

实验 1 DBMS 的安装和使用

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实验目的：

1. 通过安装某个数据库管理系统，初步了解 DBMS 的运行环境。
2. 了解 DBMS 交互界面、图形界面和系统管理工具的使用。
3. 搭建实验平台。

实验平台：

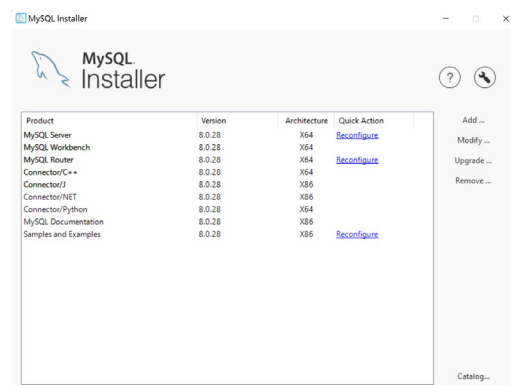
1. 操作系统：Windows11
2. 数据库管理系统：Mysql

实验内容和要求：

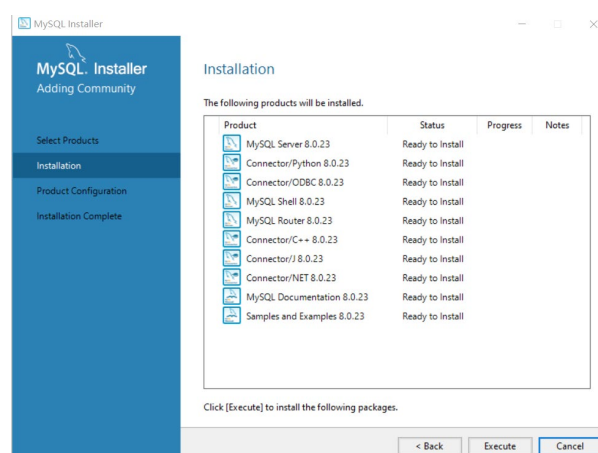
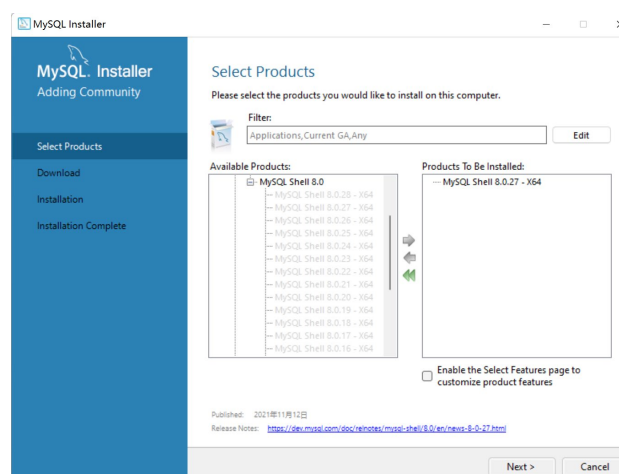
1. 根据官方文档，安装 DBMS；
 - 在官网下载 mysql-installer-web-community-8.0.23.0.msi 文件
 - 打开 mysql-installer-web-community-8.0.23.0.msi 启动
 - 打开界面



