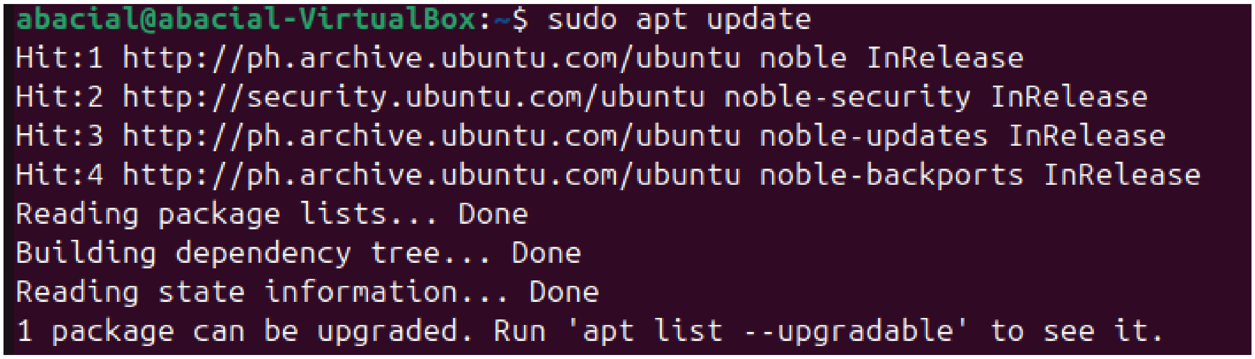
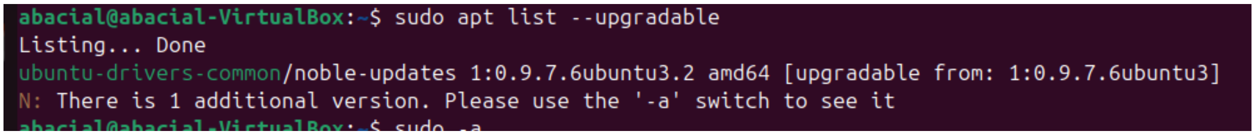
Final Examination Test Questionnaire

Step 1: Open terminal in ubuntu then update the system



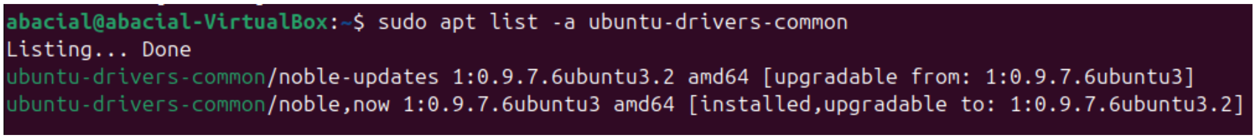
```
abacial@abacial-VirtualBox:~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://ph.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://ph.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
```

