DATABASE SYSTEM LABS – E/R MODEL AND PRACTICAL

李旭东

LEEXUDONG@NANKAI.EDU.CN

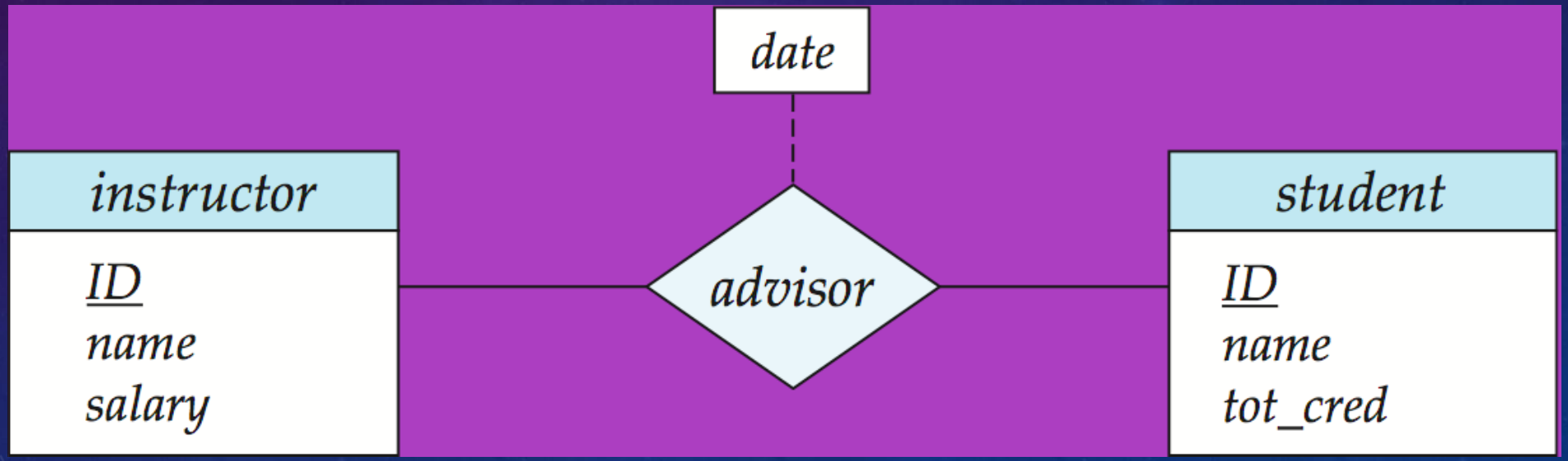
NANKAI UNIVERSITY

OBJECTIVES

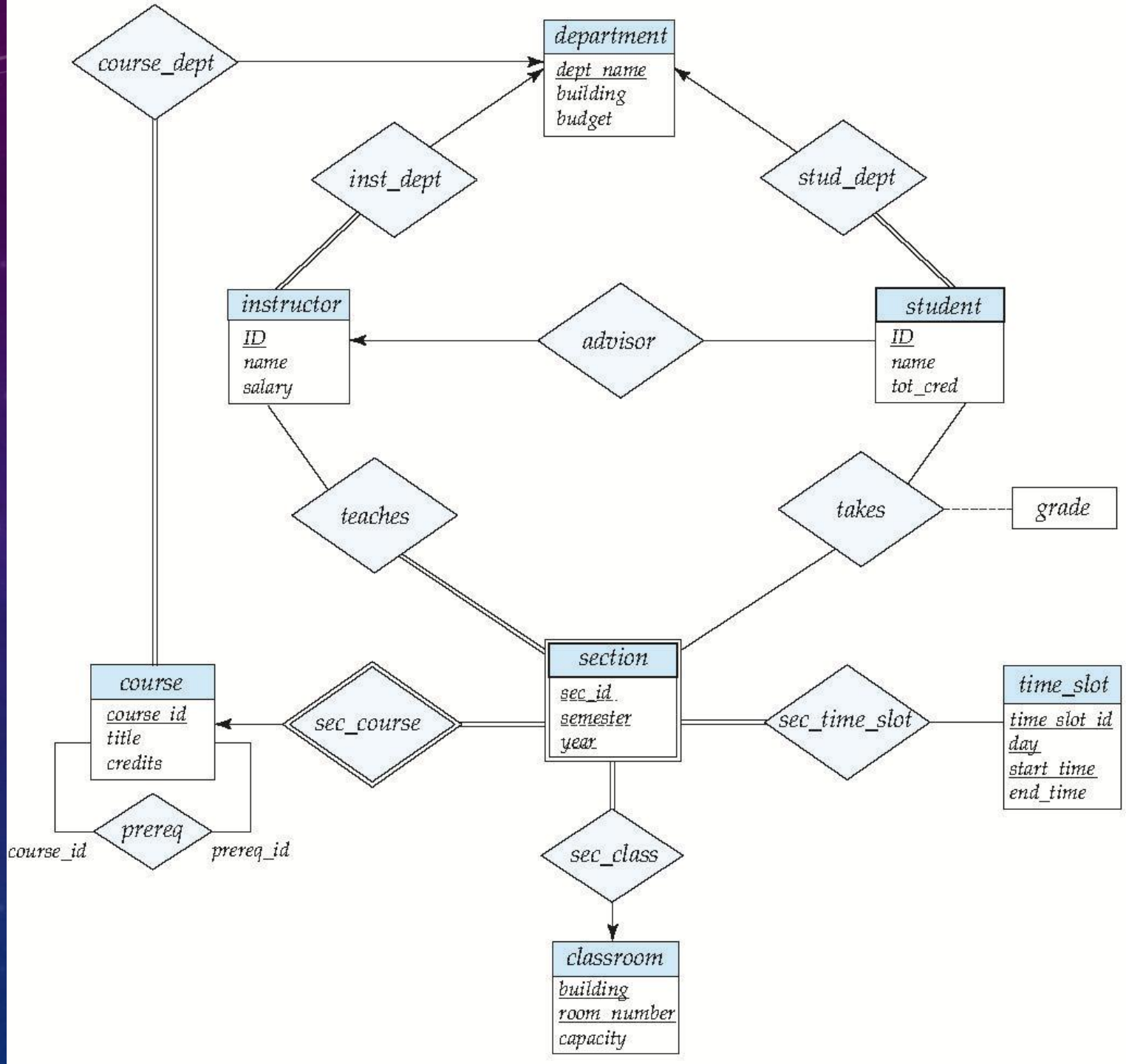
- E-R Model and Diagram
- E-R Tools
- Task

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.



