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# Tutorial 1 Software Installing

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Designed by [ZHU Yueming](#) and [WU Yechang](#), click for mailing to.

- Database: [PostgreSQL](#)

- Client: [Datagrip](#)
- Database Design (Design ER Diagram): [MySQL workbench](#)

# Part 1. Environment Configuration

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## For MacOS users

### Installation & Usage

Here are alternative ways to install postgresql.

#### By Homebrew (Recommended)

1. Install [Homebrew](#). (If you already have it, skip this step.)
  1. Prerequisites according to [Requirements](#):
    1. 64-bit Intel CPU [1](#)
    2. macOS High Sierra (10.13) (or higher) [2](#)
    3. Command Line Tools (CLT) for Xcode: `xcode-select --install`, [developer.apple.com/downloads](#) or [Xcode 3](#)
    4. A Bourne-compatible shell for installation (e.g. `bash` or `zsh`) [4](#)
  2. Open the "Terminal" application
  3. Enter the following command into a single line of the terminal

```
/usr/bin/ruby -e "$(curl -fsSL  
https://raw.githubusercontent.com/Homebrew/install/master/install)"
```

4. If you meet the problem: "Failed to connect to raw.githubusercontent.com port 443: Operation". You can solve it by the [link](#).
2. Install PostgreSQL.
  1. Enter the command to update brew home.

```
brew update
```

2. Enter the command to install PostgreSQL.

```
brew install postgresql
```

3. Check your PostgreSQL version.

```
postgres --version
```

After the initial installation, it would generate a [database](#) named **postgres**.

3. Start & Stop.

Run `brew info postgres` for details.

1. Manually (will not start after system startup), in command line:

```
pg_ctl -D /usr/local/var/postgres start # To start
pg_ctl -D /usr/local/var/postgres stop  # To stop
```

2. Automatically (will start after system startup), in command line:

```
brew services start postgresql # To start
brew services stop postgresql  # To stop
```

## By Postgres.app

It is a brand new installation method, it's reaaaaaaly simple but there may be some potential issues. Visit [PostgresApp](#) for details and optional versions.

1. Installation

1. Download the .dmg file. (Be patient...) [Download Link](#)
2. Mount the file, move Postgres to Applications folder, double click Postgres in Applications folder, the dmg file is useless and can be removed.
3. Click "Initialize" to create a new server.
4. You can change path and port in "Server settings" when stopped.

2. Start & Stop

1. Click "Start" to start server.
2. When server is started, double clicking schema can open a command line client connected to this schema.
3. Click "Stop" to stop server.

## By Installer

1. Go to [Postgresql Download Page](#), download [installer](#). When the wizard prompts you to choose where to install PostgreSQL, point it to the **apps** subdirectory of your i.e. /Library/PostgreSQL/12.
2. Keep track of the **database superuser** name and **password**. You'll need these to initially create the LabKey database, the LabKey database user, and grant that user the owner role.
3. Keep track of the **database port**. (5432 for default)

## By Docker

See [For Docker users](#)

## Uninstallation

### By Homebrew

```
brew uninstall postgres
```

### By Postgres.app

1. Open **Finder**.

2. Go to Applications.
3. Move Postgres.app to Trash.

### By Installer

There is a `uninstall-postgresql.app` in your installation directory. (i.e. `/Library/PostgreSQL/12`)

```
open /Library/PostgreSQL/12/uninstall-postgresql.app
```

For rest files, see [this sof answer](#).

### By Docker

See [For Docker users](#)

## For Linux users

### Installation

#### By Package manager

Take **Ubuntu** as an example.

1. Following command will access each URL in the source list and read the software list and save it on the local computer.

```
sudo apt update
```

2. Install PostgreSQL client first

```
sudo apt install postgresql-client
```

Then Install PostgrsSQL server

```
sudo apt install postgresql
```

Generally, after the installation, the postgresQL server will automatically open on port **5432** of the machine.

3. Check your PostgreSQL version

```
postgres --version
```

4. Noticed that, after the initial installation, it would generate three elements:

1. a **database** named **postgres**.
2. a **database user** named **postgres**.
3. a **Linux system user** named **postgres**.

