01. 专题一：MySQL的安装

版权说明

1. 本专题目标

- 掌握在Windows下安装MySQL数据库
- 掌握在CentOS下安装MySQL数据库

- 掌握在ubuntu下安装MySQL数据库

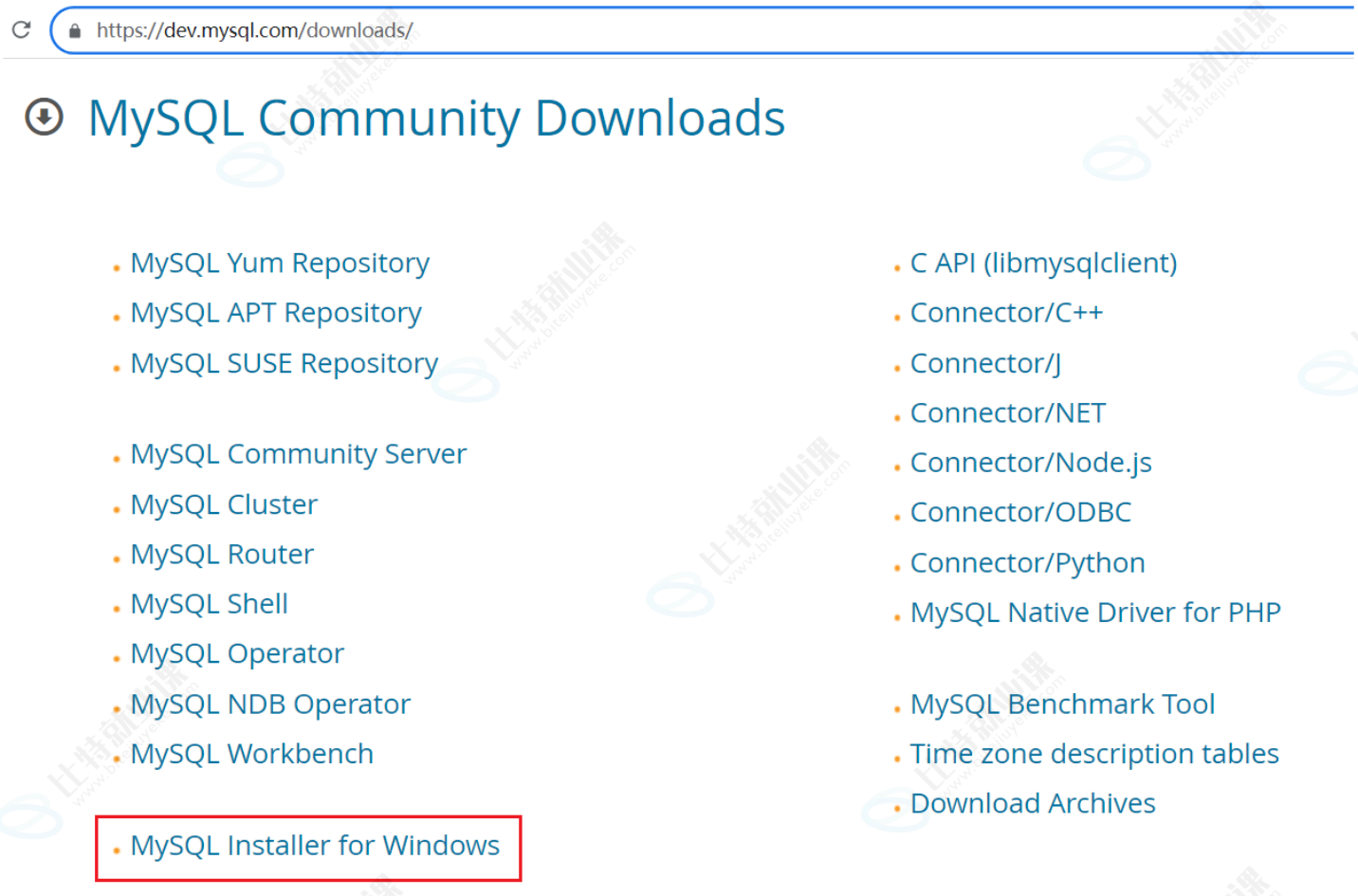
MySQL版本：8.0.x

安装之前先确保没有MySQL服务正在运行，建议在没有安装过MySQL的机器上进行全新的安装。

2. 在Windows下安装MySQL数据库

具体过程可以回顾MySQL初阶相关课程，并根据安装程序提示进行操作

- Windows下推荐使用安装程序进行安装
- 安装程序下载地址：https://dev.mysql.com/downloads/



- 根据安装程序提示成安装即可

3. 在CentOS下安装MySQL数据库

操作系统版本为CentOS 7

使用 MySQL Yum仓库在 Linux 上安装 MySQL

3.1 确认当前的系统版本

- 登录系统并切换至**root**账号，否则执行命令时需要用**sudo**命令，并按提示输入密码

- 在终端中运行以下命令，查看系统版本。如下所示，当前系统版本为**CentOS Linux release 7.9.2009**

```
[root@mini-001 ~]# cat /etc/redhat-release
CentOS Linux release 7.9.2009 (Core)
```