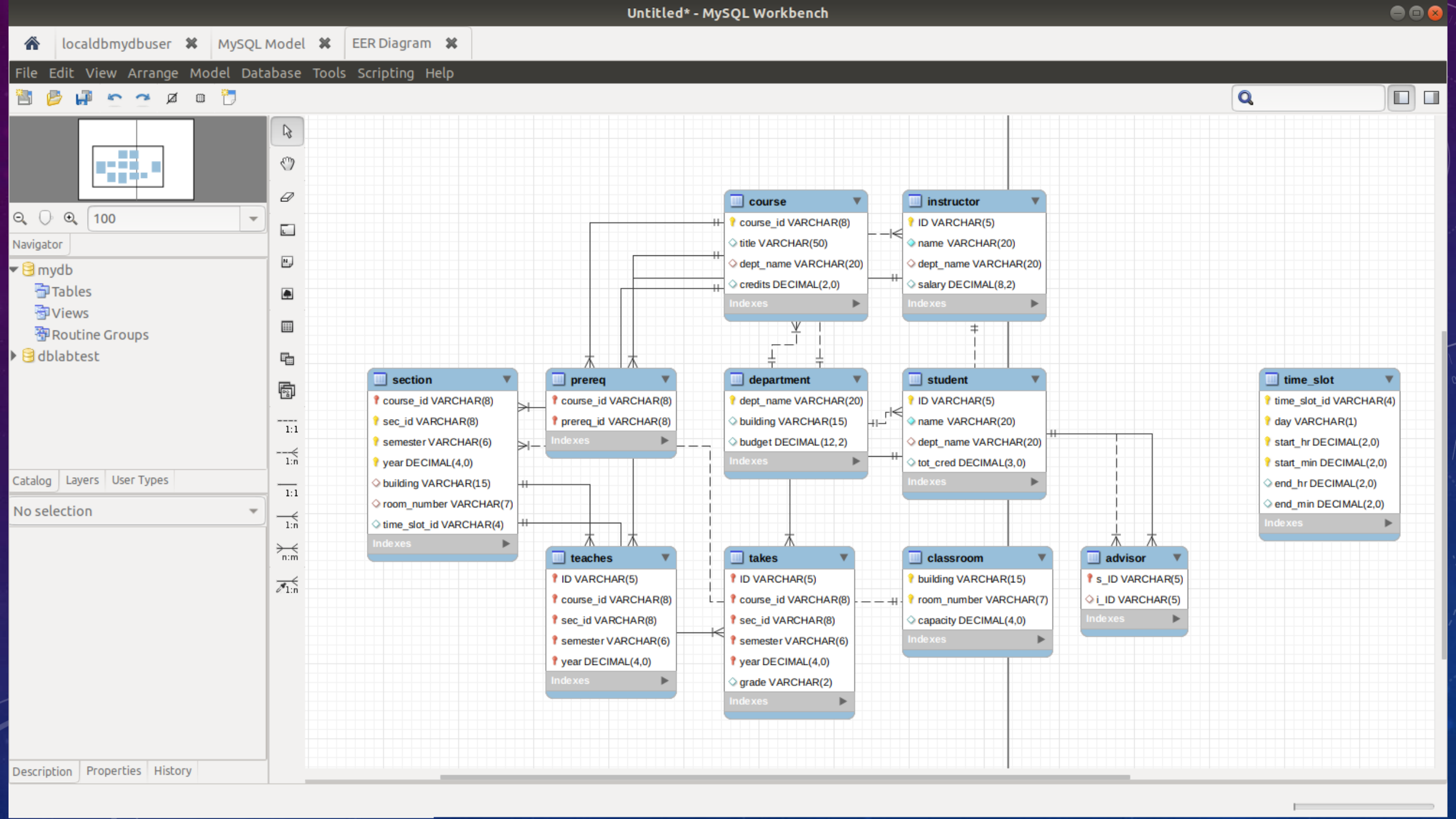
E-R DIAGRAM FOR A UNIVERSITY ENTERPRISE



E-R TOOLS

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

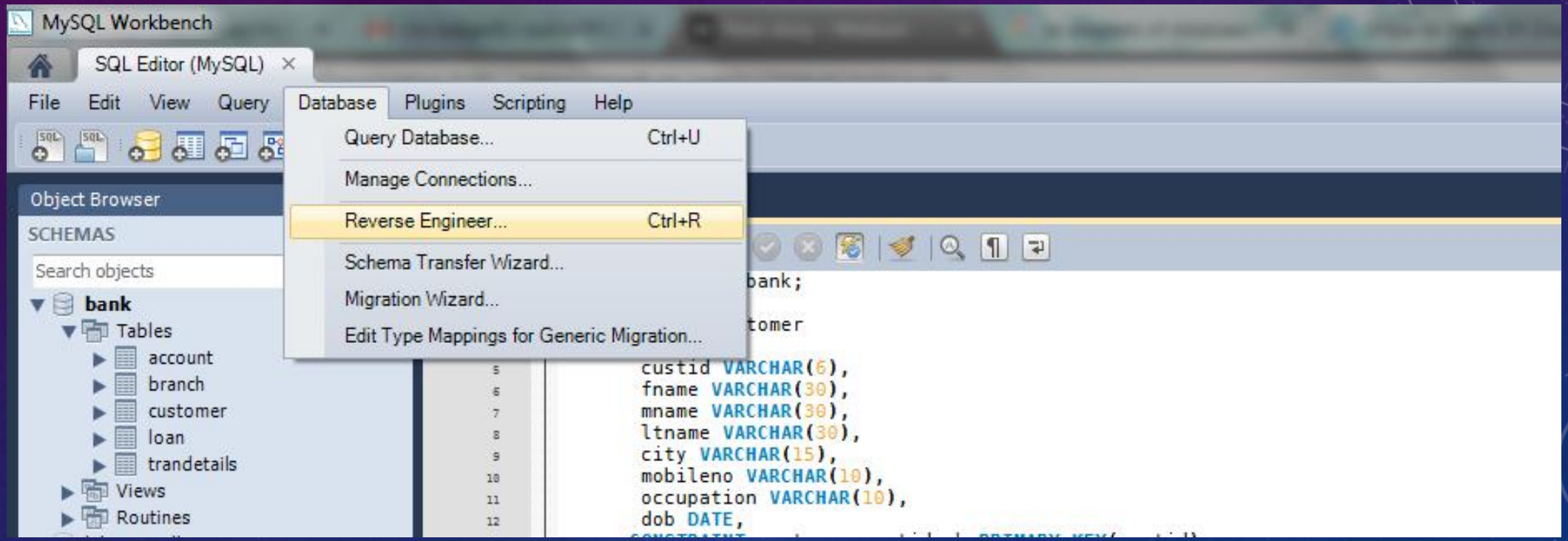
E-R DIAGRAM IN MYSQL WORKBENCH


Untitled* - MySQL Workbench
localdbmydbuser
MySQL Model
EER Diagram
File Edit View Arrange Model Database Tools Scripting Help
Navigator
mydb
Tables
Views
Routine Groups
dblabtest
Catalog Layers User Types
No selection
Description Properties History
course
course_id VARCHAR(8)
title VARCHAR(50)
dept_name VARCHAR(20)
credits DECIMAL(2,0)
Indexes
instructor
ID VARCHAR(5)
name VARCHAR(20)
dept_name VARCHAR(20)
salary DECIMAL(8,2)
Indexes
section
course_id VARCHAR(8)
sec_id VARCHAR(8)
semester VARCHAR(6)
year DECIMAL(4,0)
building VARCHAR(15)
room_number VARCHAR(7)
time_slot_id VARCHAR(4)
Indexes
prereq
course_id VARCHAR(8)
prereq_id VARCHAR(8)
Indexes
department
dept_name VARCHAR(20)
building VARCHAR(15)
budget DECIMAL(12,2)
Indexes
student
ID VARCHAR(5)
name VARCHAR(20)
dept_name VARCHAR(20)
tot_cred DECIMAL(3,0)
Indexes
time_slot
time_slot_id VARCHAR(4)
day VARCHAR(1)
start_hr DECIMAL(2,0)
start_min DECIMAL(2,0)
end_hr DECIMAL(2,0)
end_min DECIMAL(2,0)
Indexes
teaches
ID VARCHAR(5)
course_id VARCHAR(8)
sec_id VARCHAR(8)
semester VARCHAR(6)
year DECIMAL(4,0)
Indexes
takes
ID VARCHAR(5)
course_id VARCHAR(8)
sec_id VARCHAR(8)
semester VARCHAR(6)
year DECIMAL(4,0)
grade VARCHAR(2)
Indexes
classroom
building VARCHAR(15)
room_number VARCHAR(7)
capacity DECIMAL(4,0)
Indexes
advisor
s_ID VARCHAR(5)
i_ID VARCHAR(5)
Indexes