### By Docker

See [For Docker users](#)

## Uninstallation

### By Package manager

```
sudo apt remove postgresql postgresql-client
```

### By Docker

See [For Docker users](#)

## For Windows users

## Installation

### By Installer

1. Go to [Postgresql Download Page](#), download [installer](#). When the wizard prompts you to choose where to install PostgreSQL, point it to the **apps** subdirectory of your i.e. C:\labkey\apps\postgresql-10.6\
2. Keep track of the **PostgreSQL Windows Service** account name and password. LabKey Server needs to ask for it so that we can pass it along to the PostgreSQL installer.
3. Keep track of the **database superuser** name and password. You'll need these to initially create the LabKey database, the LabKey database user, and grant that user the owner role.

### By Chocolatey

If you haven't [chocolatey](#), go and get one.

```
choco install postgresql
```

### By Docker

See [For Docker users](#)

## Uninstallation

### Universal way (by installer or choco)

1. Click "Start Menu", Go to "Settings" > "Apps" > "Apps & features".
2. Select "PostgreSQL", click "Remove".

### By choco

```
choco uninstall postgresql
```

### By Docker

See [For Docker users](#)

## For Docker users

If you haven't Docker environment, please choose another installation method.

### Installation

In command line:

```
docker run --name some-postgres -p 5432:5432 -e  
POSTGRES_PASSWORD=mysecretpassword -d postgres
```

### Uninstallation

If your postgres container names "some-postgres"

```
docker stop some-postgres # Stop container  
docker rm some-postgres   # Remove container  
docker rmi postgres       # Remove image
```

## Part 2. How to use PostgreSQL

### In command line:

1. Enter command to visit postgres database:

**Mac OX user:**

```
psql postgres
```

**Linux user:**

Step1: Changed to Postgres database user

```
sudo su - postgres
```

Step2: connect PostgreSQL database by input psql command:

```
psql
```

Then system prompt would be `postgres=#`, which means you have connected to postgres database

