

Database System Labs - E/R Model and Practical

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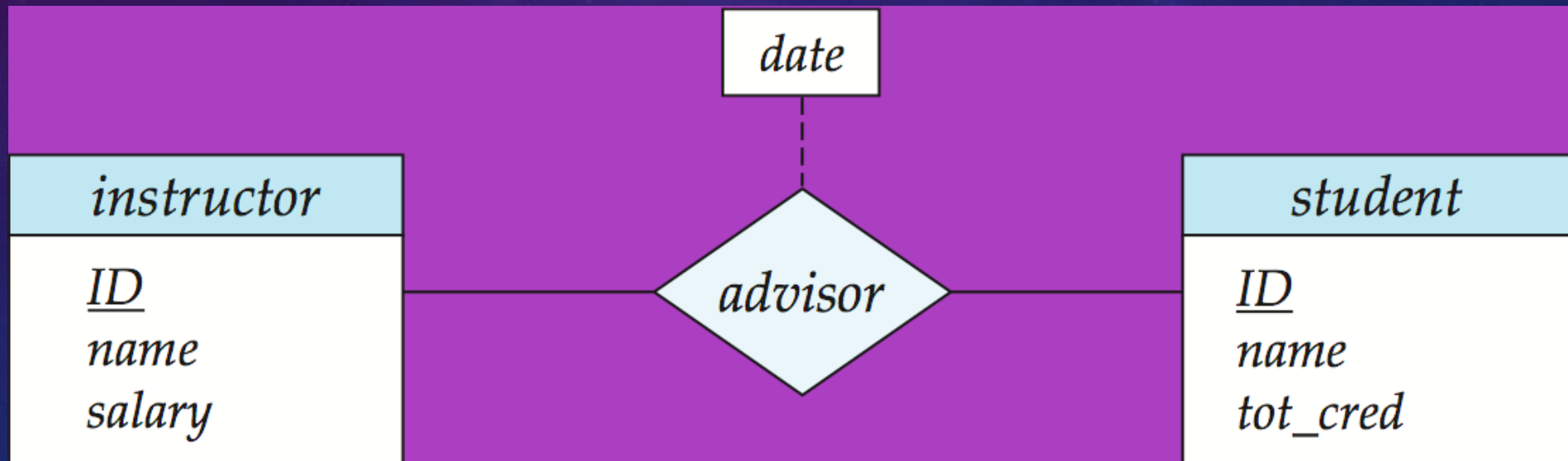
NANKAI UNIVERSITY

OBJECTIVES

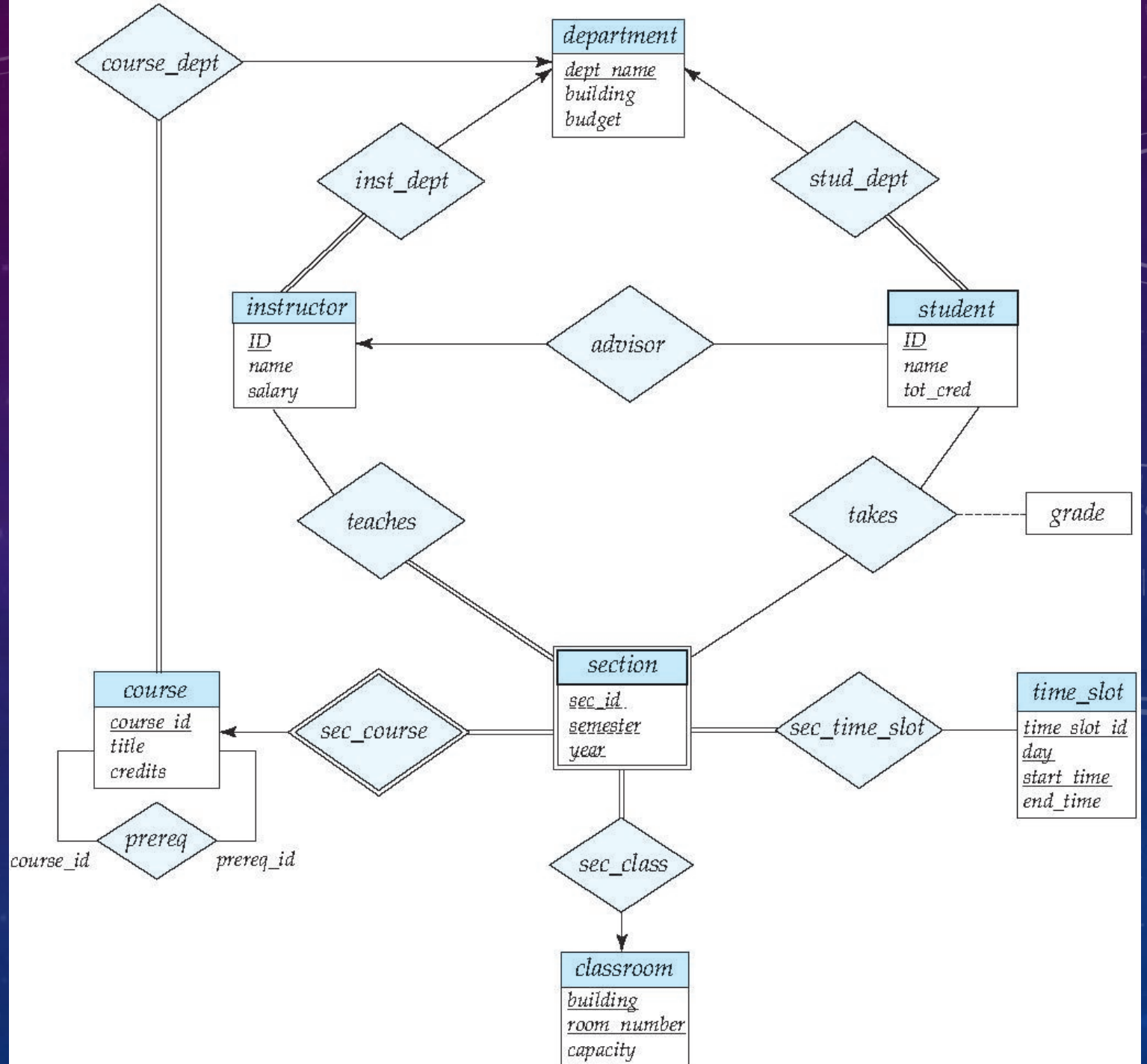
- E-R Model and Diagram
- E-R Tools
- Task

E-R MODEL

- The ER model also has an associated diagrammatic representation, the ER diagram, which can express the overall logical structure of a database graphically.



E-R DIAGRAM FOR A UNIVERSITY ENTERPRISE



E-R TOOLS

- Eclipse ERD
 - <http://eclipse-erd.sourceforge.net/>
- (MS) Viso
- PowerDesigner
- MySQL Workbench

E-R DIAGRAM IN MYSQL WORKBENCH



Navigator

Tables

 Views

Routledge Groups

► dblabtest

Catalog	Layers	User Types
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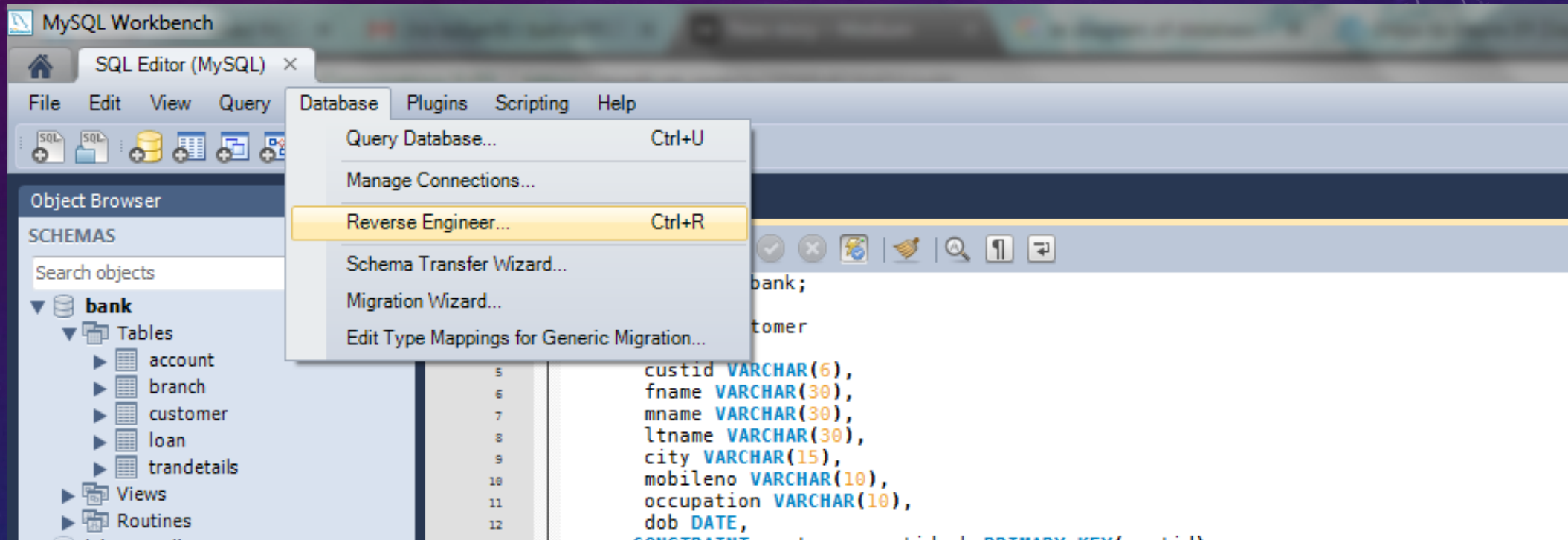
No selection

