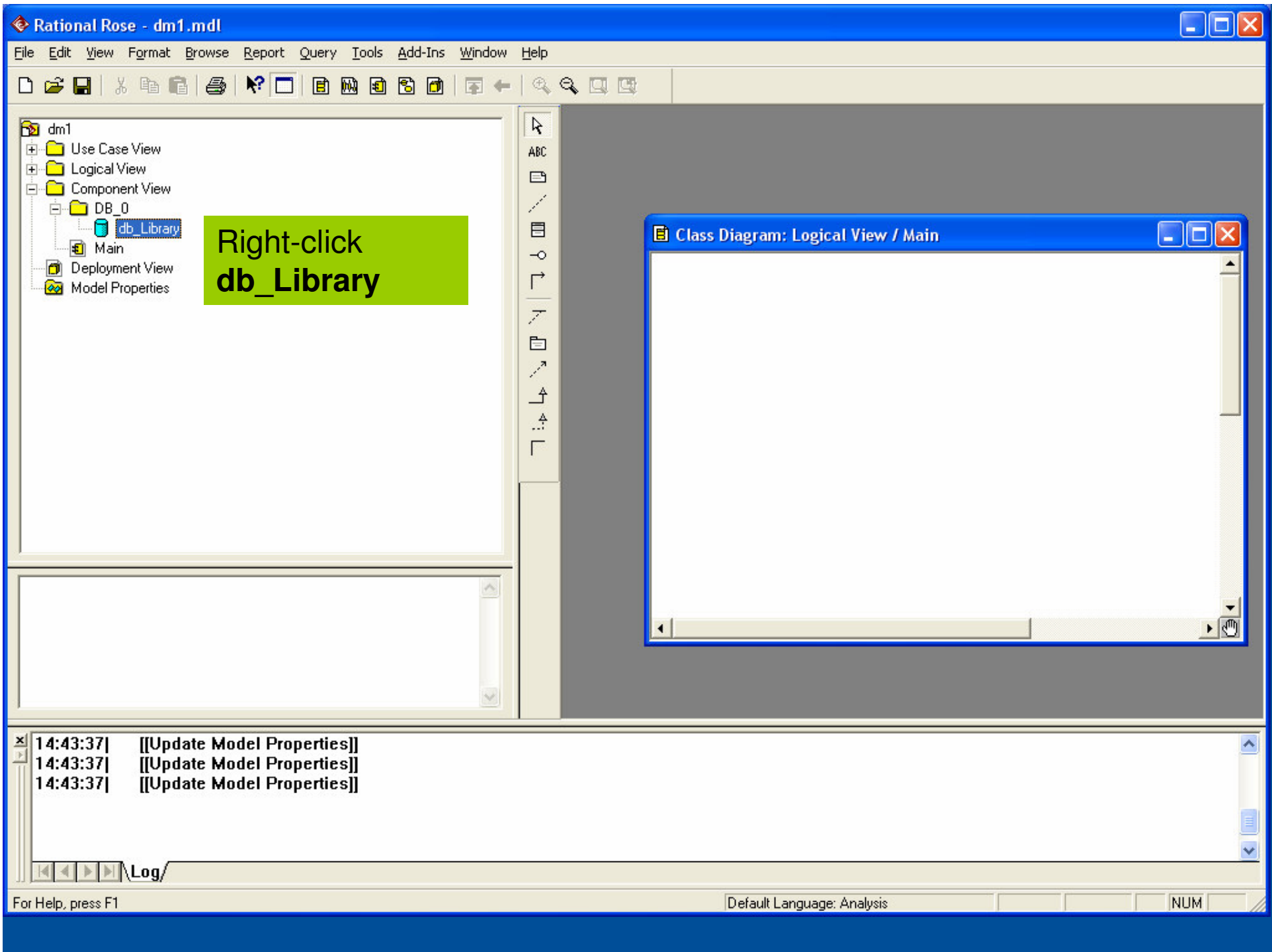
SQL Name:

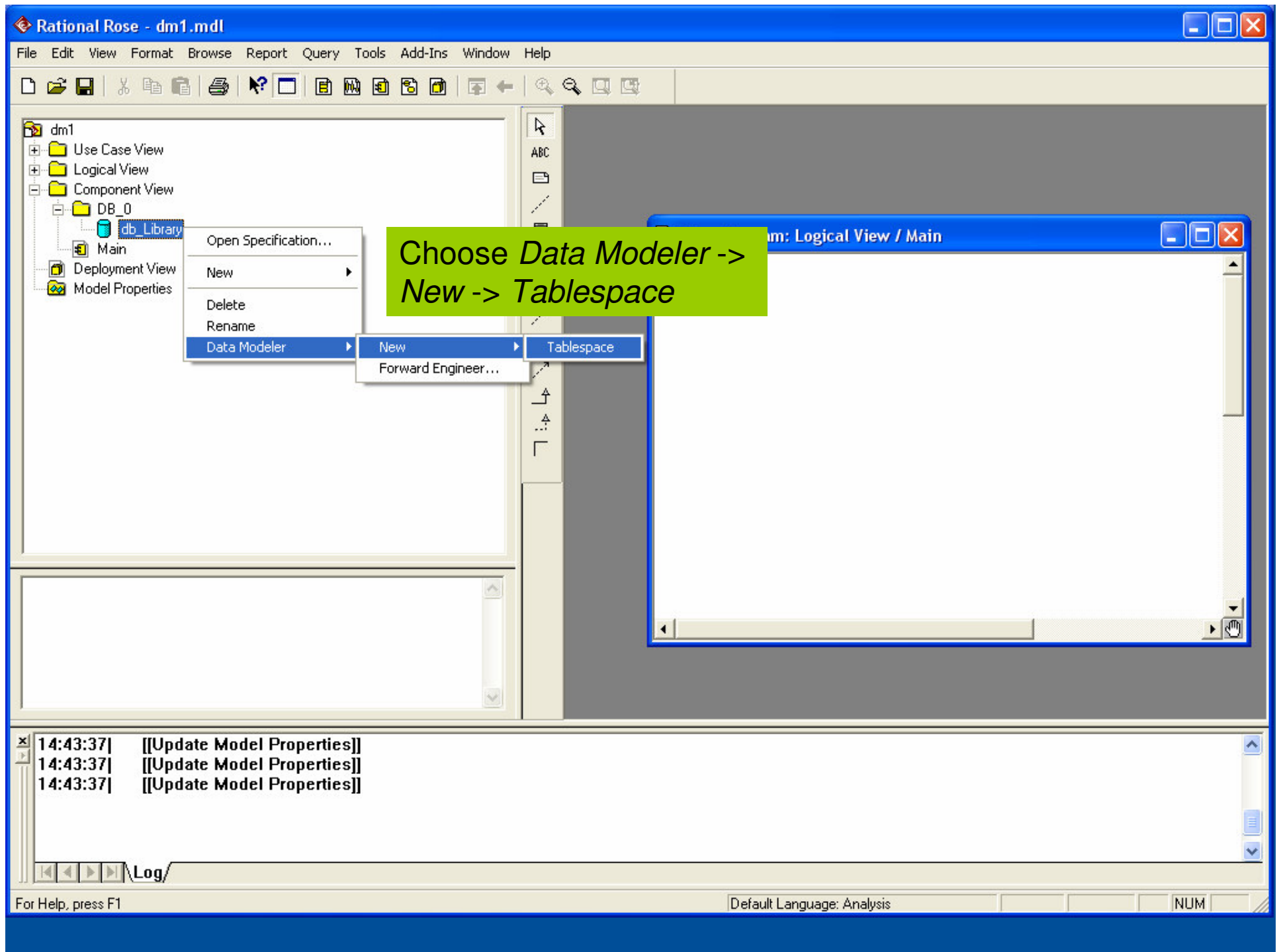
Target: IBM DB2 7.x

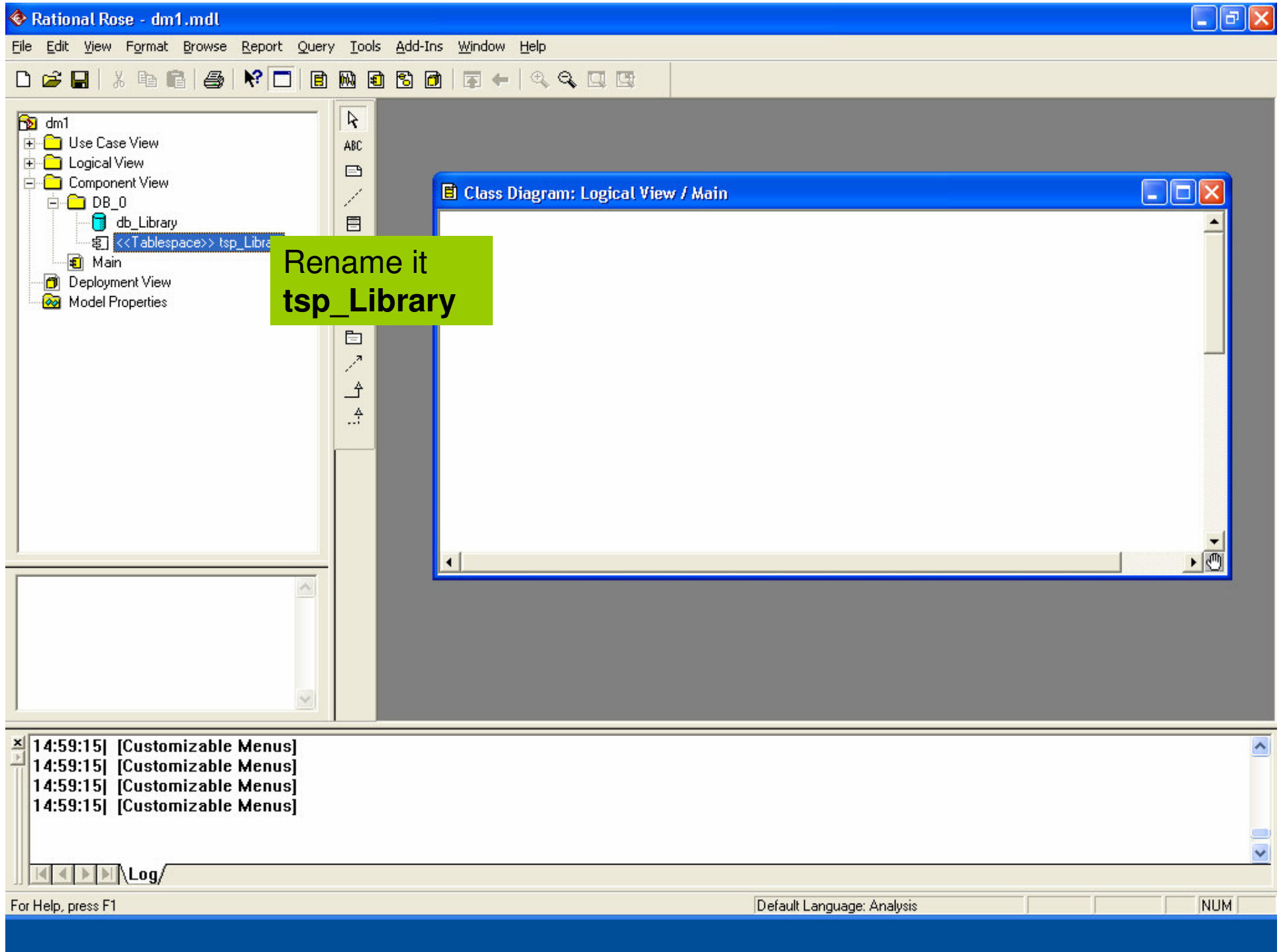
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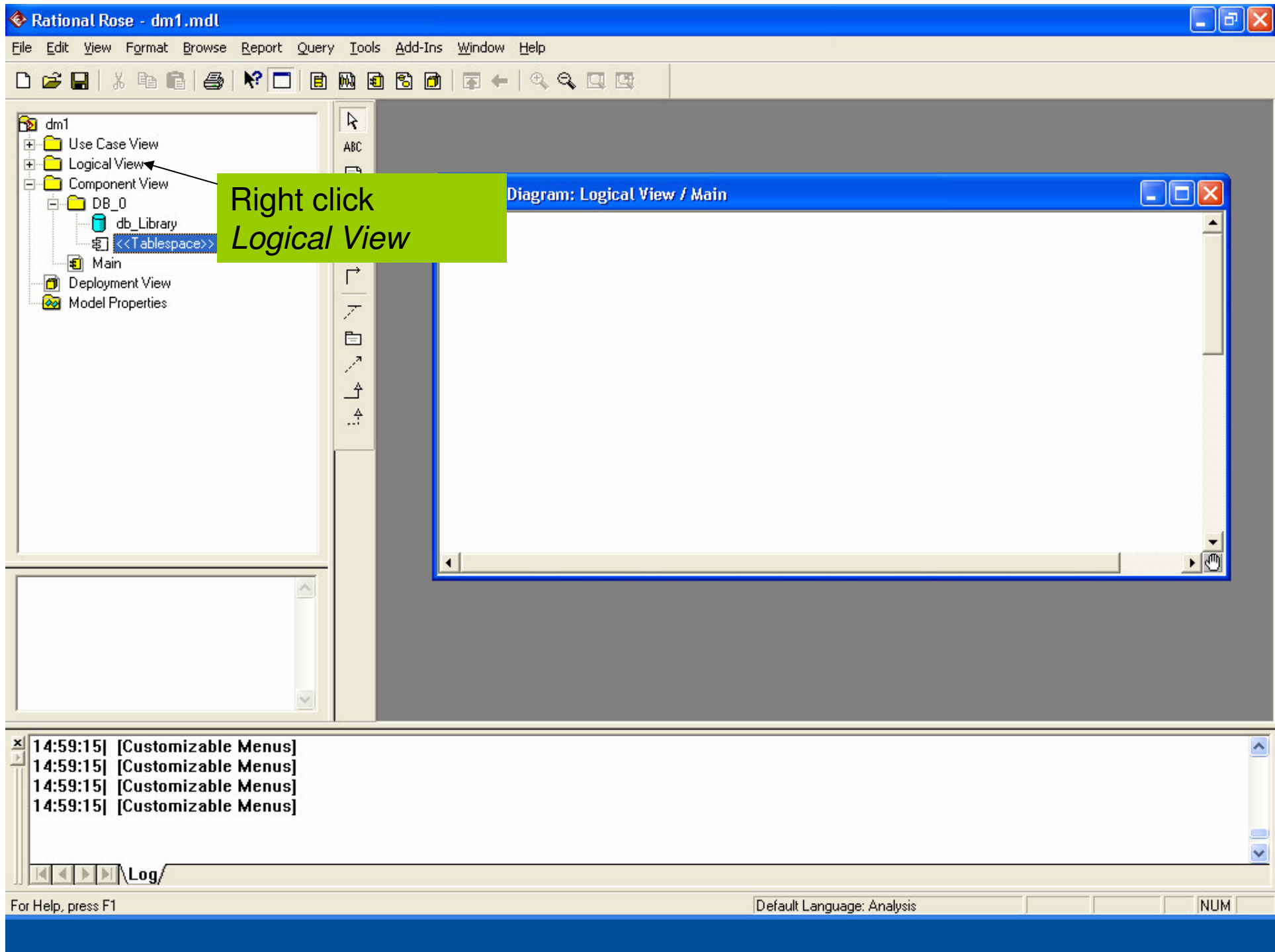
OK