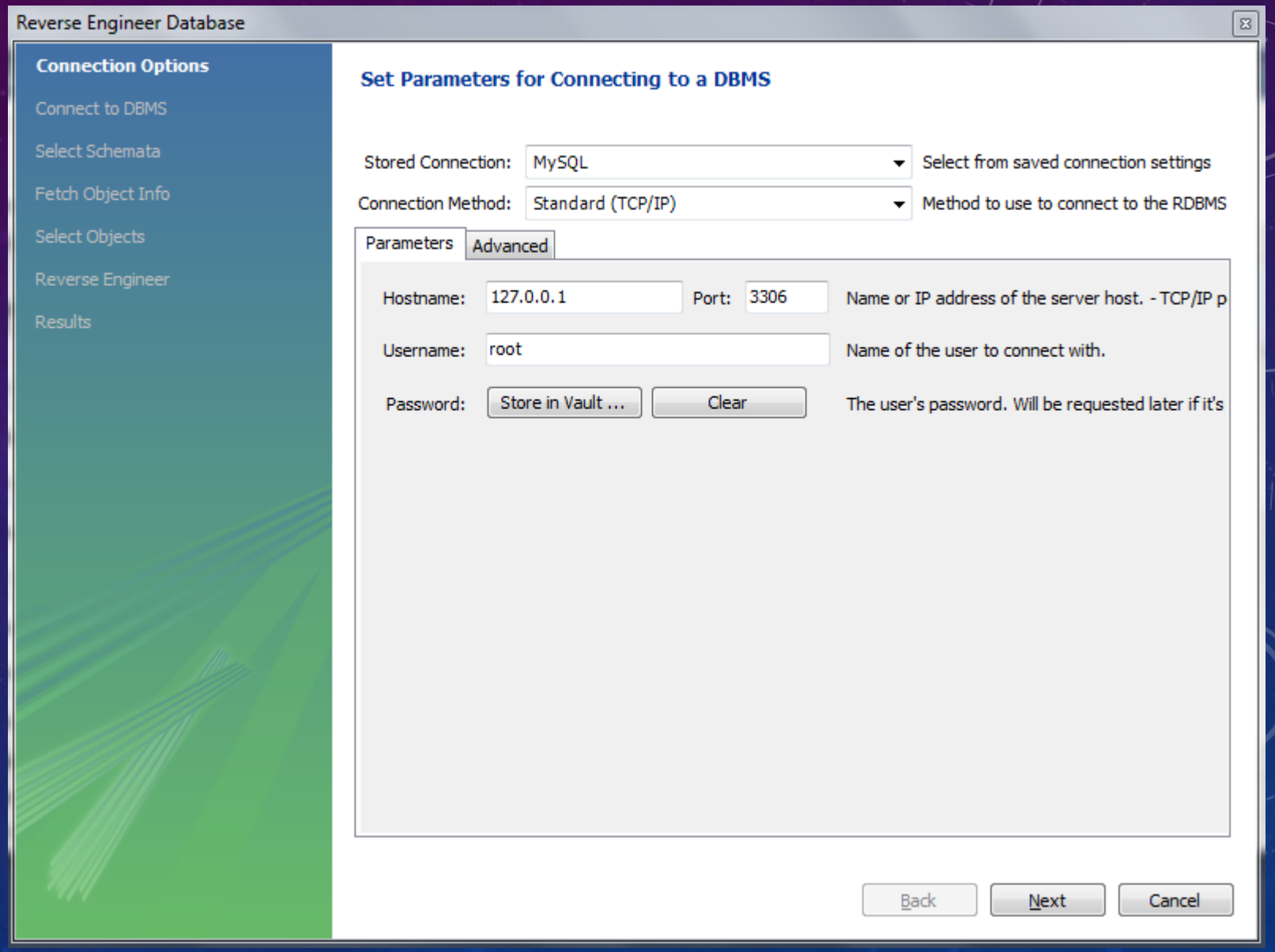
E-R DIAGRAM IN MYSQL WORKBENCH

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

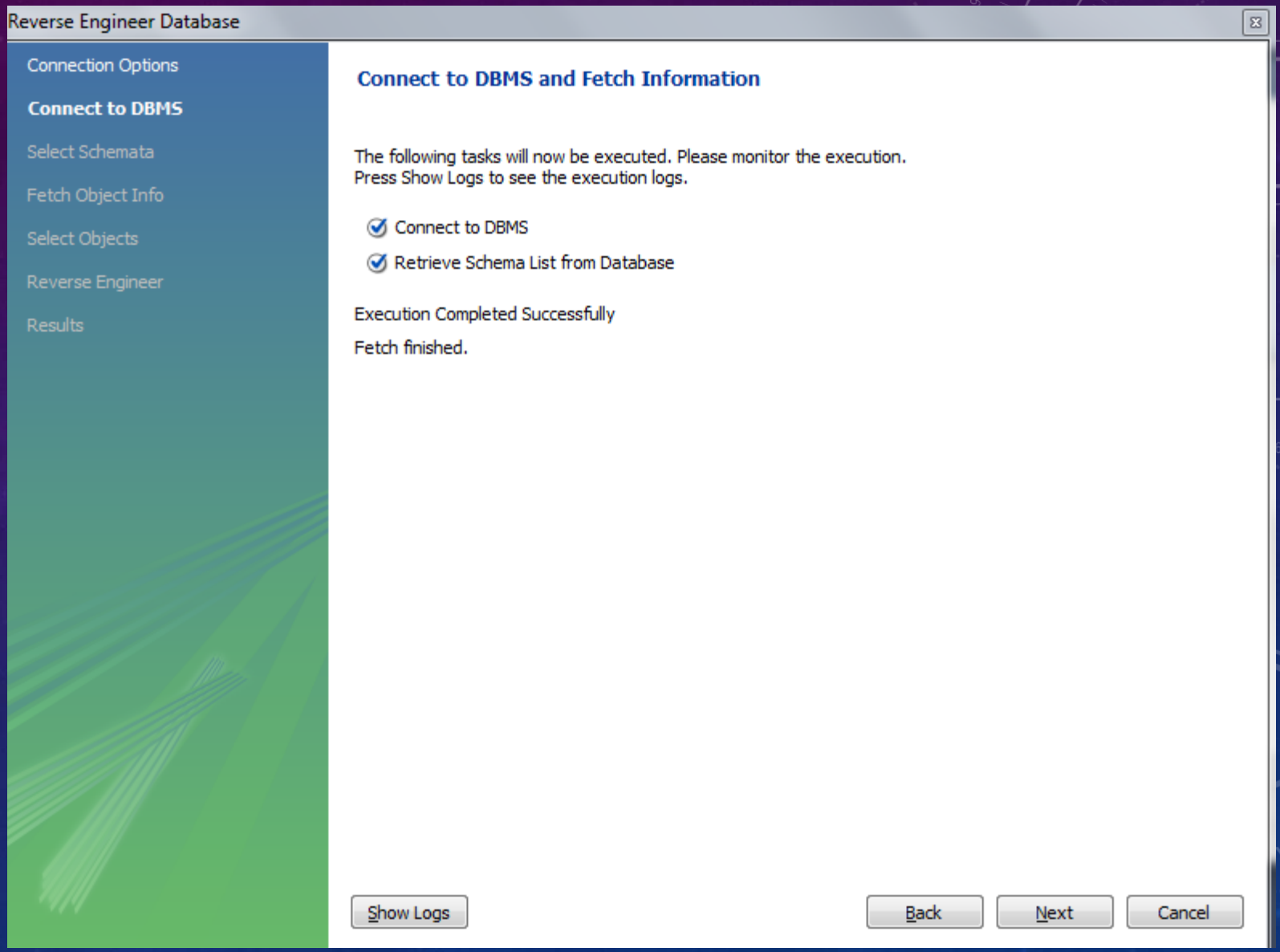
REVERSE ENGINEER



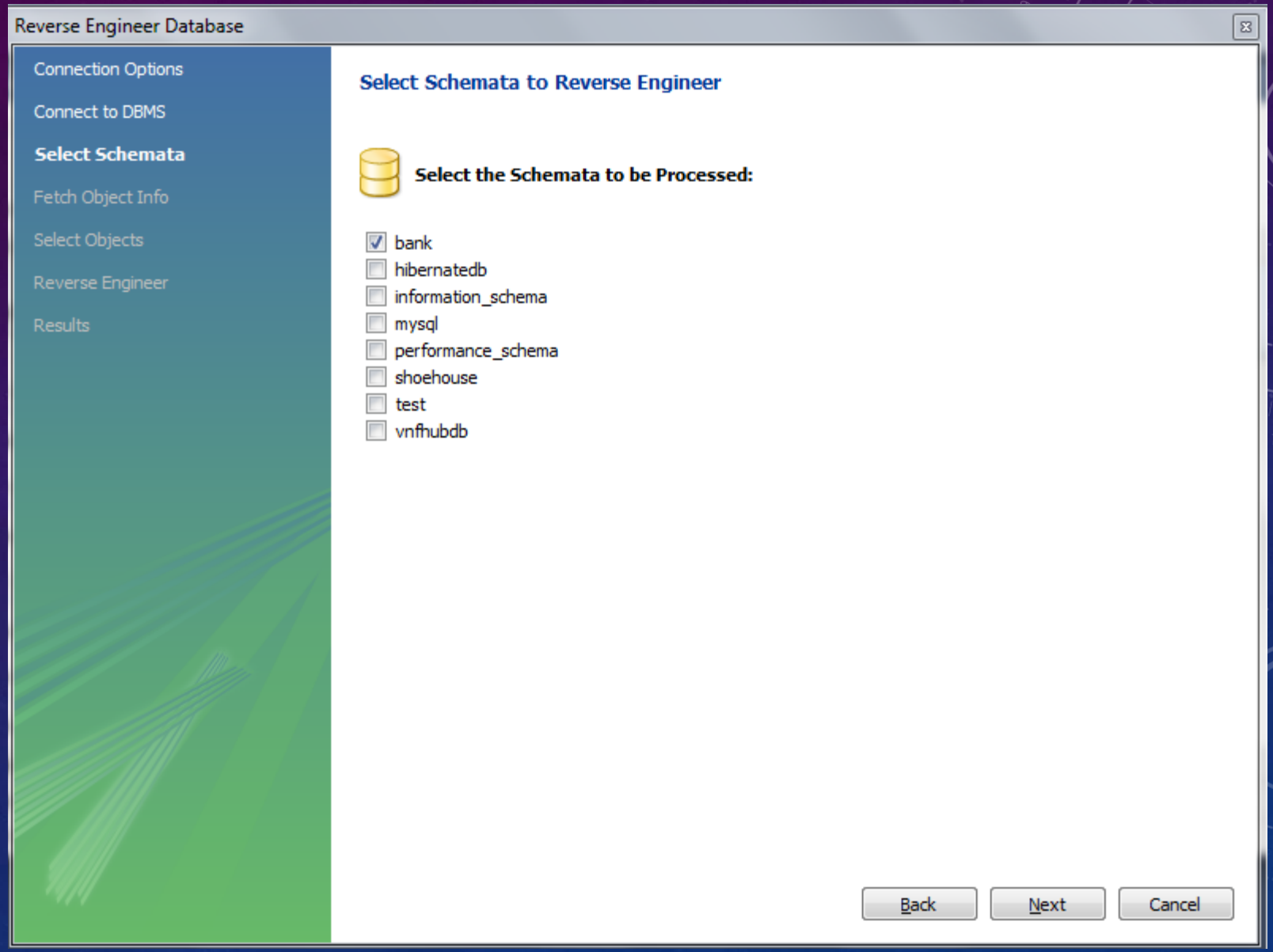
REVERSE ENGINEER



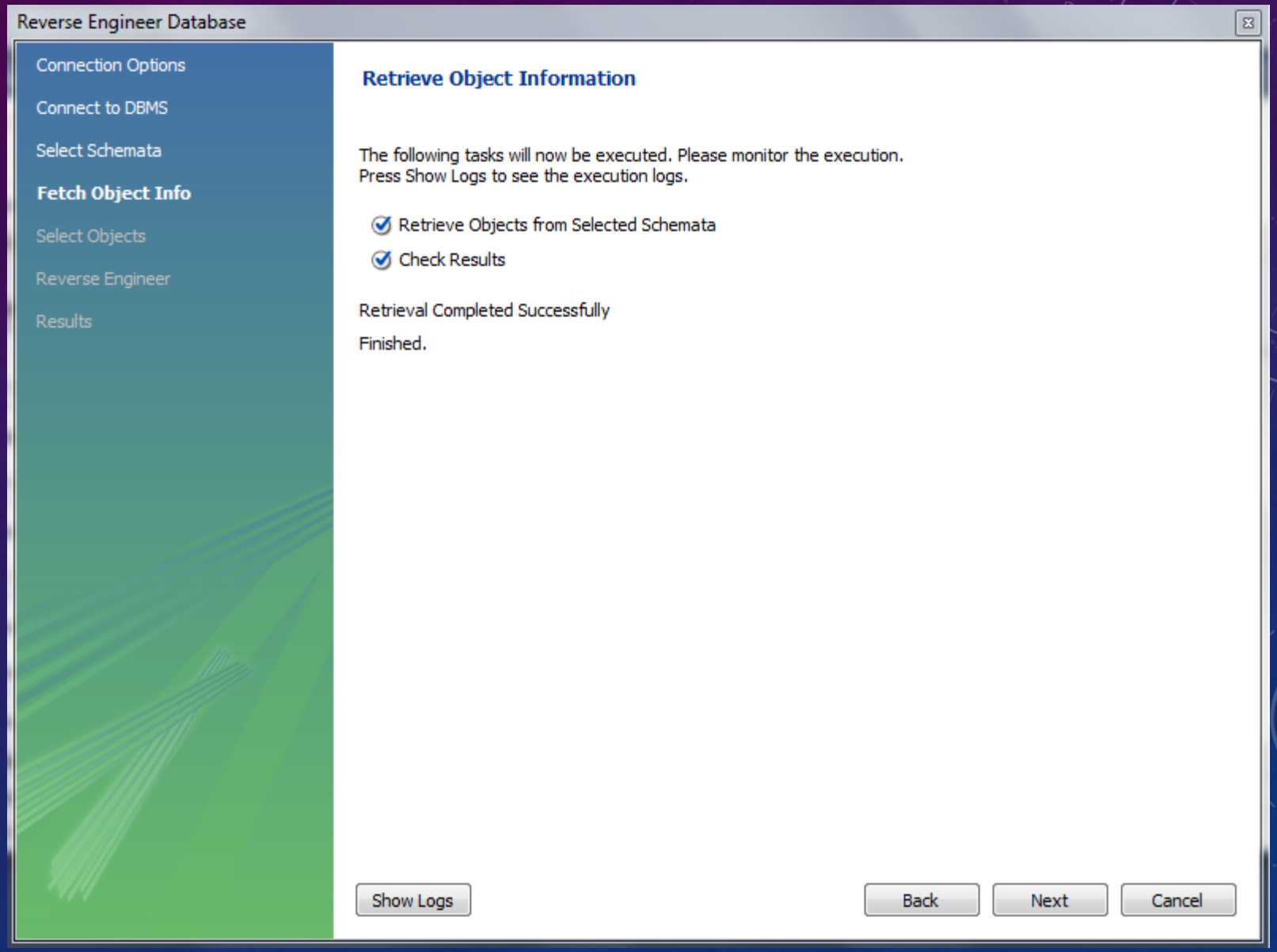
REVERSE ENGINEER



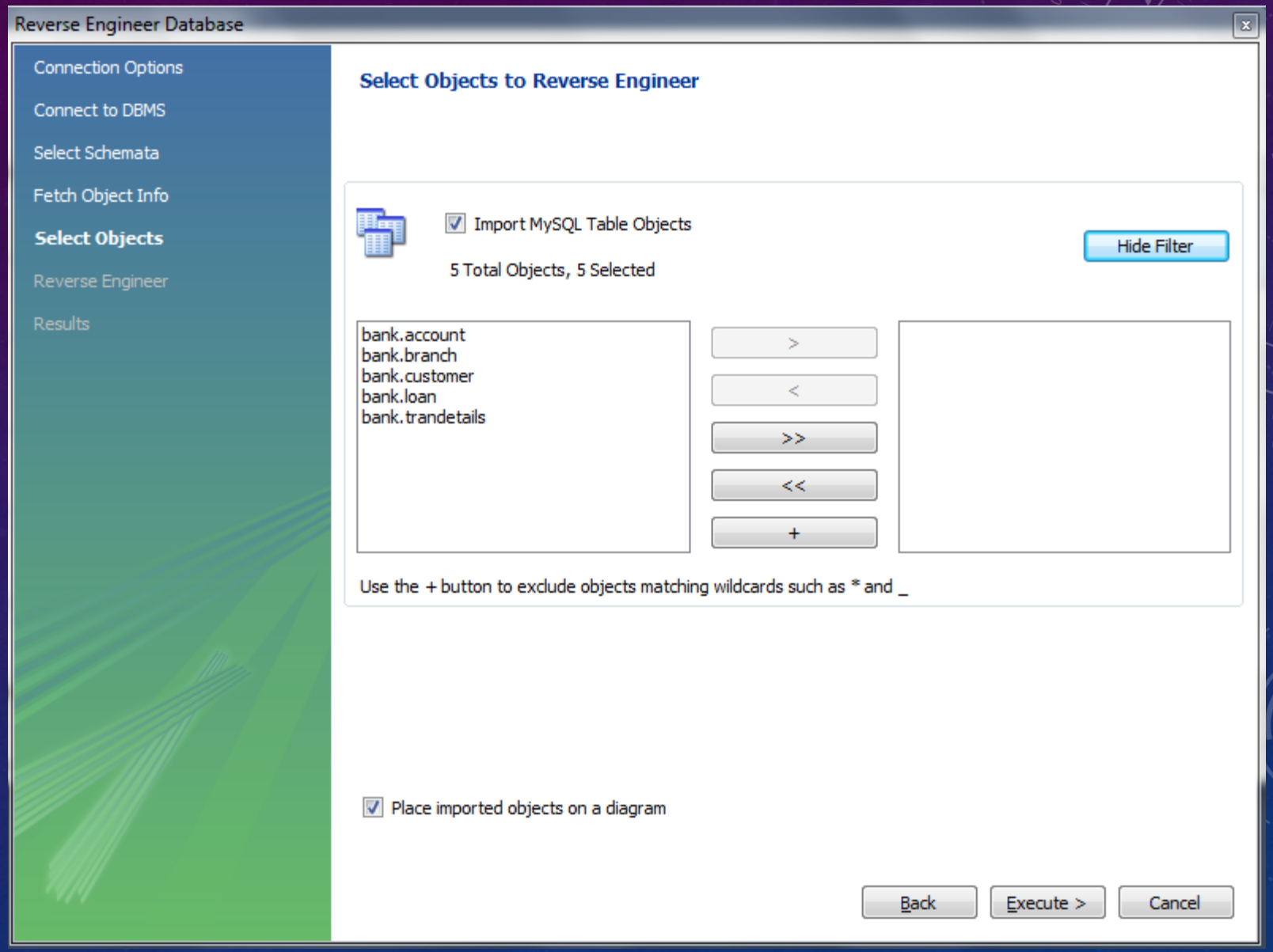
REVERSE ENGINEER



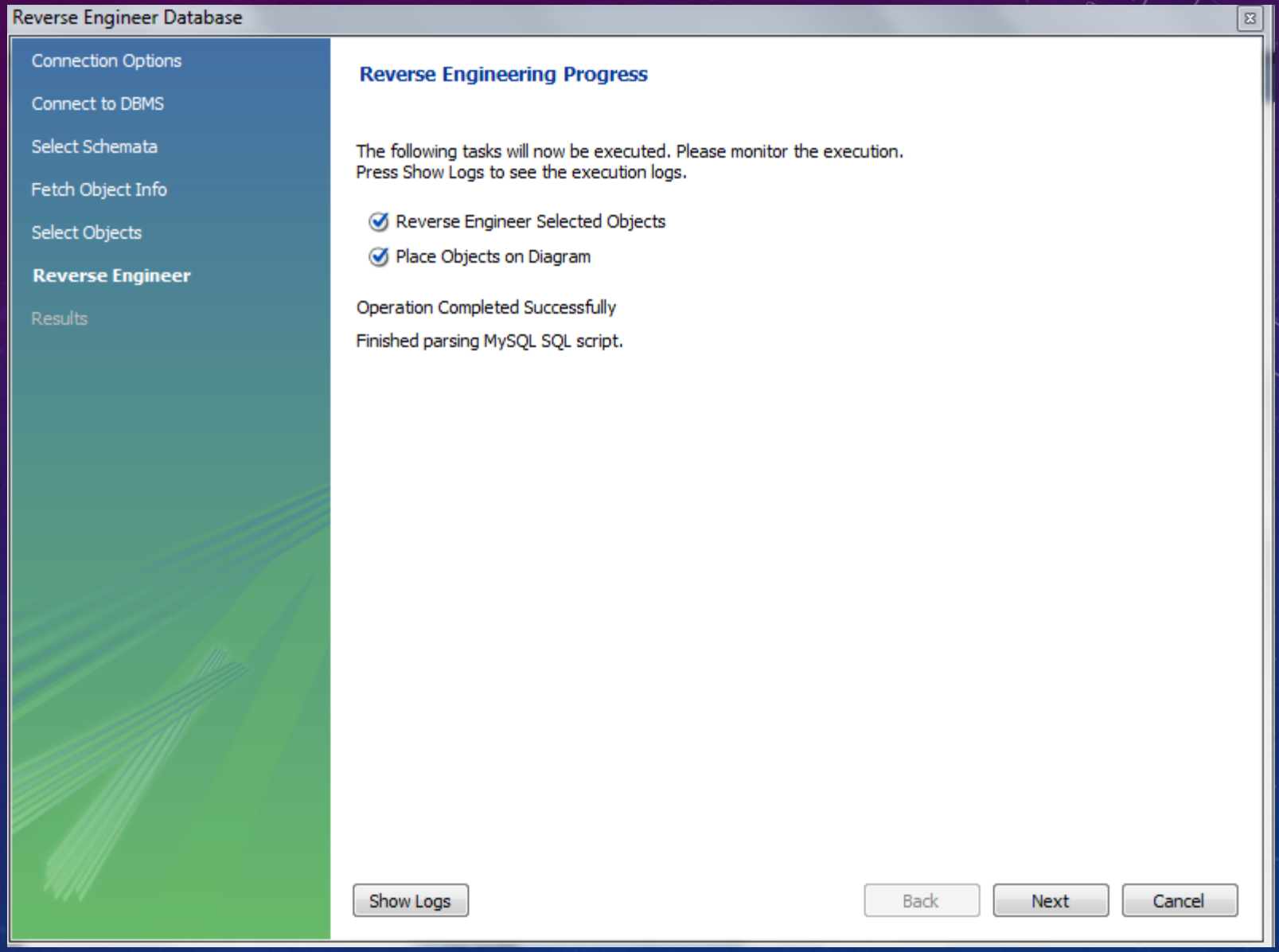
REVERSE ENGINEER



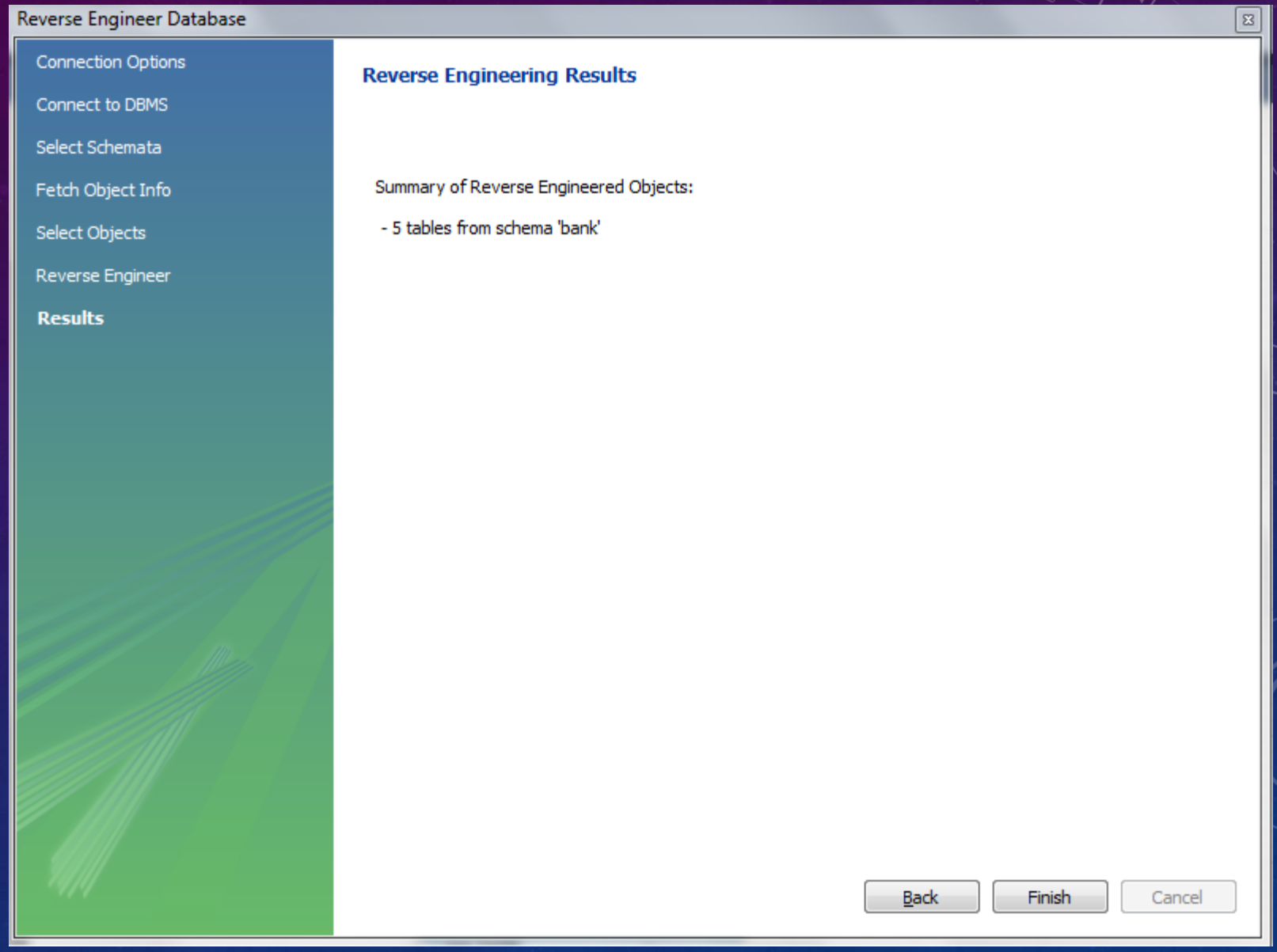
REVERSE ENGINEER

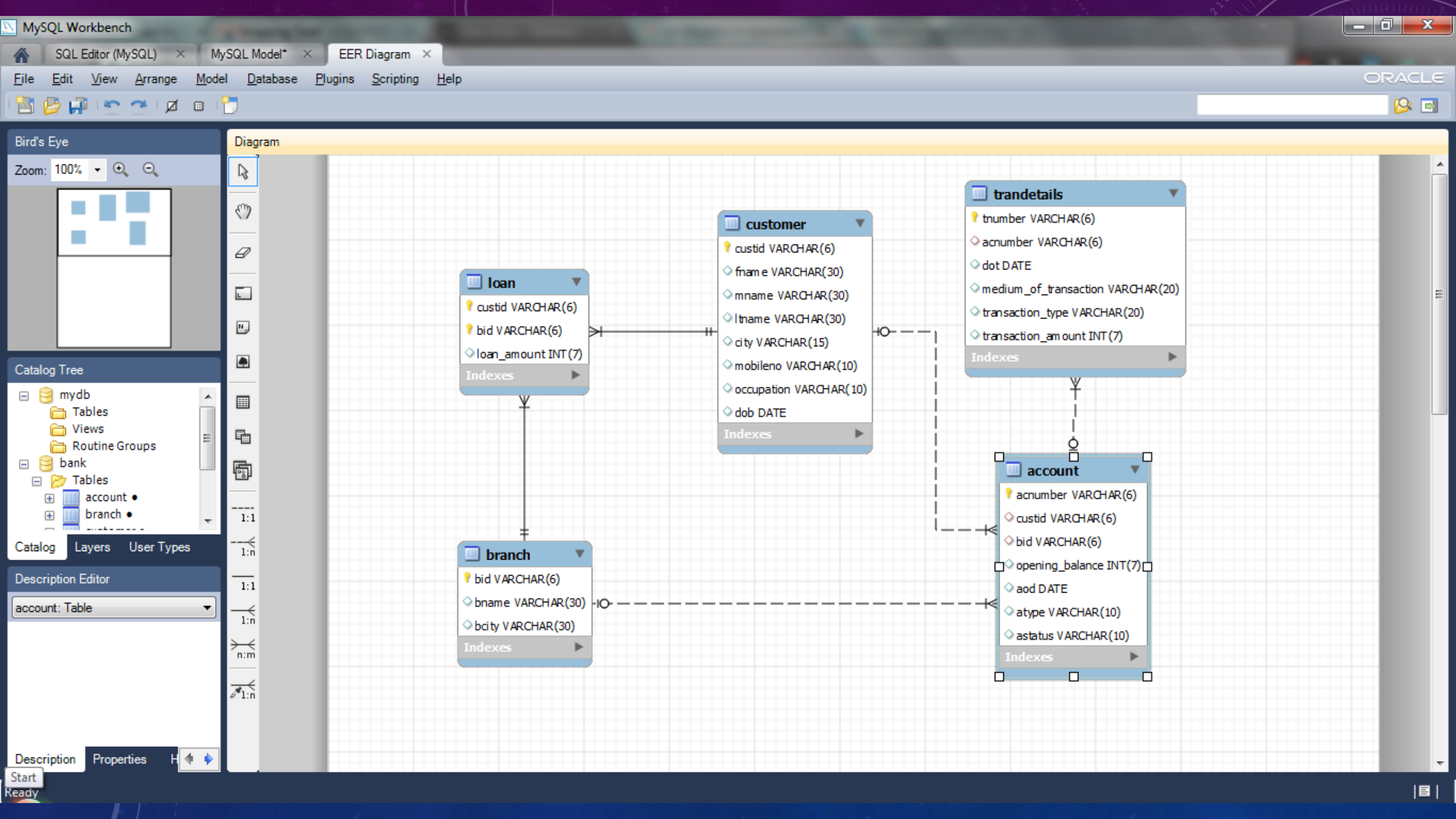


REVERSE ENGINEER

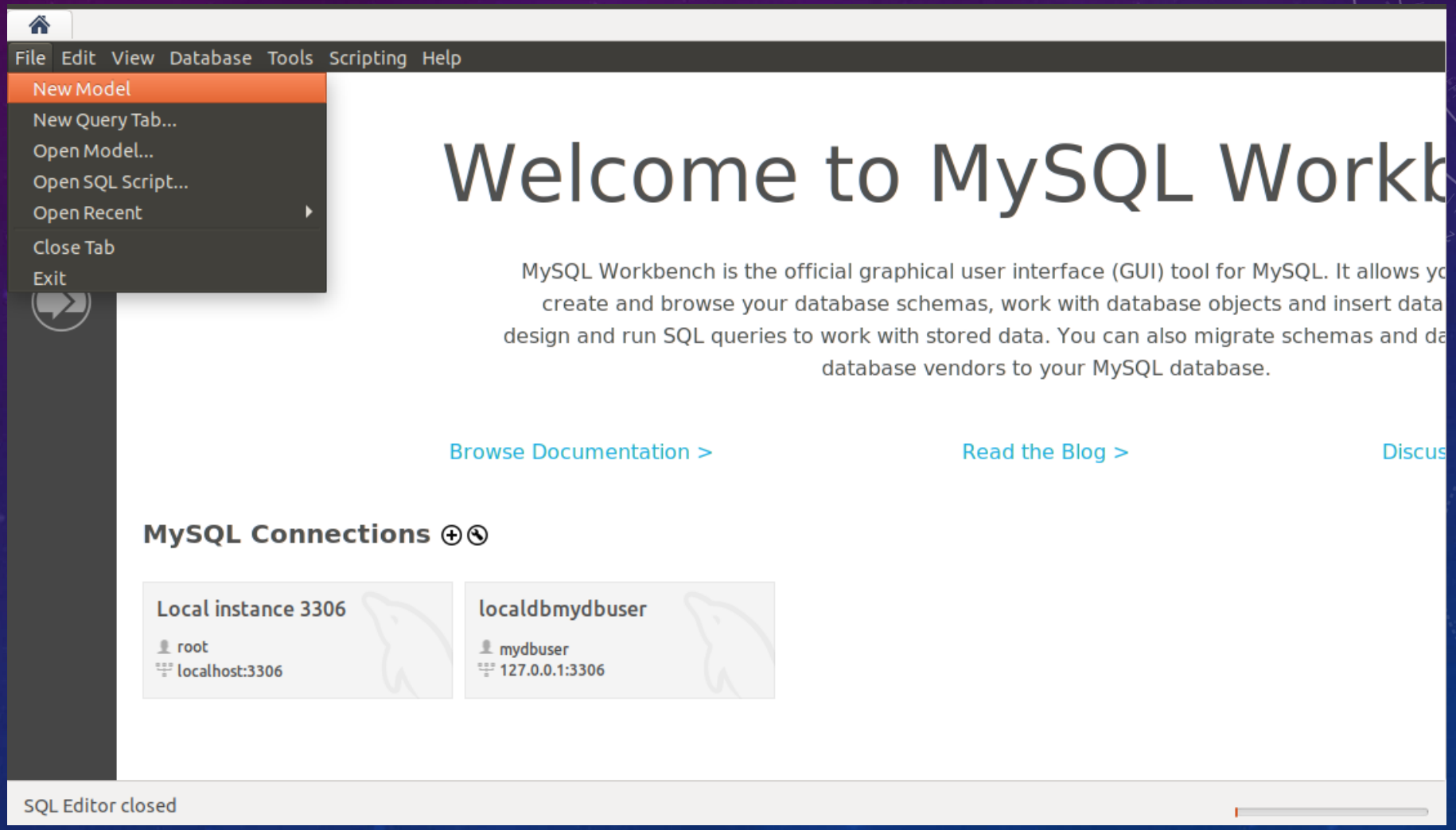