Description	Properties	History
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E-R DIAGRAM IN MYSQL WORKBENCH

- Reverse Engineer 逆向工程
- Forward Engineer 前向工程

REVERSE ENGINEER



REVERSE ENGINEER

Reverse Engineer Database

Connection Options

- Connect to DBMS
- Select Schemata
- Fetch Object Info
- Select Objects
- Reverse Engineer
- Results

Set Parameters for Connecting to a DBMS

Stored Connection: MySQL Select from saved connection settings

Connection Method: Standard (TCP/IP) Method to use to connect to the RDBMS

Parameters Advanced

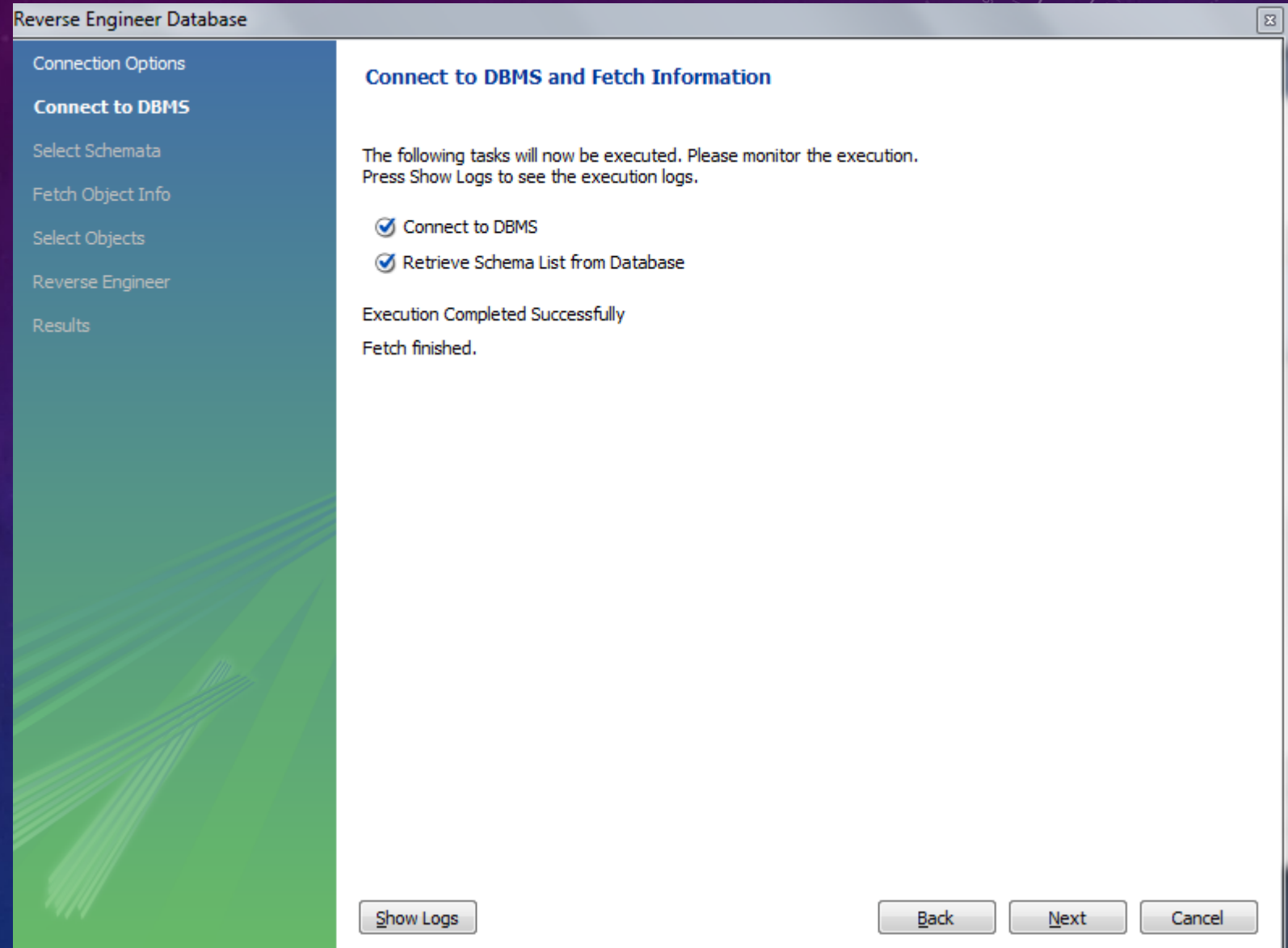
Hostname: 127.0.0.1 Port: 3306 Name or IP address of the server host. - TCP/IP p

Username: root Name of the user to connect with.

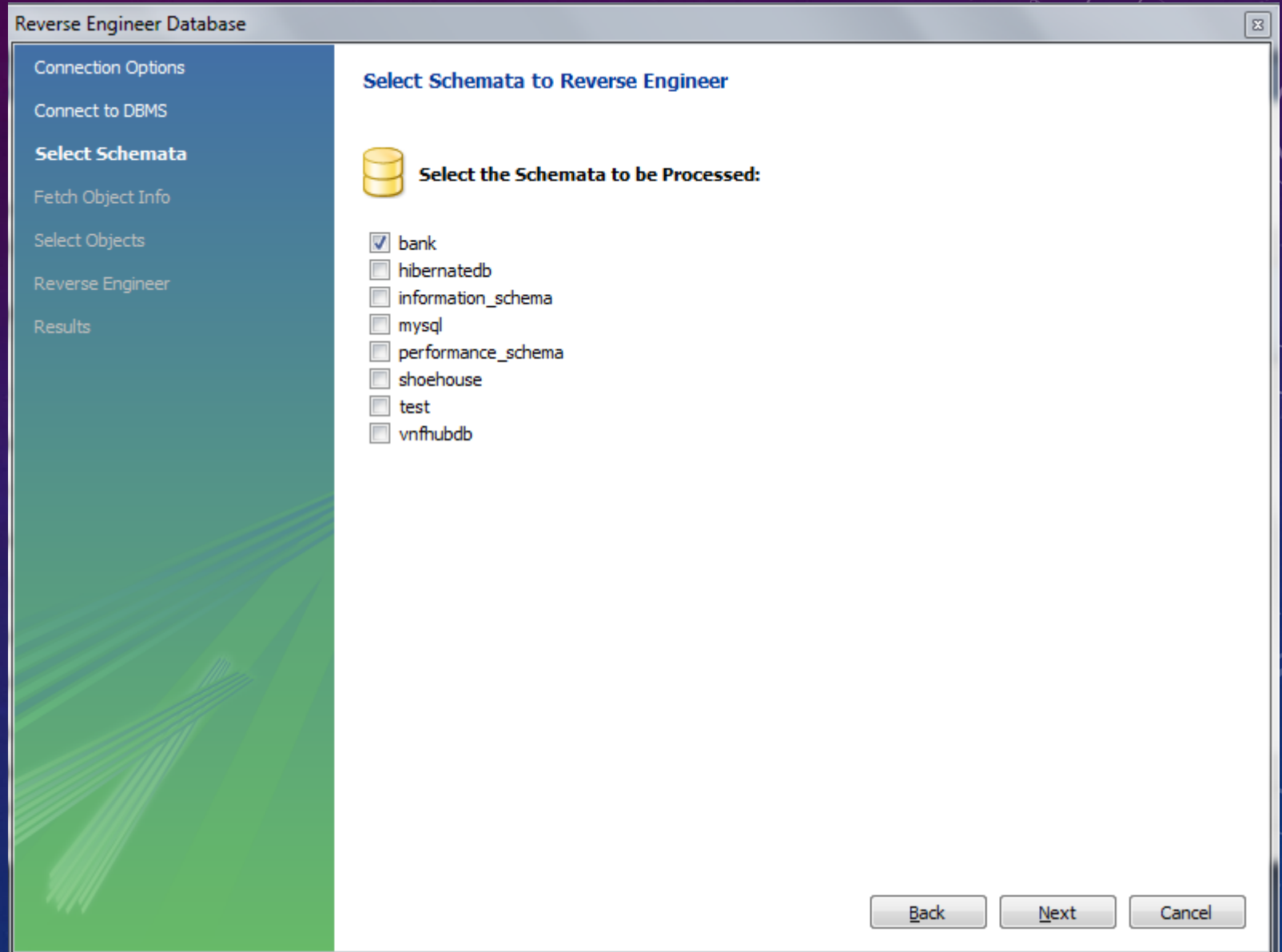
Password: Store in Vault ... Clear The user's password. Will be requested later if it's