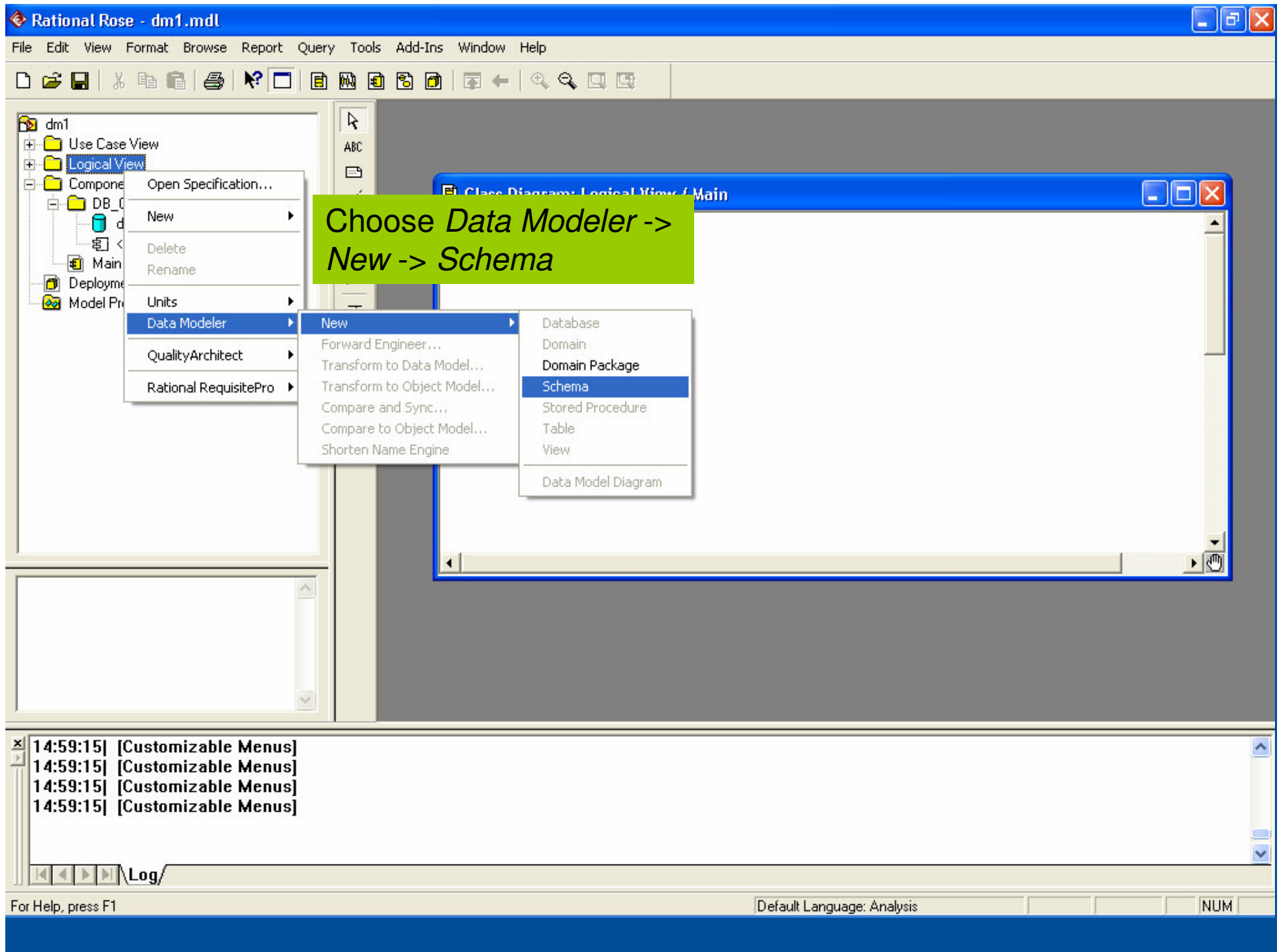
Then click *OK*

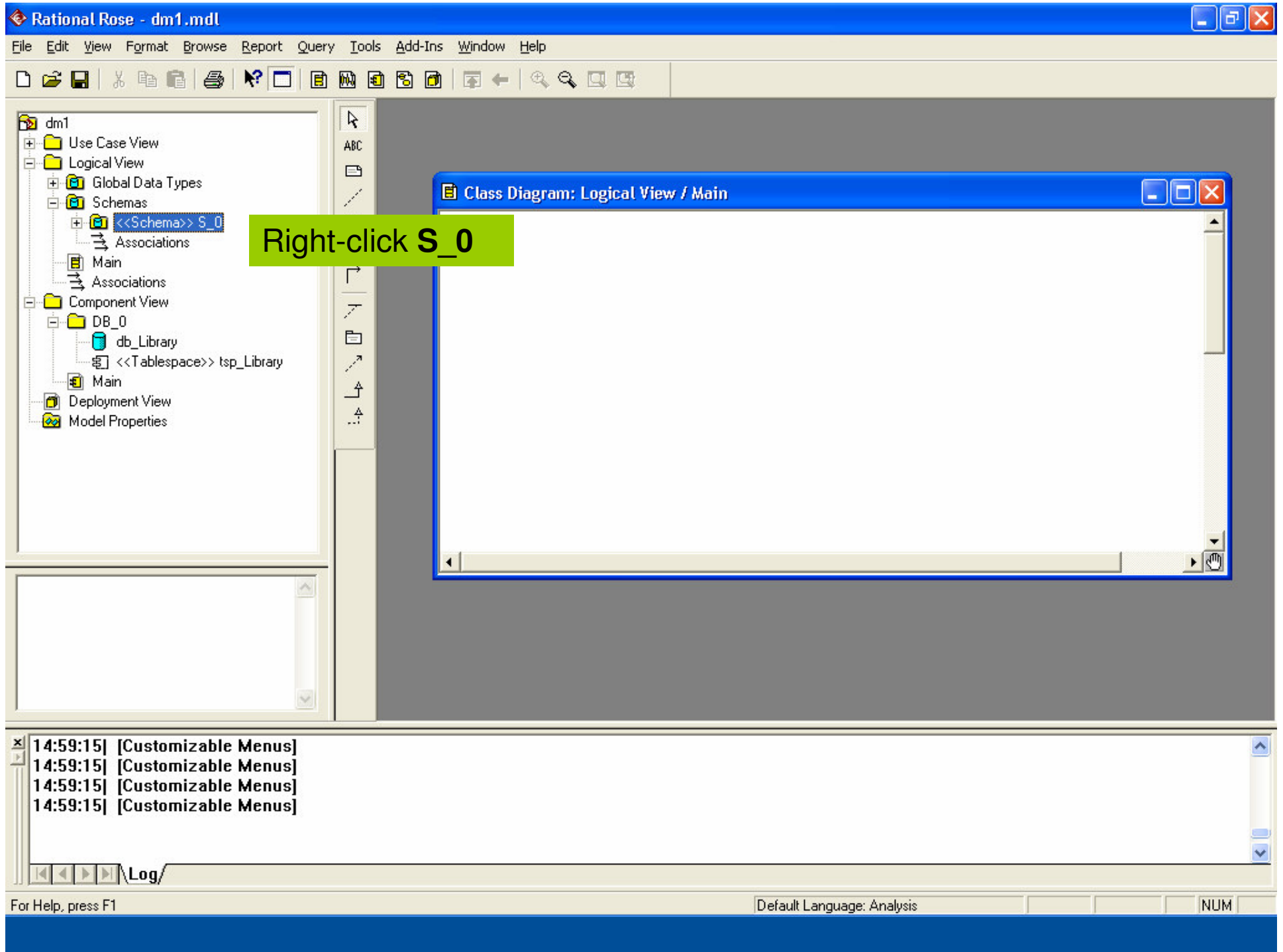


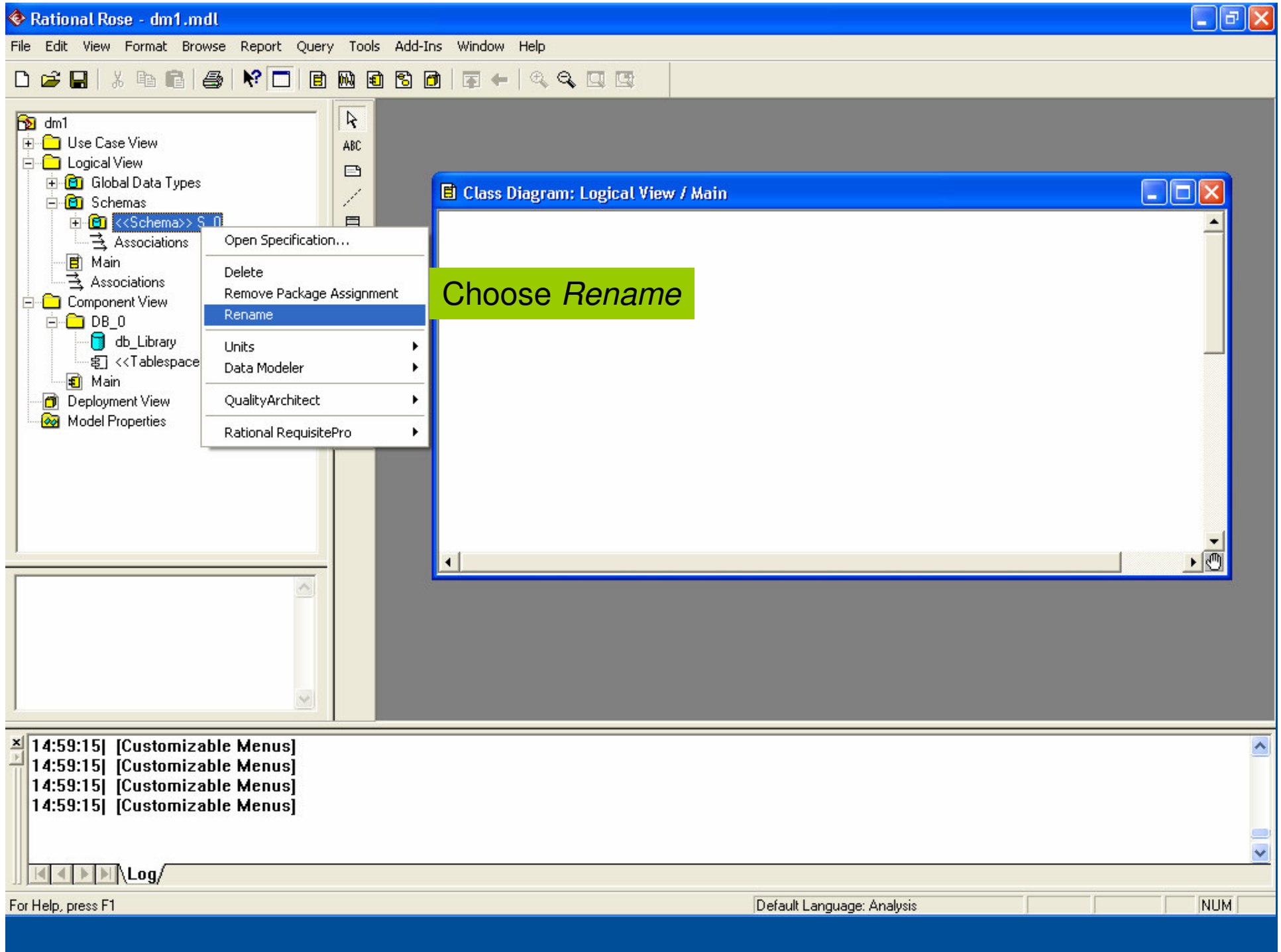


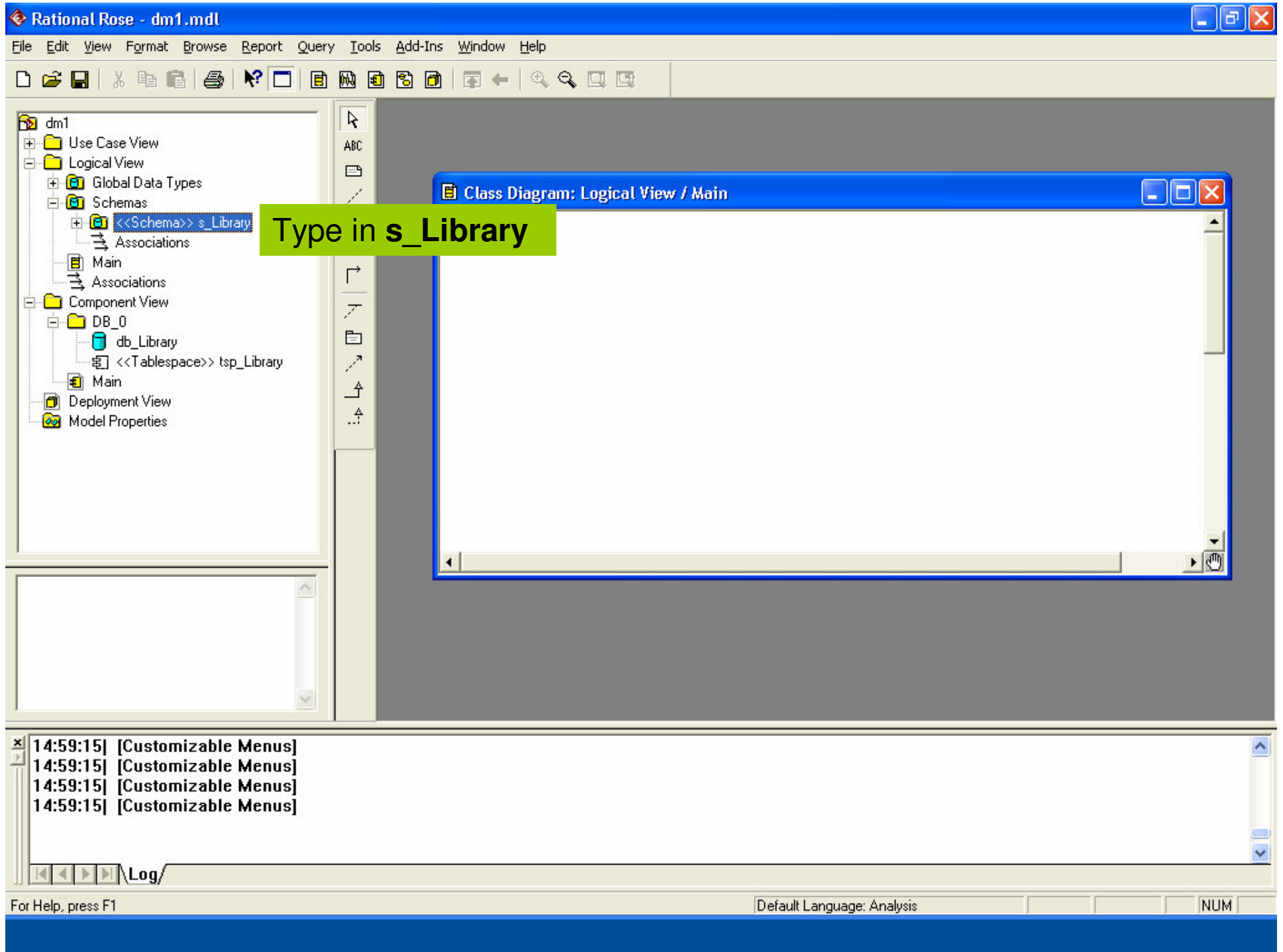


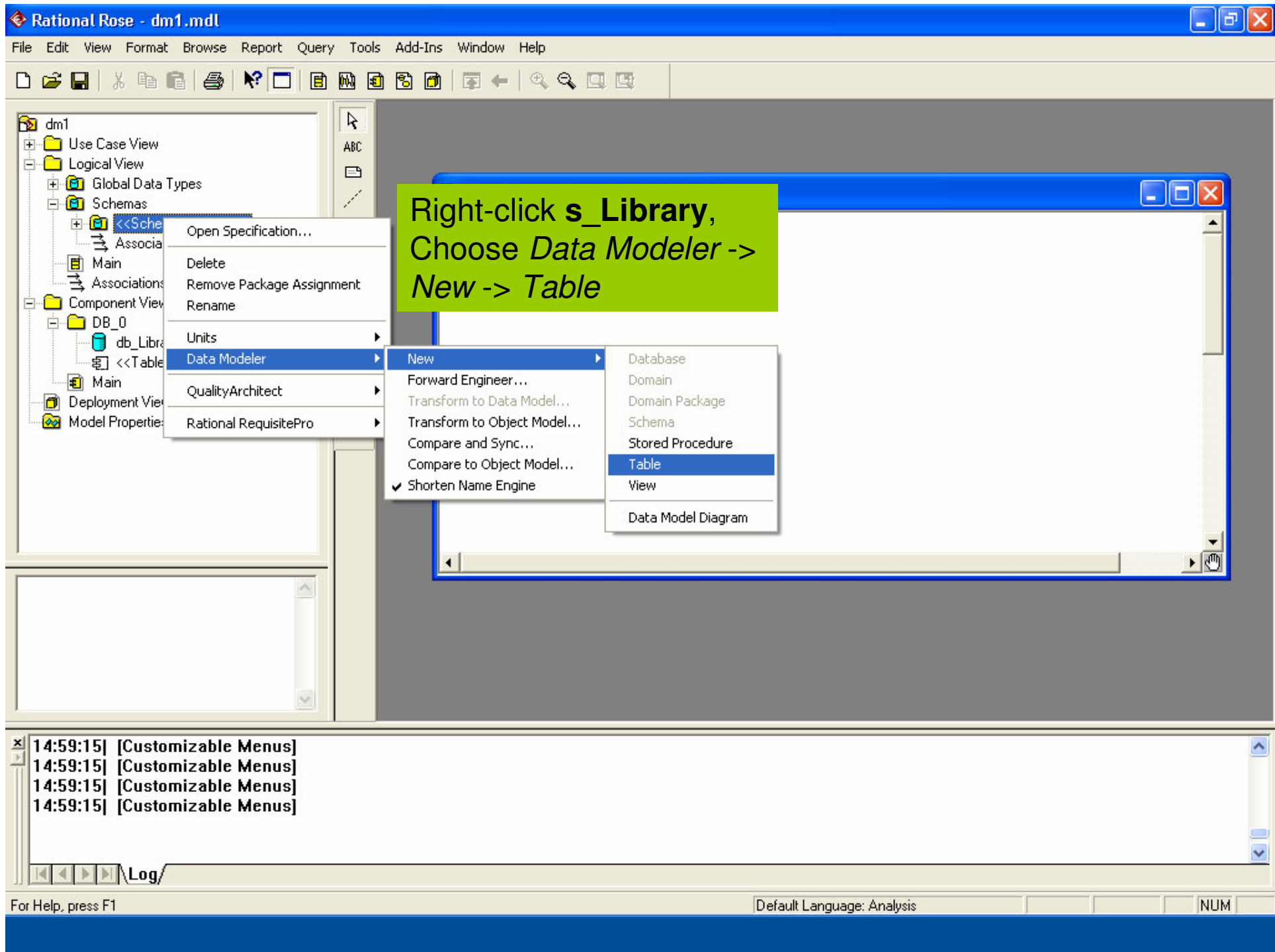


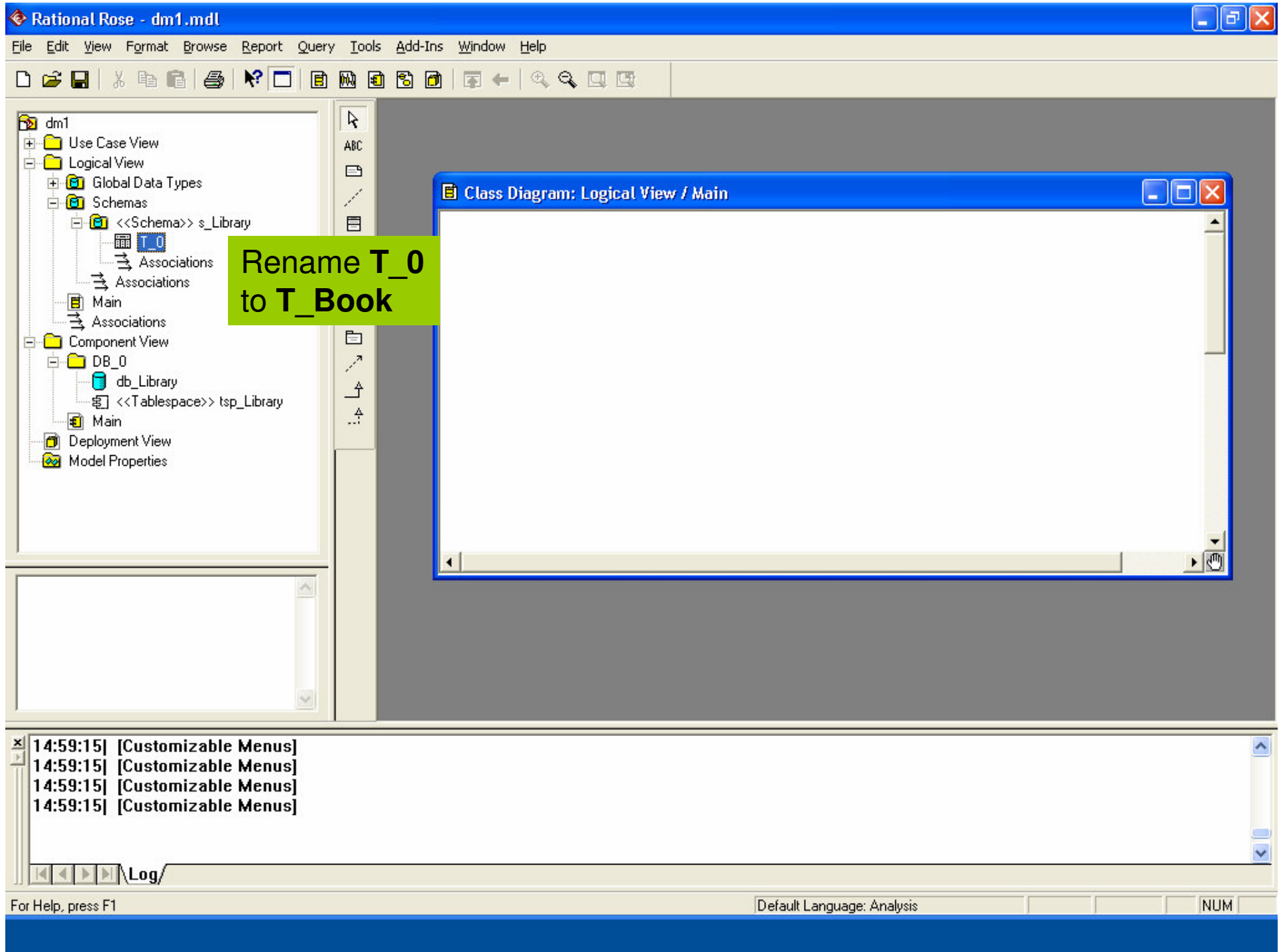