2. Finding all roles in postgresSQL

```
\du
```

3. Create a superuser named `checker`

```
create user checker with superuser
```

4. Change password, and then enter password [123456](#)

```
\password checker
```

5. Create a database named [cs307](#)

```
create database cs307;
```

6. Exit database from command line

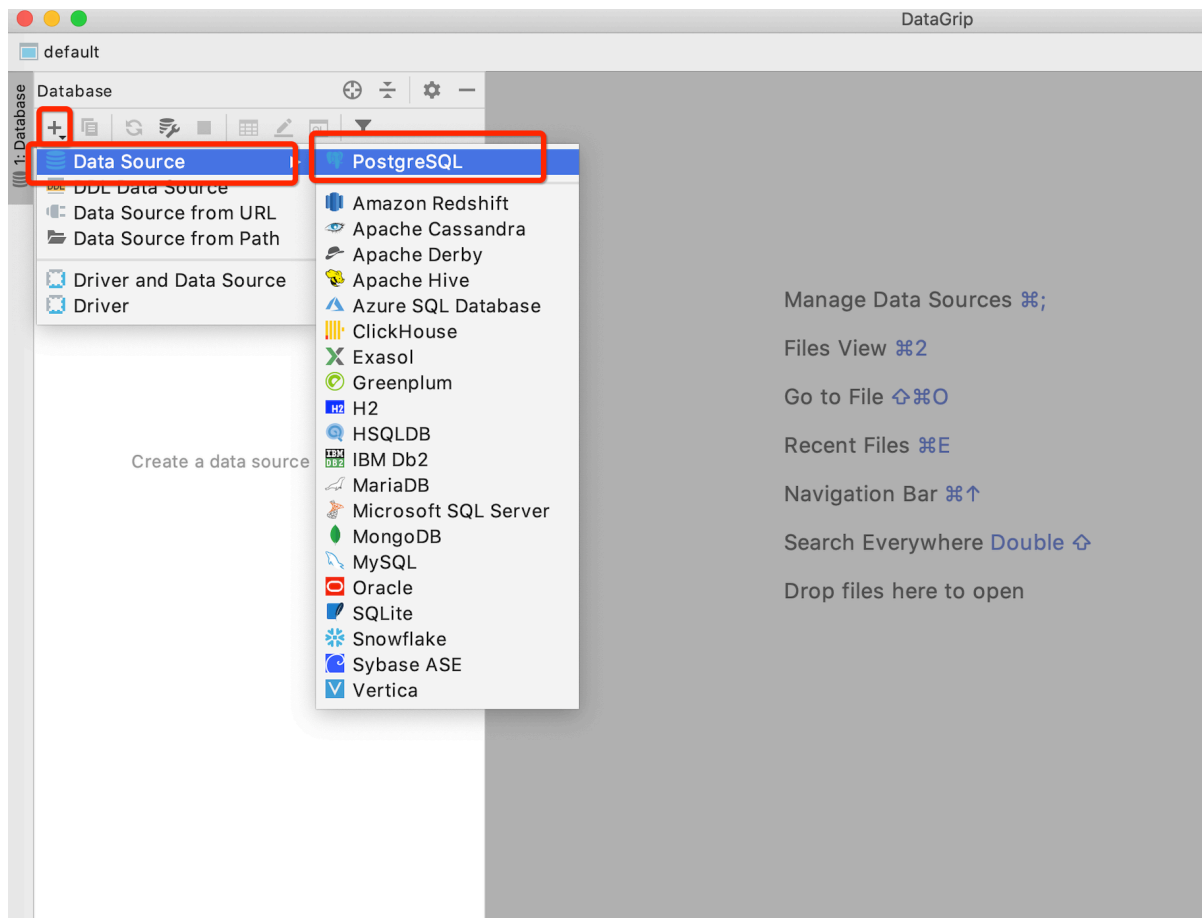
```
\q
```

## Part 3. Datagrip

Here to [download Datagrip](#), and then install it.

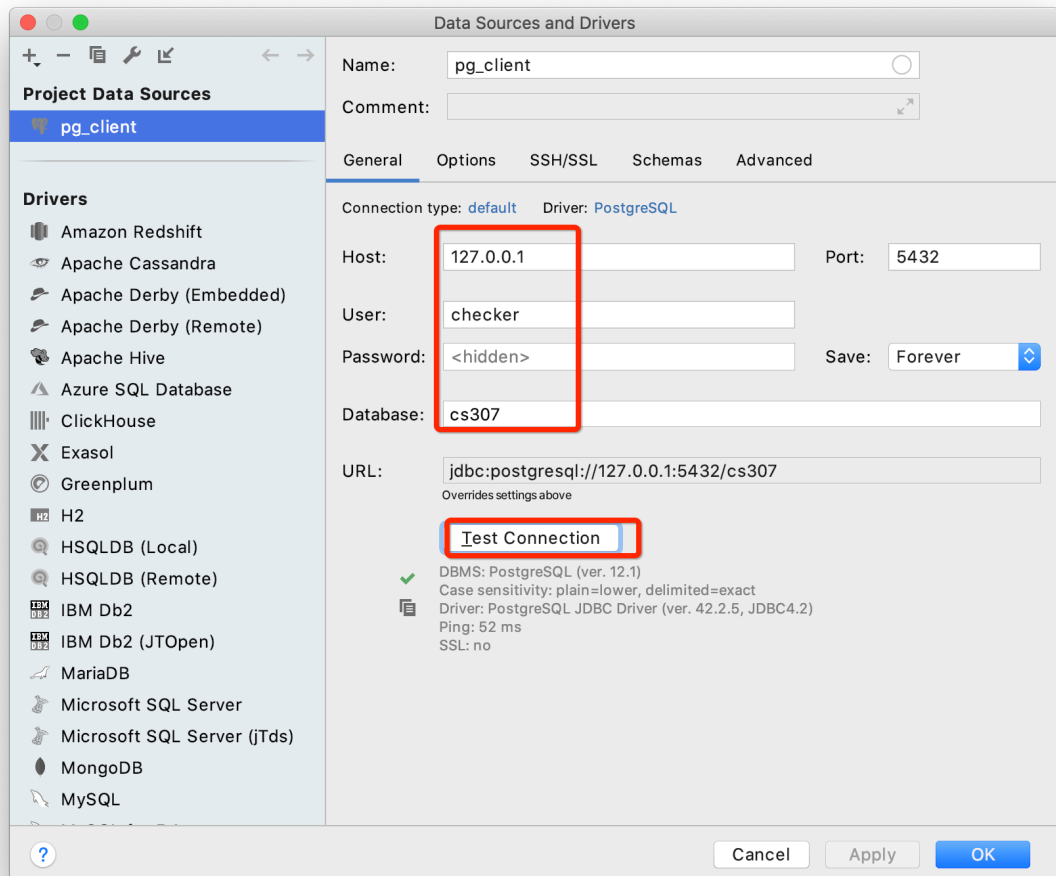
### How to use datagrip?