Back Next Cancel

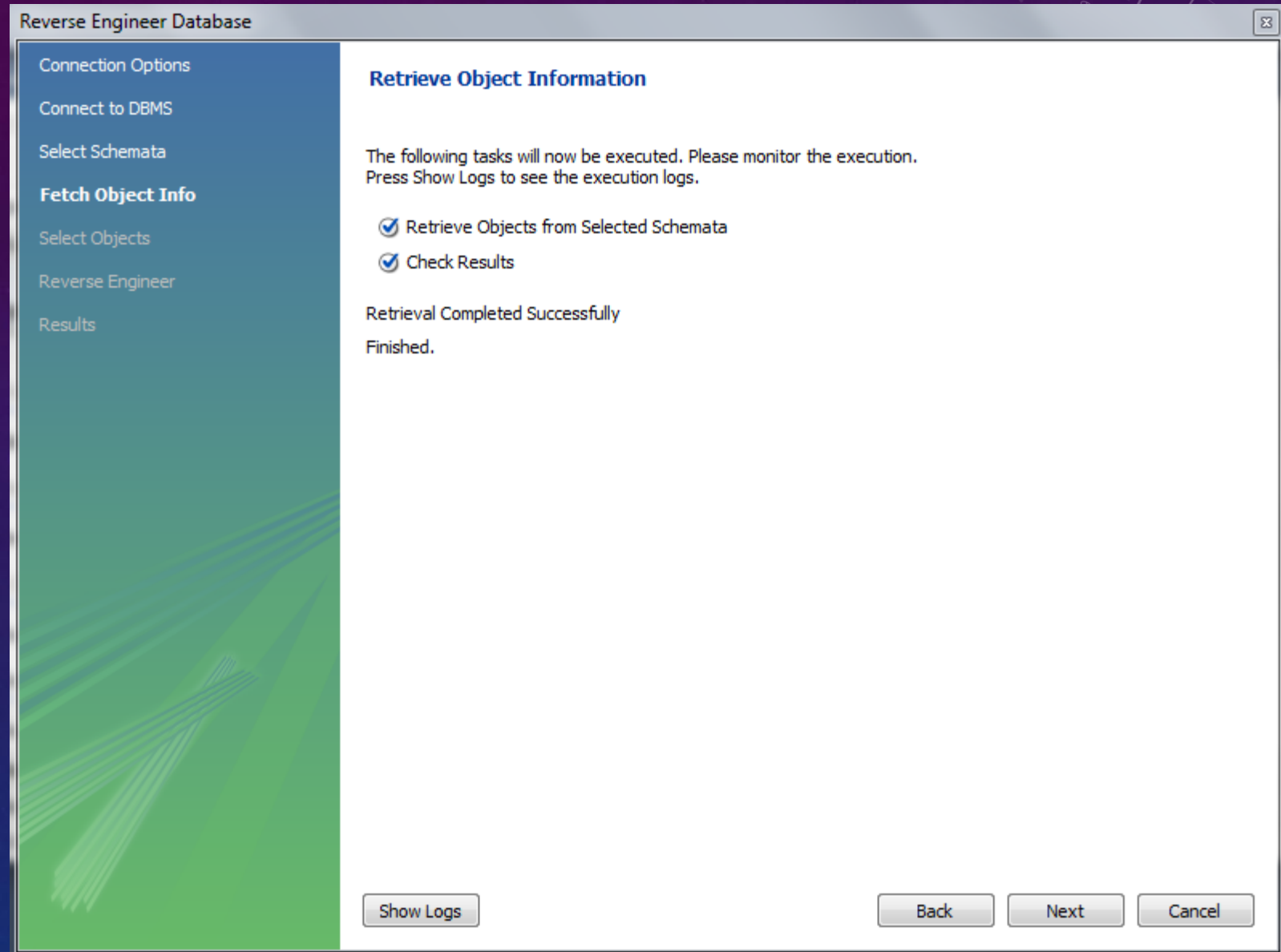
REVERSE ENGINEER



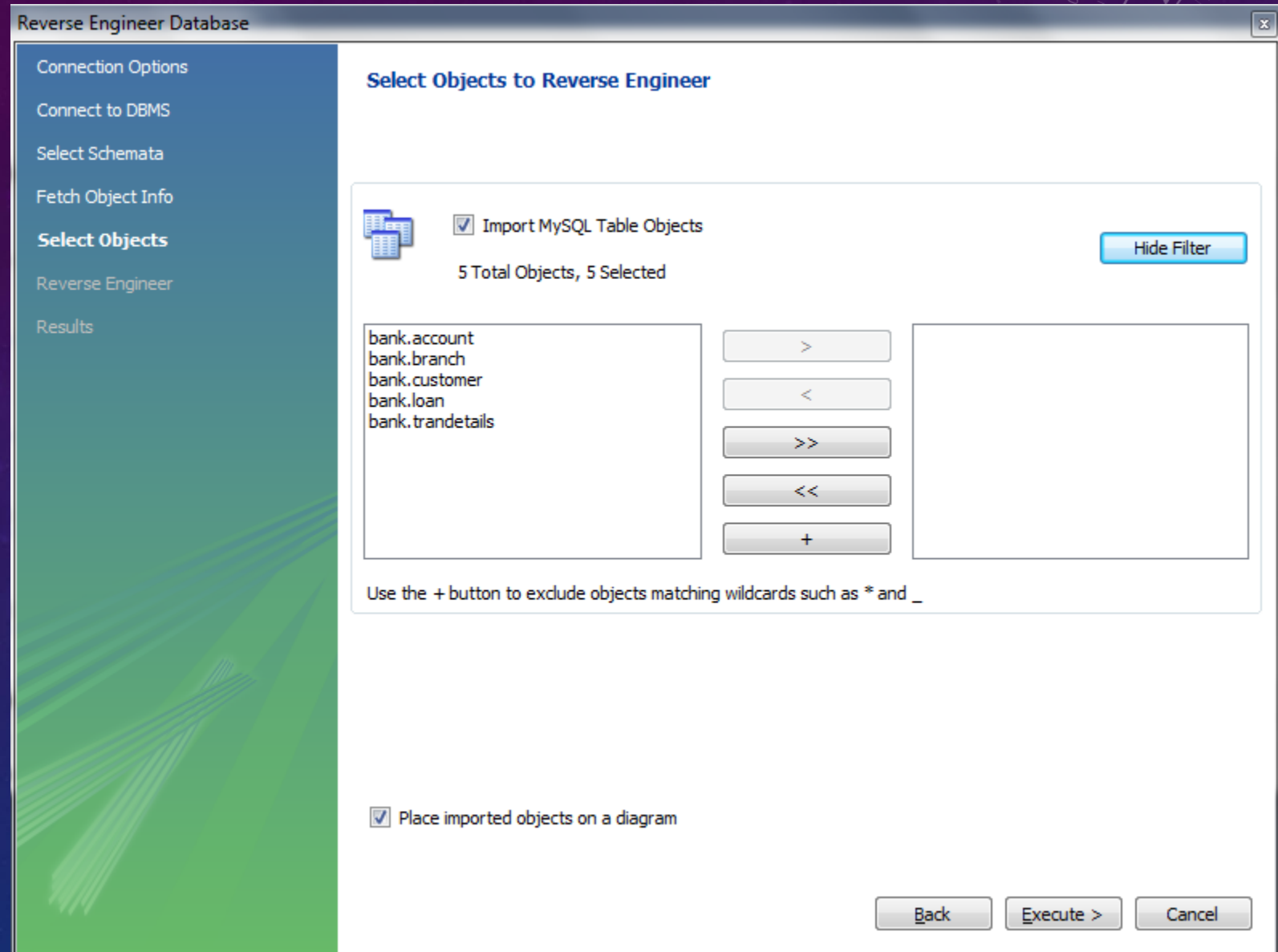
REVERSE ENGINEER



