```
!apt-get -y install mysql-server
```

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libencode-locale-perl
  libfcgi-bin libfcgi-perl libfcgi0ldbl libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl
  libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2
  libprotobuf-lite23 liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils
  mysql-client-8.0 mysql-client-core-8.0 mysql-server-8.0
  mysql-server-core-8.0
Suggested packages:
  libdata-dump-perl libipc-sharedcache-perl libbusiness-isbn-perl libwww-perl
  mailx tinyca
The following NEW packages will be installed:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libencode-locale-perl
  libfcgi-bin libfcgi-perl libfcgi0ldbl libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl
  libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2
  libprotobuf-lite23 liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils
  mysql-client-8.0 mysql-client-core-8.0 mysql-server mysql-server-8.0
  mysql-server-core-8.0
0 upgraded, 25 newly installed, 0 to remove and 35 not upgraded.
Need to get 29.8 MB of archives.
After this operation, 243 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-client-core-8.0 amd64 8.0.42-0ubuntu0.22.04.2 [2,71
```

```
Get:2 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-client-8.0 amd64 8.0.42-0ubuntu0.22.04.2 [22.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy/main amd64 libmecab2 amd64 0.996-14build9 [199 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libprotobuf-lite23 amd64 3.12.4-1ubuntu7.22.04.4 [209 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-server-core-8.0 amd64 8.0.42-0ubuntu0.22.04.2 [17.8
Get:6 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-server-8.0 amd64 8.0.42-0ubuntu0.22.04.2 [1,446 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy/main amd64 libhtml-tagset-perl all 3.20-4 [12.5 kB]
Get:8 http://archive.ubuntu.com/ubuntu jammy/main amd64 liburi-perl all 5.10-1 [78.8 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy/main amd64 libhtml-parser-perl amd64 3.76-1build2 [88.4 kB]
Get:10 http://archive.ubuntu.com/ubuntu jammy/main amd64 libcgi-pm-perl all 4.54-1 [188 kB]
Get:11 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libfcgi0ldbl amd64 2.4.2-2ubuntu0.1 [28.1 kB]
Get:12 http://archive.ubuntu.com/ubuntu jammy/main amd64 libfcgi-perl amd64 0.82+ds-1build1 [22.8 kB]
Get:13 http://archive.ubuntu.com/ubuntu jammy/main amd64 libcgi-fast-perl all 1:2.15-1 [10.5 kB]
Get:14 http://archive.ubuntu.com/ubuntu jammy/main amd64 libclone-perl amd64 0.45-1build3 [11.0 kB]
Get:15 http://archive.ubuntu.com/ubuntu jammy/main amd64 libencode-locale-perl all 1.05-1.1 [11.8 kB]
Get:16 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libfcgi-bin amd64 2.4.2-2ubuntu0.1 [11.1 kB]
Get:17 http://archive.ubuntu.com/ubuntu jammy/main amd64 libhtml-template-perl all 2.97-1.1 [59.1 kB]
Get:18 http://archive.ubuntu.com/ubuntu jammy/main amd64 libhttp-date-perl all 6.05-1 [9,920 B]
Get:19 http://archive.ubuntu.com/ubuntu jammy/main amd64 libio-html-perl all 1.004-2 [15.4 kB]
Get:20 http://archive.ubuntu.com/ubuntu jammy/main amd64 liblwp-mediatypes-perl all 6.04-1 [19.5 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy/main amd64 libhttp-message-perl all 6.36-1 [76.8 kB]
Get:22 http://archive.ubuntu.com/ubuntu jammy/main amd64 mecab-utils amd64 0.996-14build9 [4,850 B]
Get:23 http://archive.ubuntu.com/ubuntu jammy/main amd64 mecab-ipadic all 2.7.0-20070801+main-3 [6,718 kB]
Get:24 http://archive.ubuntu.com/ubuntu jammy/main amd64 mecab-ipadic-utf8 all 2.7.0-20070801+main-3 [4,384 B]
Get:25 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-server all 8.0.42-0ubuntu0.22.04.2 [9,456 B]
Fetched 29.8 MB in 1s (25.9 MB/s)
Preconfiguring packages ...
```