1. Add a postgresSQL client

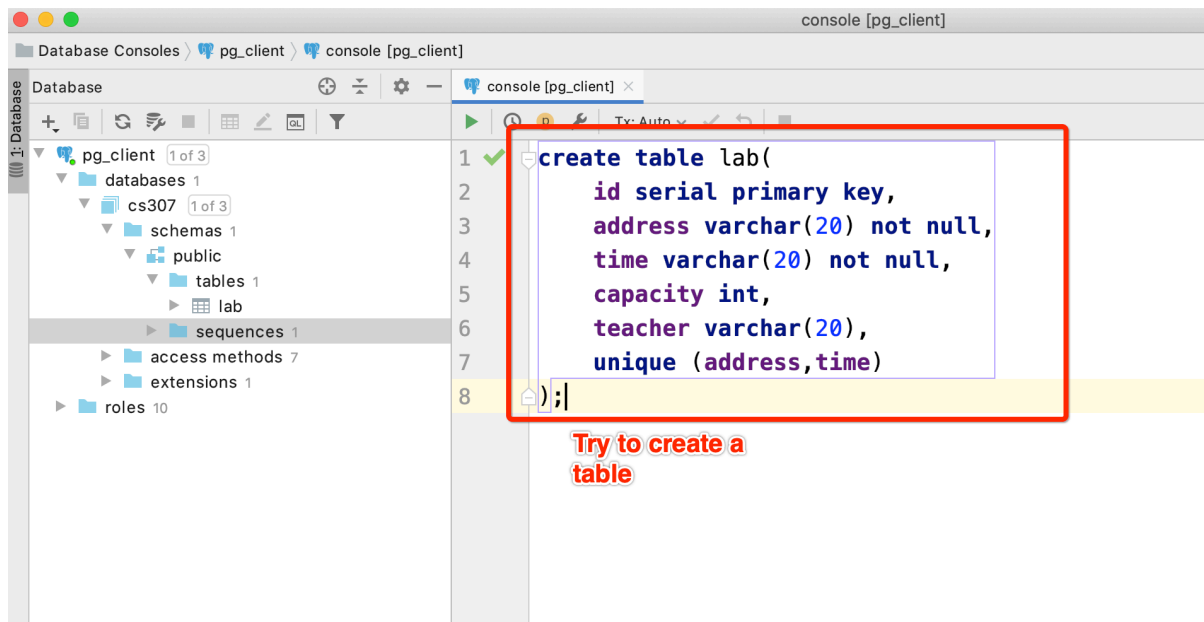


2. Download Driver

3. Fill in Host, User, Password and Database, and then click **Test Connection**



4. Try to create a table as follows in datagrip



## Part 4. What to Submit

1. Install PostgreSQL in your own computer (any system can be accepted).



2. Create a database named **cs307** with a owner named **checker**
3. Create a table in cs307 by the query below

```
create table lab(  
    id serial primary key,  
    address varchar(20) not null,  
    time varchar(20) not null,  
    capacity int,  
    teacher varchar(20),  
    unique (address,time)  
);
```

4. Install datagrip successfully, and using your datagrip to connect database cs307.
5. Accessing postgresQL database by network, which means you should connect database **cs307** by other ip address instead of 127.0.0.1. Do not use original superuser, you can use **checker** as a username. Now, you need search for any solutions to accomplish this task, and I think you, to be a student of CSE, can accomplish this task.
6. Please submit a merged **pdf** file which contains **two screenshots** as follows. The deadline of this submission is March 9th.