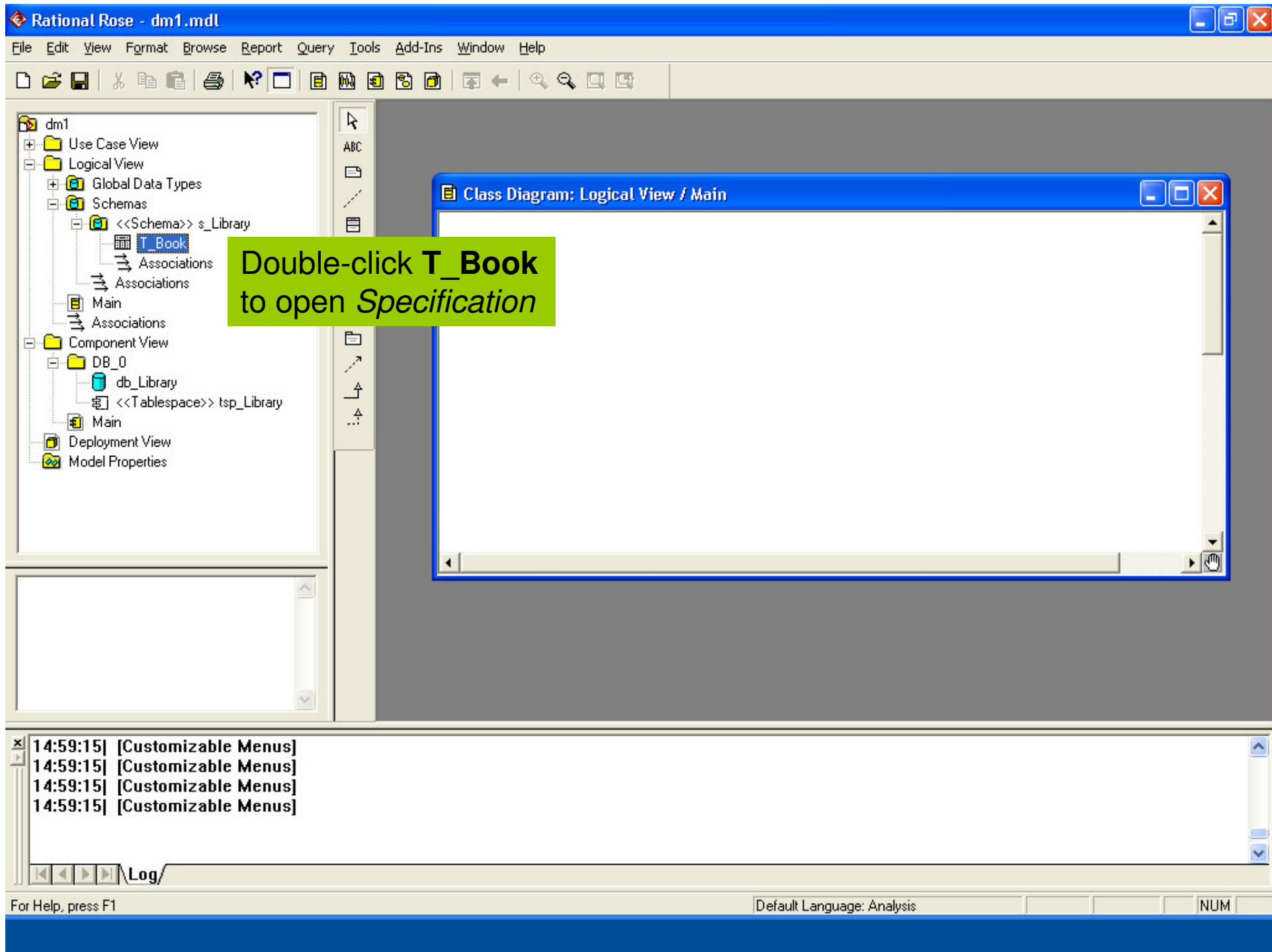


Table Specification for T_Book

General Columns Indexes Key Constraints Check Constraints Triggers Relationships

Name: T_Book Schema: s_Library

Comment:

OK Cancel Apply Help

Select the *Columns* tab