```
Selecting previously unselected package mysql-client-core-8.0.
(Reading database ... 126284 files and directories currently installed.)
Preparing to unpack .../00-mysql-client-core-8.0_8.0.42-0ubuntu0.22.04.2_amd64.deb ...
Unpacking mysql-client-core-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Selecting previously unselected package mysql-client-8.0.
Preparing to unpack .../01-mysql-client-8.0_8.0.42-0ubuntu0.22.04.2_amd64.deb ...
Unpacking mysql-client-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Selecting previously unselected package libmecab2:amd64.
Preparing to unpack .../02-libmecab2_0.996-14build9_amd64.deb ...
Unpacking libmecab2:amd64 (0.996-14build9) ...
Selecting previously unselected package libprotobuf-lite23:amd64.
Preparing to unpack .../03-libprotobuf-lite23_3.12.4-1ubuntu7.22.04.4_amd64.deb ...
Unpacking libprotobuf-lite23:amd64 (3.12.4-1ubuntu7.22.04.4) ...
Selecting previously unselected package mysql-server-core-8.0.
Preparing to unpack .../04-mysql-server-core-8.0_8.0.42-0ubuntu0.22.04.2_amd64.deb ...
Unpacking mysql-server-core-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Selecting previously unselected package mysql-server-8.0.
Preparing to unpack .../05-mysql-server-8.0_8.0.42-0ubuntu0.22.04.2_amd64.deb ...
Unpacking mysql-server-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Selecting previously unselected package libhtml-tagset-perl.
Preparing to unpack .../06-libhtml-tagset-perl_3.20-4_all.deb ...
Unpacking libhtml-tagset-perl (3.20-4) ...
Selecting previously unselected package liburi-perl.
Preparing to unpack .../07-liburi-perl_5.10-1_all.deb ...
Unpacking liburi-perl (5.10-1) ...
Selecting previously unselected package libhtml-parser-perl:amd64.
```

```
Preparing to unpack .../08-libhtml-parser-perl_3.76-1build2_amd64.deb ...
Unpacking libhtml-parser-perl:amd64 (3.76-1build2) ...
Selecting previously unselected package libcgi-pm-perl.
Preparing to unpack .../09-libcgi-pm-perl_4.54-1_all.deb ...
Unpacking libcgi-pm-perl (4.54-1) ...
Selecting previously unselected package libfcgi0ldbl:amd64.
Preparing to unpack .../10-libfcgi0ldbl_2.4.2-2ubuntu0.1_amd64.deb ...
Unpacking libfcgi0ldbl:amd64 (2.4.2-2ubuntu0.1) ...
Selecting previously unselected package libfcgi-perl:amd64.
Preparing to unpack .../11-libfcgi-perl_0.82+ds-1build1_amd64.deb ...
Unpacking libfcgi-perl:amd64 (0.82+ds-1build1) ...
Selecting previously unselected package libcgi-fast-perl.
Preparing to unpack .../12-libcgi-fast-perl_1%3a2.15-1_all.deb ...
Unpacking libcgi-fast-perl (1:2.15-1) ...
Selecting previously unselected package libclone-perl.
Preparing to unpack .../13-libclone-perl_0.45-1build3_amd64.deb ...
Unpacking libclone-perl (0.45-1build3) ...
Selecting previously unselected package libencode-locale-perl.
Preparing to unpack .../14-libencode-locale-perl_1.05-1.1_all.deb ...
Unpacking libencode-locale-perl (1.05-1.1) ...
Selecting previously unselected package libfcgi-bin.
Preparing to unpack .../15-libfcgi-bin_2.4.2-2ubuntu0.1_amd64.deb ...
Unpacking libfcgi-bin (2.4.2-2ubuntu0.1) ...
Selecting previously unselected package libhtml-template-perl.
Preparing to unpack .../16-libhtml-template-perl_2.97-1.1_all.deb ...
Unpacking libhtml-template-perl (2.97-1.1) ...
```