And upgrade



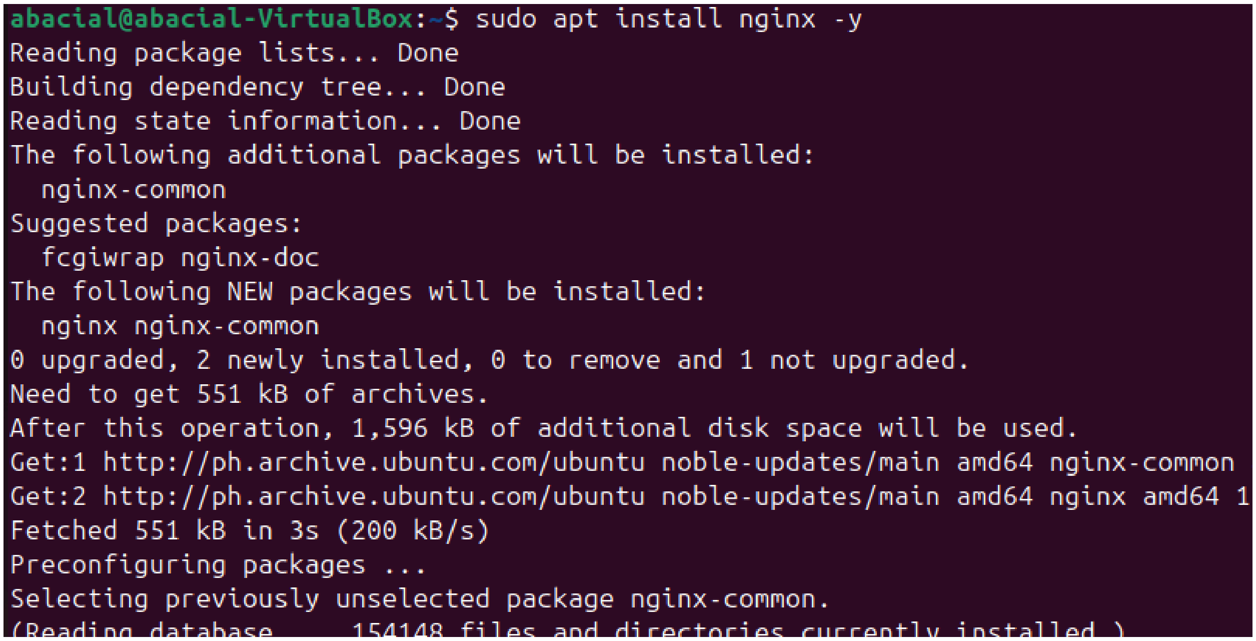
```
abacial@abacial-VirtualBox:~$ sudo apt list --upgradable
Listing... Done
ubuntu-drivers-common/noble-updates 1:0.9.7.6ubuntu3.2 amd64 [upgradable from: 1:0.9.7.6ubuntu3]
N: There is 1 additional version. Please use the '-a' switch to see it
abacial@abacial-VirtualBox:~$ sudo -a
```

Then run sudo apt list -a ubuntu-drivers-common



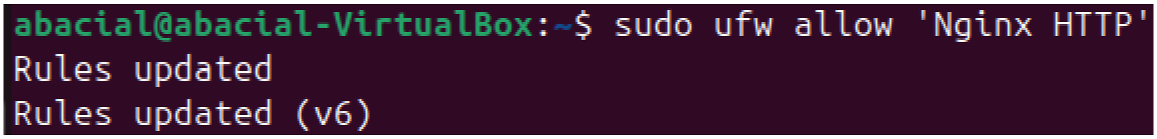
```
abacial@abacial-VirtualBox:~$ sudo apt list -a ubuntu-drivers-common
Listing... Done
ubuntu-drivers-common/noble-updates 1:0.9.7.6ubuntu3.2 amd64 [upgradable from: 1:0.9.7.6ubuntu3]
ubuntu-drivers-common/noble,now 1:0.9.7.6ubuntu3 amd64 [installed,upgradable to: 1:0.9.7.6ubuntu3.2]
```

Install nginx

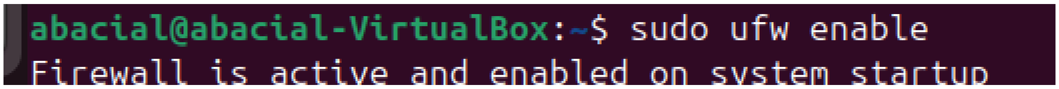


```
abacial@abacial-VirtualBox:~$ sudo apt install nginx -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  nginx-common
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  nginx nginx-common
0 upgraded, 2 newly installed, 0 to remove and 1 not upgraded.
Need to get 551 kB of archives.
After this operation, 1,596 kB of additional disk space will be used.
Get:1 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx-common
Get:2 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 nginx amd64 1
Fetched 551 kB in 3s (200 kB/s)
Preconfiguring packages ...
Selecting previously unselected package nginx-common.
(Reading database ... 154148 files and directories currently installed.)
```