Screenshot 1 is about connection:

Name:

Comment:

General Options SSH/SSL Schema

Connection type: default Driver: PostgreSQL

Host:  Port:

User:  Password:

Save: Forever

Database:

URL:   
Overrides settings above

Test Connection

✓ DBMS: PostgreSQL (ver. 12.1)  
Case sensitivity: plain=lower, delimited=exact  
Driver: PostgreSQL JDBC Driver (ver. 42.2.5, JDBC4.2)  
Ping: 35 ms  
SSL: no

Cancel Apply OK

do not input 127.0.0.1 or localhost here

User must be checker

Screenshot 2 is a result of a query:

The screenshot shows a PostgreSQL console window with a SQL query and its results. The query is:

```
14
15 select table_catalog, table_name, column_name, data_type
16 from information_schema.columns
17 where table_schema = 'public'
18 and table_name = 'lab';
19
20
```

The output is displayed in a table with 5 rows and 4 columns: table\_catalog, table\_name, column\_name, and data\_type.

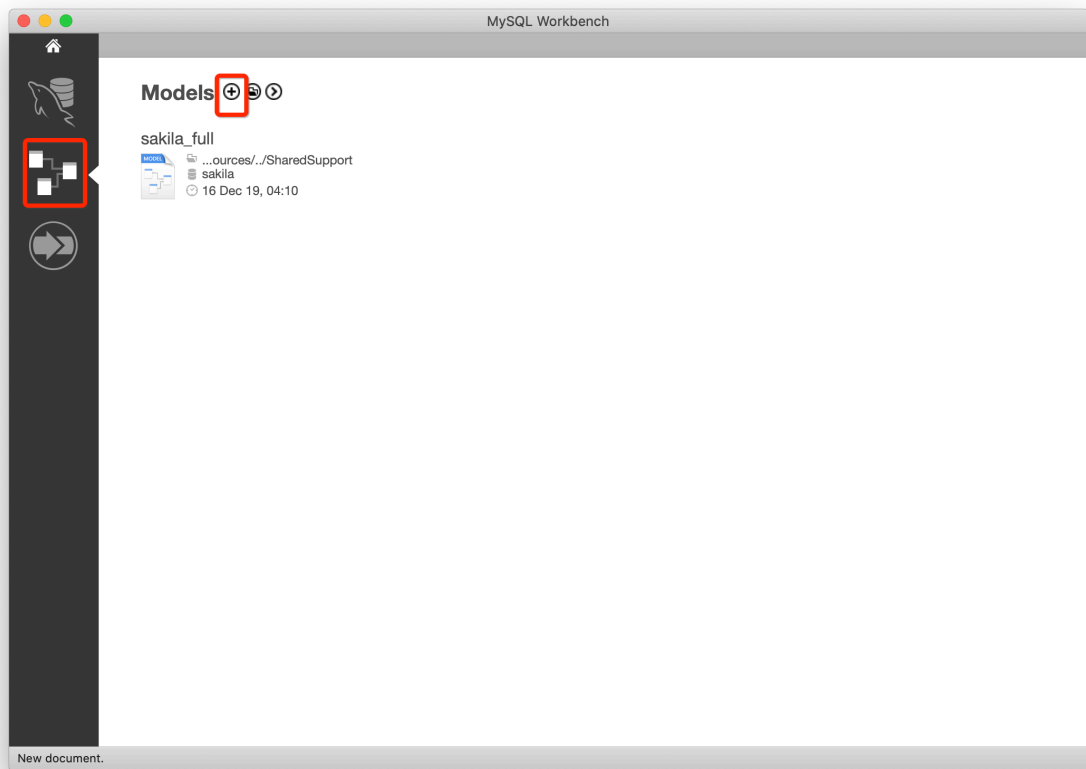
	table_catalog	table_name	column_name	data_type
1	cs307	lab	id	integer
2	cs307	lab	address	character varying
3	cs307	lab	time	character varying
4	cs307	lab	capacity	integer
5	cs307	lab	teacher	character varying