```
Selecting previously unselected package libhttp-date-perl.
Preparing to unpack .../17-libhttp-date-perl_6.05-1_all.deb ...
Unpacking libhttp-date-perl (6.05-1) ...
Selecting previously unselected package libio-html-perl.
Preparing to unpack .../18-libio-html-perl_1.004-2_all.deb ...
Unpacking libio-html-perl (1.004-2) ...
Selecting previously unselected package liblwp-mediatypes-perl.
Preparing to unpack .../19-liblwp-mediatypes-perl_6.04-1_all.deb ...
Unpacking liblwp-mediatypes-perl (6.04-1) ...
Selecting previously unselected package libhttp-message-perl.
Preparing to unpack .../20-libhttp-message-perl_6.36-1_all.deb ...
Unpacking libhttp-message-perl (6.36-1) ...
Selecting previously unselected package mecab-utils.
Preparing to unpack .../21-mecab-utils_0.996-14build9_amd64.deb ...
Unpacking mecab-utils (0.996-14build9) ...
Selecting previously unselected package mecab-ipadic.
Preparing to unpack .../22-mecab-ipadic_2.7.0-20070801+main-3_all.deb ...
Unpacking mecab-ipadic (2.7.0-20070801+main-3) ...
Selecting previously unselected package mecab-ipadic-utf8.
Preparing to unpack .../23-mecab-ipadic-utf8_2.7.0-20070801+main-3_all.deb ...
Unpacking mecab-ipadic-utf8 (2.7.0-20070801+main-3) ...
Selecting previously unselected package mysql-server.
Preparing to unpack .../24-mysql-server_8.0.42-0ubuntu0.22.04.2_all.deb ...
Unpacking mysql-server (8.0.42-0ubuntu0.22.04.2) ...
Setting up libhttp-date-perl (6.05-1) ...
Setting up libmecab2:amd64 (0.996-14build9) ...
```

```
Setting up mysql-client-core-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Setting up libfcgi0ldbl:amd64 (2.4.2-2ubuntu0.1) ...
Setting up libclone-perl (0.45-1build3) ...
Setting up libhtml-tagset-perl (3.20-4) ...
Setting up liblwp-mediatypes-perl (6.04-1) ...
Setting up libfcgi-bin (2.4.2-2ubuntu0.1) ...
Setting up libencode-locale-perl (1.05-1.1) ...
Setting up libprotobuf-lite23:amd64 (3.12.4-1ubuntu7.22.04.4) ...
Setting up mecab-utils (0.996-14build9) ...
Setting up libio-html-perl (1.004-2) ...
Setting up mysql-server-core-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Setting up mysql-client-8.0 (8.0.42-0ubuntu0.22.04.2) ...
Setting up libfcgi-perl:amd64 (0.82+ds-1build1) ...
Setting up liburi-perl (5.10-1) ...
Setting up libhttp-message-perl (6.36-1) ...
Setting up mysql-server-8.0 (8.0.42-0ubuntu0.22.04.2) ...
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of stop.
update-alternatives: using /etc/mysql/mysql.cnf to provide /etc/mysql/my.cnf (my.cnf) in auto mode
Renaming removed key_buffer and myisam-recover options (if present)
mysqld will log errors to /var/log/mysql/error.log
mysqld is running as pid 916
Created symlink /etc/systemd/system/multi-user.target.wants/mysql.service → /lib/systemd/system/mysql.service.
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy-rc.d denied execution of start.
Setting up mecab-ipadic (2.7.0-20070801+main-3) ...
```