Step 2: Configure Firewall

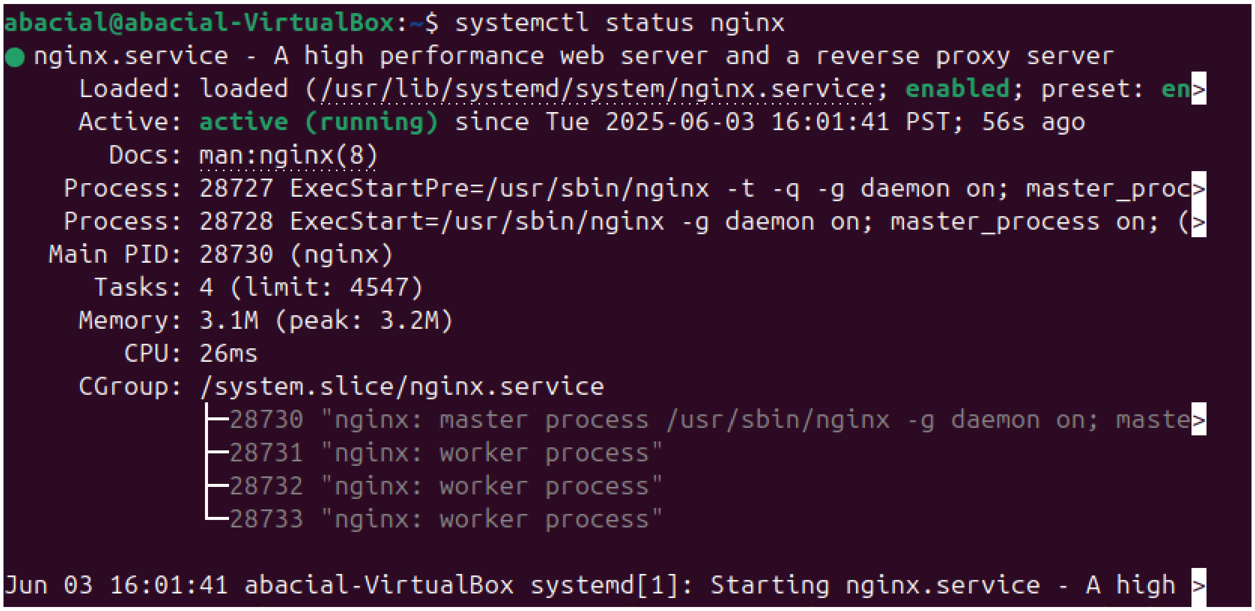


```
abacial@abacial-VirtualBox:~$ sudo ufw allow 'Nginx HTTP'
Rules updated
Rules updated (v6)
```



```
abacial@abacial-VirtualBox:~$ sudo ufw enable
Firewall is active and enabled on system startup
```

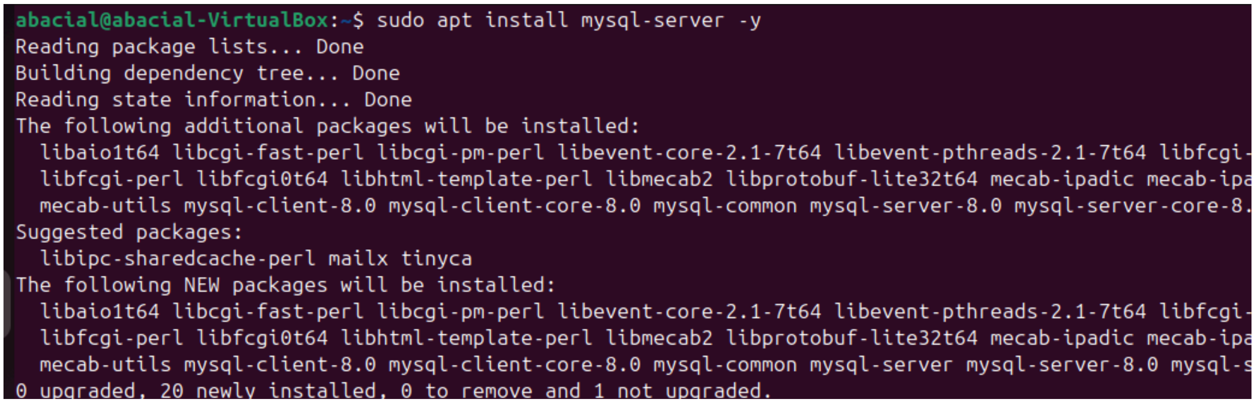
Step 3: Verify Installation



```
abacial@abacial-VirtualBox:~$ systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: en>
     Active: active (running) since Tue 2025-06-03 16:01:41 PST; 56s ago
       Docs: man:nginx(8)
    Process: 28727 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_proc>
    Process: 28728 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (>
   Main PID: 28730 (nginx)
      Tasks: 4 (limit: 4547)
     Memory: 3.1M (peak: 3.2M)
        CPU: 26ms
     CGroup: /system.slice/nginx.service
             ├─28730 "nginx: master process /usr/sbin/nginx -g daemon on; maste>
             ├─28731 "nginx: worker process"
             ├─28732 "nginx: worker process"
             └─28733 "nginx: worker process"

Jun 03 16:01:41 abacial-VirtualBox systemd[1]: Starting nginx.service - A high >
```