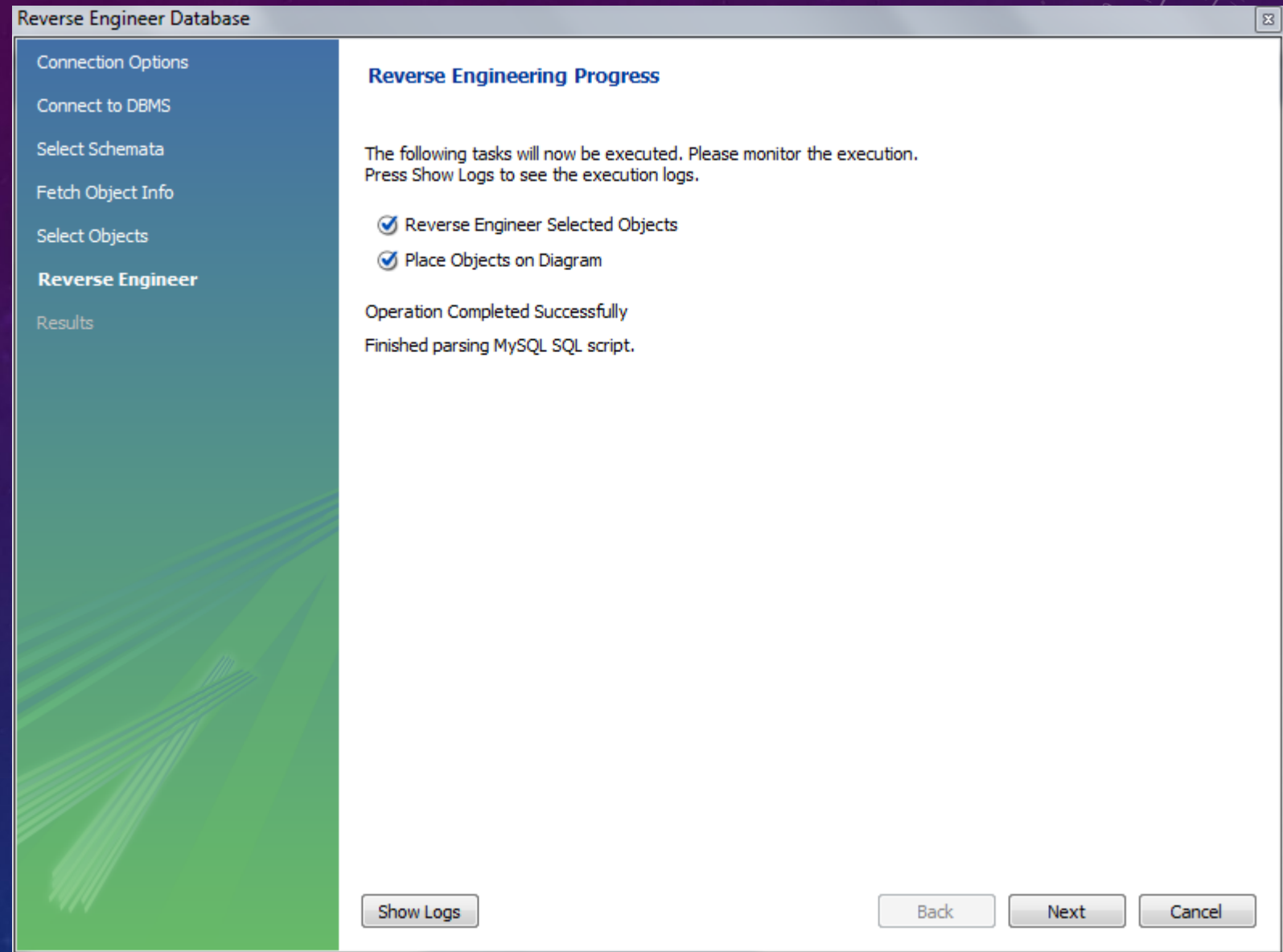
REVERSE ENGINEER



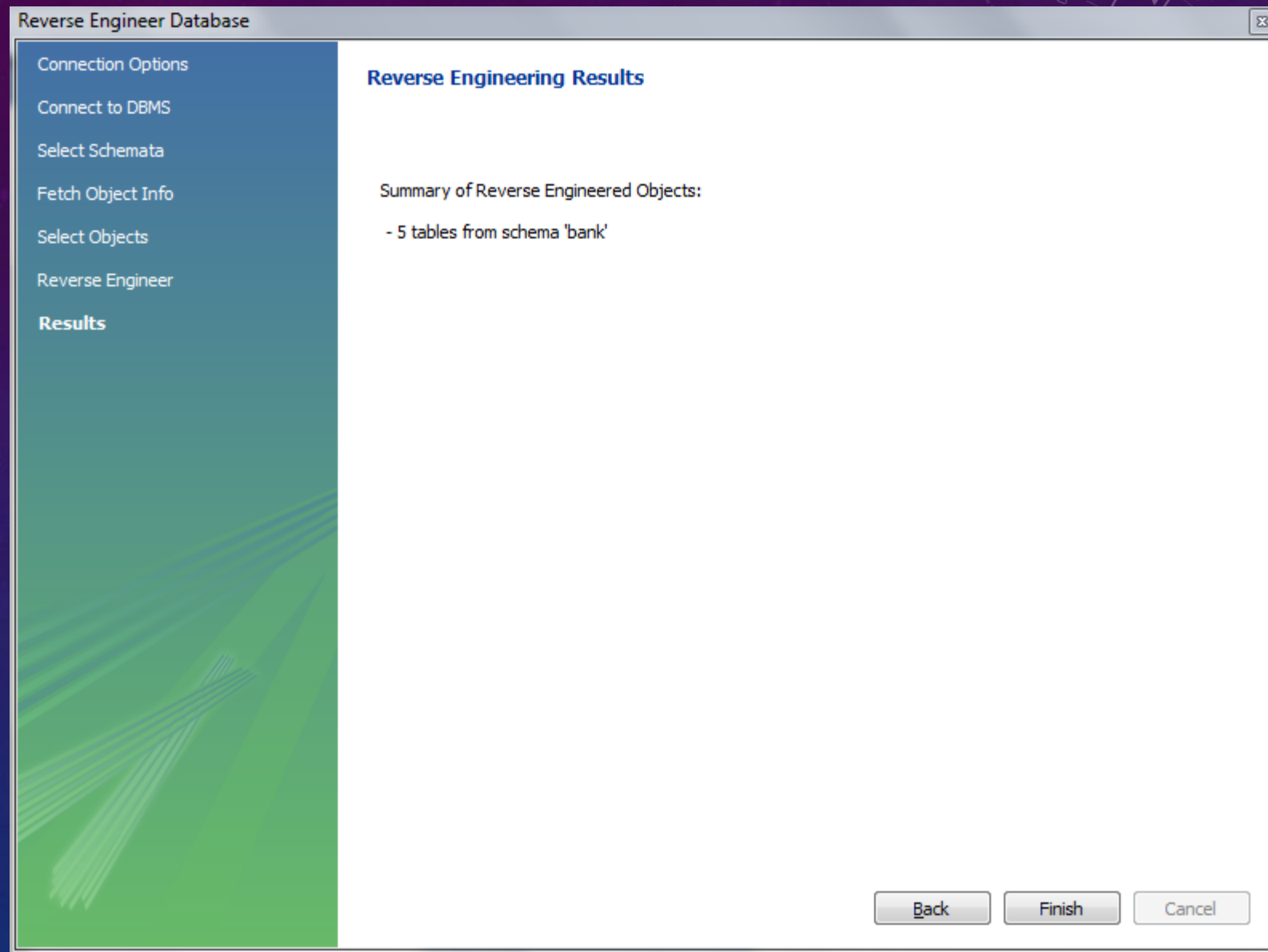
REVERSE ENGINEER