3.2 添加 MySQL Yum 源

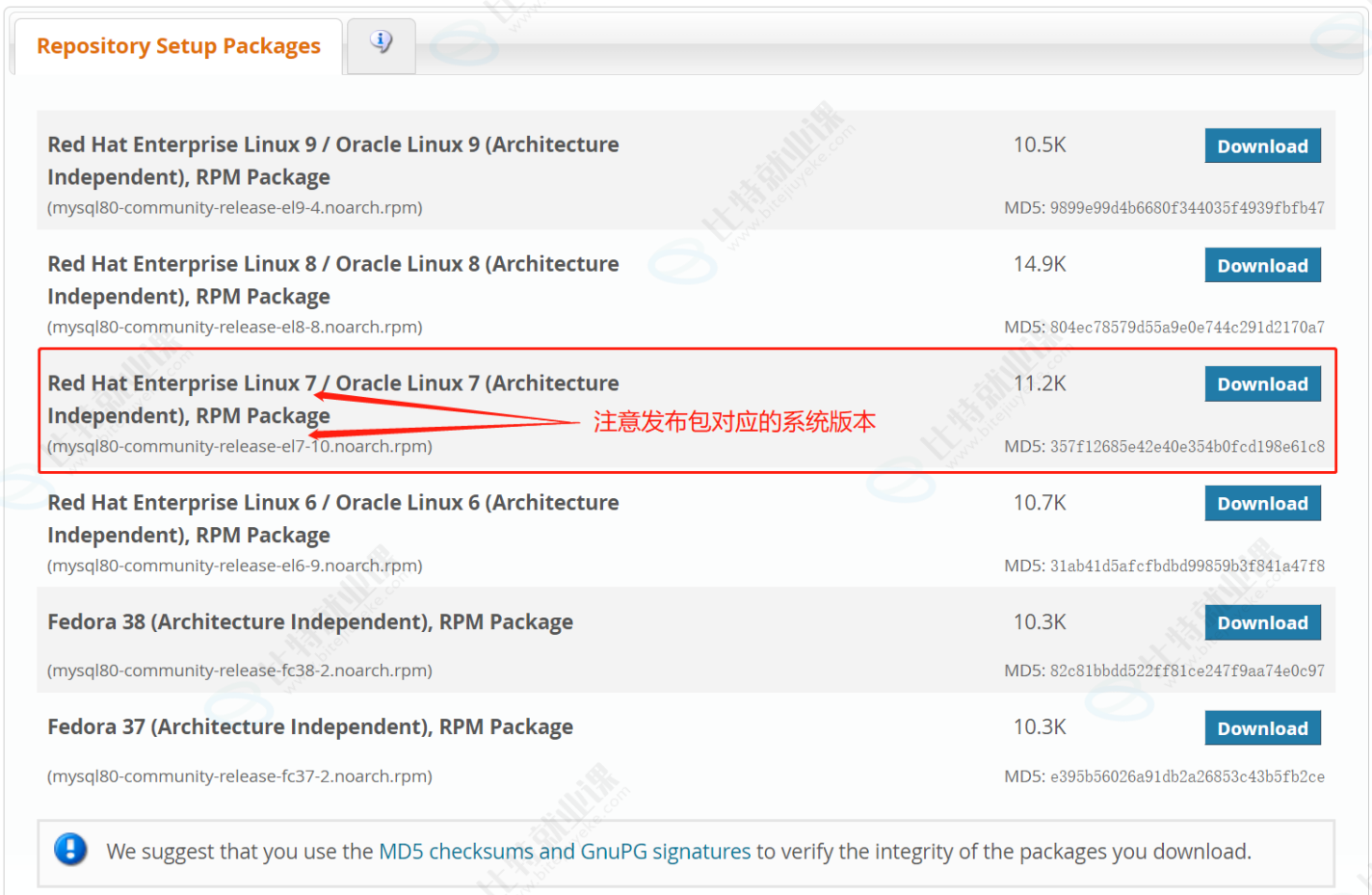
3.2.1 访问MySQL开发者专区

https://dev.mysql.com/downloads/repo/yum

3.2.2 根据当前系统选择对应的发布包

MySQL Community Downloads

MySQL Yum Repository



TIPS:

1. **发布包命名规则：**

{mysql80}-community-release-*{platform}*-*{version-number}*.noarch.rpm

{mysql80}：MySQL版本号

{platform}：平台(系统)号，用来描述系统的版本

*{version-number}：*MySQL仓库配置RPM包的版本号

2. **如下所示：**

mysql80-community-release-el7-10.noarch.rpm

mysql80: MySQL版本号，默认是MySQL8.0版本

el7 : 其中**el** 是 Enterprise Linux的编写，7表示 Linux大版本号，比如el6 表示 Linux6, el7表示 Linux7, e8表示Linux8, el9表示Linux9, '**fc**' 则表示 Fedora

el7-**10**：表示MySQL仓库配置RPM包的第10次更新

3. **选择方式：**

针对当前演示系统版本Linux7，以及我们要安装的MySQL数据库版本8.0，选择对应RPM包的最近一次更新，所以下载**mysql80-community-release-el7-10.noarch.rpm**即可

4. **其他版本**

如果默认下载页面没有你所需要的RPM包，可以通过http://repo.mysql.com/查找

3.2.3 下载后上传到Linux服务器

TIPS: 安装 rz 插件以支持拖拽上传

[root@mini-001 ~]# **yum -y install lrzsz**

- 上传完成后查看是否成功

```
[root@centos-001 ~]# ll
-rwxrw-rw-. 1 root root 11472 Aug 25 01:12 mysql80-community-release-el7-10.noarch.rpm
```

3.2.4 安装发布包

- **在终端执行：yum -y install mysql80-community-release-el7-10.noarch.rpm**

```
[root@centos-001 ~]# yum -y install mysql80-community-release-el7-10.noarch.rpm
Loaded plugins: fastestmirror, langpacks
Examining mysql80-community-release-el7-10.noarch.rpm: mysql80-community-release-el7-10.noarch
Marking mysql80-community-release-el7-10.noarch.rpm to be installed
Resolving Dependencies
--> Running transaction check
---> Package mysql80-community-release.noarch 0:el7-10 will be installed
```

```
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
================================================================================
 Package                                                 Arch
     Version                             Repository
                              Size
================================================================================
================================================================================
Installing:
 mysql80-community-release                               noarch
     el7-10                              /mysql80-community-release-el7-10.noarch
                              12 k

Transaction Summary
================================================================================
================================================================================
Install  1 Package

Total size: 12 k
Installed size: 12 k
Downloading packages:
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : mysql80-community-release-el7-10.noarch
                                                                              1/1
  Verifying  : mysql80-community-release-el7-10.noarch
                                                                              1/1

Installed:
  mysql80-community-release.noarch 0:el7-10



Complete!
```

- **通过以下命令检查是否已成功添加 MySQL Yum 源**

在终端执行： **yum repolist enabled | grep mysql.*-community**

```
[root@centos-001 ~]# yum repolist enabled | grep mysql.*-community
mysql-connectors-community/x86_64       MySQL Connectors Community
227
mysql-tools-community/x86_64            MySQL Tools Community
100
mysql80-community/x86_64                MySQL 8.0 Community Server
426 # 说明已安装
```