```
Compiling IPA dictionary for Mecab.  This takes long time...
reading /usr/share/mecab/dic/ipadic/unk.def ... 40
emitting double-array: 100% |###################################|
/usr/share/mecab/dic/ipadic/model.def is not found. skipped.
reading /usr/share/mecab/dic/ipadic/Noun.number.csv ... 42
reading /usr/share/mecab/dic/ipadic/Noun.proper.csv ... 27328
reading /usr/share/mecab/dic/ipadic/Noun.org.csv ... 16668
reading /usr/share/mecab/dic/ipadic/Adj.csv ... 27210
reading /usr/share/mecab/dic/ipadic/Prefix.csv ... 221
reading /usr/share/mecab/dic/ipadic/Noun.adjv.csv ... 3328
reading /usr/share/mecab/dic/ipadic/Postp-col.csv ... 91
reading /usr/share/mecab/dic/ipadic/Noun.nai.csv ... 42
reading /usr/share/mecab/dic/ipadic/Noun.csv ... 60477
reading /usr/share/mecab/dic/ipadic/Postp.csv ... 146
reading /usr/share/mecab/dic/ipadic/Verb.csv ... 130750
reading /usr/share/mecab/dic/ipadic/Adverb.csv ... 3032
reading /usr/share/mecab/dic/ipadic/Noun.demonst.csv ... 120
reading /usr/share/mecab/dic/ipadic/Symbol.csv ... 208
reading /usr/share/mecab/dic/ipadic/Others.csv ... 2
reading /usr/share/mecab/dic/ipadic/Noun.verbal.csv ... 12146
reading /usr/share/mecab/dic/ipadic/Adnominal.csv ... 135
reading /usr/share/mecab/dic/ipadic/Noun.place.csv ... 72999
reading /usr/share/mecab/dic/ipadic/Auxil.csv ... 199
reading /usr/share/mecab/dic/ipadic/Noun.adverbal.csv ... 795
reading /usr/share/mecab/dic/ipadic/Noun.others.csv ... 151
reading /usr/share/mecab/dic/ipadic/Noun.name.csv ... 34202
```

```
reading /usr/share/mecab/dic/ipadic/Interjection.csv ... 252
reading /usr/share/mecab/dic/ipadic/Suffix.csv ... 1393
reading /usr/share/mecab/dic/ipadic/Filler.csv ... 19
reading /usr/share/mecab/dic/ipadic/Conjunction.csv ... 171
emitting double-array: 100% |###################################|
reading /usr/share/mecab/dic/ipadic/matrix.def ... 1316x1316
emitting matrix     : 100% |###################################|

done!
update-alternatives: using /var/lib/mecab/dic/ipadic to provide /var/lib/mecab/dic/debian (mecab-dictionary) in auto mode
Setting up mecab-ipadic-utf8 (2.7.0-20070801+main-3) ...
Compiling IPA dictionary for Mecab.  This takes long time...
reading /usr/share/mecab/dic/ipadic/unk.def ... 40
emitting double-array: 100% |###################################|
/usr/share/mecab/dic/ipadic/model.def is not found. skipped.
reading /usr/share/mecab/dic/ipadic/Noun.number.csv ... 42
reading /usr/share/mecab/dic/ipadic/Noun.proper.csv ... 27328
reading /usr/share/mecab/dic/ipadic/Noun.org.csv ... 16668
reading /usr/share/mecab/dic/ipadic/Adj.csv ... 27210
reading /usr/share/mecab/dic/ipadic/Prefix.csv ... 221
reading /usr/share/mecab/dic/ipadic/Noun.adjv.csv ... 3328
reading /usr/share/mecab/dic/ipadic/Postp-col.csv ... 91
reading /usr/share/mecab/dic/ipadic/Noun.nai.csv ... 42
reading /usr/share/mecab/dic/ipadic/Noun.csv ... 60477
reading /usr/share/mecab/dic/ipadic/Postp.csv ... 146
reading /usr/share/mecab/dic/ipadic/Verb.csv ... 130750
```

```
reading /usr/share/mecab/dic/ipadic/Adverb.csv ... 3032
reading /usr/share/mecab/dic/ipadic/Noun.demonst.csv ... 120
reading /usr/share/mecab/dic/ipadic/Symbol.csv ... 208
reading /usr/share/mecab/dic/ipadic/Others.csv ... 2
reading /usr/share/mecab/dic/ipadic/Noun.verbal.csv ... 12146
reading /usr/share/mecab/dic/ipadic/Adnominal.csv ... 135
reading /usr/share/mecab/dic/ipadic/Noun.place.csv ... 72999
reading /usr/share/mecab/dic/ipadic/Auxil.csv ... 199
reading /usr/share/mecab/dic/ipadic/Noun.adverbal.csv ... 795
reading /usr/share/mecab/dic/ipadic/Noun.others.csv ... 151
reading /usr/share/mecab/dic/ipadic/Noun.name.csv ... 34202
reading /usr/share/mecab/dic/ipadic/Interjection.csv ... 252
reading /usr/share/mecab/dic/ipadic/Suffix.csv ... 1393
reading /usr/share/mecab/dic/ipadic/Filler.csv ... 19
reading /usr/share/mecab/dic/ipadic/Conjunction.csv ... 171
emitting double-array: 100% |###################################|
reading /usr/share/mecab/dic/ipadic/matrix.def ... 1316x1316
emitting matrix     : 100% |###################################|