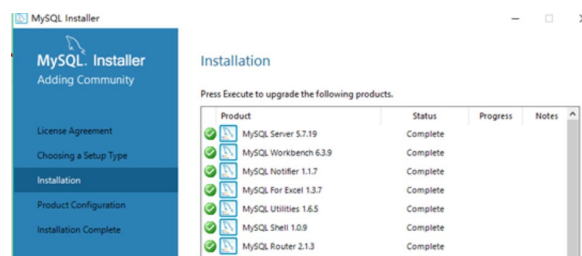
- 出现如下界面，点击 Add



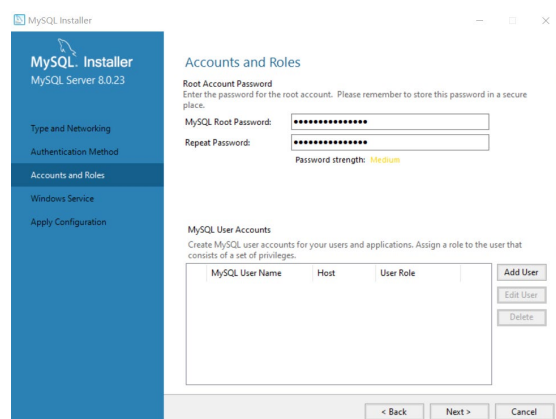
- Select Products 界面：选择需要安装的软件后点击 Next>



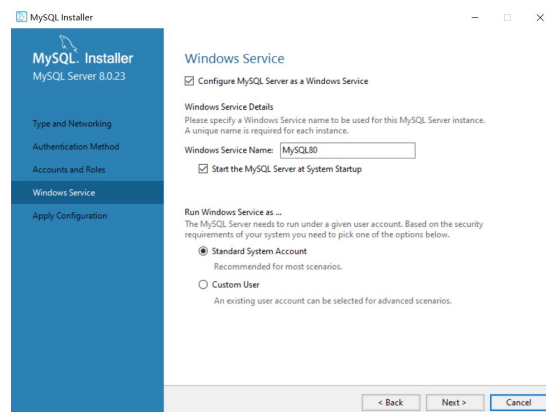
- 确认 Execute，开始安装



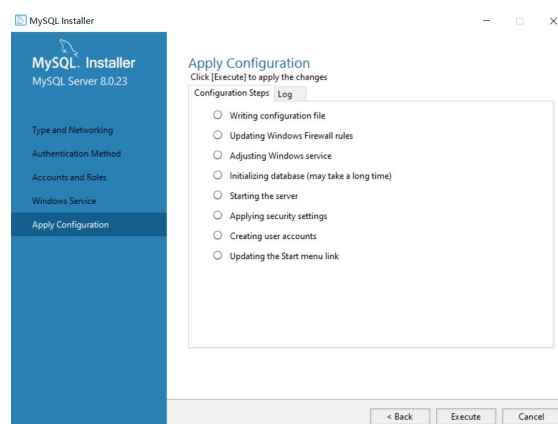
- Type and Networking 里选择默认选项点击 Next
- 设置管理员密码，点击 AddUser 添加使用者



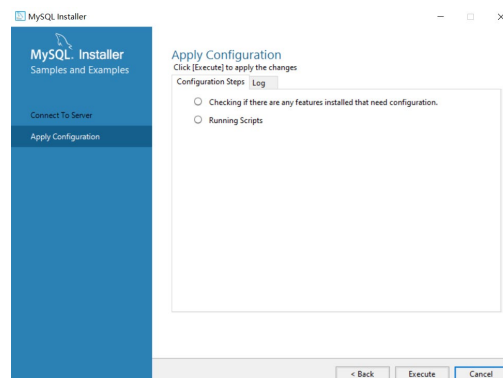
- Windows Services 里选择默认选项点击 Next



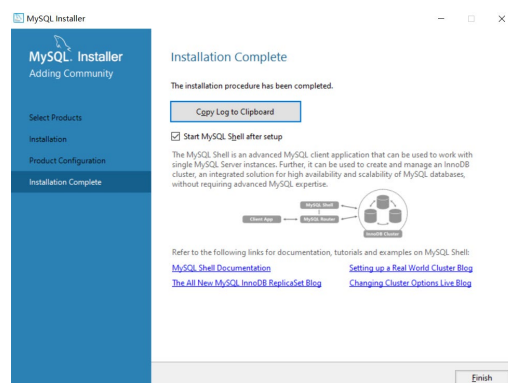
- 在 Apply Configuration 里点击 Execute，执行服务器配置