3.3 选择发布系列

- 在终端执行 **yum repolist all | grep mysql**
- **mysql80-community/x86_64、mysql-connectors-community/x86_64、mysql-tools-community/x86_64** 为启用状态

```
[root@centos-001 ~]# yum repolist all | grep mysql
mysql-cluster-7.5-community/x86_64                  MySQL Cluste disabled
mysql-cluster-7.5-community-source                  MySQL Cluste disabled
mysql-cluster-7.6-community/x86_64                  MySQL Cluste disabled
mysql-cluster-7.6-community-source                  MySQL Cluste disabled
mysql-cluster-8.0-community/x86_64                  MySQL Cluste disabled
mysql-cluster-8.0-community-debuginfo/x86_64        MySQL Cluste disabled
mysql-cluster-8.0-community-source                  MySQL Cluste disabled
mysql-cluster-innovation-community/x86_64           MySQL Cluste disabled
mysql-cluster-innovation-community-debuginfo/x86_64 MySQL Cluste disabled
mysql-cluster-innovation-community-source           MySQL Cluste disabled
mysql-connectors-community/x86_64                   MySQL Connec enabled:
227 #启用
mysql-connectors-community-debuginfo/x86_64         MySQL Connec disabled
mysql-connectors-community-source                   MySQL Connec disabled
mysql-innovation-community/x86_64                   MySQL Innova disabled
mysql-innovation-community-debuginfo/x86_64         MySQL Innova disabled
mysql-innovation-community-source                   MySQL Innova disabled
mysql-tools-community/x86_64                        MySQL Tools  enabled:
100 #启用
mysql-tools-community-debuginfo/x86_64              MySQL Tools  disabled
mysql-tools-community-source                        MySQL Tools  disabled
mysql-tools-innovation-community/x86_64             MySQL Tools  disabled
mysql-tools-innovation-community-debuginfo/x86_64   MySQL Tools  disabled
mysql-tools-innovation-community-source             MySQL Tools  disabled
mysql-tools-preview/x86_64                          MySQL Tools  disabled
mysql-tools-preview-source                          MySQL Tools  disabled
```

```
mysql57-community/x86_64                        MySQL 5.7 Co disabled
mysql57-community-source                        MySQL 5.7 Co disabled
mysql80-community/x86_64                        MySQL 8.0 Co enabled:
426 #启用
mysql80-community-debuginfo/x86_64              MySQL 8.0 Co disabled
mysql80-community-source                        MySQL 8.0 Co disabled

```

3.4 安装 MySQL

- 在终端执行：**yum install mysql-community-server**

安装过程提示是否继续，选y即可

> 将安装 MySQL 服务器包（`mysql-community-server`）以及运行服务器所需的组件，包括:
>
> 客户端包（`mysql-community-client`）
>
> 客户端和服务器常见错误消息和字符集（`mysql-community-common`）
>
> 共享客户端库（`mysql-community-libs`）.

```
[root@centos-001 ~]# yum install mysql-community-server

# ....省略
                                                              6/6

Installed:  # 服务器程序
  mysql-community-server.x86_64 0:8.0.34-1.el7


Dependency Installed: # 相关依赖
  mysql-community-client.x86_64 0:8.0.34-1.el7
  mysql-community-client-plugins.x86_64 0:8.0.34-1.el7
  mysql-community-common.x86_64 0:8.0.34-1.el7
  mysql-community-icu-data-files.x86_64 0:8.0.34-1.el7
  mysql-community-libs.x86_64 0:8.0.34-1.el7

Complete!

```

3.5 启动 MySQL 服务器

- 在终端执行： **systemctl start mysqld**

```
[root@centos-001 ~]# systemctl start mysqld
```

3.6 查看MySQL 服务状态

- 在终端执行： **systemctl status mysqld**

```
[root@centos-001 ~]# systemctl status mysqld
● mysqld.service - MySQL Server
   Loaded: loaded (/usr/lib/systemd/system/mysqld.service; enabled; vendor preset: disabled)
   Active: active (running) since Tue 2023-08-29 00:39:04 PDT; 2min 6s ago
     Docs: man:mysqld(8)
           http://dev.mysql.com/doc/refman/en/using-systemd.html
  Process: 4080 ExecStartPre=/usr/bin/mysqld_pre_systemd (code=exited, status=0/SUCCESS)
 Main PID: 4107 (mysqld)
   Status: "Server is operational"
    Tasks: 37
   CGroup: /system.slice/mysqld.service
           └─4107 /usr/sbin/mysqld

Aug 29 00:39:00 centos-001 systemd[1]: Starting MySQL Server...
Aug 29 00:39:04 centos-001 systemd[1]: Started MySQL Server.
```