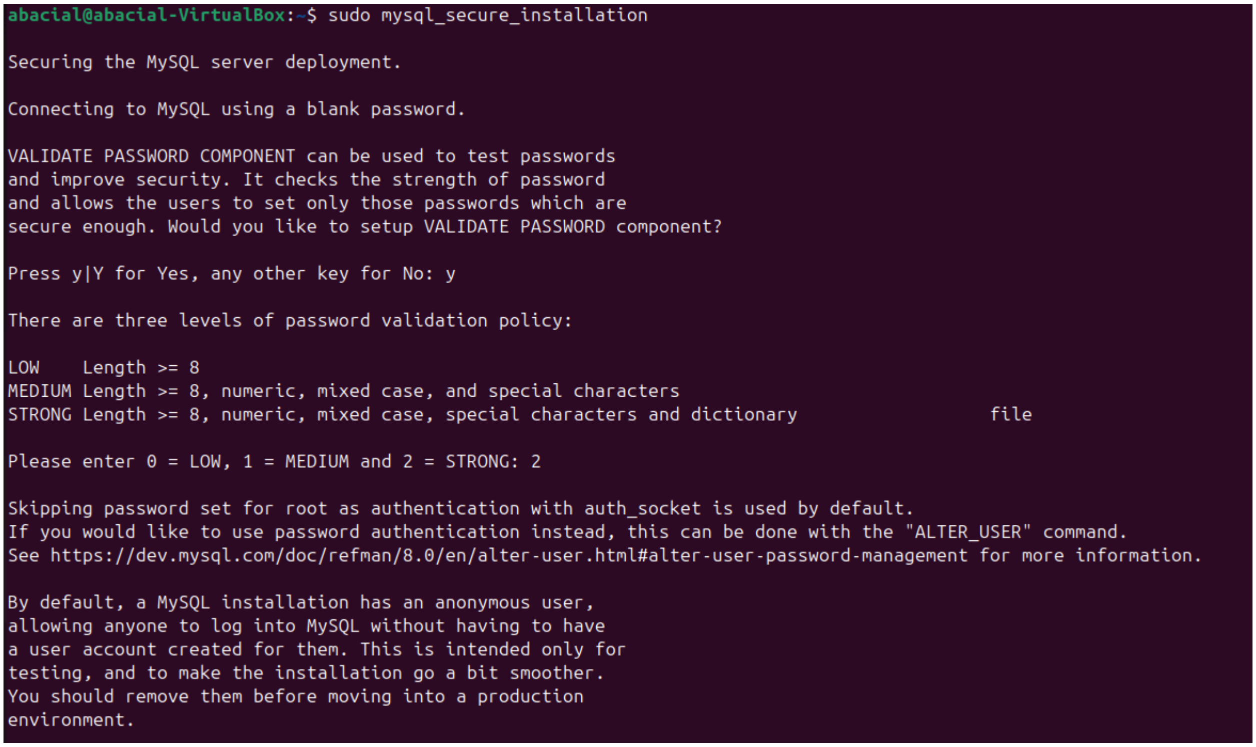
Step 4: Database Server Setup

Install mysql



```
abacial@abacial-VirtualBox:~$ sudo apt install mysql-server -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libaio1t64 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64 libfcgi-
  libfcgi-perl libfcgi0t64 libhtml-template-perl libmecab2 libprotobuf-lite32t64 mecab-ipadic mecab-ipa
  mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0 mysql-server-core-8.
Suggested packages:
  libipc-sharedcache-perl mailx tinyca
The following NEW packages will be installed:
  libaio1t64 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64 libfcgi-
  libfcgi-perl libfcgi0t64 libhtml-template-perl libmecab2 libprotobuf-lite32t64 mecab-ipadic mecab-ipa
  mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0 mysql-s
0 upgraded, 20 newly installed, 0 to remove and 1 not upgraded.
```