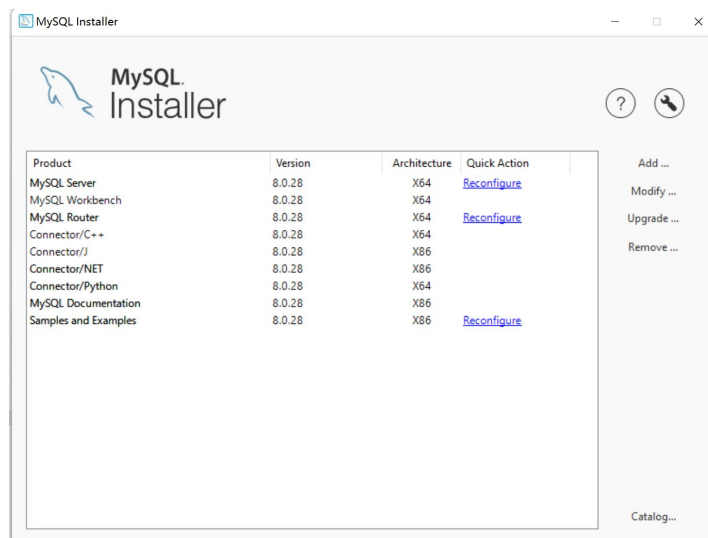
- 检查数据库连接完好后点击 Execute 执行样本数据库配置



- 安装完成

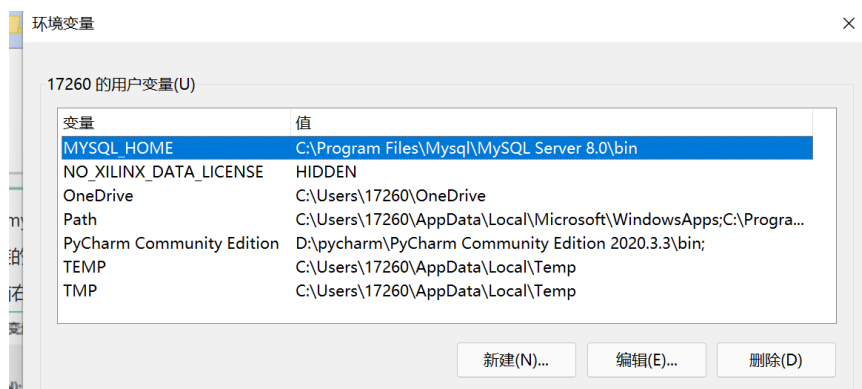


- 安装完成后的 Installer 主界面

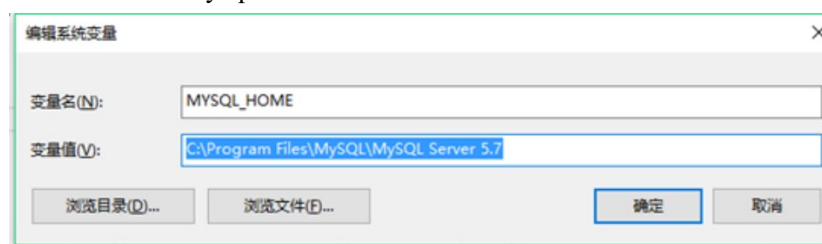


- 环境配置

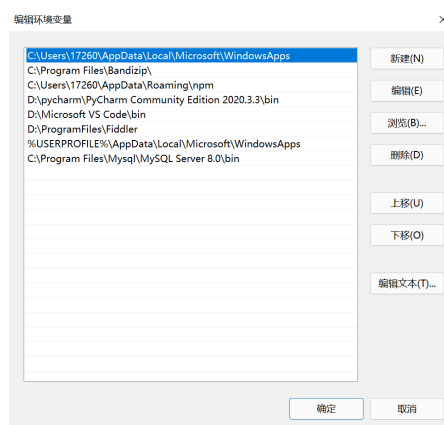
- 打开系统属性，点击环境变量



- 点击新建，将 mysql 的安装路径输入



- 找到 path，点击编辑，点击新建，输入

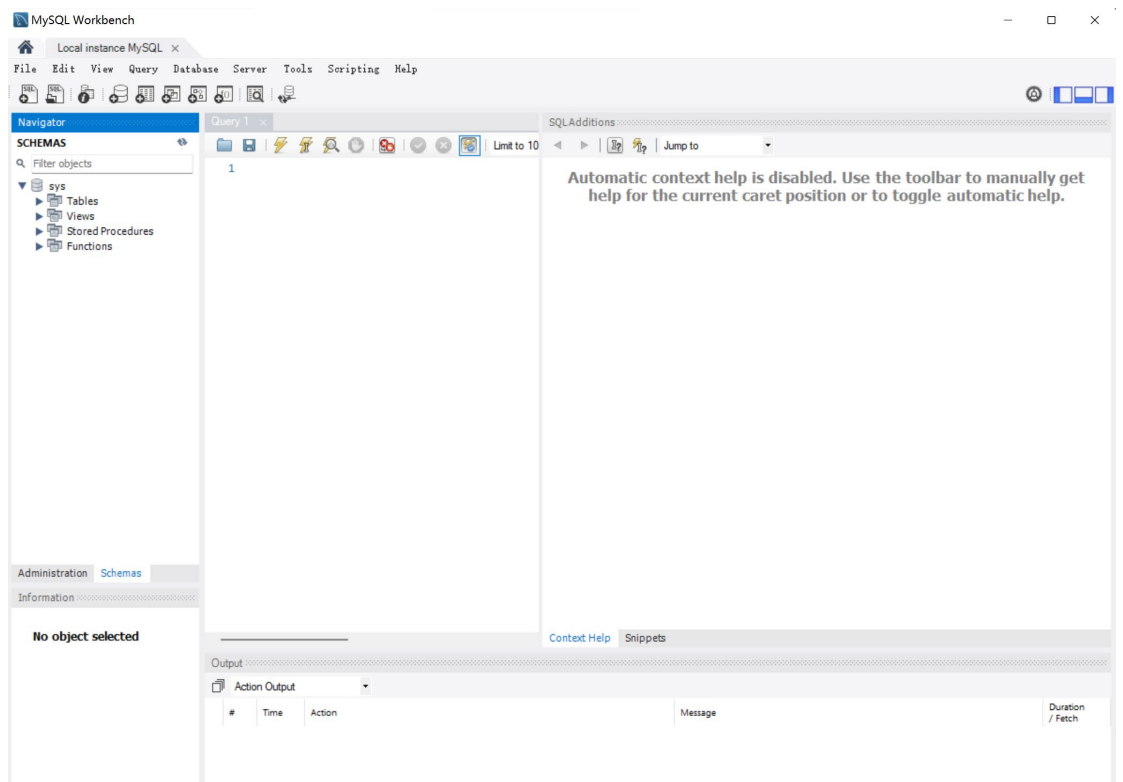


```

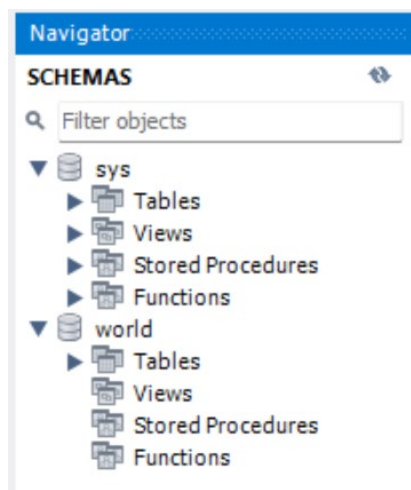
C:\Users\17260\AppData\Local\Microsoft\WindowsApps
C:\Program Files\Bandizip\
C:\Users\17260\AppData\Roaming\npm
D:\pycharm\PyCharm Community Edition 2020.3.3\bin
D:\Microsoft VS Code\bin
D:\ProgramFiles\Fiddler
%USERPROFILE%\AppData\Local\Microsoft\WindowsApps
C:\Program Files\MySQL\MySQL Server 8.0\bin