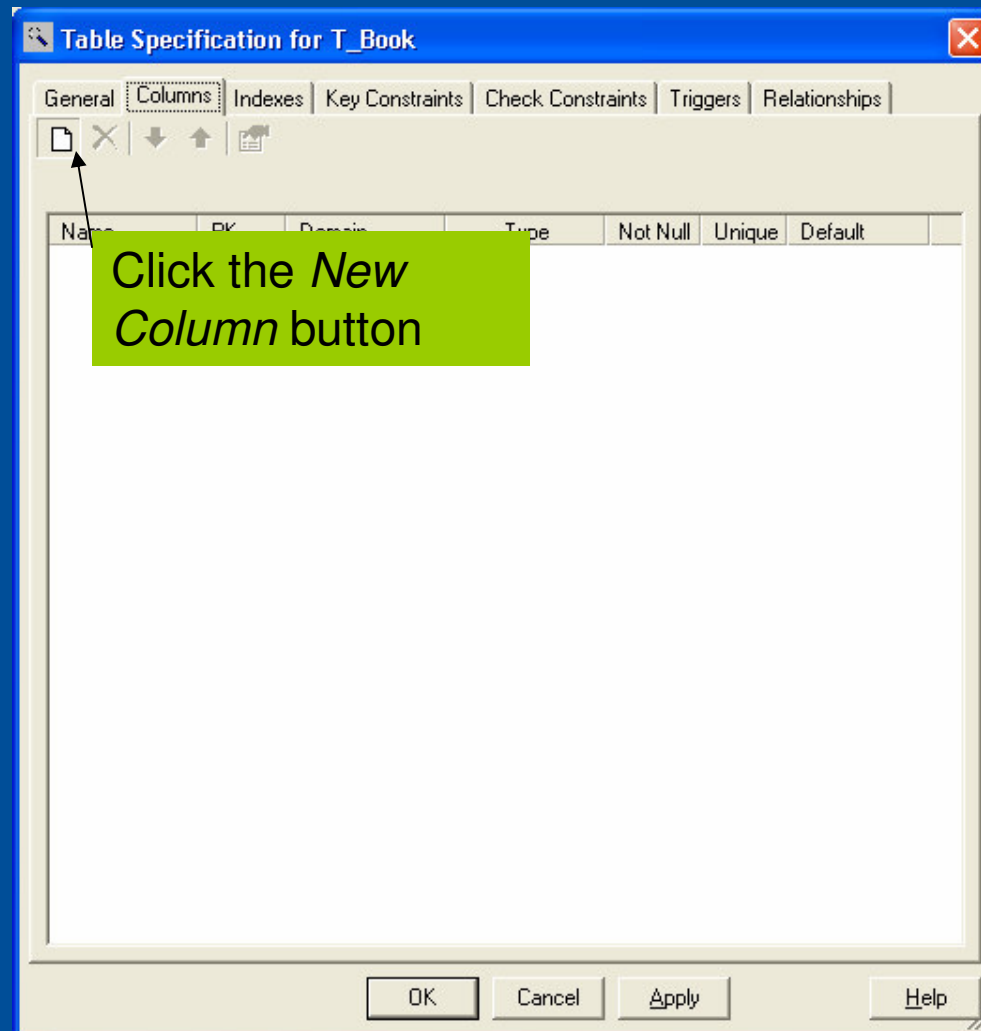
Table Specification for T_Book

General Columns Indexes Key Constraints Check Constraints Triggers Relationships

File Undo Redo Print

Name	PK	Domain	Type	Not Null	Unique	Default
------	----	--------	------	----------	--------	---------