## Part 5. Install MySQL workbench

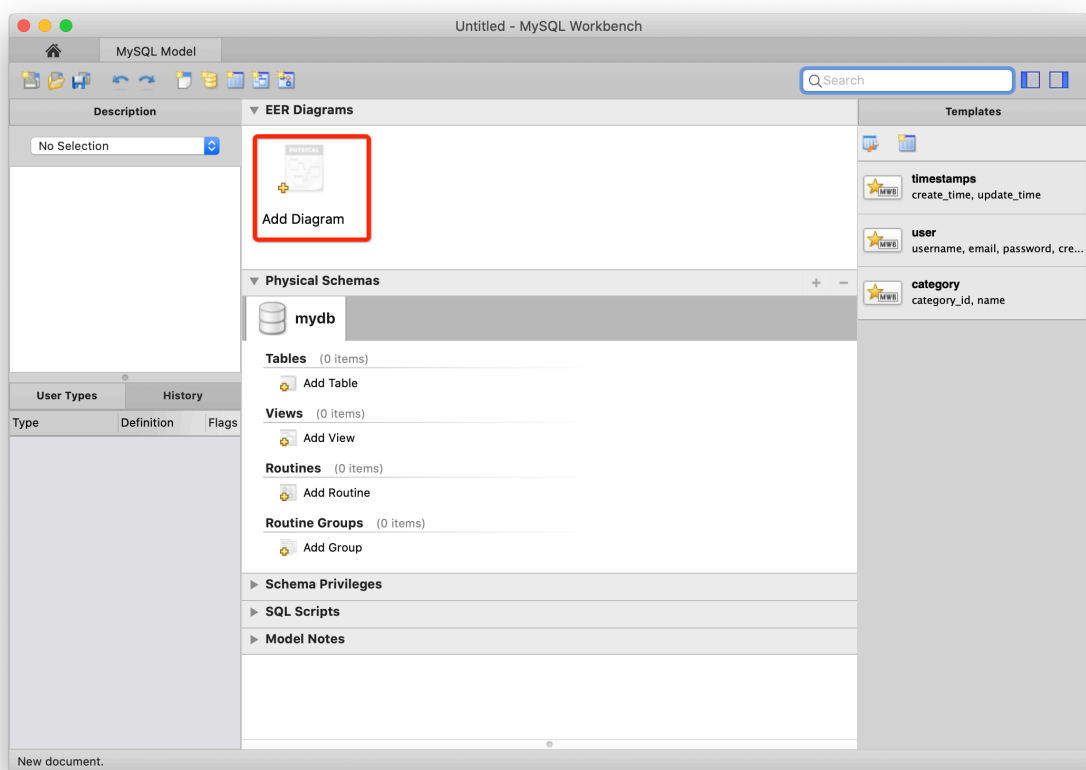
If you only want to download mysql workbench, you can download from [this link](#), and then install it. It is only mysql workbench [without](#) mysql server.