```

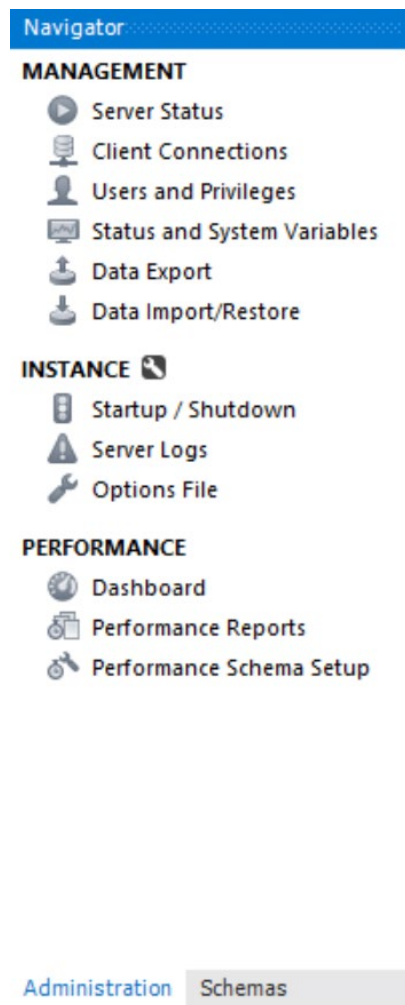
- 点击确定
- 打开 cmd 输入命令行 `mysql -u root -p`
- 输入密码
- 打开 MySQL Workbench 8.0 CE，选择 Local instance MySQL 实例，双击输入密码登录，登陆后界面如下



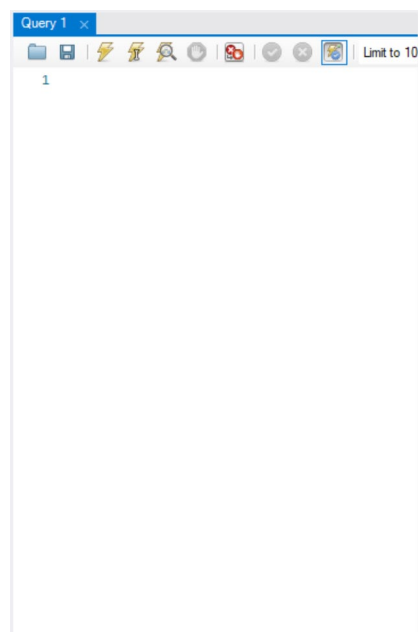
- SCHEMAS 区域显示数据库服务器中已经创建好的数据库列表，现有数据库 sys 和 world



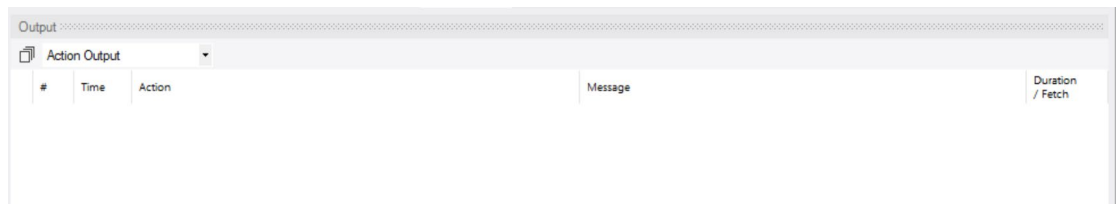
- Administration 区域包括 MANAGEMENT, INSTANCE, PERFORMANCE, 是数据库的操作列表。