OK Cancel Apply Help



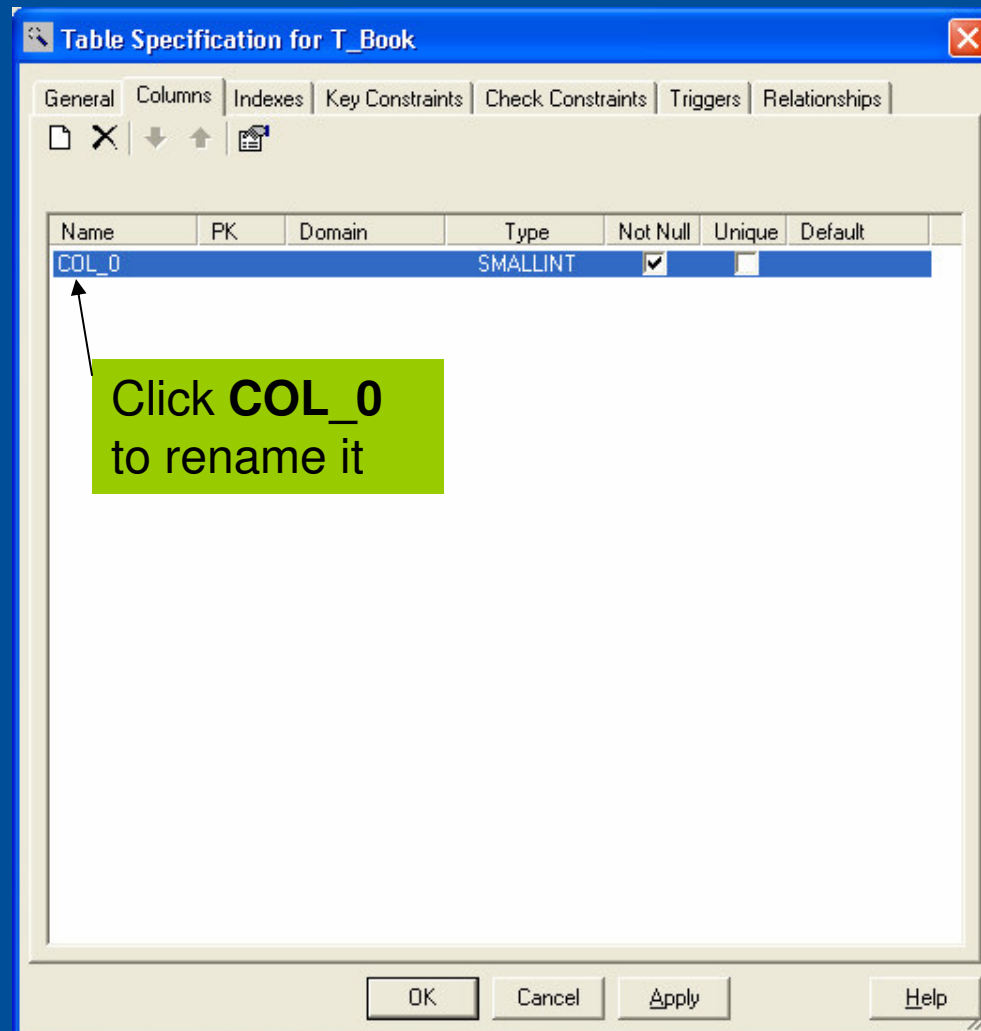


Table Specification for T_Book

General Columns Indexes Key Constraints Check Constraints Triggers Relationships

✗ ⬇ ⬆

Name	PK	Domain	Type	Not Null	Unique	Default
COL_0			SMALLINT	☒	☐	

Enter Title

OK Cancel Apply Help

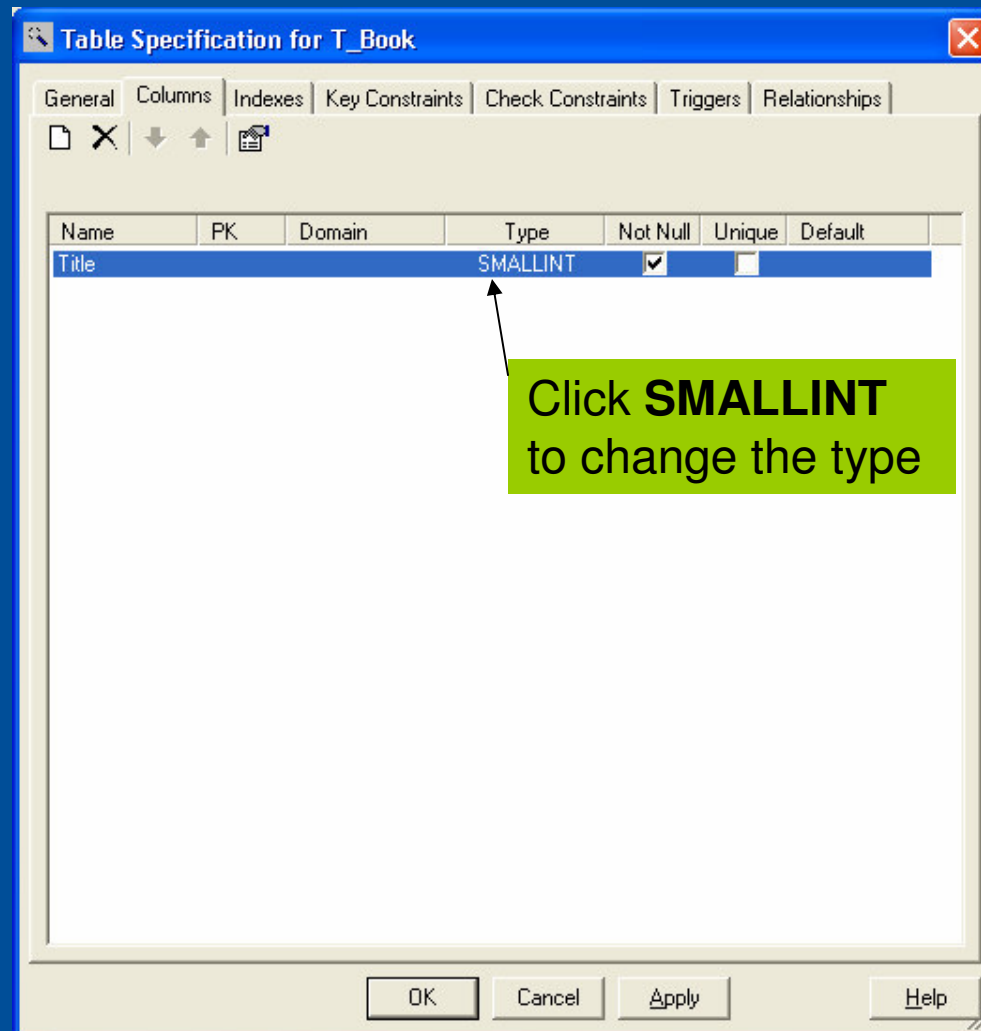


Table Specification for T_Book

General Columns Indexes Key Constraints Check Constraints Triggers Relationships

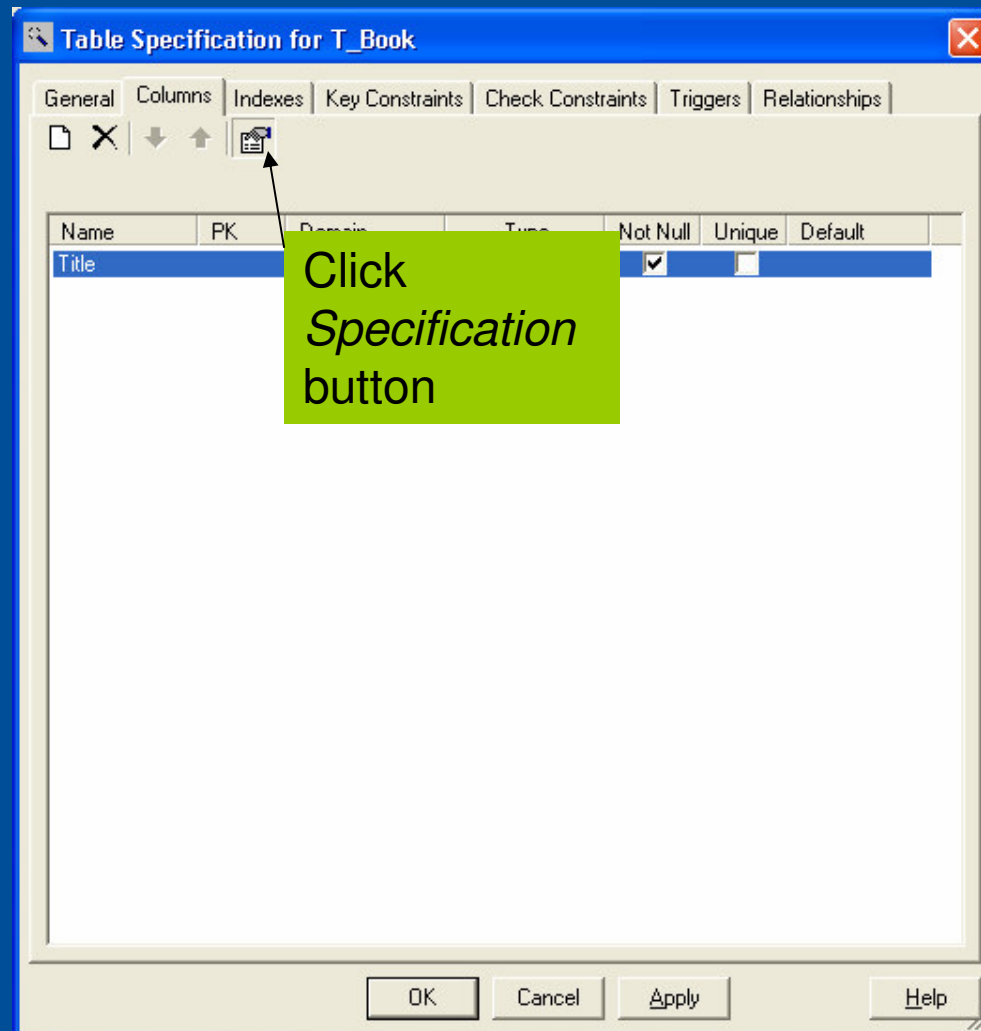
↓ ↑

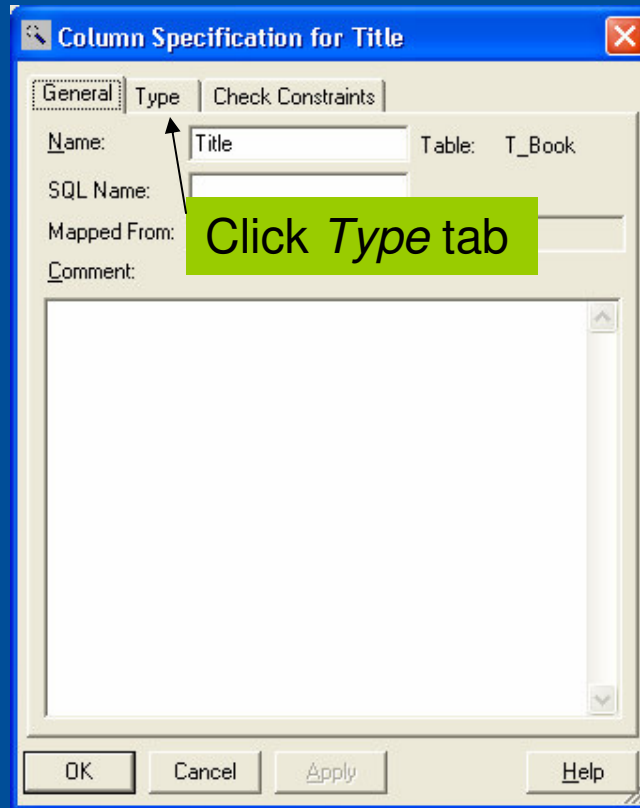
Name	PK	Domain	Type	Not Null	Unique	Default
Title			VARCHAR	☒	☐	

INTERVAL
REAL
SMALLINT
TIME
TIME WITH
TIMESTAMP
TIMESTAMP
VARCHAR

Select VARCHAR

OK Cancel Apply Help





Column Specification for Title

General Type Check Constraints

☒ Data Column

Domain:

Datatype: VARCHAR

Length: 1

☐ Unique Constraint

☐ Primary Key

☒ Not Null

Default Value:

☐ Computed Column

Expression:

OK Cancel Apply Help

Change the
length to 80

Column Specification for Title

General Type Check Constraints

☒ Data Column

Domain:

Datatype: VARCHAR

Length: 80

☐ Unique Constraint ☐ For Bit Data

☐ Primary Key ☐ Identity

☒ Not Null

Default Value:

☐ Computed Column

Expression:

OK Cancel Apply Help

Click *OK*

Column Specification for Title

General | **Type** | **Check Constraints**

☒ **Data Column**

Domain:

Datatype: VARCHAR

Length: 80

☐ Unique Constraint

☐ Primary Key

☒ Not Null

Default Value:

☐ For Bit Data

☐ Identity

☐ **Computed Column**

Expression:

Table Specification for T_Book

General Columns Indexes Key Constraints Check Constraints Triggers Relationships

↓ ↑

Name	PK	Domain	Type	Not Null	Unique	Default
Title			VARCHAR	☒	☐	
Author			VARCHAR	☒	☐	
ISBN			VARCHAR	☒	☐	
Publisher			VARCHAR	☒	☐	
Status			VARCHAR	☒	☐	

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)

OK Cancel Apply Help

Table Specification for T_Book

General Columns Indexes Key Constraints Check Constraints Triggers Relationships

Table Specification for T_Book

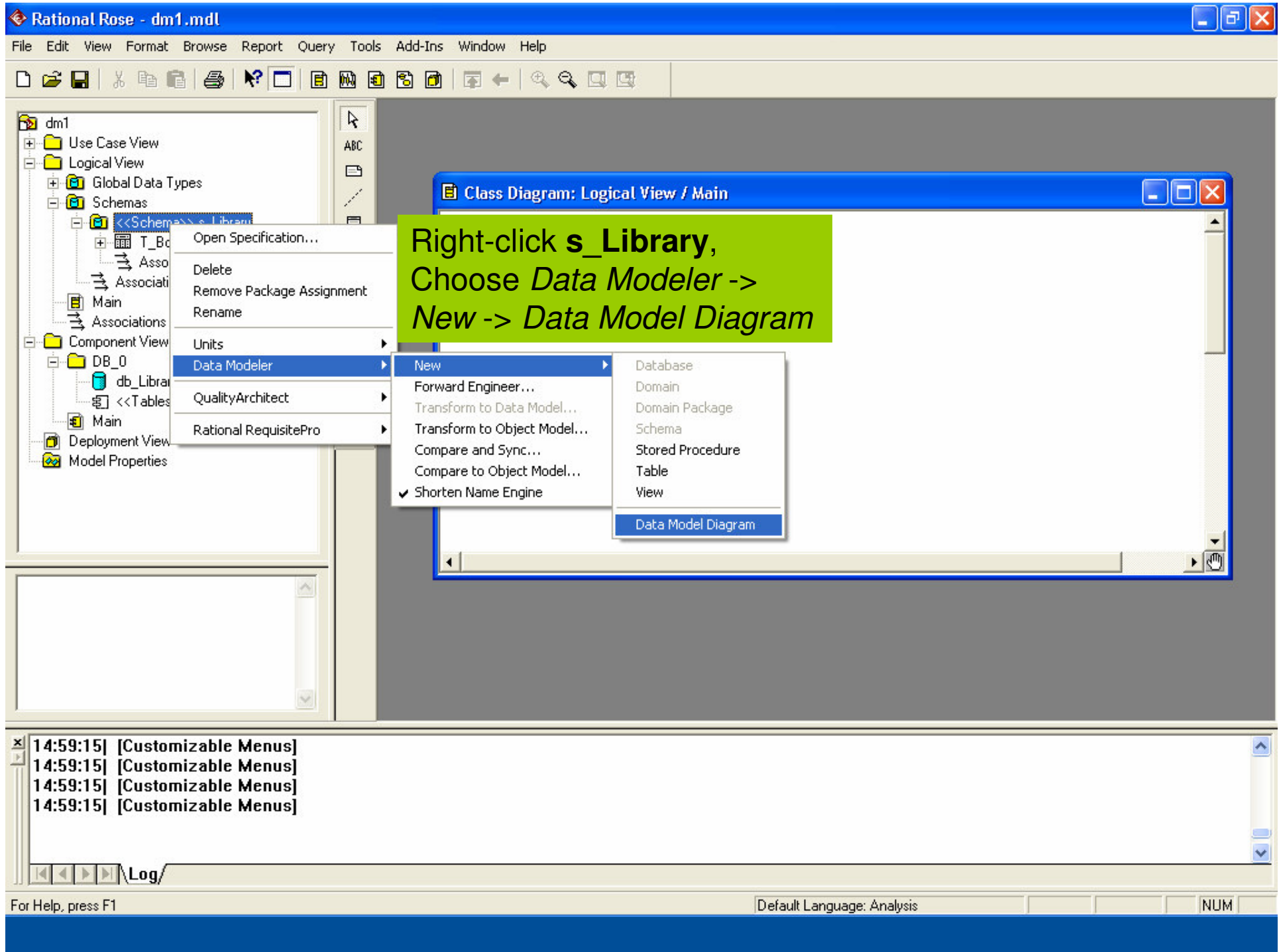
Name	PK	Domain	Type	Not Null	Unique	Default
Title			VARCHAR	☒	☐	
Author			VARCHAR	☒	☐	
ISBN	PK		VARCHAR	☒	☒	
Publisher			VARCHAR	☒	☐	
Status			VARCHAR	☒	☐	