- 可以使用 **systemctl [stop| start| restart| status] mysqld,** 命令对MySQL服务进行[停止| 启动|重启|查看服务状态]操作

3.7 开启自启动

- 在终端执行：**systemctl enable mysqld**

```
[root@centos-001 ~]# systemctl enable mysqld  #设置自启动
[root@centos-001 ~]# systemctl list-unit-files|grep mysqld #查看状态
mysqld.service                              enabled

```

3.8 登录MySQL

首次安装成功，MySQL把**root**用户的默认密码保存在错误日志中

- 可以通过在终端执行：**grep 'temporary password' /var/log/mysqld.log 进行查看**

```
[root@centos-001 log]# grep 'temporary password' /var/log/mysqld.log
2023-08-25T08:32:10.905479Z 6 [Note] [MY-010454] [Server] A temporary password
is generated for root@localhost: IRDMJQ_.v566 #这个就是默认生成的密码
```

- 使用密码进行登录

```
[root@centos-001 log]# mysql -uroot -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.34 MySQL Community Server - GPL

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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>

```

3.9 修改密码

> TIPS:
>
> `validate_password` 组件是默认安装的，实现的默认密码策略，要求密码至少包含1个大写字母、1个小写字母、1个数字和1个特殊字符，密码总长度至少为8个字符。

3.9.1 默认密码策略

密码策略分为 `LOW` 、 `MEDIUM` (默认)和 `STRONG` ，分别用0，1(默认)，2表示。

0表示只校验密码长度，长度最小为8，所以以后要设置简单密码时还需要修改密码的长度限制。

他们分别用两个系统变量**validate-password.policy和validate_password.length**表示

在MySQL 客户端运行以下命令查看当前设置

```
mysql> show variables like 'validate_password.policy'; #查看当前密码策略
+--------------------------+--------+
| Variable_name            | Value  |
+--------------------------+--------+
| validate_password.policy | MEDIUM | # 中等
```

```
+--------------------------+-------+
1 row in set (0.00 sec)

mysql> show variables like 'validate_password.length'; #查看当前密码长度限制
+--------------------------+-------+
| Variable_name            | Value |
+--------------------------+-------+
| validate_password.length | 8     | # 最小为8个字符
+--------------------------+-------+
1 row in set (0.00 sec)
```

3.9.2 设置简单密码

如果我们要在开发环境设置如123456的简单密码那么就要修改默认密码策略，

我们只需要设置**validate-password.policy和validate_password.length**对应的值即可。

- **在终端执行以下命令：**

```
mysql> set global validate_password.policy=0; #策略设置为LOW
Query OK, 0 rows affected (0.00 sec)

mysql> set global validate_password.length=4; #密码长度最少为4位(系统限制不能小于4位)
Query OK, 0 rows affected (0.00 sec)
```

- **重新查看系统变量的值：**

```
mysql> show variables like 'validate_password.policy';
+--------------------------+-------+
| Variable_name            | Value |
+--------------------------+-------+
| validate_password.policy | LOW   |   # LOW级
+--------------------------+-------+
1 row in set (0.00 sec)

mysql> show variables like 'validate_password.length';
+--------------------------+-------+
| Variable_name            | Value |
+--------------------------+-------+
| validate_password.length | 4     |  # 最小长度为4
+--------------------------+-------+
1 row in set (0.00 sec)
```

- **设置新密码**

```
mysql> ALTER USER 'root'@'localhost' IDENTIFIED BY '123456';

ALTER USER 'root'@'localhost' IDENTIFIED BY 'Qs1!Ed3#';
Query OK, 0 rows affected (0.03 sec)
```

- **恢复密码策略与密码长度限制并检查**

```
# 恢复密码策略
mysql> set global validate_password.policy=1;
mysql> set global validate_password.length=8;

# 查看设置是否成功
mysql> show variables like 'validate_password.policy';
mysql> show variables like 'validate_password.length';
```

- **用新密码重新登录MySQL**

4. 在ubuntu下安装MySQL数据库

> 操作系统版本为Ubuntu 22.04.3 LTS

4.1 查看操作系统版本

```
guangchen@guangchen-vm:~$ lsb_release -a
No LSB modules are available.
Distributor ID:	Ubuntu
Description:	Ubuntu 22.04.3 LTS
Release:	22.04
Codename:	jammy