REVERSE ENGINEER

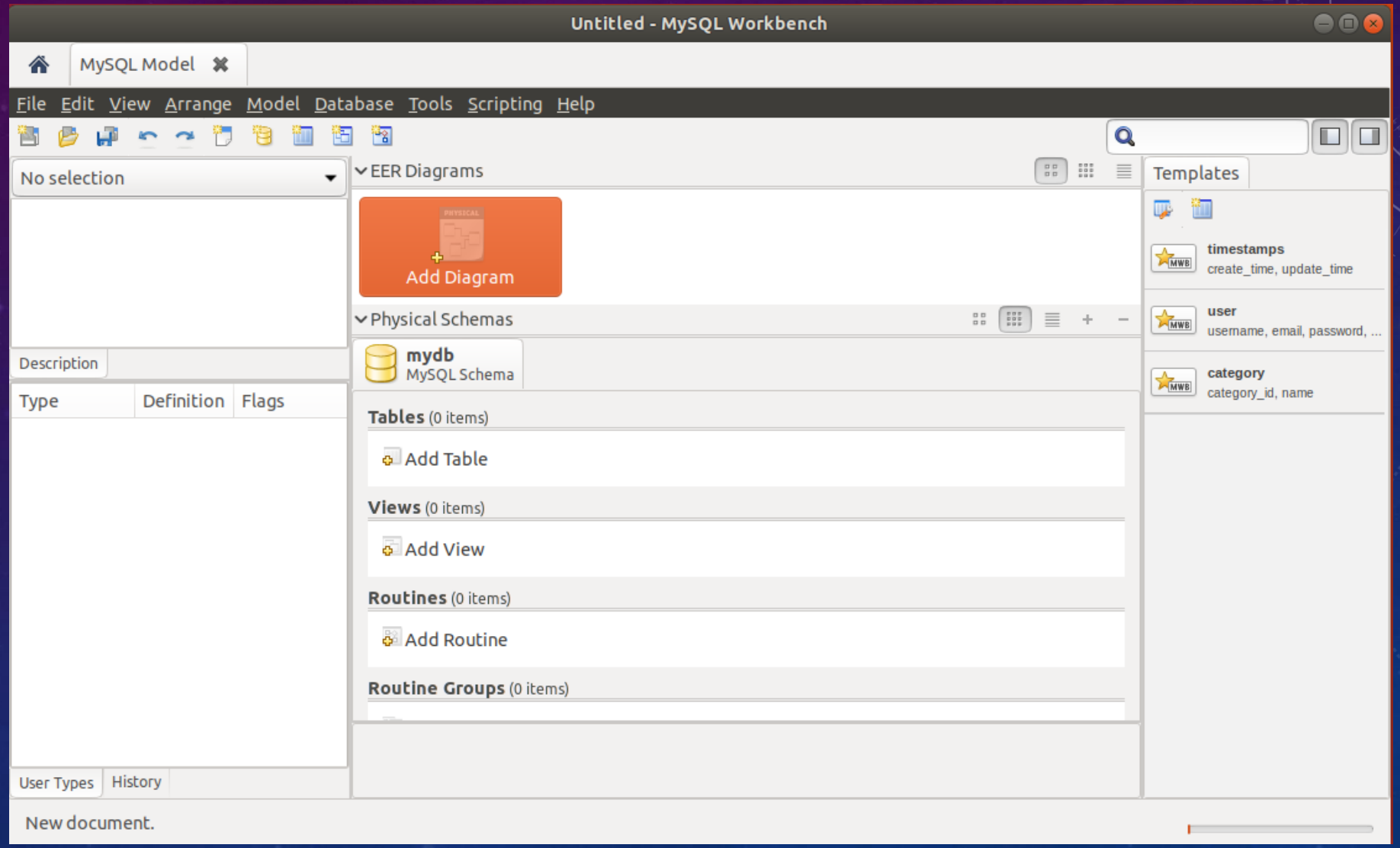



MySQL Workbench
SQL Editor (MySQL)
MySQL Model*
EER Diagram
File Edit View Arrange Model Database Plugins Scripting Help
ORACLE
Bird's Eye
Zoom: 100%
Catalog Tree
mydb
Tables
Views
Routine Groups
bank
Tables
account
branch
Catalog Layers User Types
Description Editor
account: Table
Description Properties
Diagram
loan
custid VARCHAR(6)
bid VARCHAR(6)
loan_amount INT(7)
Indexes
customer
custid VARCHAR(6)
fname VARCHAR(30)
mname VARCHAR(30)
ltname VARCHAR(30)
city VARCHAR(15)
mobileno VARCHAR(10)
occupation VARCHAR(10)
dob DATE
Indexes