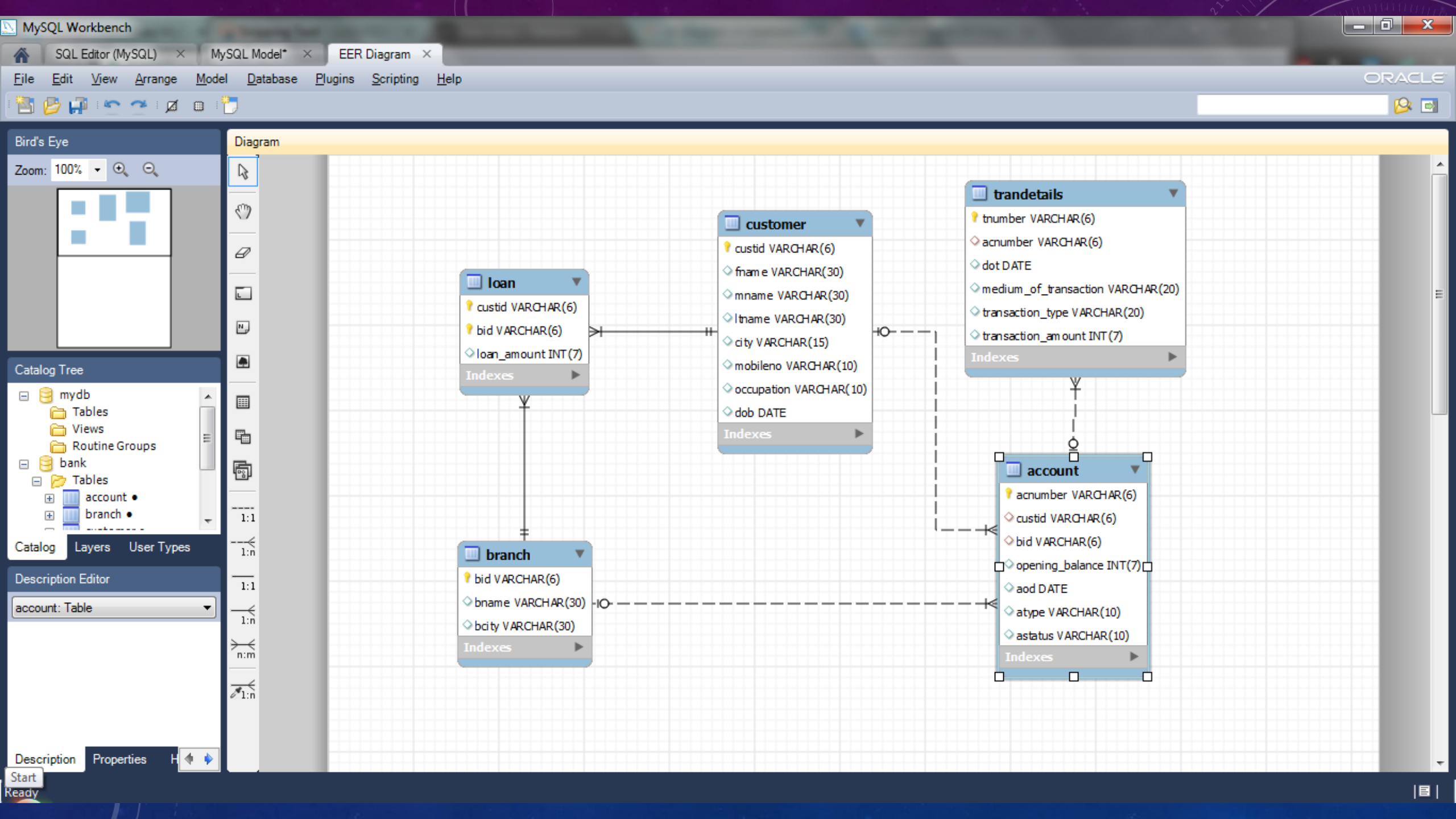


REVERSE ENGINEER

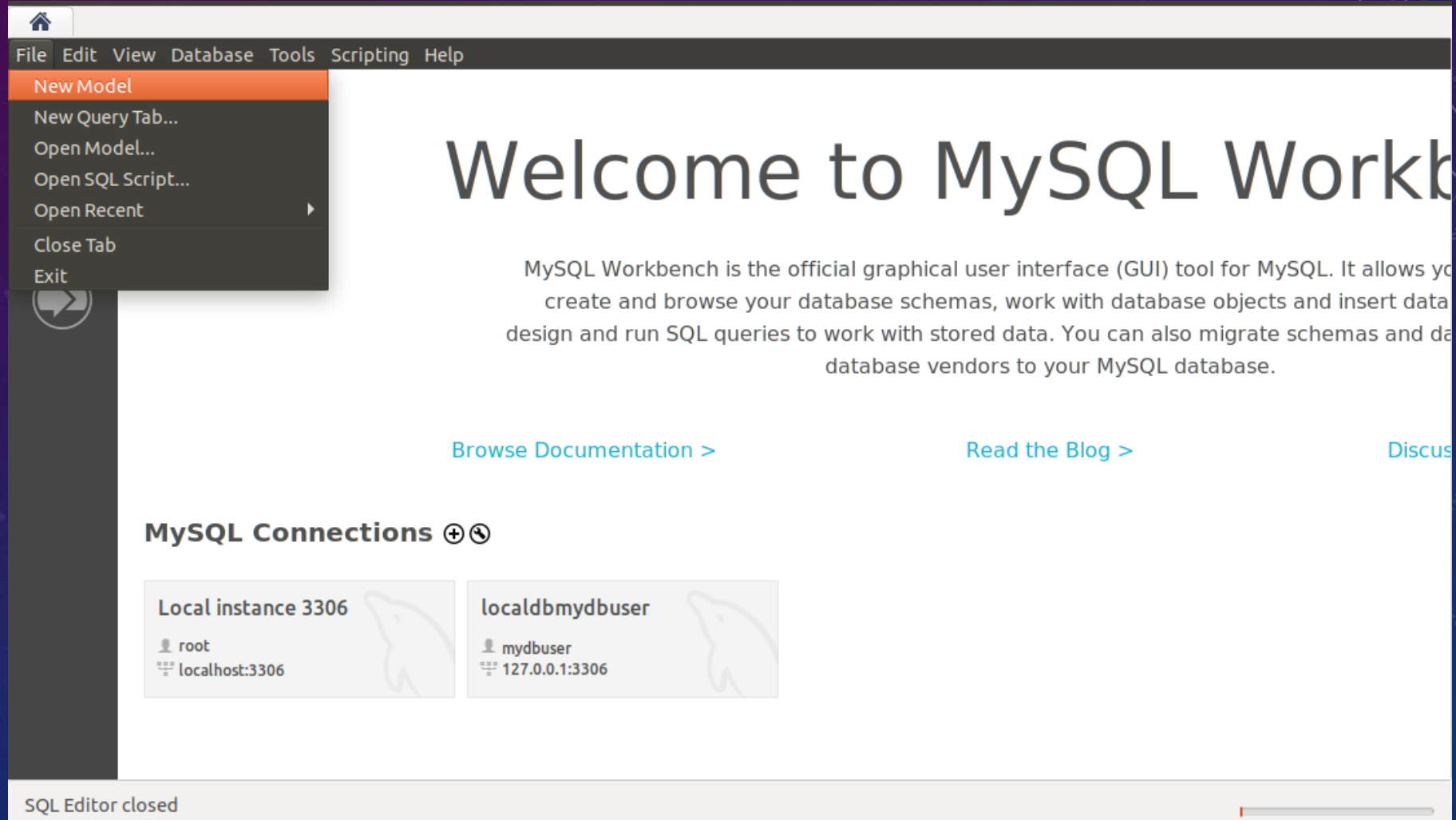


REVERSE ENGINEER