```

4.2 添加 MySQL APT 源

4.2.1 访问下载页面并下载发布包

- 下载地址：https://dev.mysql.com/downloads/repo/apt

- 课堂演示版本为mysql-apt-config_0.8.26-1_all.deb，也可以通过http://repo.mysql.com/查找并下载

4.2.2 安装发布包

> 发布包的命名格式：mysql-apt-config_***w.x.y-z***_all.deb
>
> 可以在支持APT打包工具的Debian和Ubuntu 系统中使用相同的发布包

- **使用切换到root用户**

```
guangchen@guangchen-vm:~$ sudo su                  # 切换成root用户
root@guangchen-vm:/home/guangchen# cd ~             # 进行root的home目录
root@guangchen-vm:~# ll                            # 列出目录内容
```

- **安装 rz 工具**

```
root@guangchen-vm:~# apt install lrzsz          #安装rz工具
```

- **拖拽上传发布包并查看**

```
root@guangchen-vm:~# ll                                  #列出目录内容
-rw-r--r--  1 root root 18088  8月 29 18:05 mysql-apt-config_0.8.26-1_all.deb
```

4.2.3 安装发布包

- **执行安装命令**

```
root@guangchen-vm:~# dpkg -i mysql-apt-config_0.8.26-1_all.deb
Selecting previously unselected package mysql-apt-config.
(Reading database ... 143288 files and directories currently installed.)
Preparing to unpack mysql-apt-config_0.8.26-1_all.deb ...
Unpacking mysql-apt-config (0.8.26-1) ...
Setting up mysql-apt-config (0.8.26-1) ... # 发布包安装完成
```

- **从MySQL APT 源更新包信息**

```
root@guangchen-vm:~# apt-get update
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:2 http://repo.mysql.com/apt/ubuntu jammy InRelease [20.3 kB]
Get:3 http://repo.mysql.com/apt/ubuntu jammy/mysql-8.0 Sources [963 B]
Hit:4 http://cn.archive.ubuntu.com/ubuntu jammy InRelease

Get:5 http://repo.mysql.com/apt/ubuntu jammy/mysql-apt-config amd64 Packages
[565 B]
Get:6 http://cn.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]

Get:7 http://repo.mysql.com/apt/ubuntu jammy/mysql-apt-config i386 Packages
[565 B]
Get:8 http://repo.mysql.com/apt/ubuntu jammy/mysql-8.0 amd64 Packages [12.7
kB]
Get:9 http://repo.mysql.com/apt/ubuntu jammy/mysql-tools amd64 Packages [8,011
B]
Get:10 http://repo.mysql.com/apt/ubuntu jammy/mysql-tools i386 Packages [457 B]
Get:11 http://cn.archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Fetched 381 kB in 6s (62.6 kB/s)

Reading package lists... Done  # 更新完成
```