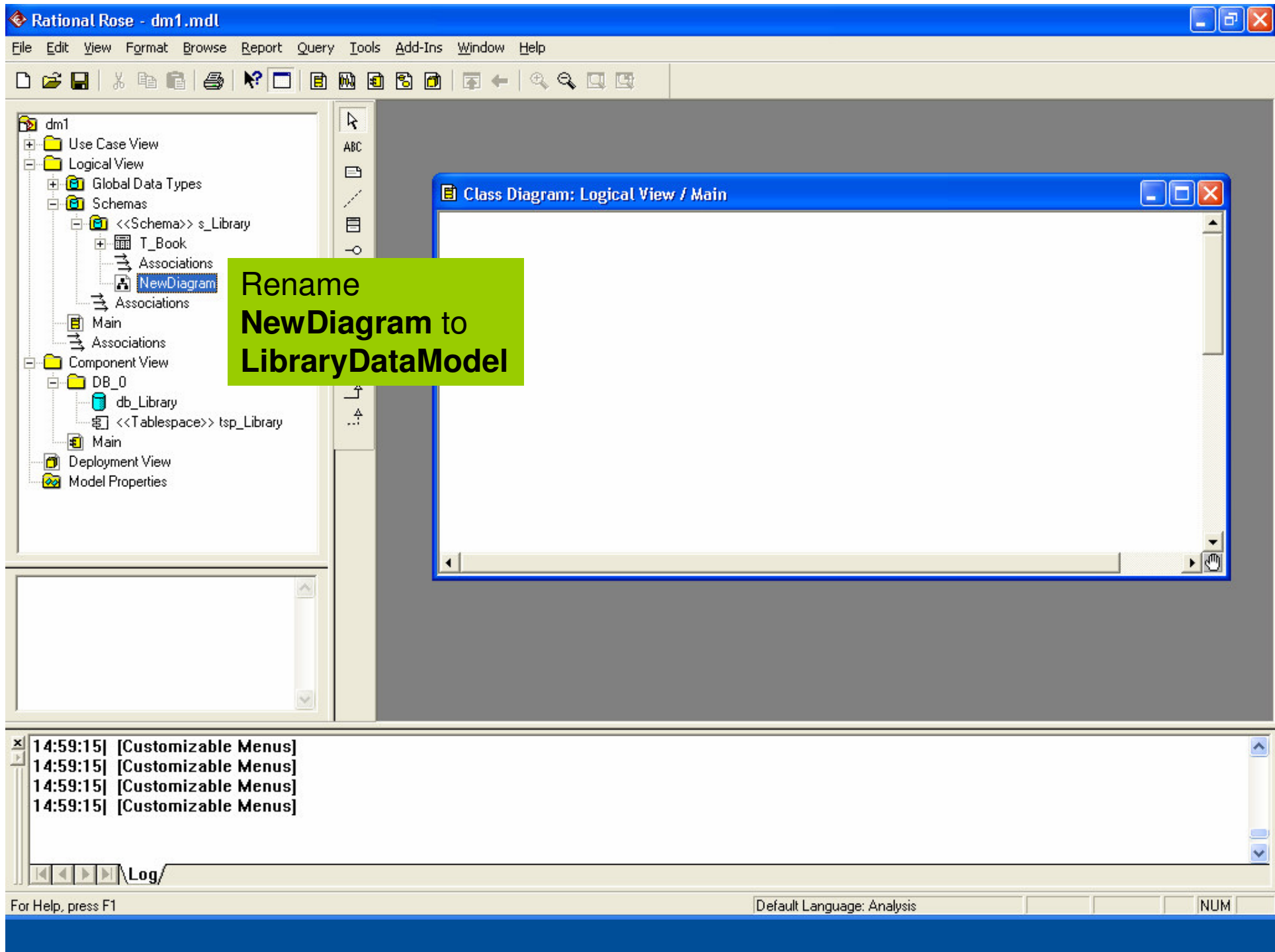
OK Cancel Apply Help

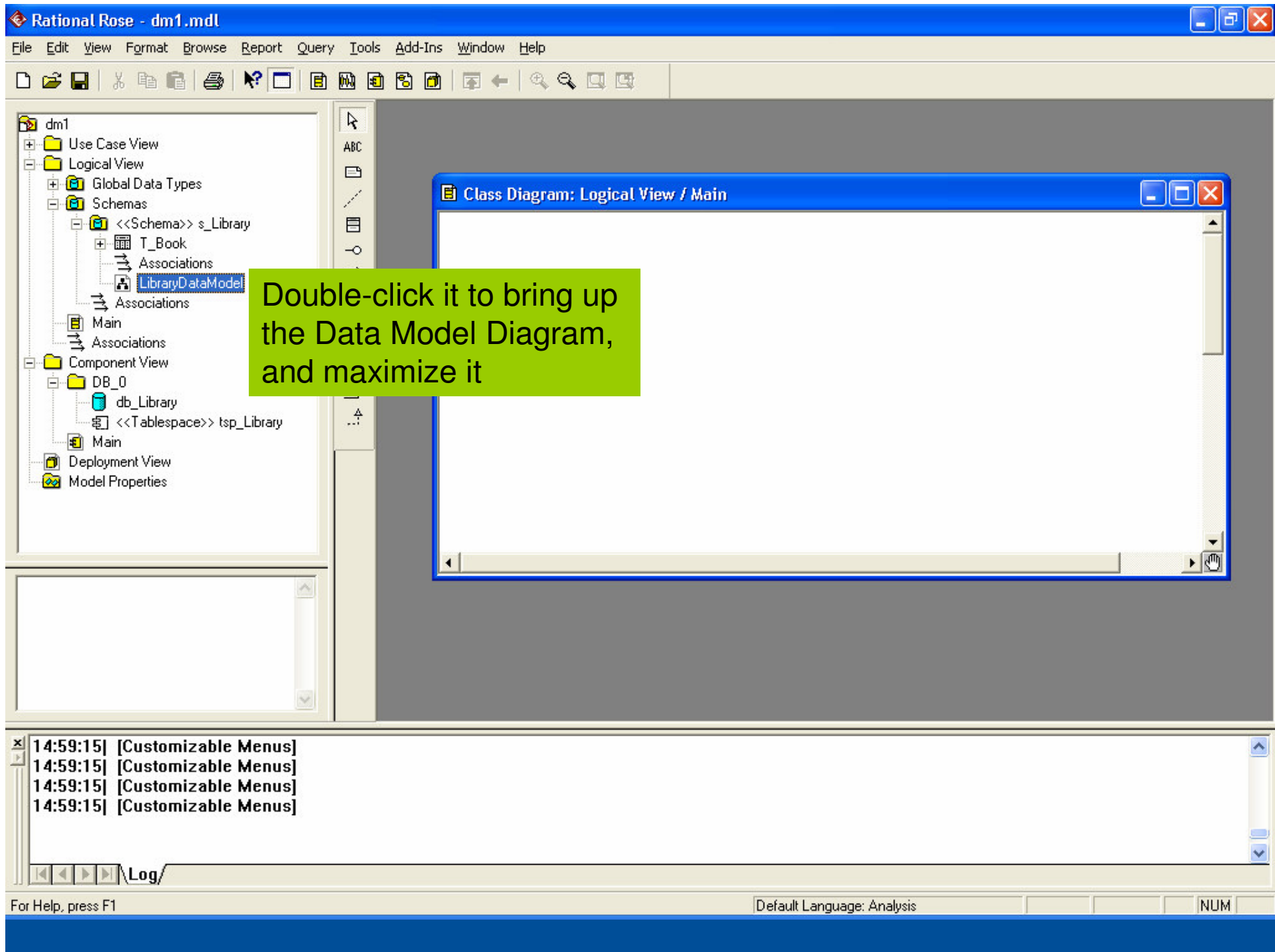
Click here and select **PK** (Primary Key) in the dropdown for the **ISBN** column

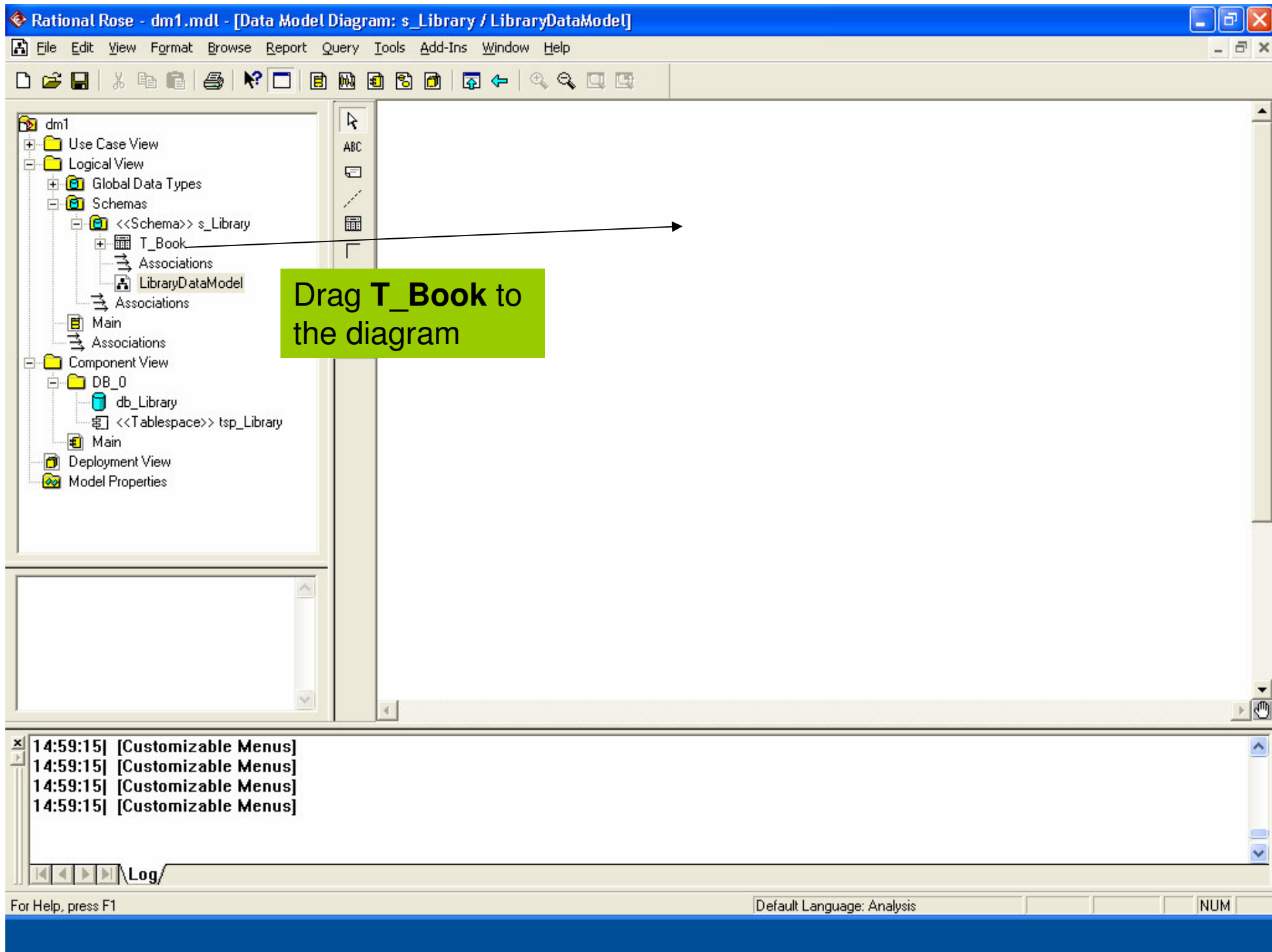
Check the *Unique* box

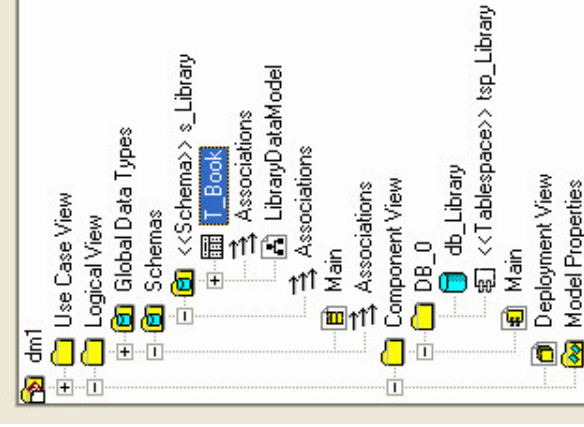
Then click **OK**











T_Book
Title : VARCHAR(80) Author : VARCHAR(50) PK ISBN : VARCHAR(10) Publisher : VARCHAR(30) Status : VARCHAR(20)
◆ <<PK>> PK_T_Book00 ◆ <<Unique>> TC_T_Book00

x	14:59:15	[Customizable Menu]
	14:59:15	[Customizable Menu]
	14:59:15	[Customizable Menu]
	14:59:15	[Customizable Menu]