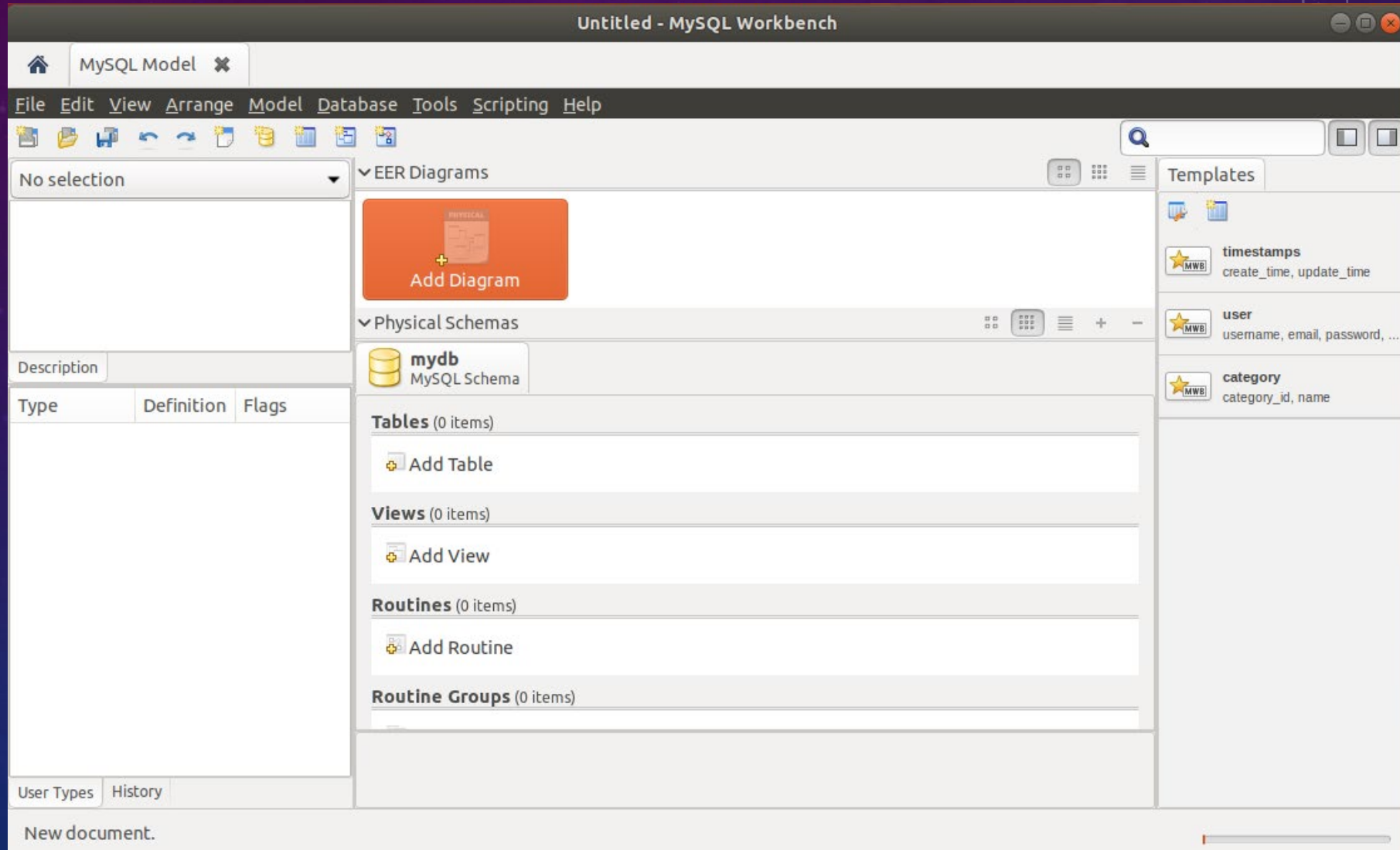




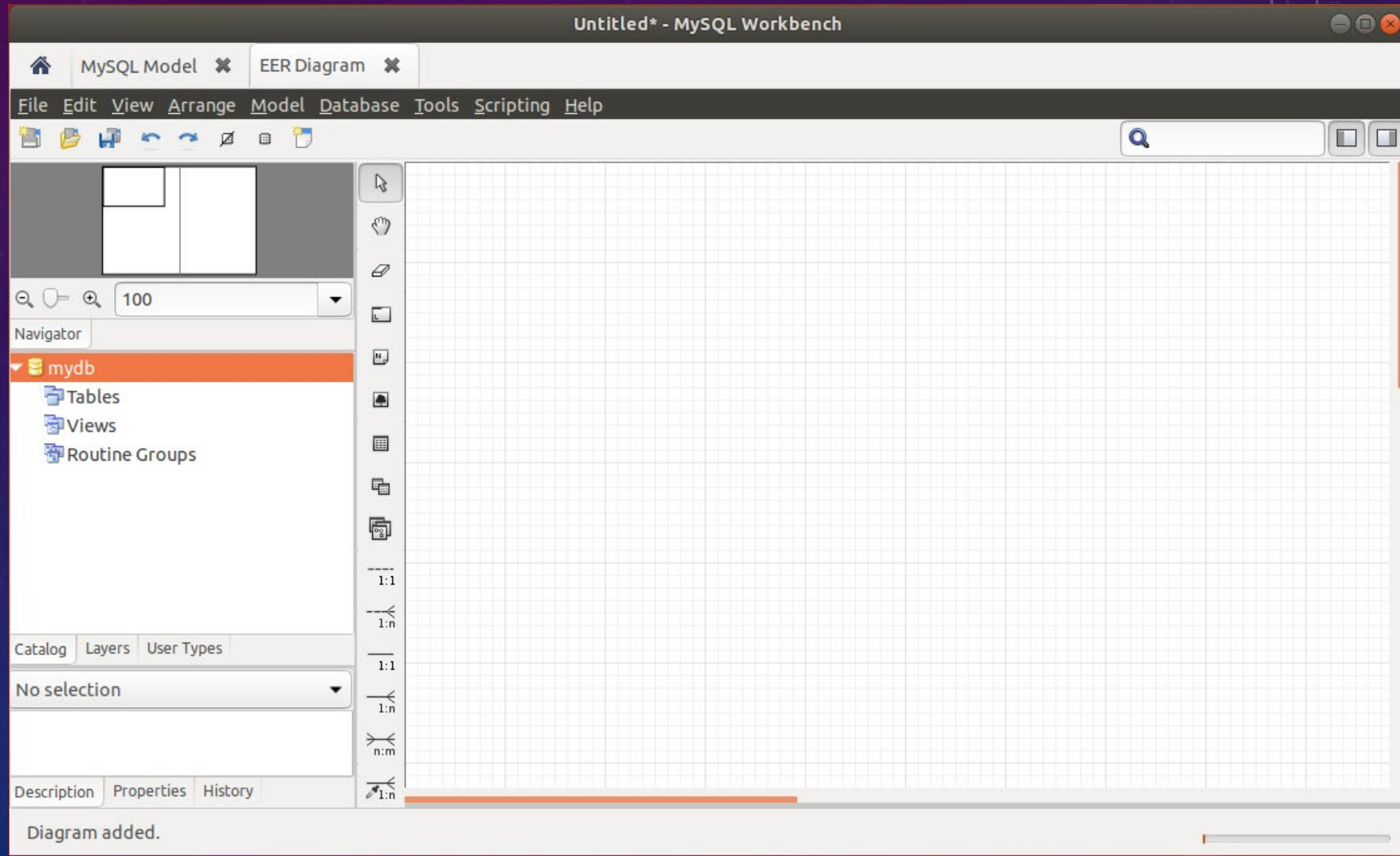
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