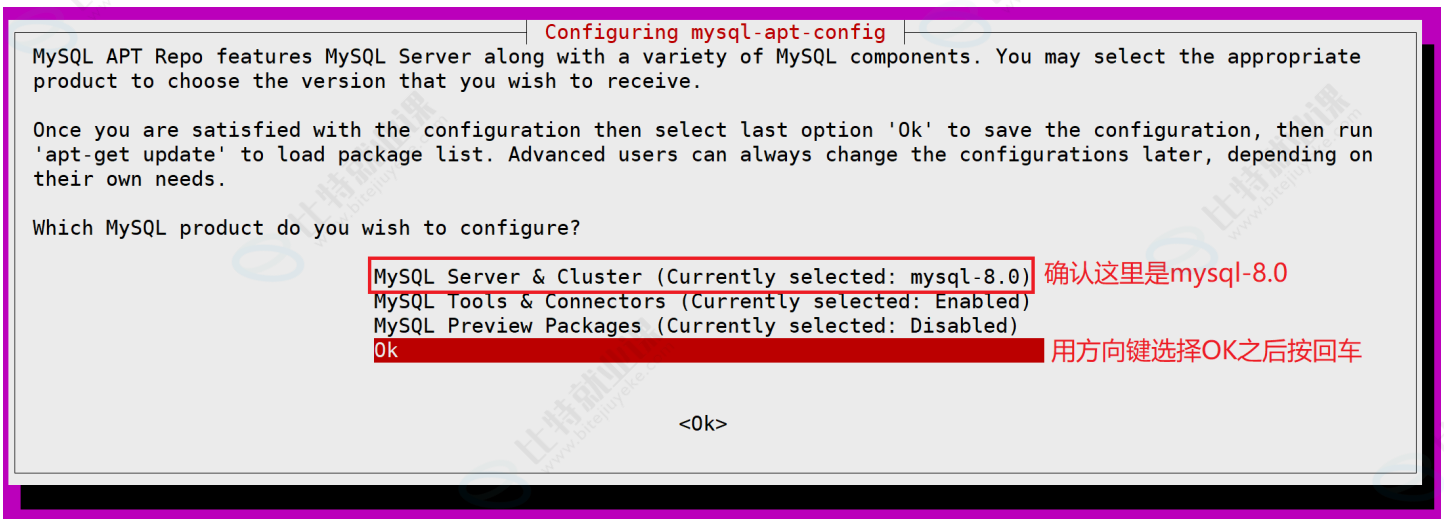
4.3 安装MySQL

- **执行安装命令**

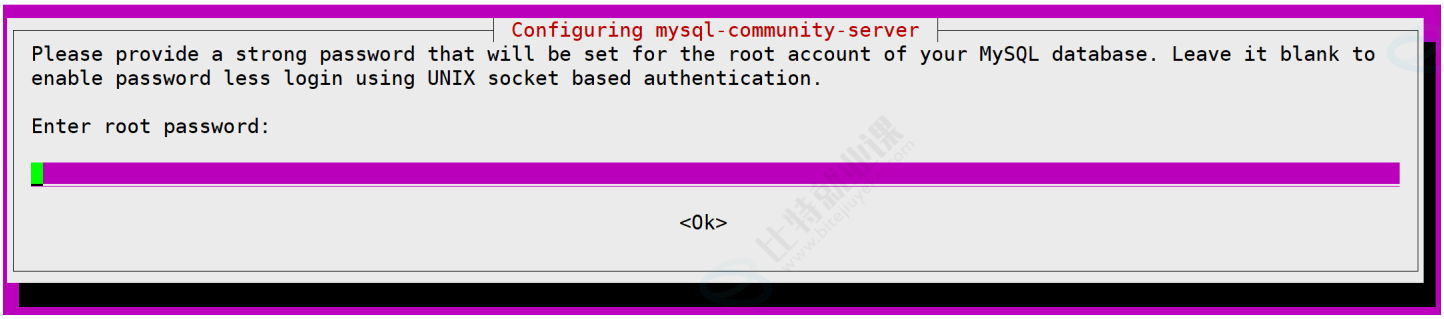
```
root@guangchen-vm:~# apt-get install mysql-server  #输入安装命令
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libmecab2 mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client mysql-
common mysql-community-client
```

```
  mysql-community-client-core mysql-community-client-plugins mysql-community-server mysql-community-server-core
The following NEW packages will be installed:
  libmecab2 mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client mysql-common mysql-community-client
  mysql-community-client-core mysql-community-client-plugins mysql-community-server mysql-community-server-core
  mysql-server
0 upgraded, 12 newly installed, 0 to remove and 6 not upgraded.
Need to get 37.6 MB of archives.
After this operation, 273 MB of additional disk space will be used.
Do you want to continue? [Y/n] y  # 输入y确认

emitting matrix     : 100% |###########################################|

done! #成功
update-alternatives: using /var/lib/mecab/dic/ipadic-utf8 to provide /var/lib/mecab/dic/debian (mecab-dictionary) in auto mode
Setting up mysql-community-client (8.0.34-1ubuntu22.04) ...
Setting up mysql-client (8.0.34-1ubuntu22.04) ...
Setting up mysql-community-server (8.0.34-1ubuntu22.04) ...
update-alternatives: using /etc/mysql/mysql.cnf to provide /etc/mysql/my.cnf (my.cnf) in auto mode
Created symlink /etc/systemd/system/multi-user.target.wants/mysql.service → /lib/systemd/system/mysql.service.
Setting up mysql-server (8.0.34-1ubuntu22.04) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
```