Rational Rose - dm1.mdl - [Data Model Diagram: s_Library / LibraryDataModel]

File Edit View Format Browse Report Query Tools Add-Ins Window Help

dm1

- Use Case View
- Logical View
 - Global Data Types
 - Schemas
 - <<Schema>> s_Library
 - T_Book
 - Associations
 - LibraryDataModel
 - T_Patron
 - Associations
 - Main
 - Associations

T_Book

Title : VARCHAR(80)
Author : VARCHAR(50)
PK ISBN : VARCHAR(10)
Publisher : VARCHAR(30)
Status : VARCHAR(20)

<<PK>> PK_T_Book0()
<<Unique>> TC_T_Book0()

T_Patron

Name : VARCHAR(50)
Gender : VARCHAR(1)
Address : VARCHAR(100)
PK LibraryCardNumber : VARCHAR(10)

<<PK>> PK_T_Patron1()
<<Unique>> TC_T_Patron1()

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

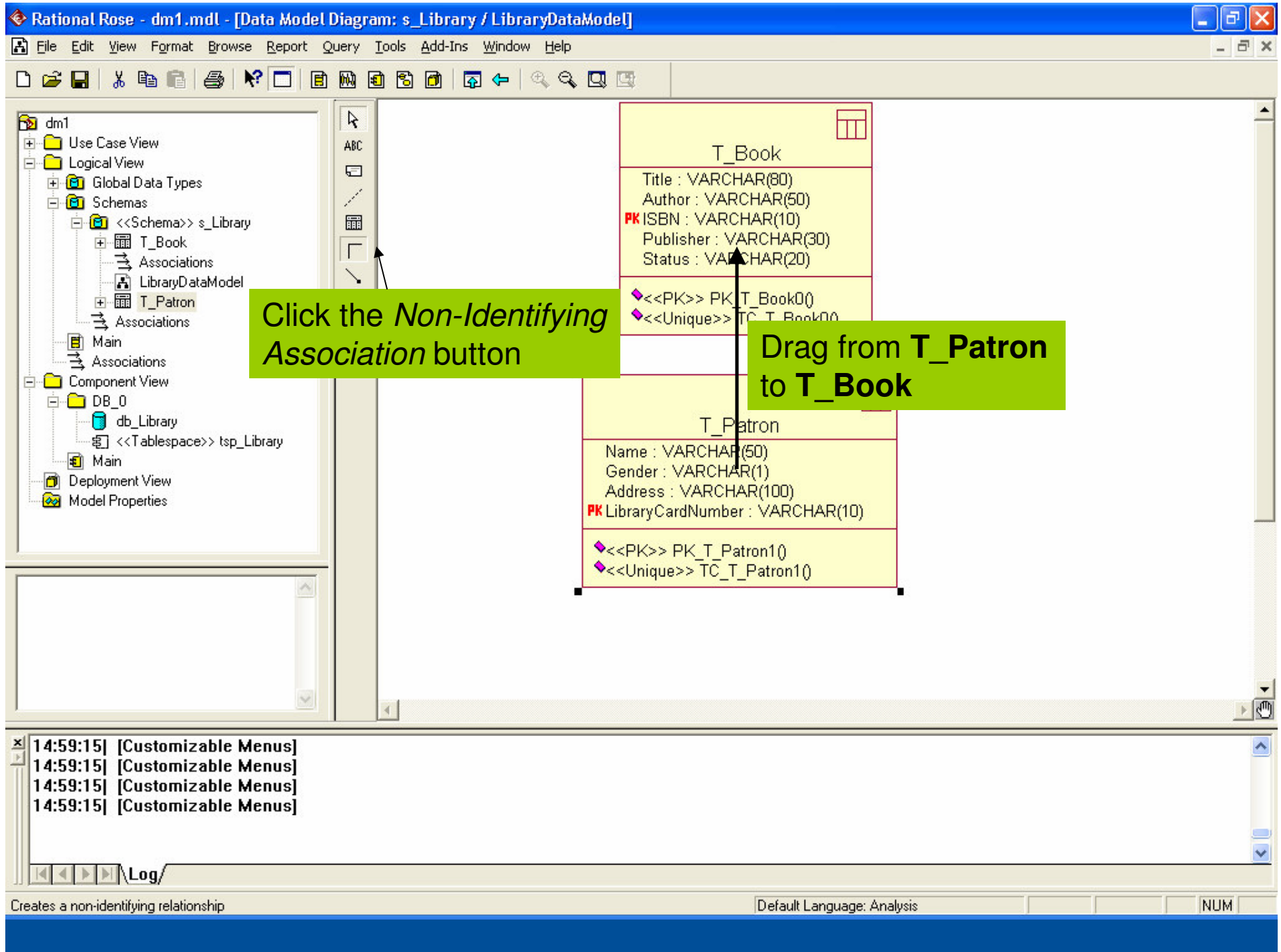
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14:59:15| [Customizable Menus]

Log/

For Help, press F1

Default Language: Analysis

NUM



Rational Rose - dm1.mdl - [Data Model Diagram: s_Library / LibraryDataModel]

File Edit View Format Browse Report Query Tools Add-Ins Window Help

Click *Format* Menu

dm1

- Use Case View
- Logical View
 - Global Data Types
 - Schemas
 - <<Schema>> s_Library
 - T_Book
 - Associations
 - LibraryDataModel
 - T_Patron
 - Associations
 - Main
 - Associations
 - Component View
 - DB_0
 - db_Library
 - <<Tablespace>> tsp_Library
 - Main
 - Deployment View
 - Model Properties

T_Book

Title : VARCHAR(80)
Author : VARCHAR(50)
PK ISBN : VARCHAR(10)
Publisher : VARCHAR(30)
Status : VARCHAR(20)
FK LibraryCardNumber : VARCHAR(10)

<<PK>> PK_T_Book00
<<Unique>> TC_T_Book00
<<FK>> FK_T_Book30

0..1

T_Patron

Name : VARCHAR(50)
Gender : VARCHAR(1)
Address : VARCHAR(100)
PK LibraryCardNumber : VARCHAR(10)

<<PK>> PK_T_Patron10
<<Unique>> TC_T_Patron10

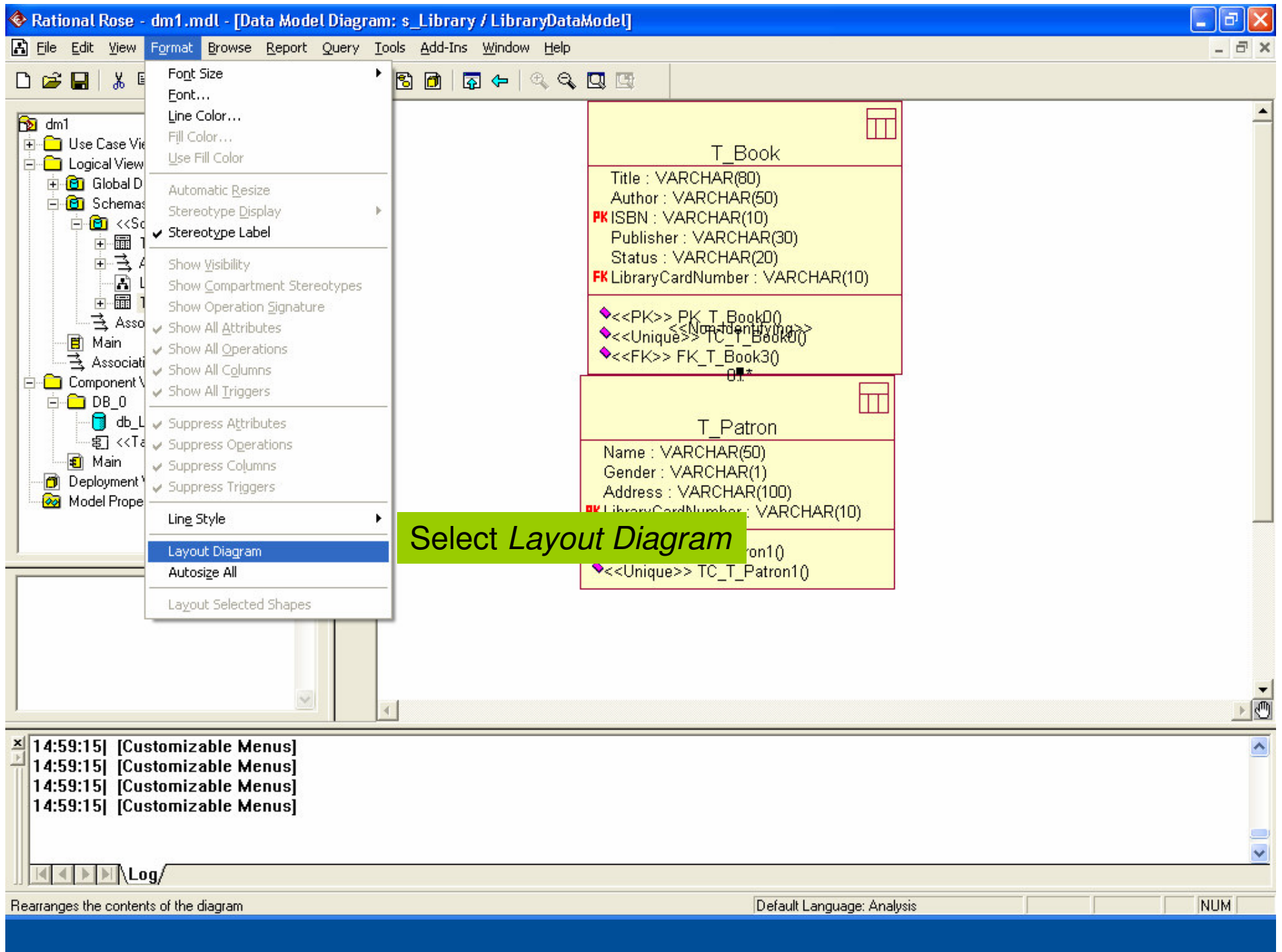
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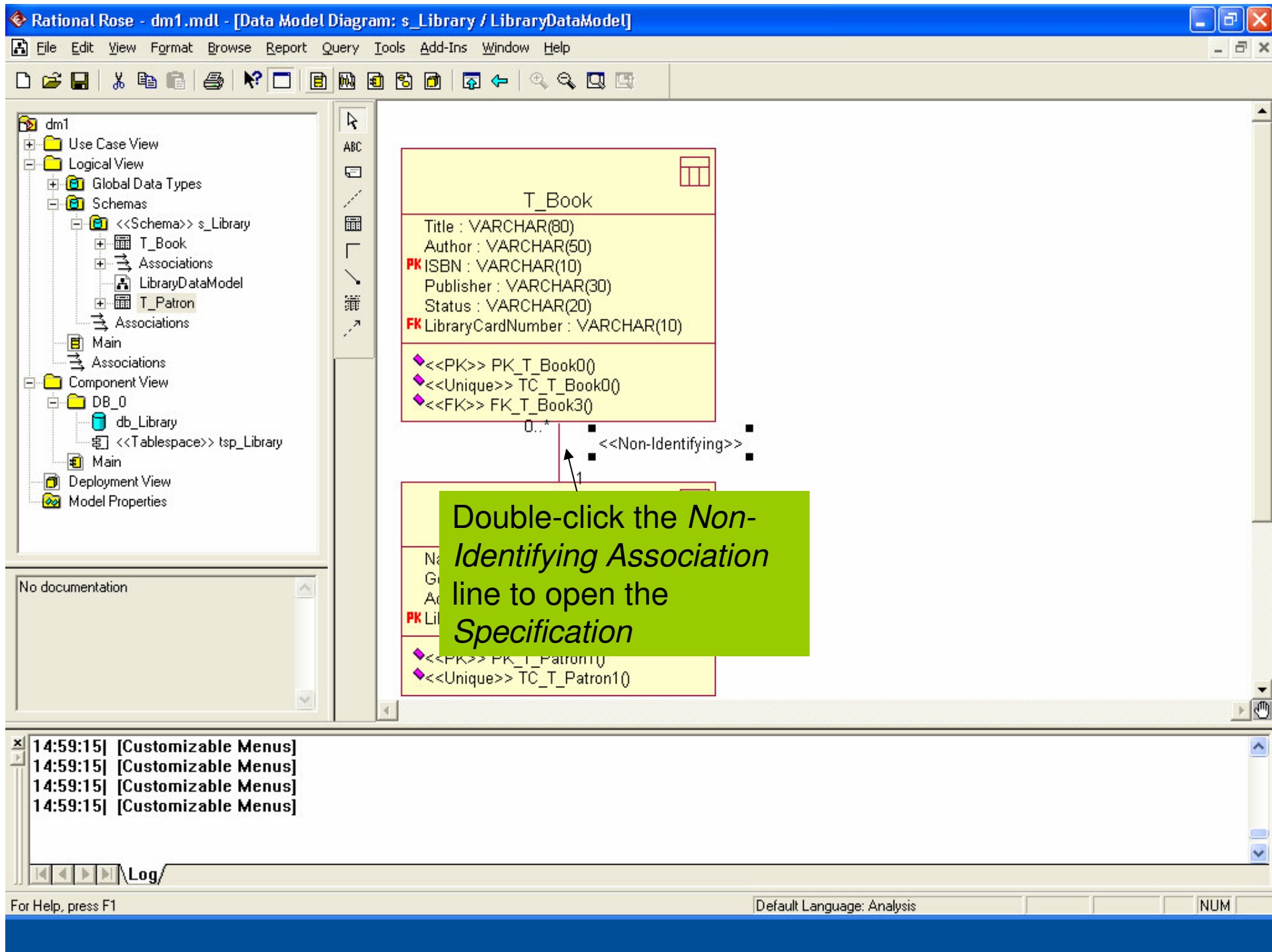
Log/