trandetails
tnumber VARCHAR(6)
acnumber VARCHAR(6)
dot DATE
medium_of_transaction VARCHAR(20)
transaction_type VARCHAR(20)
transaction_amount INT(7)
Indexes
account
acnumber VARCHAR(6)
custid VARCHAR(6)
bid VARCHAR(6)
opening_balance INT(7)
aod DATE
atype VARCHAR(10)
astatus VARCHAR(10)
Indexes
branch
bid VARCHAR(6)
bname VARCHAR(30)
bcity VARCHAR(30)
Indexes
1:1
1:n
1:1
1:n
n:m
1:n
Start
Ready

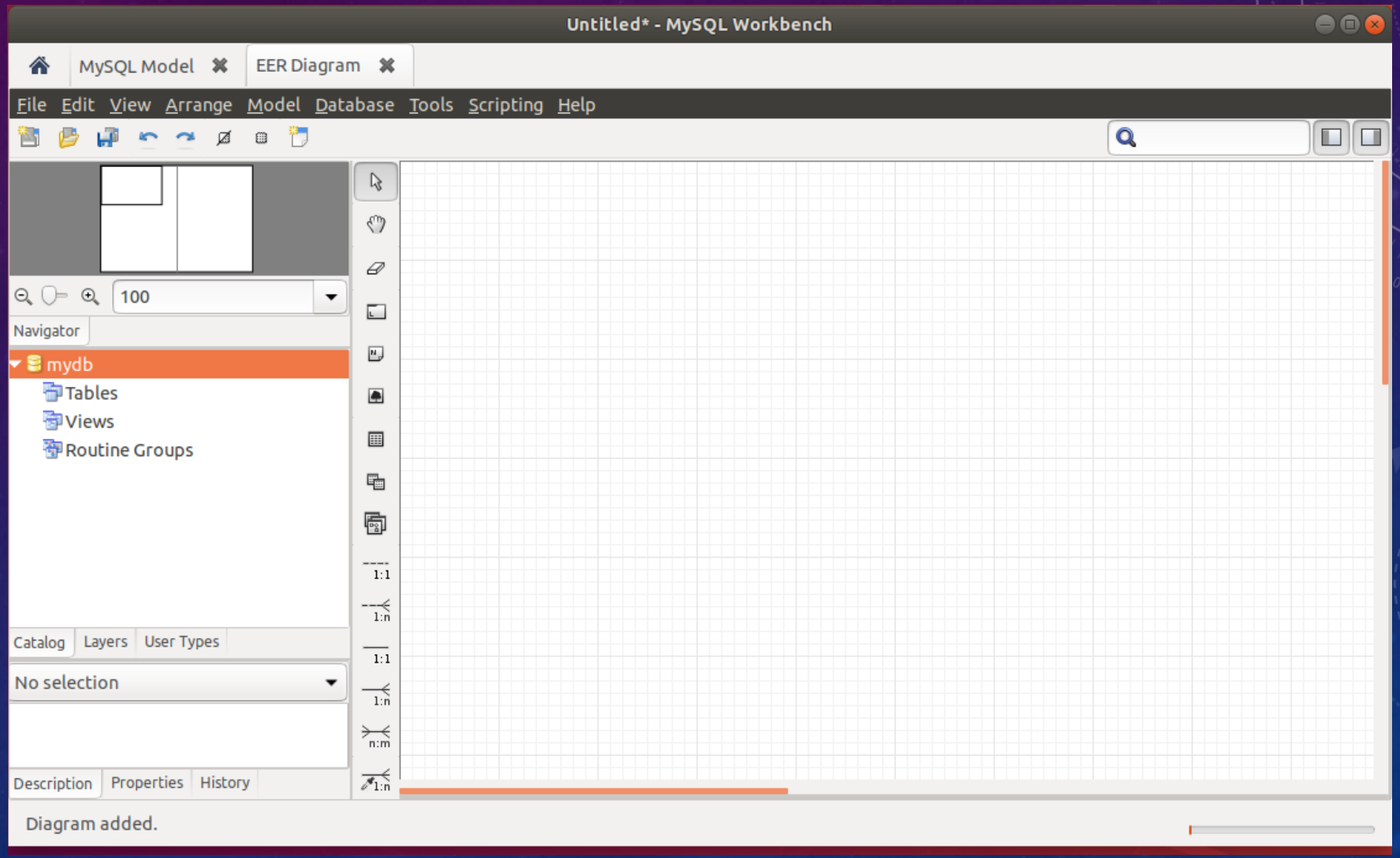
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



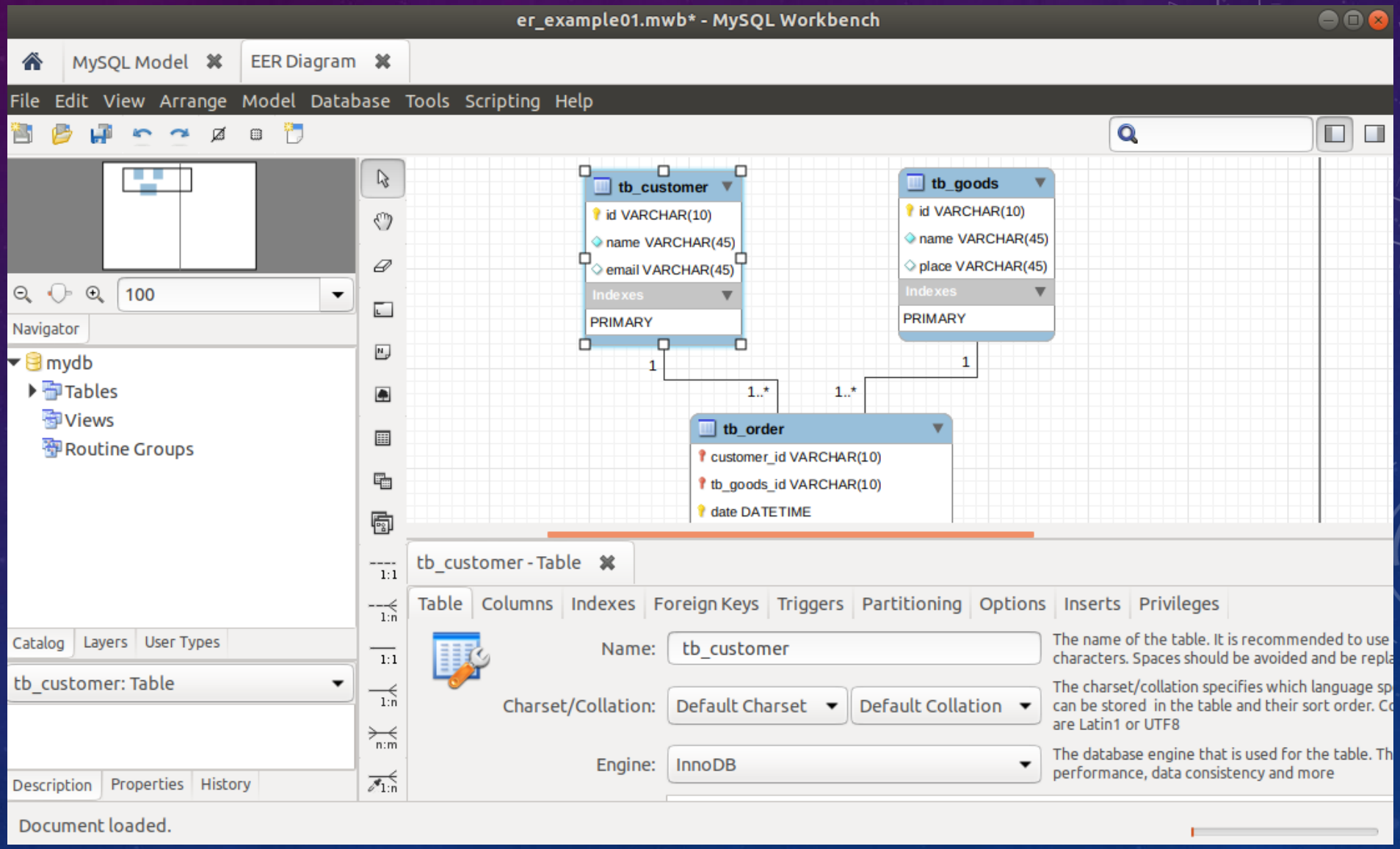
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