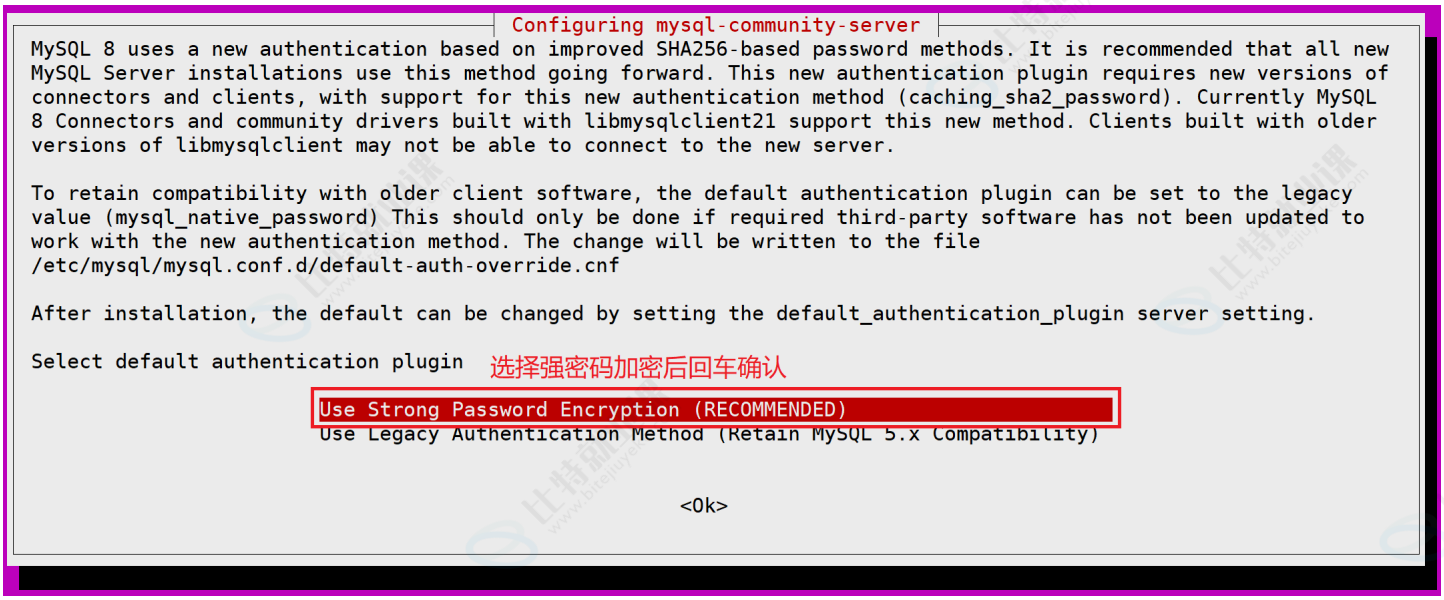
- **确认安装的MySQL版本为8.0**



- **在安装过程中要求输入root用户的密码和确认密码，可以输入类似123456的简单密码**



- **选择密码策略**



- **安装完成后，将会在服务器上安装MySQL服务、客户端工具和其他公共组件**

4.4 查看MySQL状态

> 安装完成后MySQL服务会自动启动

```
root@guangchen-vm:~# systemctl status mysql #查看mysql服务状态
● mysql.service - MySQL Community Server
     Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2023-08-29 18:46:42 CST; 8min ago
       Docs: man:mysqld(8)
             http://dev.mysql.com/doc/refman/en/using-systemd.html
   Main PID: 5097 (mysqld)
     Status: "Server is operational"
      Tasks: 37 (limit: 4542)
     Memory: 361.5M
        CPU: 2.581s
     CGroup: /system.slice/mysql.service
             └─5097 /usr/sbin/mysqld

8月 29 18:46:41 guangchen-vm systemd[1]: Starting MySQL Community Server...
```

```
8月 29 18:46:42 guangchen-vm systemd[1]: Started MySQL Community Server.
```

- 可以使用 **systemctl [stop| start| restart| status] mysql,** 命令对MySQL服务进行[停止| 启动|重启|查看服务状态]操作

4.5 开启自启动

```
root@guangchen-vm:~# systemctl enable mysql #设置自启动
root@guangchen-vm:~# systemctl list-unit-files|grep mysql #查看状态
mysql.service                                enabled         enabled
mysql@.service                               disabled        enabled
```

4.6 登录MySQL

```
root@guangchen-vm:~# mysql -uroot -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.34 MySQL Community Server - GPL

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owners.

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

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