Securing the mysql installation

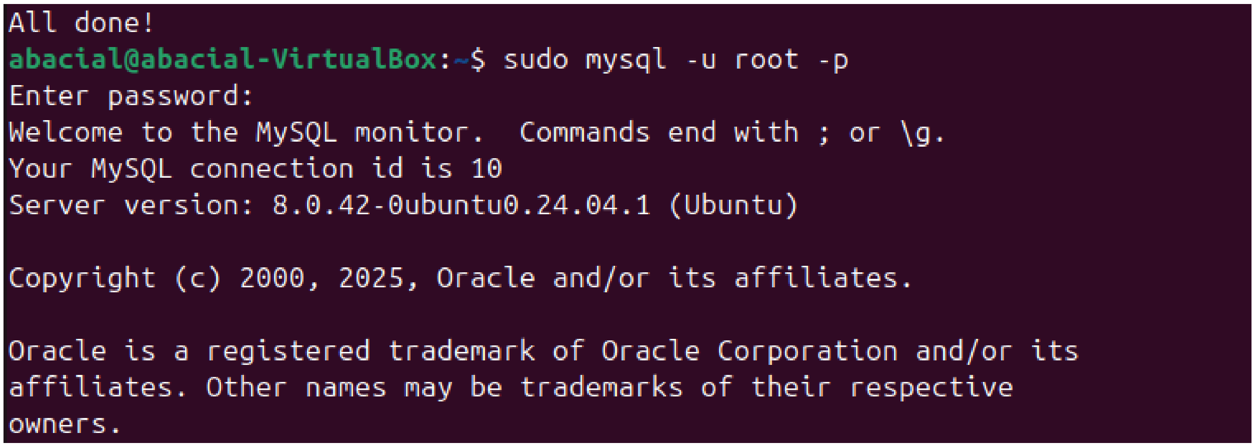


```
abacial@abacial-VirtualBox:~$ sudo mysql_secure_installation

Securing the MySQL server deployment.

Connecting to MySQL using a blank password.

VALIDATE PASSWORD COMPONENT can be used to test passwords
and improve security. It checks the strength of password
and allows the users to set only those passwords which are
secure enough. Would you like to setup VALIDATE PASSWORD component?

Press y|Y for Yes, any other key for No: y

There are three levels of password validation policy:

LOW    Length >= 8
MEDIUM Length >= 8, numeric, mixed case, and special characters
STRONG Length >= 8, numeric, mixed case, special characters and dictionary                  file

Please enter 0 = LOW, 1 = MEDIUM and 2 = STRONG: 2

Skipping password set for root as authentication with auth_socket is used by default.
If you would like to use password authentication instead, this can be done with the "ALTER_USER" command.
See https://dev.mysql.com/doc/refman/8.0/en/alter-user.html#alter-user-password-management for more information.

By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.
```

After

- Setting up the root password
- Removed anonymous users
- Disabled remote root login
- Removed test database
- Reload privilege tables

Then create database and user for crud app



```
All done!
abacial@abacial-VirtualBox:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.42-0ubuntu0.24.04.1 (Ubuntu)

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owners.
```
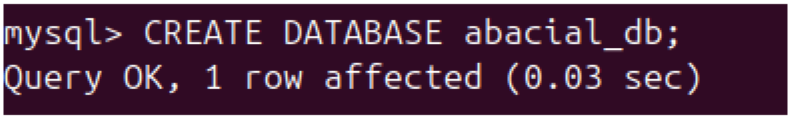
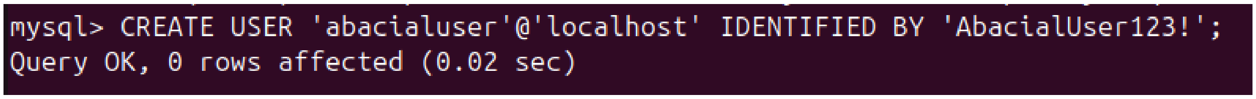
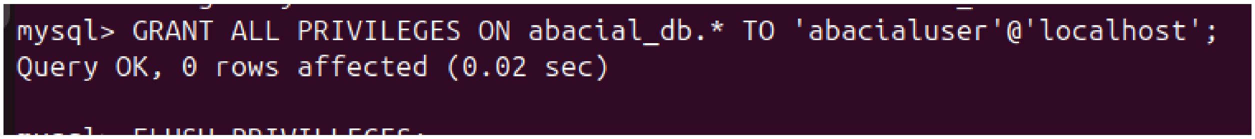