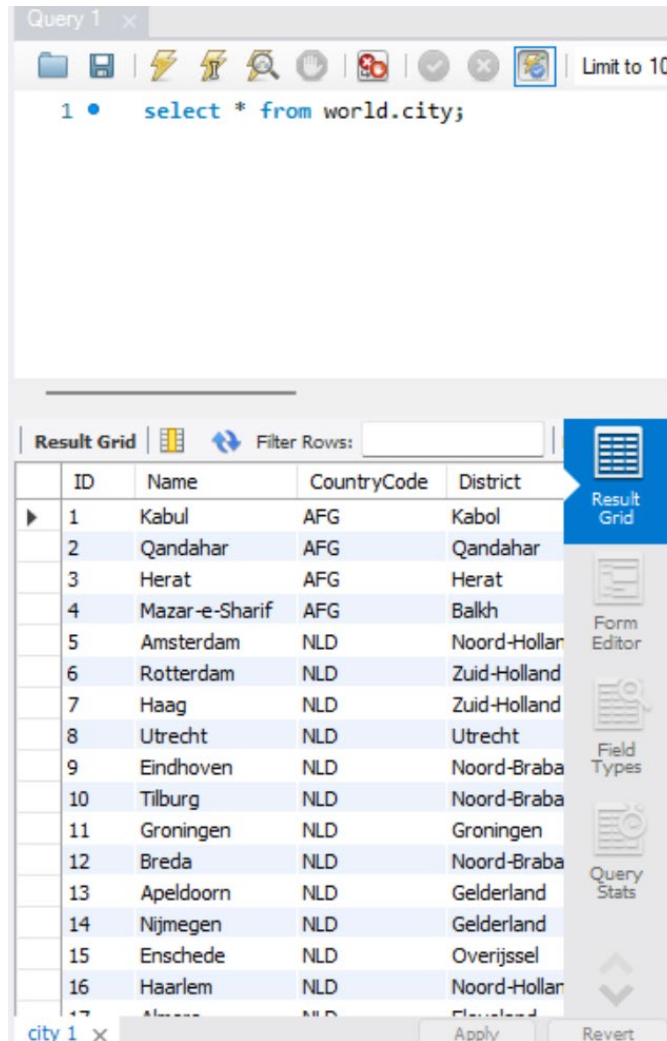
- 下图为 sql 编辑器和执行环境



- 下图为执行描述区域



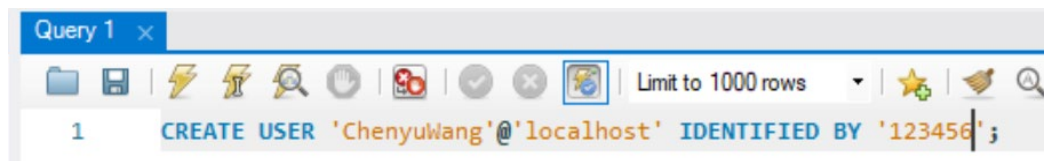
- 输入第一个 SQL 代码: `select *from world.city;`, 点击 , 出现了数据查询结果。



- 安装步骤完成
2. 了解 DBMS 的用户管理;
 - 创建新用户
 1. 命令:


```
CREATE USER 'username'@'host' IDENTIFIED BY 'password';
```
 2. 参数:
 - Username: 用户名
 - Host: 指定用户在哪个主机登录
 - 本地: localhost
 - 远程: 通配符%

Password: 密码



- 授权用户

1. 命令:

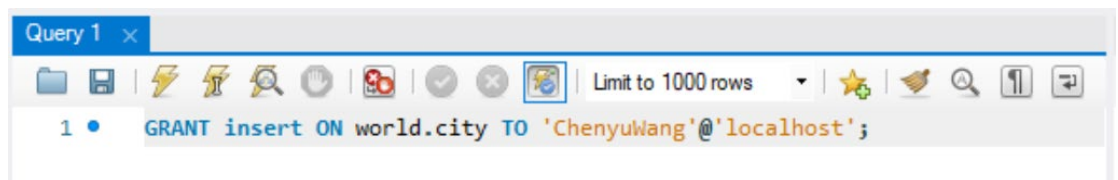
```
grant privileges on databasename.tablename to  
'username'@'host';
```

2. 参数:

Privileges: 操作权限, 可设置为 SELECT, INSERT, UPDATE, ALL

Databasename: 数据库名称

Tablename: 表明, “*” 可以表示对所有数据库和表的操作



- 设置和更改用户密码

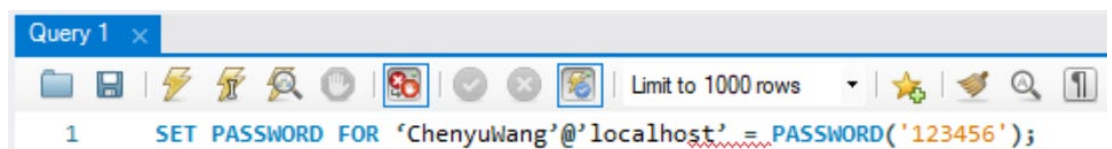
1. 命令:

非当前用户:

```
set passwor for 'username'@'host' =  
password('newpassword');
```

当前用户: set password = password('newpassword');

提示报错:



解决方案:

经过上网搜索资料, 发现可能是由于版本过新, 新版本的语法为:

```
ALTER USER user1@localhost IDENTIFIED BY 'NewPassword';
```

或者:

```
SET PASSWORD FOR user1@localhost = ' NewPassword ';
```

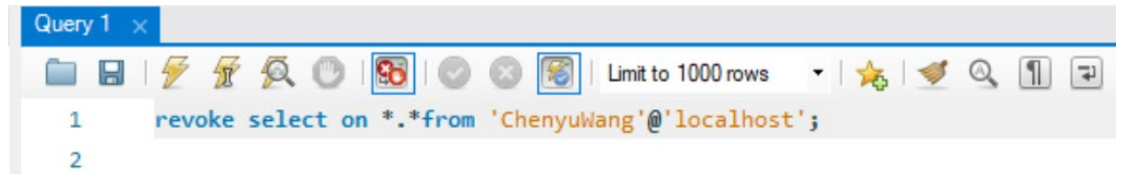
最终结果:



- 撤销权限

1. 命令:

```
REVOKE privilege ON databasename.tablename FROM  
'username'@'host';
```

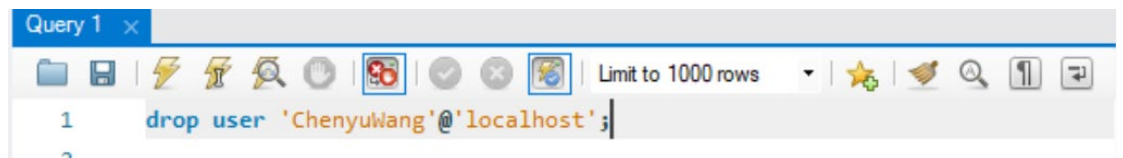



```
Query 1 x
1 revoke select on *.* from 'ChenyuWang'@'localhost';
2
```

- 删除用户

1. 命令:

DROP USER 'username'@'host';