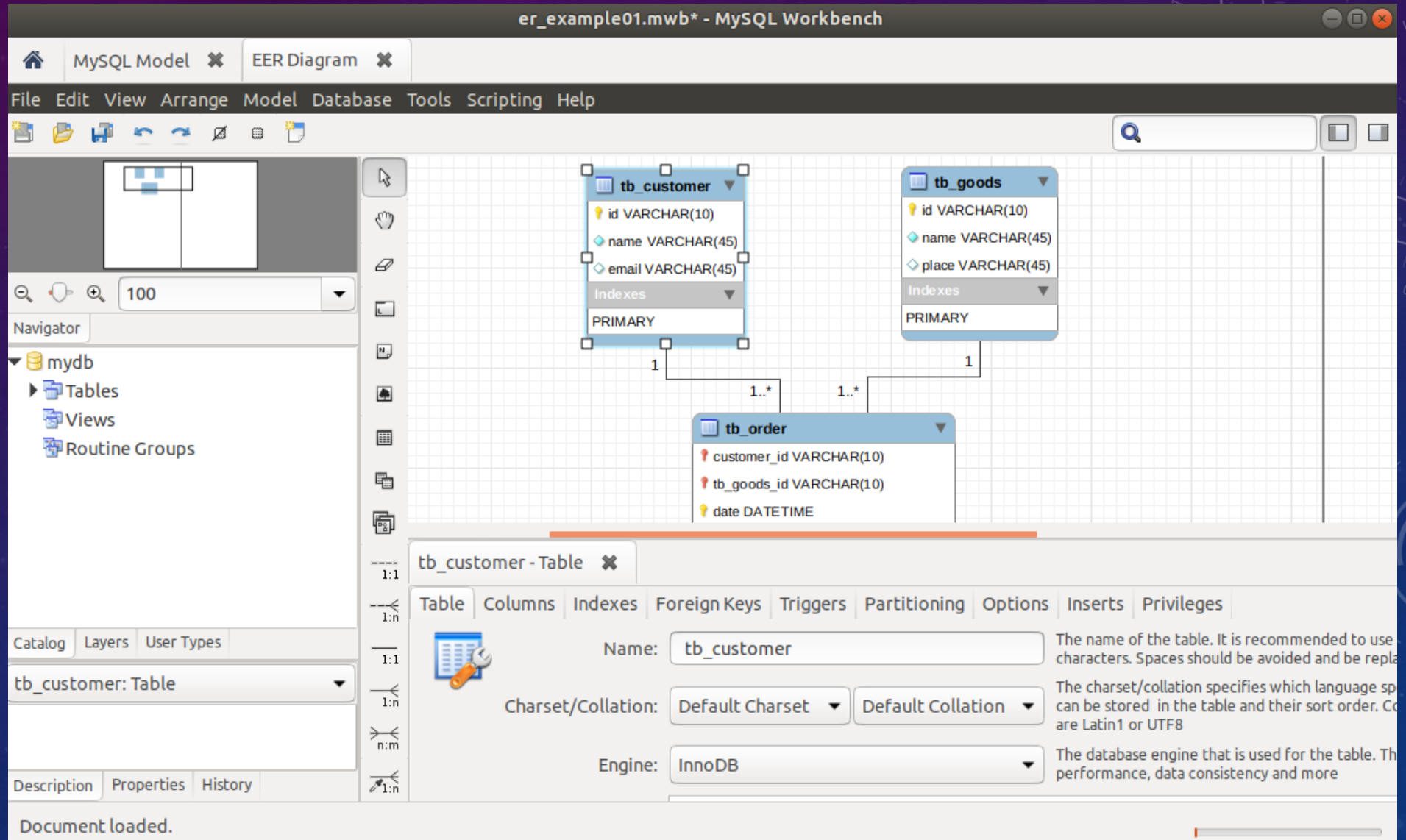
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



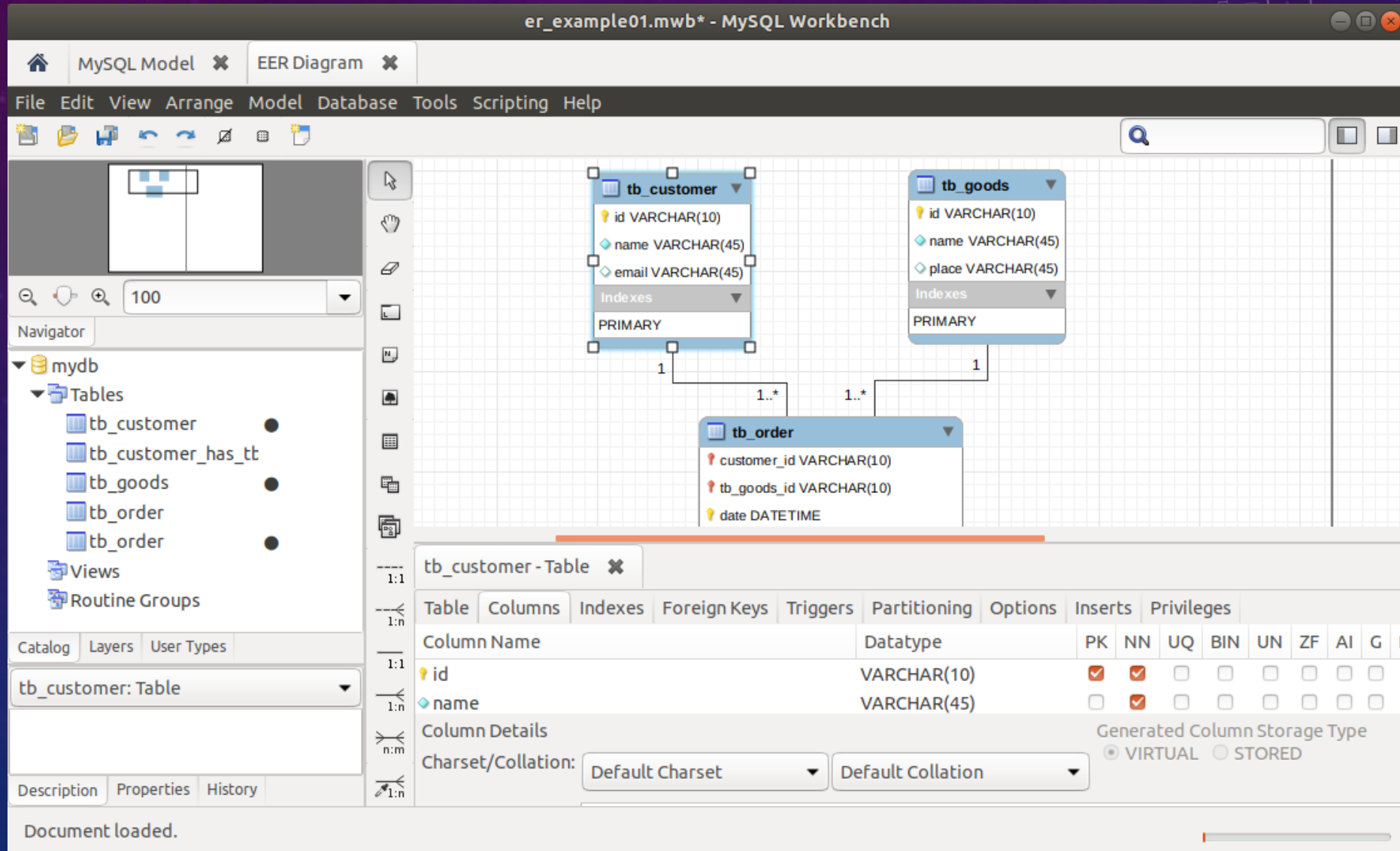
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH

The screenshot shows the MySQL Workbench interface with the 'EER Diagram' tab selected. The 'Add Diagram' menu is open, showing options like 'Create Diagram from Catalog Objects', 'User Defined Types...', 'Table Templates...', 'Object Notation', 'Relationship Notation', 'Diagram Properties and Size...', and 'Model Options...'. The diagram area shows three tables: 'tb_customer', 'tb_goods', and 'tb_order'. 'tb_customer' has columns 'id' (VARCHAR(10)), 'name' (VARCHAR(45)), and 'place' (VARCHAR(45)). 'tb_goods' has columns 'id' (VARCHAR(10)), 'name' (VARCHAR(45)), and 'place' (VARCHAR(45)). 'tb_order' has columns 'customer_id' (VARCHAR(10)), 'tb_goods_id' (VARCHAR(10)), and 'date' (DATETIME). Relationships are shown between 'tb_customer' and 'tb_order' (1..*), and between 'tb_goods' and 'tb_order' (1..*). The 'tb_customer' table is selected, and the 'Columns' tab is active, showing the column details for 'id' and 'name'.

er_example01.mwb* - MySQL Workbench

MySQL Model x EER Diagram x

File Edit View Arrange Model Database Tools Scripting Help

Add Diagram

- Create Diagram from Catalog Objects
- User Defined Types...
- Table Templates...
- Object Notation
- Relationship Notation
- Diagram Properties and Size...
- Model Options...