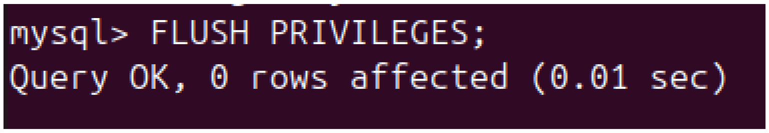
```
mysql> CREATE DATABASE abacial_db;
Query OK, 1 row affected (0.03 sec)
```



```
mysql> CREATE USER 'abacialuser'@'localhost' IDENTIFIED BY 'AbacialUser123!';
Query OK, 0 rows affected (0.02 sec)
```

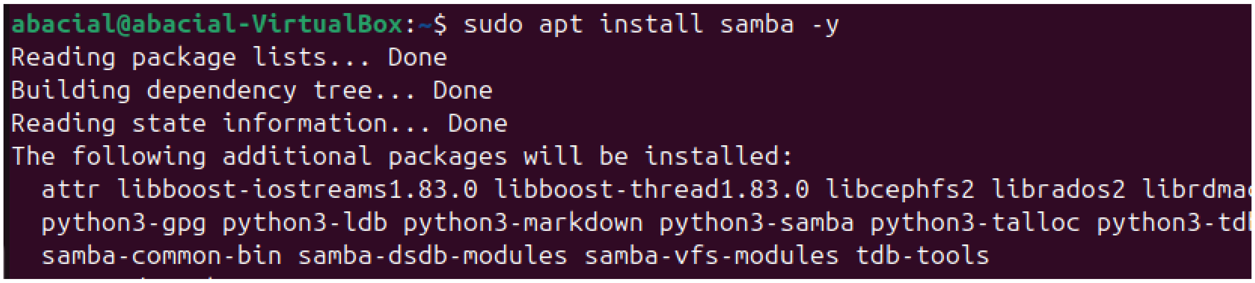


```
mysql> GRANT ALL PRIVILEGES ON abacial_db.* TO 'abacialuser'@'localhost';
Query OK, 0 rows affected (0.02 sec)
```



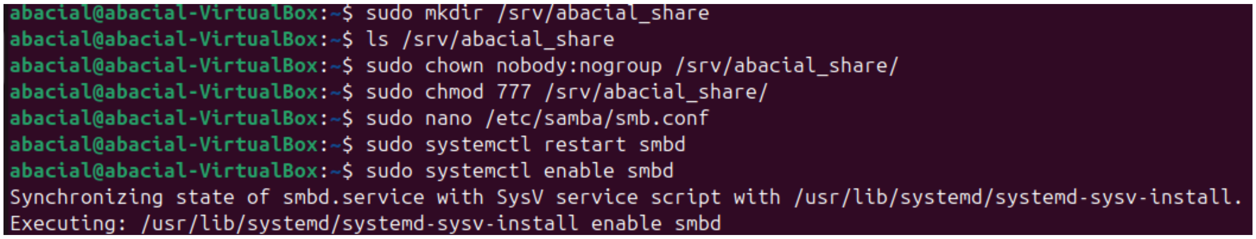
```
mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.01 sec)
```

After that install samba



```
abacial@abacial-VirtualBox:~$ sudo apt install samba -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  attr libboost-iostreams1.83.0 libboost-thread1.83.0 libcephfs2 librados2 librdma
  python3-gpg python3-ldb python3-markdown python3-samba python3-talloc python3-td
  samba-common-bin samba-dsdb-modules samba-vfs-modules tdb-tools
```

Then create shared directory



```
abacial@abacial-VirtualBox:~$ sudo mkdir /srv/abacial_share
abacial@abacial-VirtualBox:~$ ls /srv/abacial_share
abacial@abacial-VirtualBox:~$ sudo chown nobody:nogroup /srv/abacial_share/
abacial@abacial-VirtualBox:~$ sudo chmod 777 /srv/abacial_share/
abacial@abacial-VirtualBox:~$ sudo nano /etc/samba/smb.conf
abacial@abacial-VirtualBox:~$ sudo systemctl restart smbd
abacial@abacial-VirtualBox:~$ sudo systemctl enable smbd
Synchronizing state of smbd.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable smbd
```