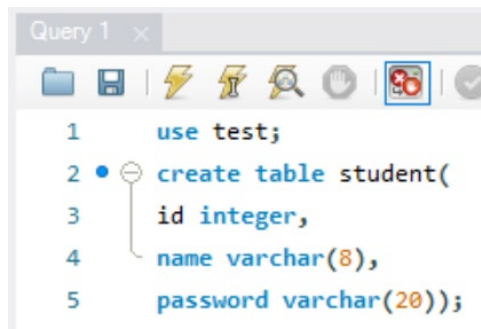
```
Query 1 x
1 drop user 'ChenyuWang'@'localhost';
2
```

3. 熟悉基本的命令行指令;

- 创建数据库

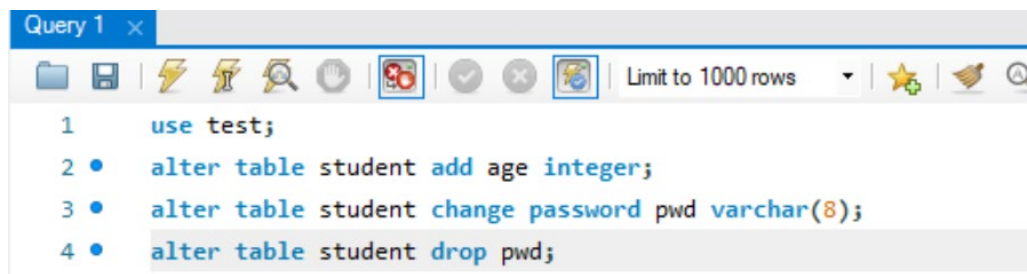
Create database test;

- 创建表



```
Query 1 x
1 use test;
2 create table student(
3 id integer,
4 name varchar(8),
5 password varchar(20));
```

- 删除表 输入命令: drop table table_name;
- 修改表名 输入命令: alter table student rename to stu;
- 在表中增加, 修改, 删除字段



```
Query 1 x
1 use test;
2 alter table student add age integer;
3 alter table student change password pwd varchar(8);
4 alter table student drop pwd;
```

- 数据类型

TINYINT, 1 bytes

SMALLINT, 2bytes

MEDIUNINT, 3bytes,

INT / INTEGER 4 bytes

BIGINT 8 bytes

FLOAT 4 bytes

DOUBLE 8 bytes

DECIMAL

用命令行进行实验:

1) 进入 Mysql, 输入密码

```
C:\WINDOWS\system32\cmd.exe - mysql -u root -p
Microsoft Windows [版本 10.0.22000.493]
(c) Microsoft Corporation. 保留所有权利。

C:\Users\17260>mysql -u root -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.28 MySQL Community Server - GPL

Copyright (c) 2000, 2022, Oracle and/or its affiliates.

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

2) 查看环境状态 status:

```
mysql> status;
-----
mysql Ver 8.0.28 for Win64 on x86_64 (MySQL Community Server - GPL)

Connection id:          16
Current database:
Current user:           root@localhost
SSL:                    Cipher in use is TLS_AES_256_GCM_SHA384
Using delimiter:        ;
Server version:         8.0.28 MySQL Community Server - GPL
Protocol version:       10
Connection:             localhost via TCP/IP
Server characterset:    utf8mb4
Db characterset:        utf8mb4
Client characterset:    gbk
Conn. characterset:     gbk
TCP port:               3306
Binary data as:         Hexadecimal
Uptime:                 4 hours 58 min 13 sec

Threads: 4  Questions: 5785  Slow queries: 0  Opens: 273  Flush tables: 3  Open tables: 186  Queries per second avg: 23
-----
```

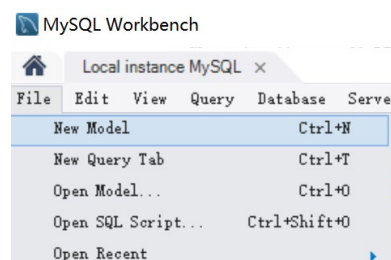
3) 查看数据库 show databases:

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql      |
| performance_schema |
| sys       |
| test      |
| world     |
+-----+
6 rows in set (0.01 sec)
```