### How to use MySQL workbench ?

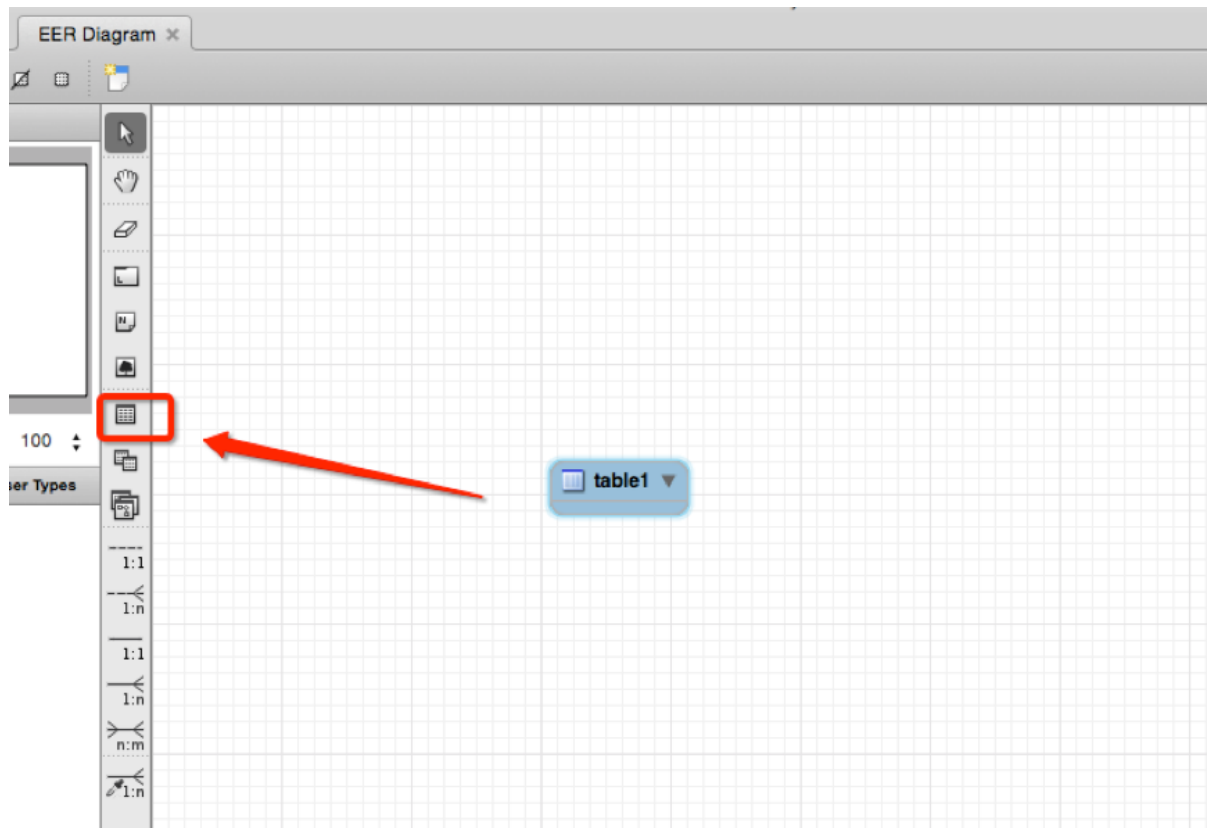
1. File—New Model



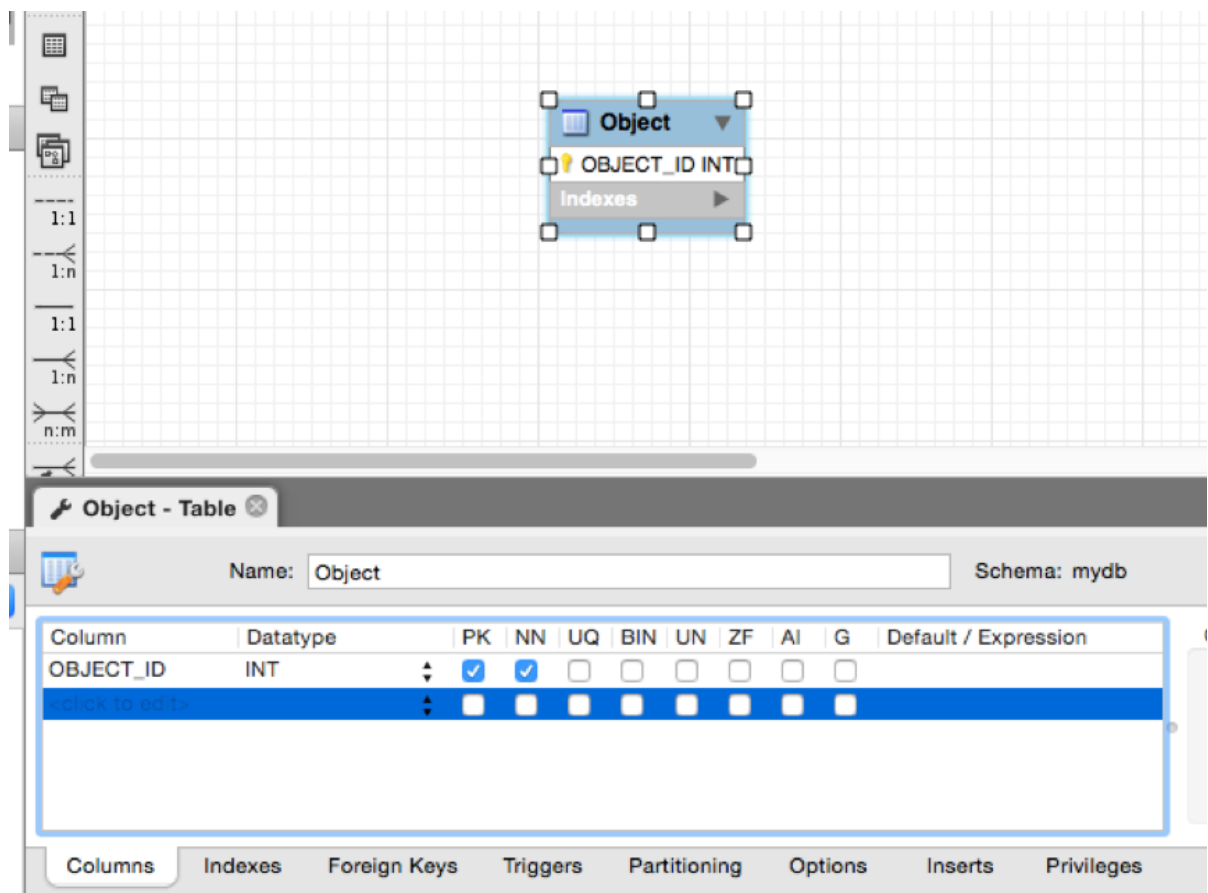
2. Double click Add diagram



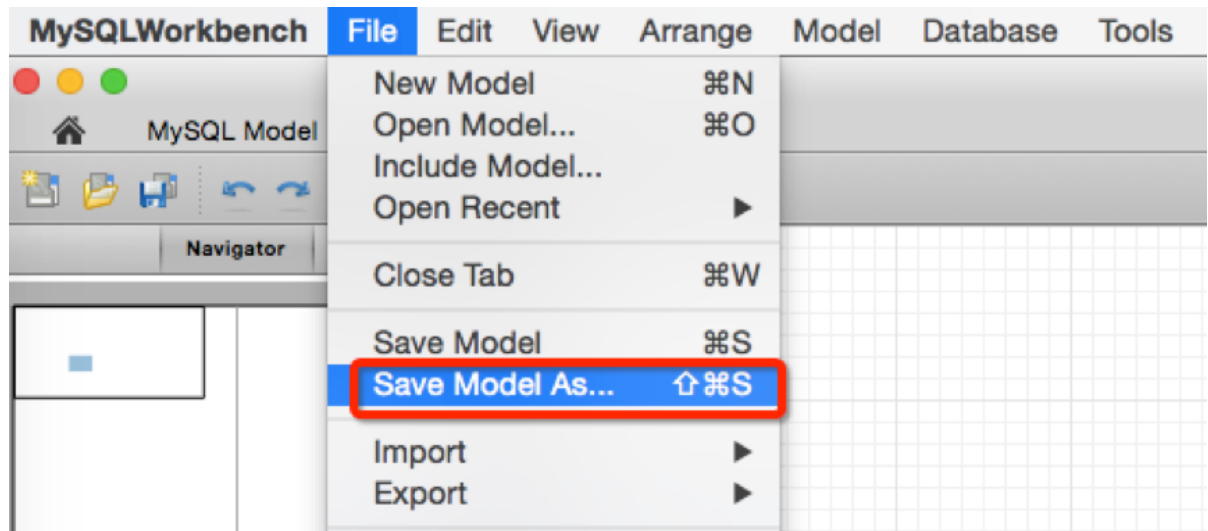
3. Add table to ER diagram by clicking this button



4. Double click table in ER diagram and edit it. Give it a name and add other columns.



5. When you finish editing your ER diagram, do not forget to save it.



**Tips:** I suggest you edit relationship between tables by setting foreign key from one table to another. Don't create relationships by adding lines directly in ER diagram.