Navigator

- mydb
 - Tables
 - tb_customer
 - tb_customer_has_tt
 - tb_goods
 - tb_order
 - tb_order
 - Views
 - Routine Groups

tb_customer - Table x

Table	Columns	Indexes	Foreign Keys	Triggers	Partitioning	Options	Inserts	Privileges																															
tb_customer	<table border="1"><thead><tr><th>Column Name</th><th>Datatype</th><th>PK</th><th>NN</th><th>UQ</th><th>BIN</th><th>UN</th><th>ZF</th><th>AI</th><th>G</th></tr></thead><tbody><tr><td>id</td><td>VARCHAR(10)</td><td><input checked="" type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>name</td><td>VARCHAR(45)</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></tbody></table>	Column Name	Datatype	PK	NN	UQ	BIN	UN	ZF	AI	G	id	VARCHAR(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	name	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
Column Name	Datatype	PK	NN	UQ	BIN	UN	ZF	AI	G																														
id	VARCHAR(10)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																														
name	VARCHAR(45)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																														

Column Details

Charset/Collation: Default Charset Default Collation

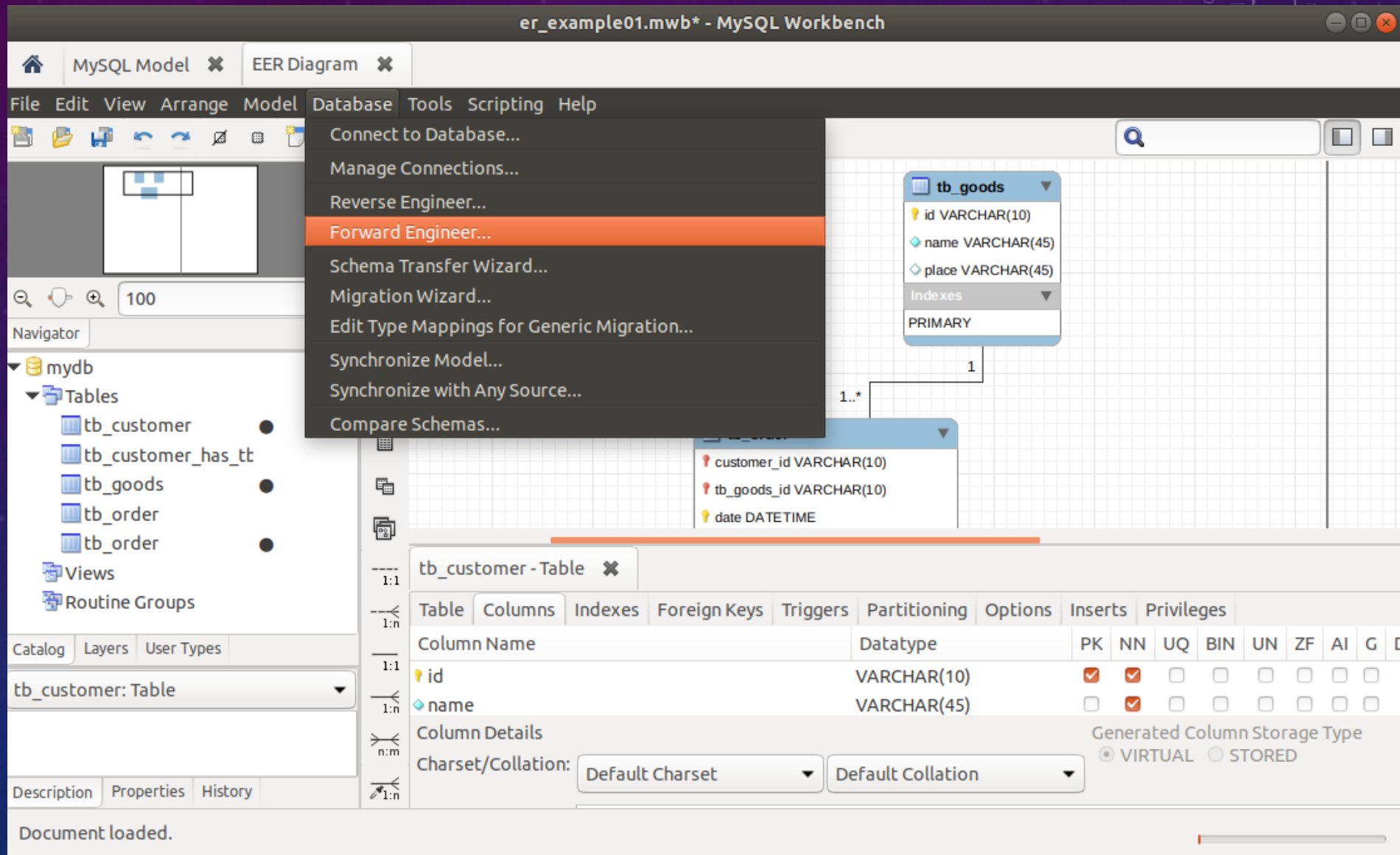
Generated Column Storage Type

☒ VIRTUAL ☐ STORED

Description Properties History

Document loaded.

CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



Forward Engineer to Database

- Connection Options
- Options
- Select Objects
- Review SQL Script
- Commit Progress

Set Parameters for Connecting to a DBMS

Stored Connection:

localdbmydbuser

Select from saved connection settings

Connection Method:

Standard (TCP/IP)

Method to use to connect to the RDBMS

Parameters

SSL

Advanced

Hostname:

127.0.0.1

Port:

3306

Name or IP address of the server host - and TCP/IP port.

Username:

mydbuser

Name of the user to connect with.

Password:

Store in Keychain ...

Clear

The user's password. Will be requested later if it's not set.

Default Schema:

The schema to use as default schema. Leave blank to select it later.

Cancel

Back

Next

Forward Engineer to Database

- Connection Options
- Options
- Select Objects
- Review SQL Script
- Commit Progress

Set Options for Database to be Created

Tables

- ☐ Skip creation of FOREIGN KEYS
- ☐ Skip creation of FK Indexes as well
- ☐ Generate separate CREATE INDEX statements
- ☐ Generate INSERT statements for tables
- ☐ Disable FK checks for INSERTs

Other Objects

- ☐ Don't create view placeholder tables
- ☐ Do not create users. Only create privileges (GRANTS)

Code Generation

- ☐ DROP objects before each CREATE object
- ☐ Generate DROP SCHEMA
- ☐ Omit schema qualifier in object names
- ☐ Generate USE statements
- ☐ Add SHOW WARNINGS after every DDL statement
- ☒ Include model attached scripts

Cancel

Back

Next

Forward Engineer to Database

- Connection Options
- Options
- Select Objects
- Review SQL Script
- Commit Progress

Select Objects to Forward Engineer

To exclude objects of a specific type from the SQL Export, disable the corresponding checkbox. Press Show Filter and add objects or patterns to the ignore list to exclude them from the export.



☒ Export MySQL Table Objects

5 Total Objects, 5 Selected

Show Filter



☐ Export MySQL View Objects

0 Total Objects, 0 Selected

Show Filter



☐ Export MySQL Routine Objects

0 Total Objects, 0 Selected

Show Filter

☐ Export MySQL Trigger Objects

0 Total Objects, 0 Selected

Show Filter

☐ Export User Objects

0 Total Objects, 0 Selected

Show Filter

Cancel

Back

Next

- Connection Options
- Options
- Select Objects
- Review SQL Script
- Commit Progress

Review the SQL Script to be Executed

This script will now be executed on the DB server to create your databases.
You may make changes before executing.

```
1  -- MySQL Workbench Forward Engineering
2
3  SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
4  SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
5  SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='ONLY_FULL_GROUP_BY,STRICT_TRANS_TABLES,I
6
7  -----
8  -- Schema mydb
9  -----
10
11 -----
12 -- Schema mydb
13 -----
14 CREATE SCHEMA IF NOT EXISTS `mydb` DEFAULT CHARACTER SET utf8 ;
15 USE `mydb` ;
16
17 -----
18 -- Table `mydb`.`tb_customer`
19 -----
20 CREATE TABLE IF NOT EXISTS `mydb`.`tb_customer` (
21   `id` VARCHAR(10) NOT NULL,
```

Save to File...

Copy to Clipboard

Cancel

< Back

> Next

Forward Engineer to Database

- Connection Options
- Options
- Select Objects
- Review SQL Script
- Commit Progress

Forward Engineering Progress

The following tasks will now be executed. Please monitor the execution. Press Show Logs to see the execution logs.

- ☒ Connect to DBMS
- ☒ Execute Forward Engineered Script
- ☒ Read Back Changes Made by Server
- ☒ Save Synchronization State

Forward Engineer Finished Successfully

Show Logs

Cancel

Back

Close



Navigator

 Tables Views

Routledge Groups

► dblabtest

Catalog	Layers	User Types
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No selection

Description	Properties	History
-------------	------------	---------

LAB

• ?

LAB 1

- 给某商场会员卡业务画出相关实体关系图并生成MySQL数据库脚本
 - 某商场可以为顾客办理会员卡;
 - 每个顾客只能办理一张会员卡;
 - 顾客信息包括顾客姓名、地址、电话、身份证号;
 - 会员卡信息包括号码、等级和积分。
 - 顾客具有多个地址和多个电话号码
 - 地址包括省、市、区、街道;
 - 电话号码包括区号、号码。