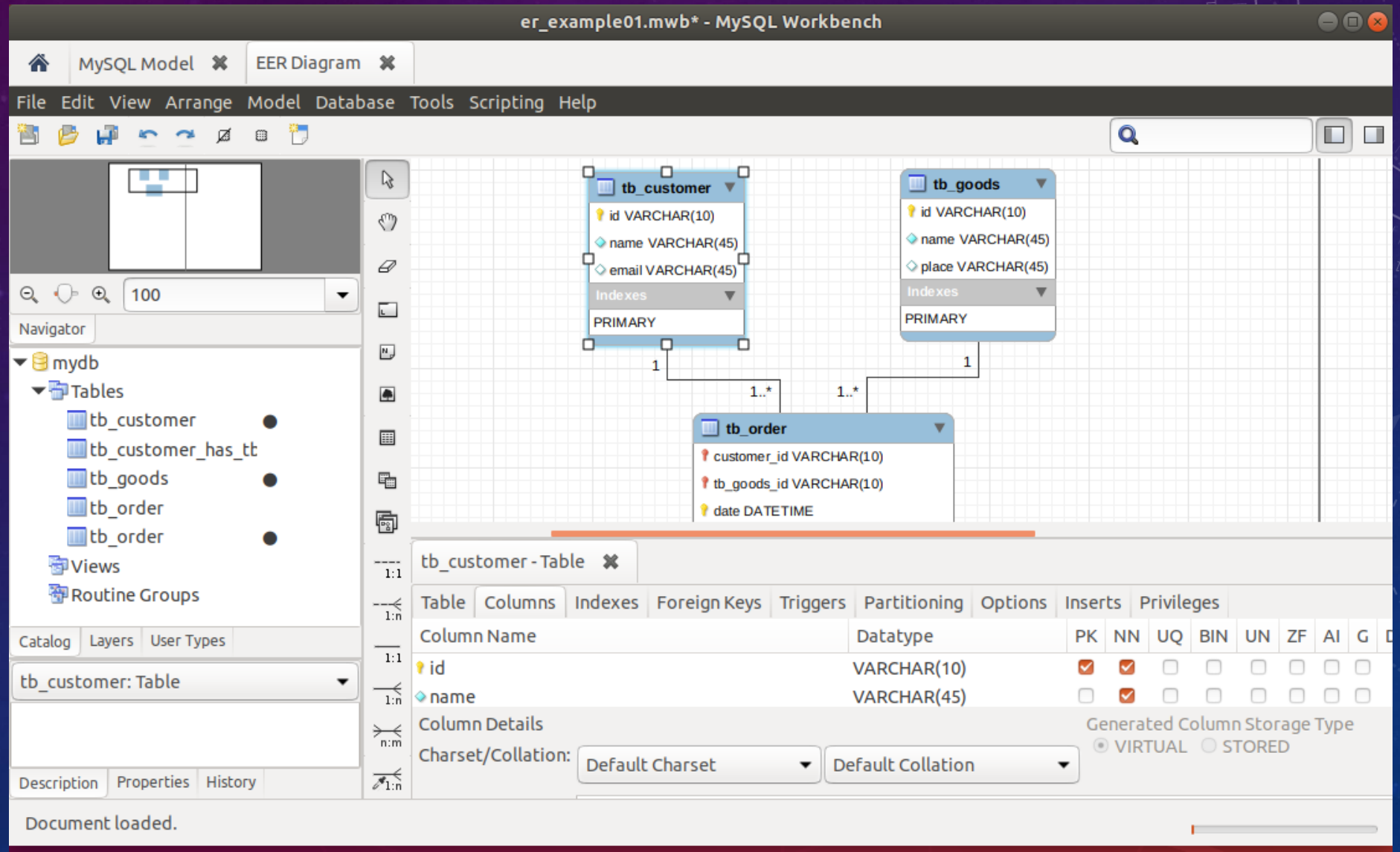
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



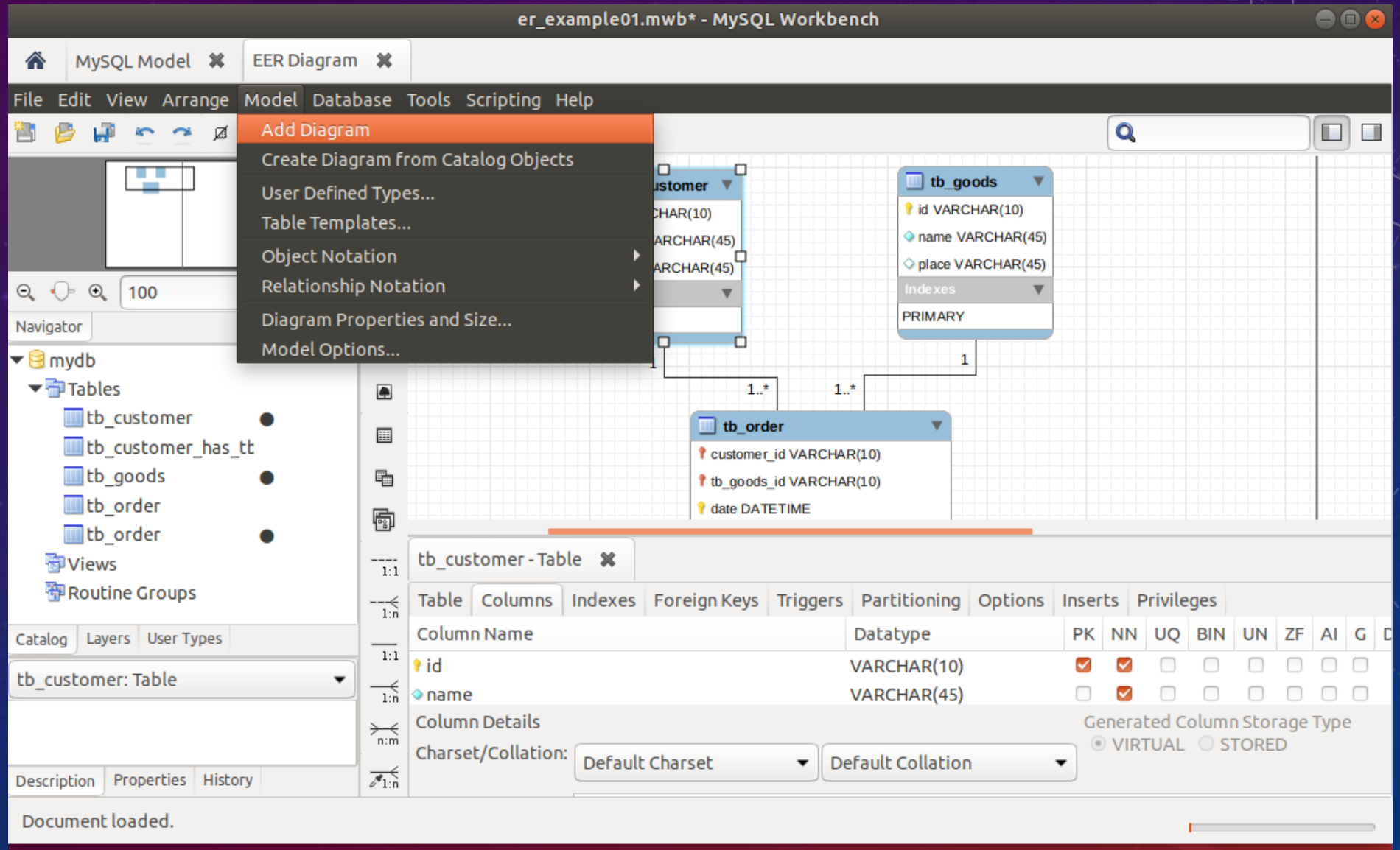
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH



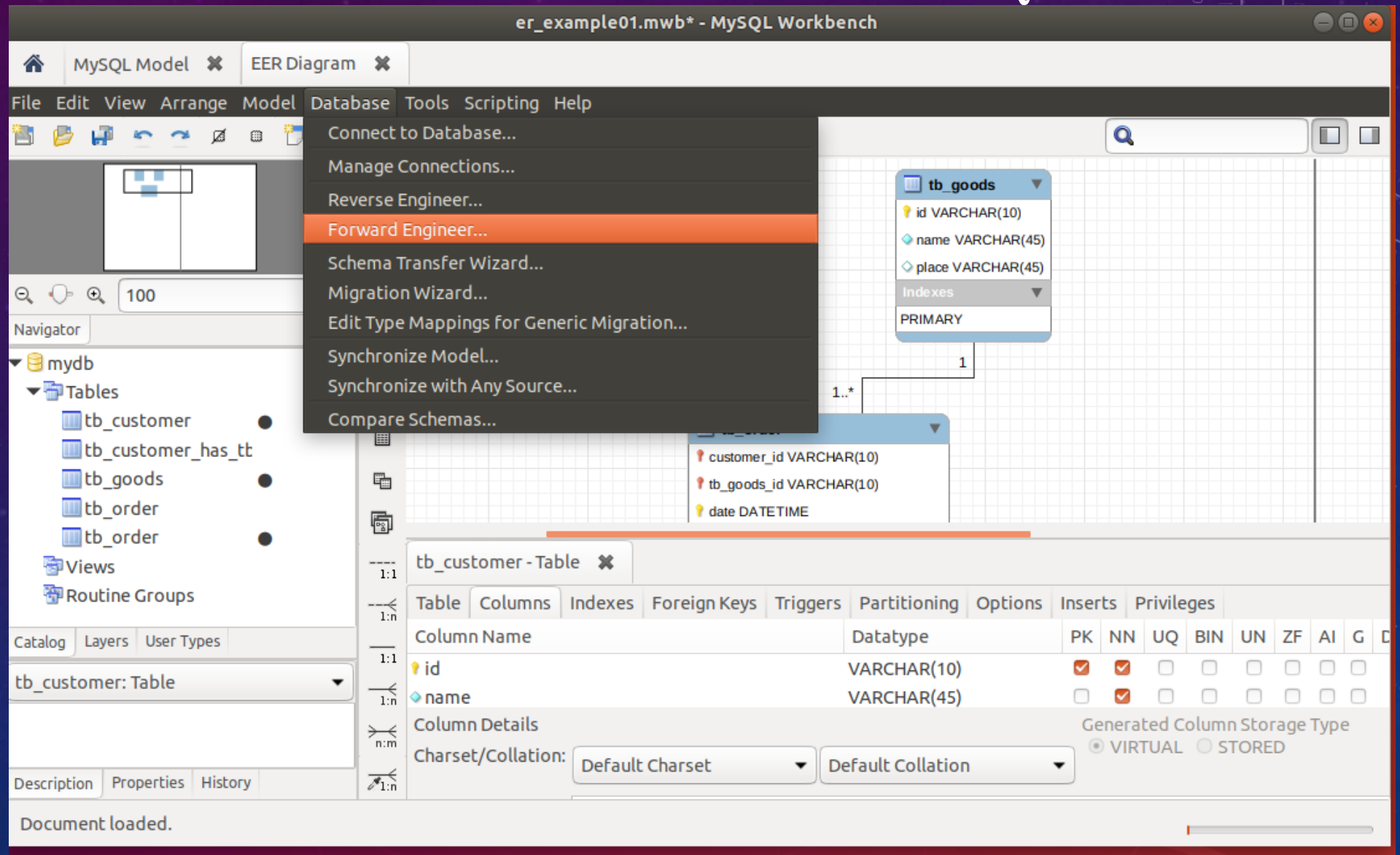
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH

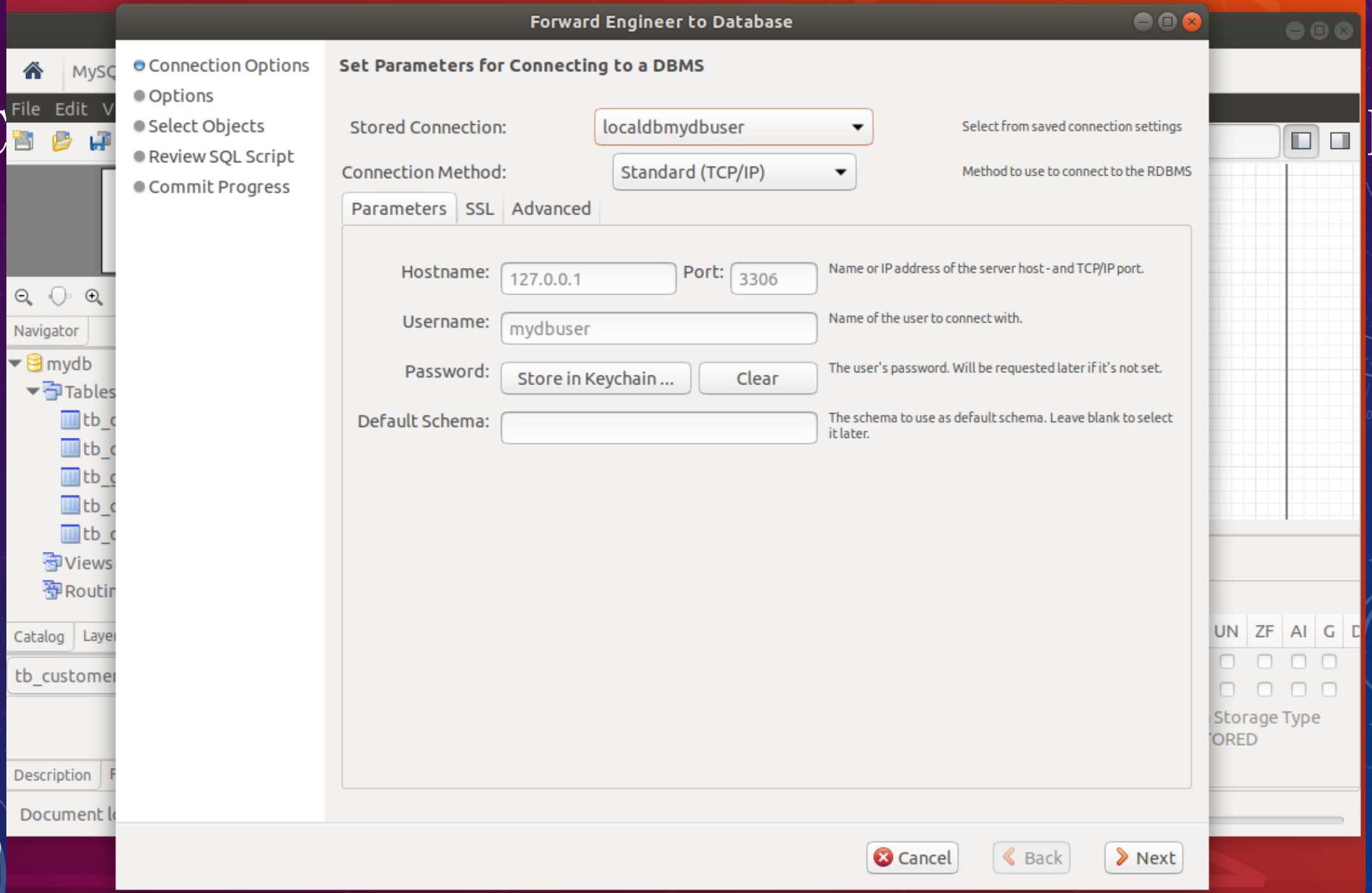


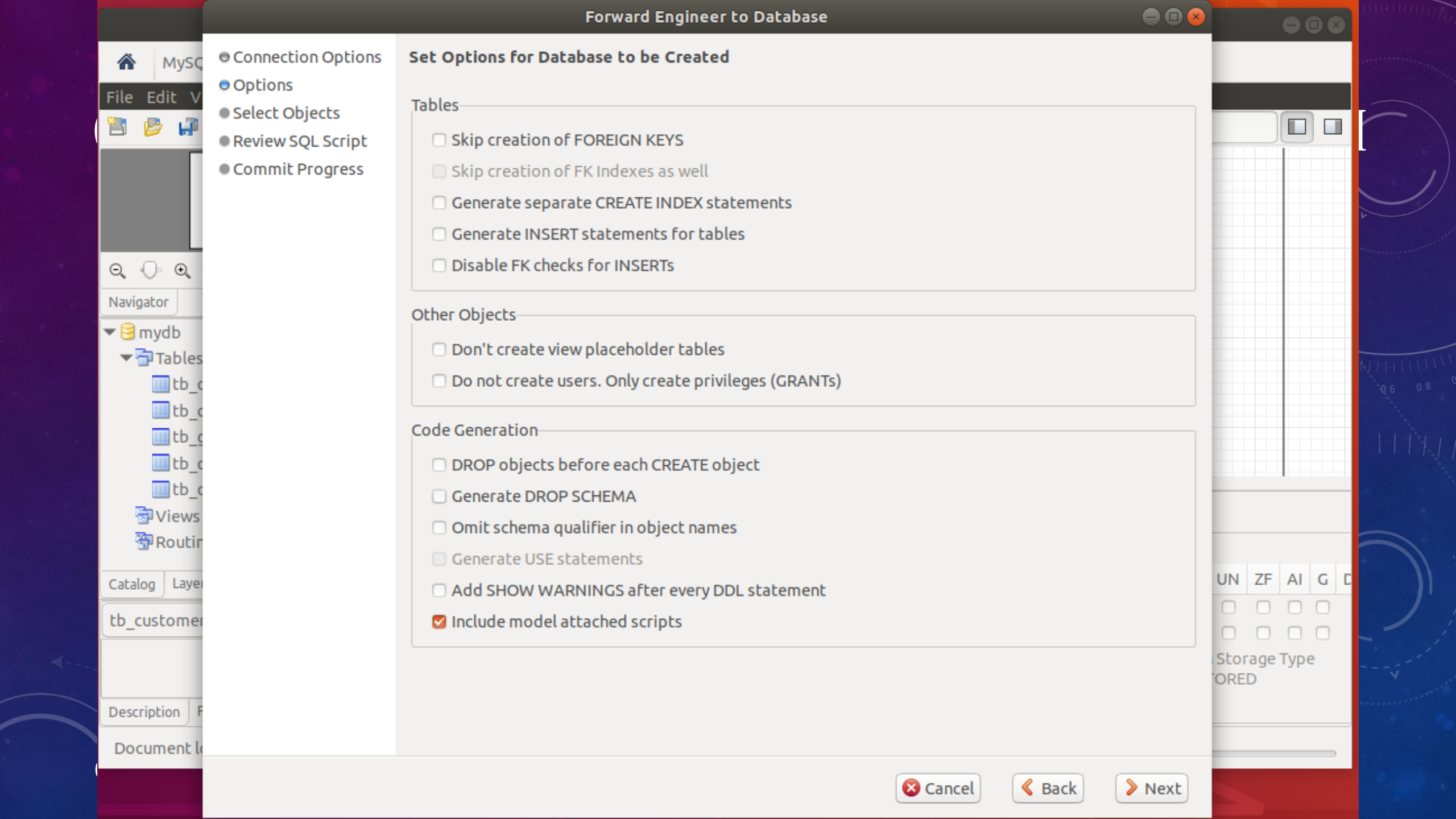
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH

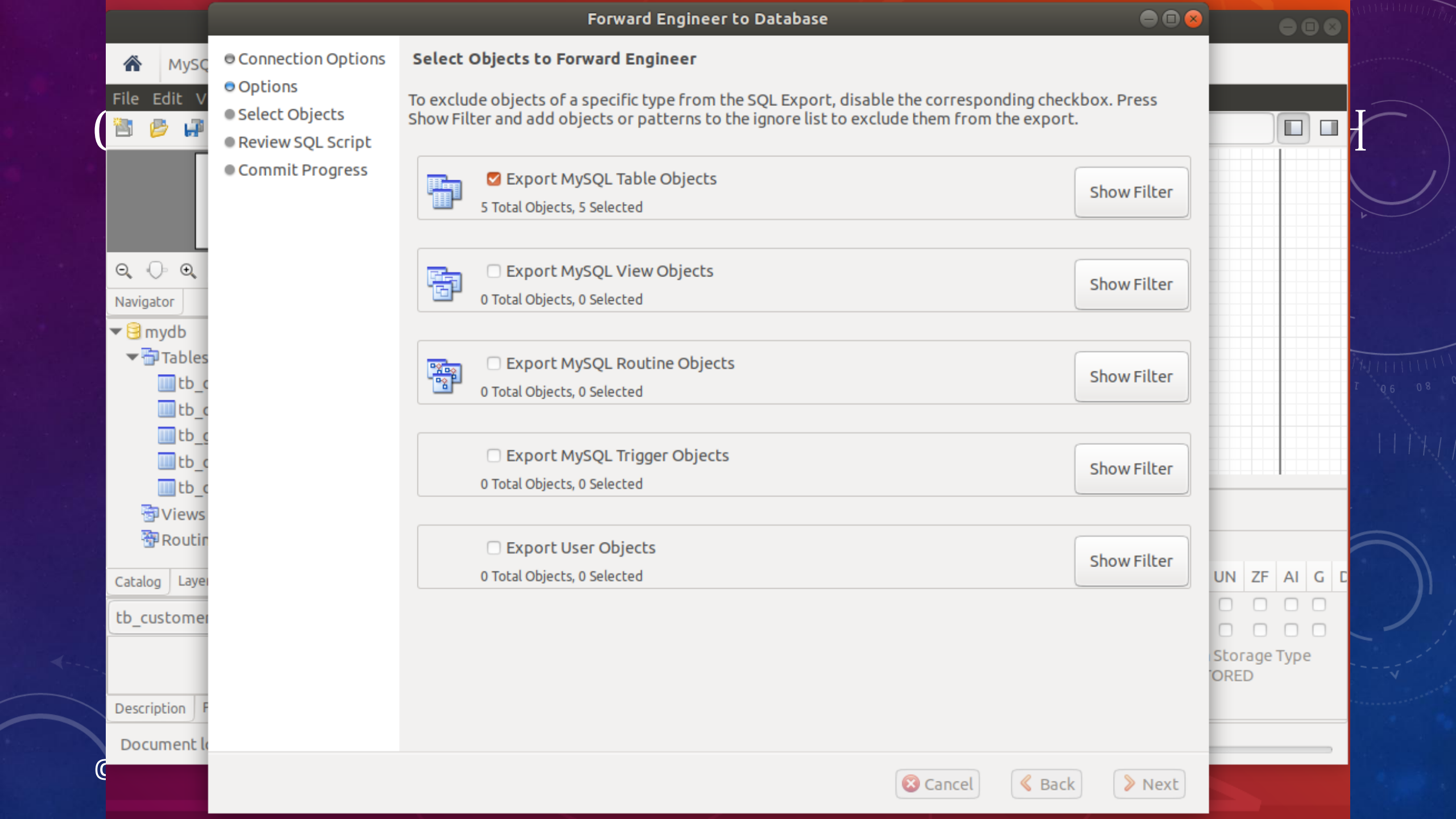


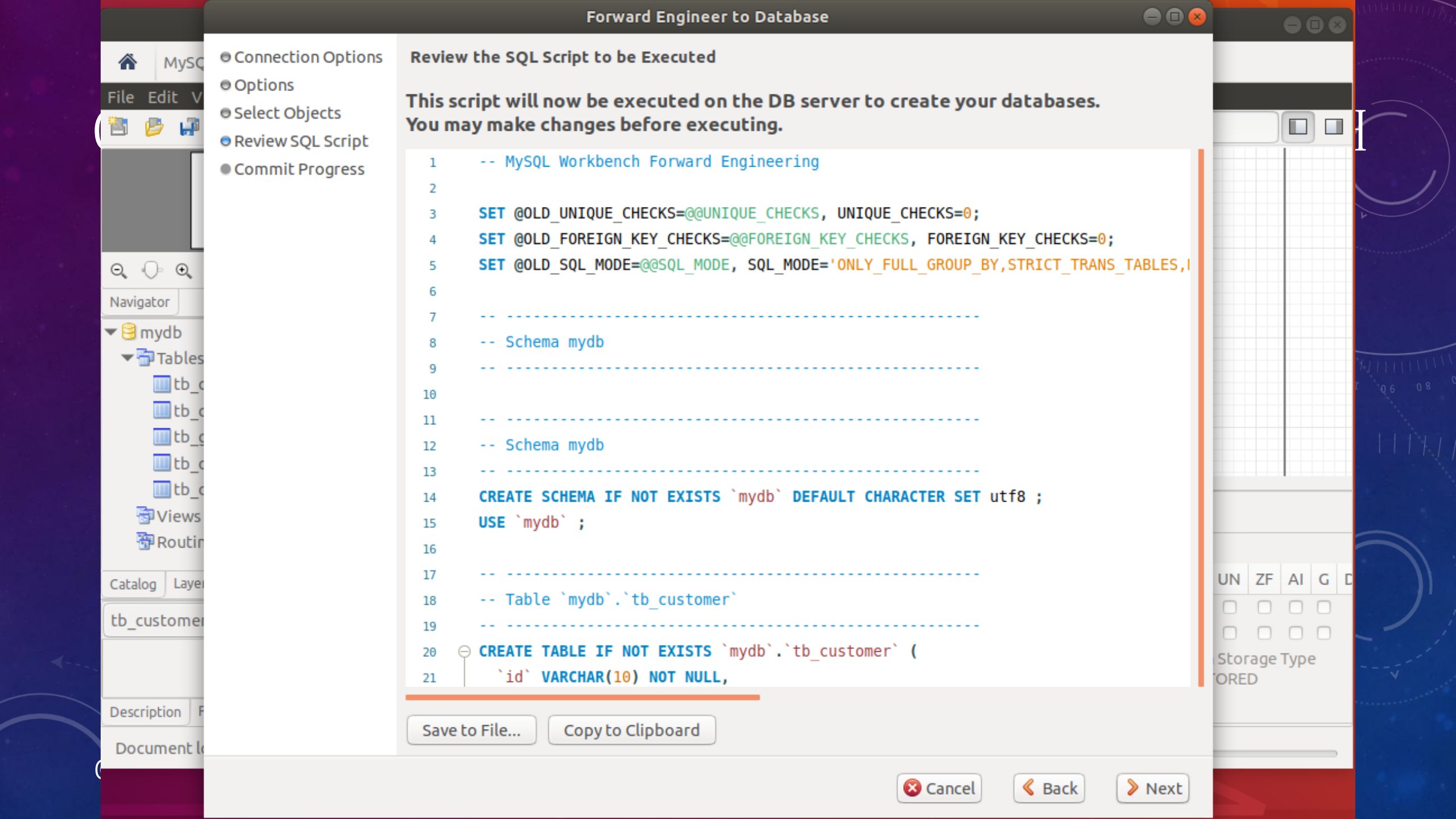
CREATE NEW E-R DIAGRAM IN MYSQL WORKBENCH

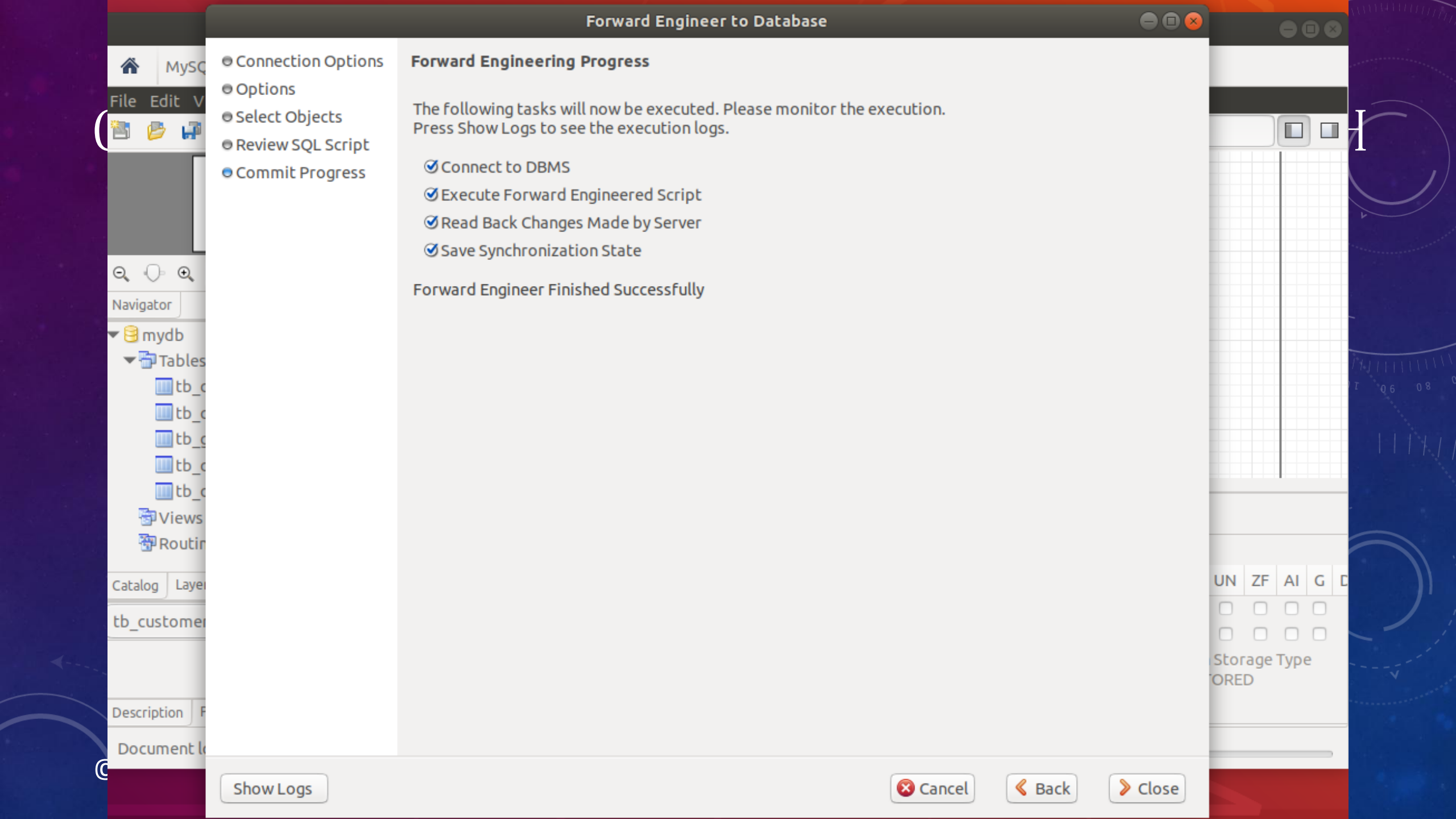


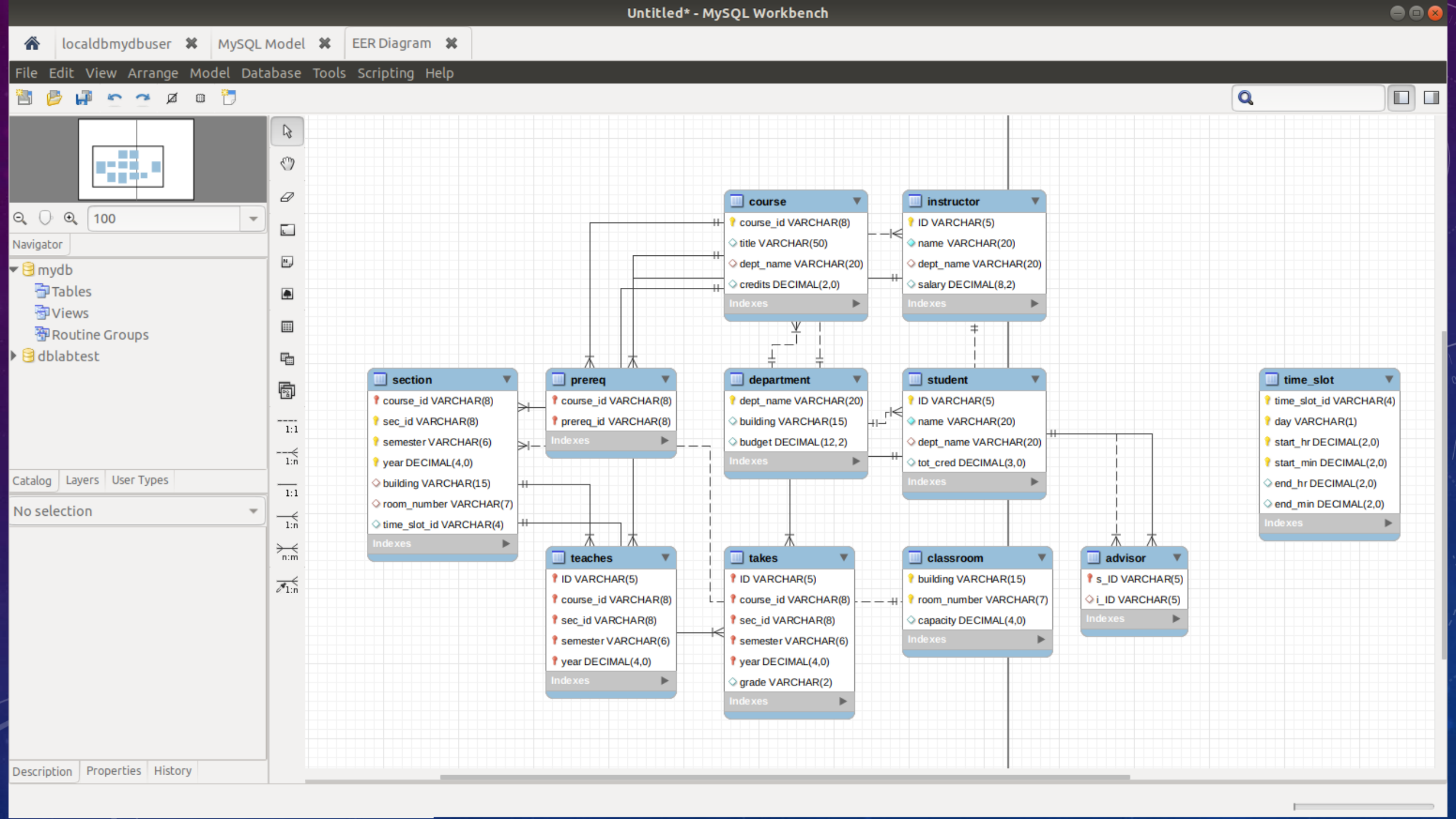

Forward Engineer to Database
Connection Options
Options
Select Objects
Review SQL Script
Commit Progress
Set Parameters for Connecting to a DBMS
Stored Connection:
localdbmydbuser
Select from saved connection settings
Connection Method:
Standard (TCP/IP)
Method to use to connect to the RDBMS
Parameters
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


Forward Engineer to Database
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,
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
File Edit
Navigator
mydb
Tables
Views
Catalog
tb_customer
Description
UN
ZF
AI
G
Storage Type


Untitled* - MySQL Workbench
localdbmydbuser
MySQL Model
EER Diagram
File Edit View Arrange Model Database Tools Scripting Help
Navigator
mydb
Tables
Views
Routine Groups
dblabtest
Catalog Layers User Types
No selection
Description Properties History
course
course_id VARCHAR(8)
title VARCHAR(50)
dept_name VARCHAR(20)
credits DECIMAL(2,0)
Indexes
instructor
ID VARCHAR(5)
name VARCHAR(20)
dept_name VARCHAR(20)
salary DECIMAL(8,2)
Indexes
section
course_id VARCHAR(8)
sec_id VARCHAR(8)
semester VARCHAR(6)
year DECIMAL(4,0)
building VARCHAR(15)
room_number VARCHAR(7)
time_slot_id VARCHAR(4)
Indexes
prereq
course_id VARCHAR(8)
prereq_id VARCHAR(8)
Indexes
department
dept_name VARCHAR(20)
building VARCHAR(15)
budget DECIMAL(12,2)
Indexes
student
ID VARCHAR(5)
name VARCHAR(20)
dept_name VARCHAR(20)
tot_cred DECIMAL(3,0)
Indexes
time_slot
time_slot_id VARCHAR(4)
day VARCHAR(1)
start_hr DECIMAL(2,0)
start_min DECIMAL(2,0)
end_hr DECIMAL(2,0)
end_min DECIMAL(2,0)
Indexes
teaches
ID VARCHAR(5)
course_id VARCHAR(8)
sec_id VARCHAR(8)
semester VARCHAR(6)
year DECIMAL(4,0)
Indexes
takes
ID VARCHAR(5)
course_id VARCHAR(8)
sec_id VARCHAR(8)
semester VARCHAR(6)
year DECIMAL(4,0)
grade VARCHAR(2)
Indexes
classroom
building VARCHAR(15)
room_number VARCHAR(7)
capacity DECIMAL(4,0)
Indexes
advisor
s_ID VARCHAR(5)
i_ID VARCHAR(5)
Indexes

THANKS !

leexudong@nankai.edu.cn