done!
update-alternatives: using /var/lib/mecab/dic/ipadic-utf8 to provide /var/lib/mecab/dic/debian (mecab-dictionary) in auto
Setting up libhtml-parser-perl:amd64 (3.76-1build2) ...
Setting up mysql-server (8.0.42-0ubuntu0.22.04.2) ...
Setting up libcgi-pm-perl (4.54-1) ...
Setting up libhtml-template-perl (2.97-1.1) ...
Setting up libcgi-fast-perl (1:2.15-1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
```

```
/sbin/ldconfig.real: /usr/local/lib/libtcm.so.1 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_adapter_level_zero_v2.so.0 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbmalloc.so.2 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtcm_debug.so.1 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbbind_2_0.so.3 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbbind_2_5.so.3 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_loader.so.0 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_adapter_opencl.so.0 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbmalloc_proxy.so.2 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libur_adapter_level_zero.so.0 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbb.so.12 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libhwloc.so.15 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libumf.so.0 is not a symbolic link

/sbin/ldconfig.real: /usr/local/lib/libtbbbind.so.3 is not a symbolic link
```

```python
!pip install mysql-connector-python
```

```
Collecting mysql-connector-python
  Downloading mysql_connector_python-9.3.0-cp311-cp311-manylinux_2_28_x86_64.whl.metadata (7.2 kB)
Downloading mysql_connector_python-9.3.0-cp311-cp311-manylinux_2_28_x86_64.whl (33.9 MB)
━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 33.9/33.9 MB 50.6 MB/s eta 0:00:00
Installing collected packages: mysql-connector-python
Successfully installed mysql-connector-python-9.3.0
```

```
!service mysql start
```

```
 * Starting MySQL database server mysqld
su: warning: cannot change directory to /nonexistent: No such file or directory
   ...done.
```

```
!mysql -e "ALTER USER 'root'@'localhost' IDENTIFIED WITH mysql_native_password BY 'root'; FLUSH PRIVILEGES;"
```

```
!mysql -u root -proot -e "SHOW DATABASES;"
```

```
mysql: [Warning] Using a password on the command line interface can be insecure.
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
```

```python
sql_script = """
CREATE DATABASE IF NOT EXISTS empresa;
USE empresa;

CREATE TABLE IF NOT EXISTS funcionarios (
    id INT AUTO_INCREMENT PRIMARY KEY,
    nome VARCHAR(100),
    salario DECIMAL(10,2)
);

DELIMITER //
CREATE FUNCTION calcular_bonus (sal DECIMAL(10,2))
RETURNS DECIMAL(10,2)
DETERMINISTIC
BEGIN
    RETURN sal * 0.10;
END//
DELIMITER ;

DELIMITER //
CREATE PROCEDURE adicionar_funcionario (
    IN p_nome VARCHAR(100),
    IN p_salario DECIMAL(10,2)
)
BEGIN
```

```
        INSERT INTO funcionarios (nome, salario) VALUES (p_nome, p_salario);
    END//
    DELIMITER ;
    """

    with open("setup.sql", "w") as f:
        f.write(sql_script)
```

```
!mysql -u root -proot < setup.sql
```

mysql: [Warning] Using a password on the command line interface can be insecure.

```python
import mysql.connector

conn = mysql.connector.connect(
    host="localhost",
    user="root",
    password="root",
    database="empresa"
)
cursor = conn.cursor()
```

```python
cursor.callproc('adicionar_funcionario', ['Ana Souza', 3500.00])
conn.commit()
```

```python
cursor.execute("""
    SELECT nome, salario, calcular_bonus(salario) AS bonus
    FROM funcionarios
""")
for row in cursor.fetchall():
    print(row)
```

('Ana Souza', Decimal('3500.00'), Decimal('350.00'))

```python
cursor.close()
conn.close()
```

+ Código   + Texto