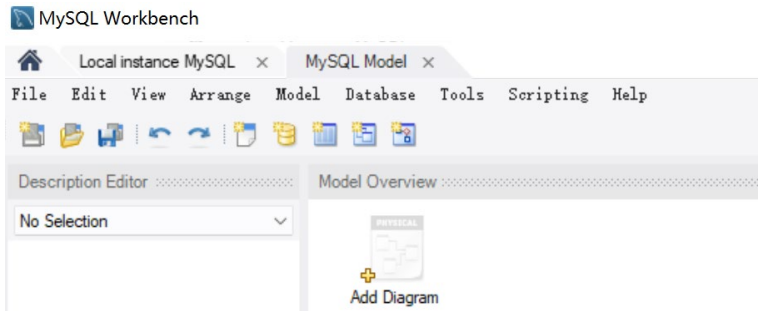
4. 熟悉图形界面对数据库表的功能和操作

● 创建 Model, 设计 ER 图

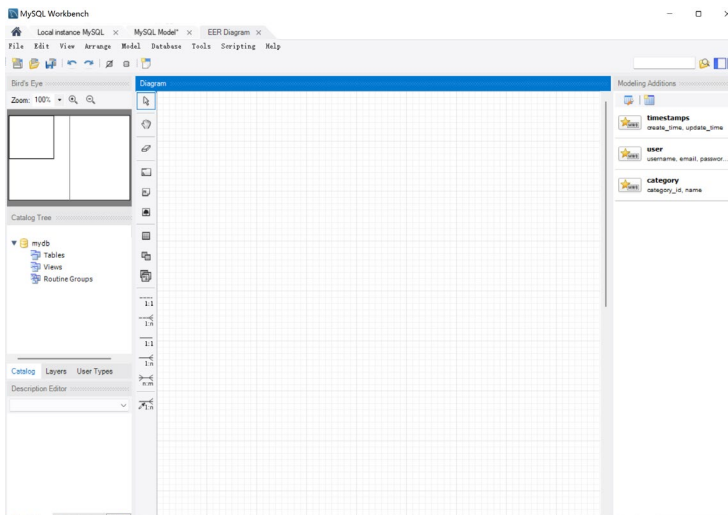
File -> New Model



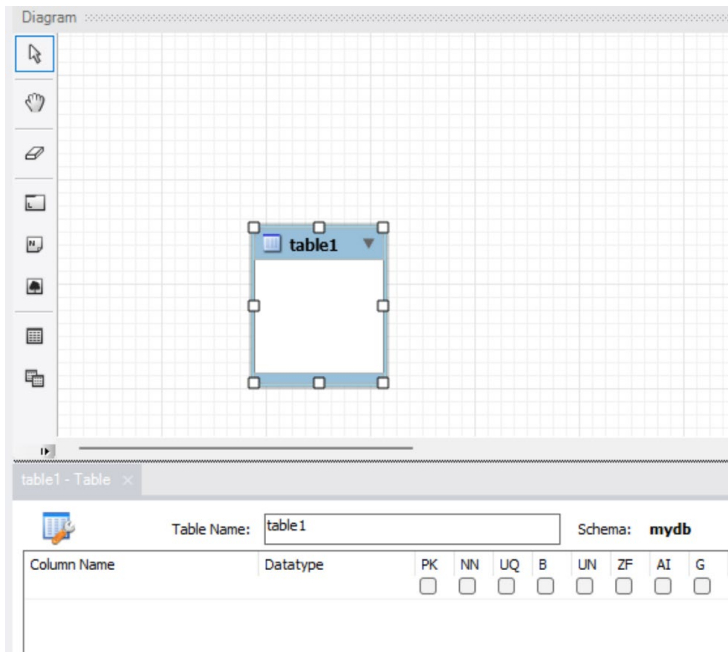
Add Diagram:



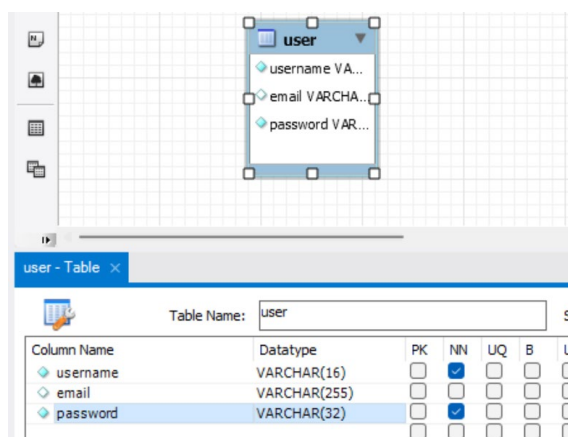
出现如下界面：



添加一个表：



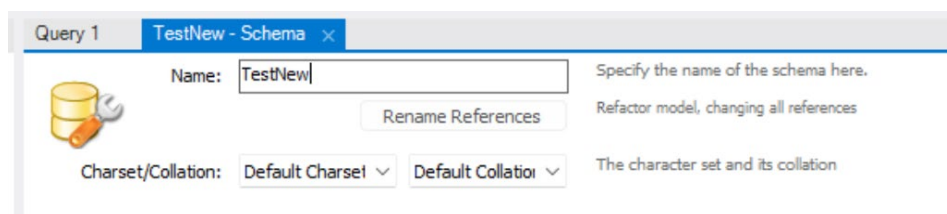
双击表格，创建各个字段。



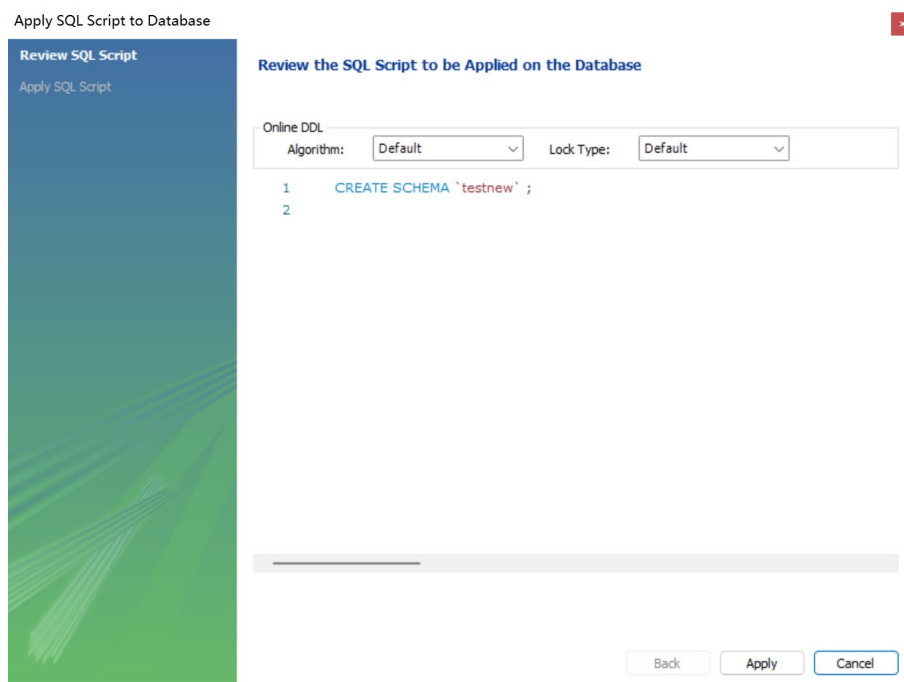
5. 了解基本的 DBMS 管理功能和操作

● 新建数据库

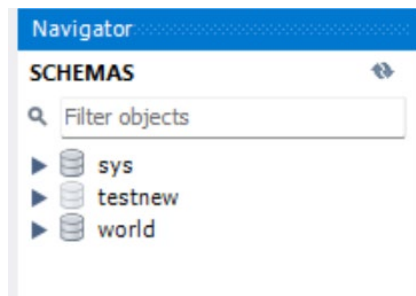
新建数据库，输入内容，点击 Apply



弹出如下界面，点击 Apply，创建成功

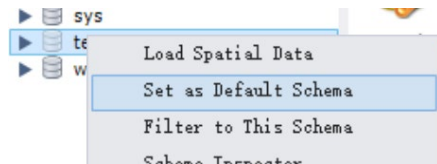


查看右侧数据库列表，出现了新数据库，说明创建完成

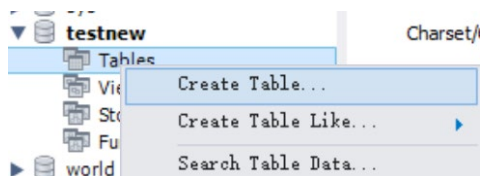


- 创建数据表

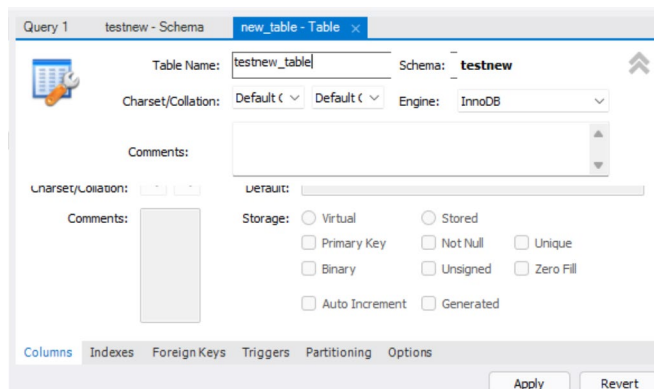
右击刚刚创建的数据库选择 set as DefaultSchema 将新数据库设置为默认数据库



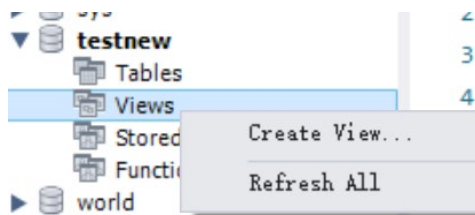
创建 Table:



在如下窗口中设置参数，点击 Apply



- 新建视图

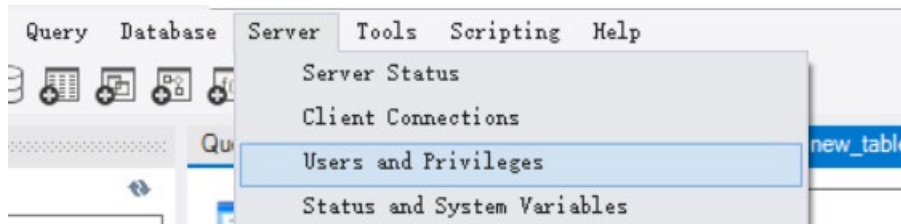


- 存储过程

- 用户和权限管理

1) 创建用户:

菜单栏中选择 Server-> Users and Privileges



点开后出现如下界面，点击 Add Account，创建新用户

Local instance MySQL80
Users and Privileges

User Accounts

User	From Host
mysql.infoschema	localhost
mysql.session	localhost
mysql.sys	localhost
newuser	%
noodles	localhost
root	localhost

Details for account newuser@%

Login Account Limits Administrative Roles Schema Privileges

Login Name: You may create multiple accounts with the same name to connect from different hosts.

Authentication Type: For the standard password and/or host based authentication, select 'Standard'.

Limit to Hosts Matching: % and _ wildcards may be used

Password: Type a password to reset it.

Confirm Password: Enter password again to confirm.

2) 删除用户：点击 Delete 删除

User Accounts

User	From Host
mysql.infoschema	localhost
mysql.session	localhost
mysql.sys	localhost
newuser	%
noodles	localhost
root	localhost