For Help, press F1

Default Language: Analysis

NUM





Relationship Specification for

General | Migrated Keys | RI

Name: Schema: s_Library

Type: Non-Identifying

Parent

Role:

Cardinality: 1

Child

Role:

Cardinality: 0..n

Comment:

OK Cancel Apply Help

Select **0..1** in the
Cardinality dropdown

Relationship Specification for

General | Migrated Keys | RI

Name: Schema: s_Library

Type: Non-Identifying

Parent

Role:

Cardinality: 0..1 (Foreign Key allows Null)

Child

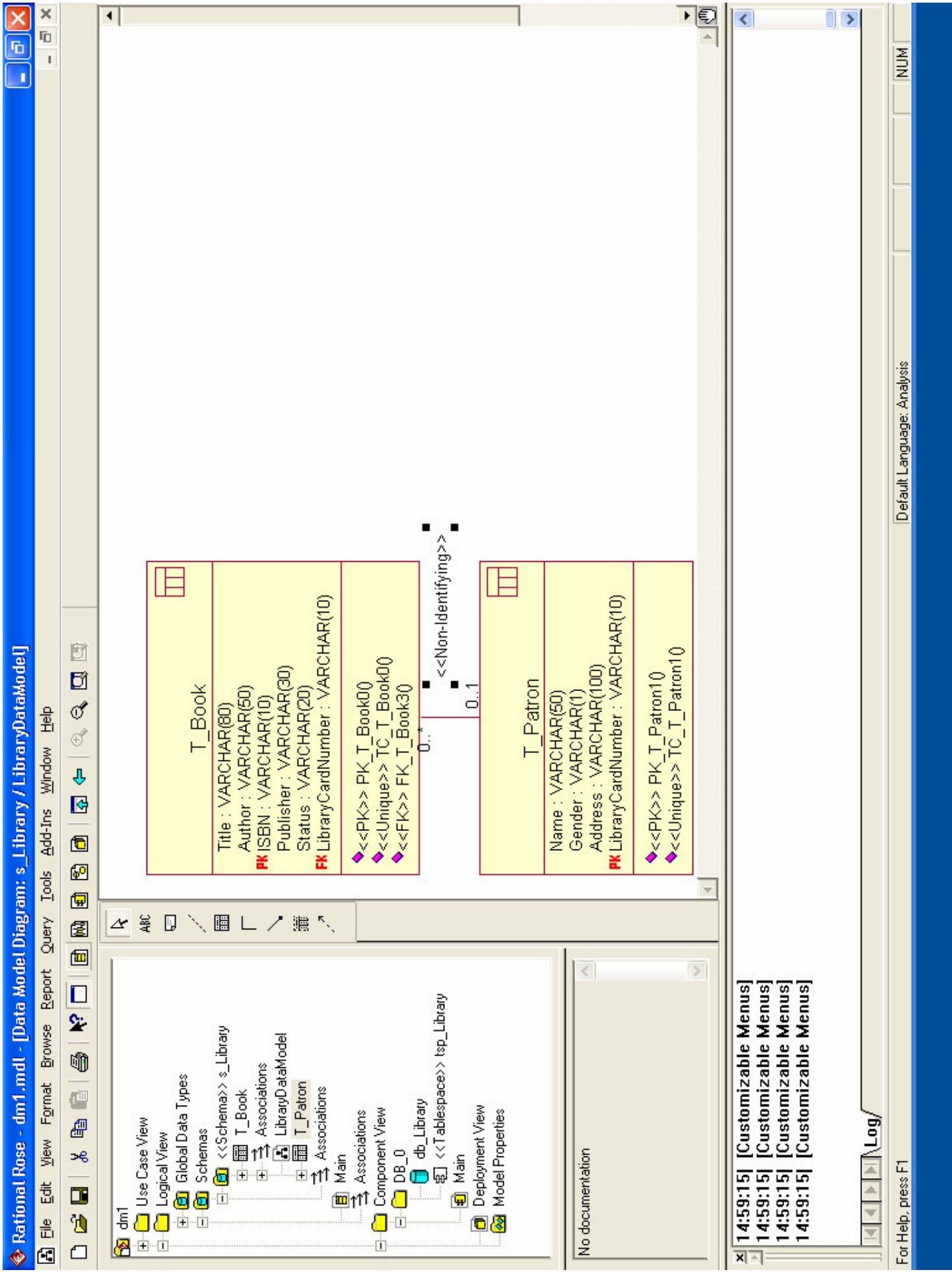
Role:

Cardinality: 0..n

Comment:

OK Cancel Apply Help

Click *OK*



Types of Diagrams

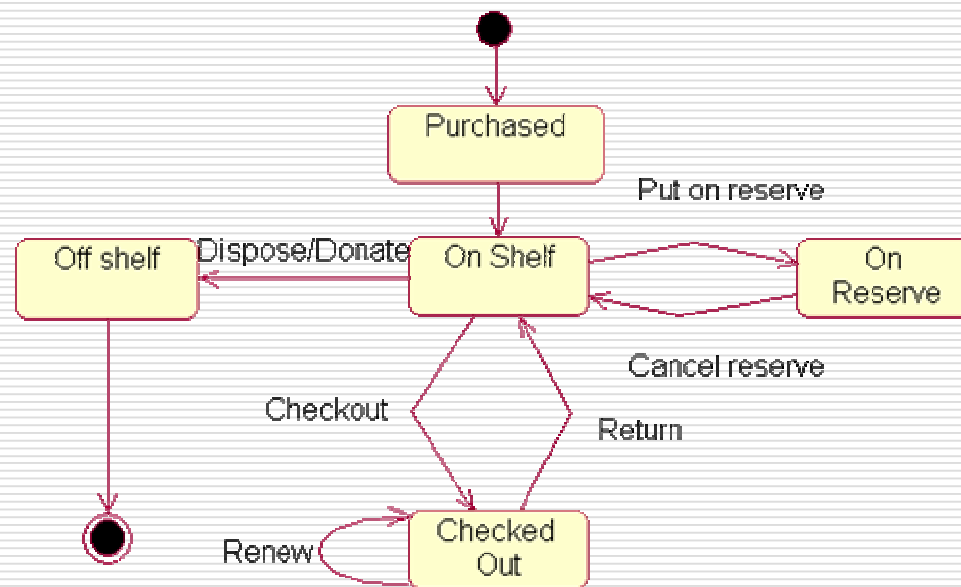
- ☐ Use Case Diagram
 - ☐ Class Diagram
 - ☐ Data Model Diagram
 - ☐ State Machine Diagram
 - ☐ Interaction Diagram
 - ☐ Component Diagram
 - ☐ Deployment Diagram
-

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
-

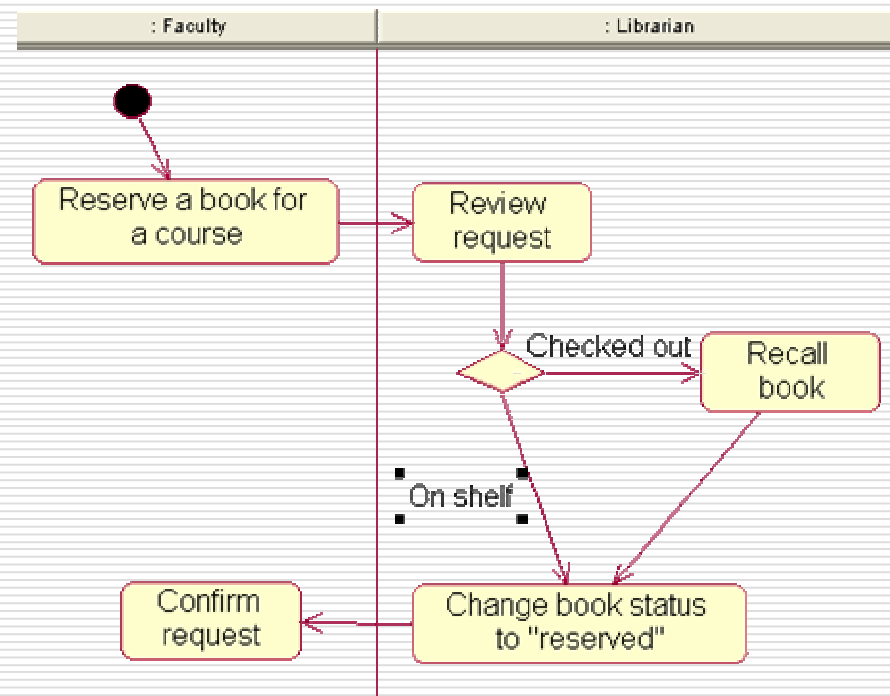
Statechart Diagram

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



Activity Diagram

- ❑ Shows the workflow of a specific task

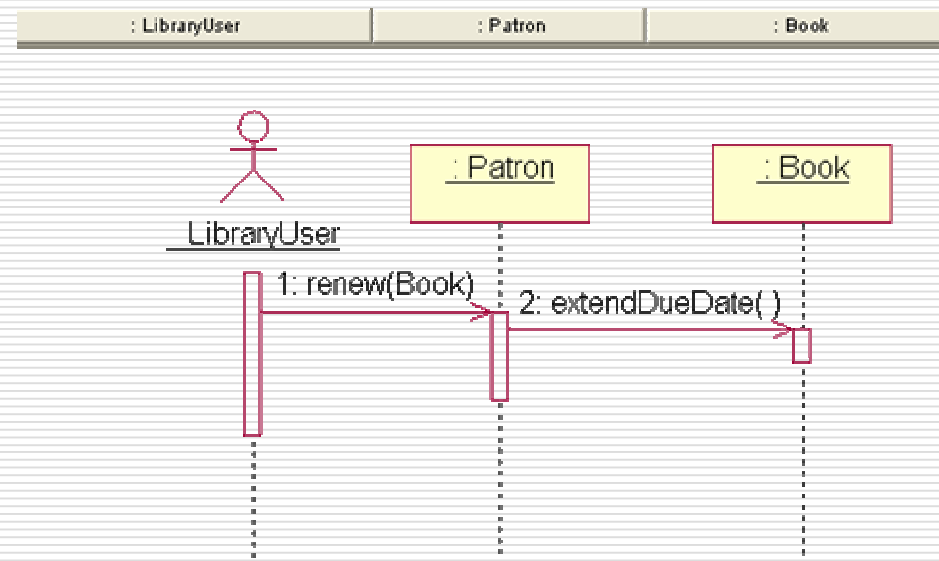


Interaction Diagram

- ☐ 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
-

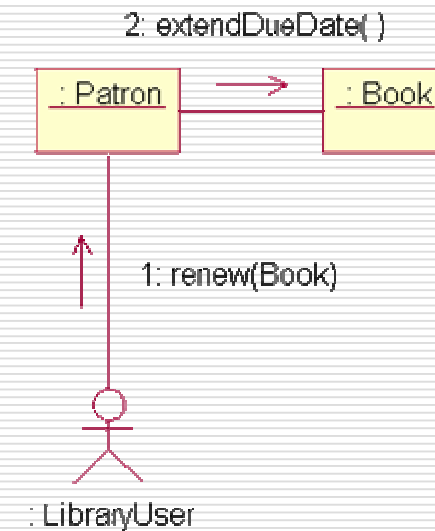
Sequence Diagram

- ❑ 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