Configure Samba

Run sudo nano /etc/samba/smb.conf then put this

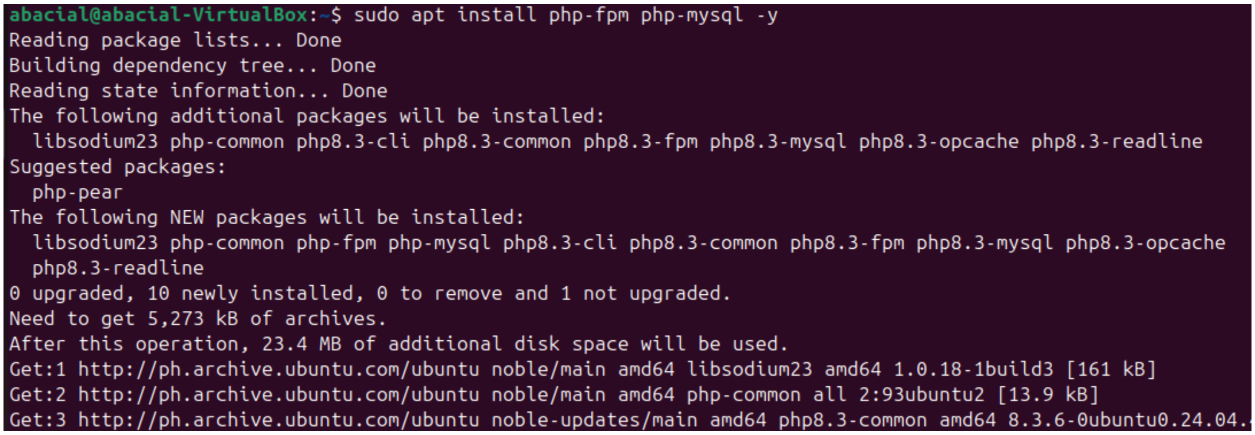
```
[abacial_share]
    comment = Abacial File Share
    path = /srv/abacial_share
    browsable = yes
    read only = no
    guest ok = yes
```

After that restart samba and enable

Run sudo systemctl restart smbd and sudo systemctl enable smbd

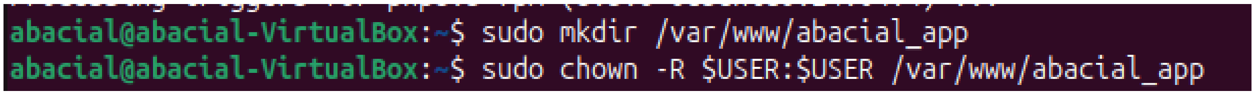
Step 5: Install PHP and Required Extensions

Run sudo apt install php-fpm php-mysql -y



```
abacial@abacial-VirtualBox:~$ sudo apt install php-fpm php-mysql -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libsodium23 php-common php8.3-cli php8.3-common php8.3-fpm php8.3-mysql php8.3-opcache php8.3-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libsodium23 php-common php-fpm php-mysql php8.3-cli php8.3-common php8.3-fpm php8.3-mysql php8.3-opcache
  php8.3-readline
0 upgraded, 10 newly installed, 0 to remove and 1 not upgraded.
Need to get 5,273 kB of archives.
After this operation, 23.4 MB of additional disk space will be used.
Get:1 http://ph.archive.ubuntu.com/ubuntu noble/main amd64 libsodium23 amd64 1.0.18-1build3 [161 kB]
Get:2 http://ph.archive.ubuntu.com/ubuntu noble/main amd64 php-common all 2:93ubuntu2 [13.9 kB]
Get:3 http://ph.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-common amd64 8.3.6-0ubuntu0.24.04.
```

Then create application directory



```
abacial@abacial-VirtualBox:~$ sudo mkdir /var/www/abacial_app
abacial@abacial-VirtualBox:~$ sudo chown -R $USER:$USER /var/www/abacial_app
```

After creating application directory run cd /var/www/abacial_app

Step 6: Create index.php with crud functionality

Run sudo nano index.php and put this php file

```
<?php

$conn = new mysqli('localhost', 'appuser', 'appuser123', 'technova_app');

if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}

$conn->query("CREATE TABLE IF NOT EXISTS employees (
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100),
    email VARCHAR(100),
    position VARCHAR(100),
    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
)");

if ($_SERVER['REQUEST_METHOD'] === 'POST') {
    if (isset($_POST['add'])) {
        $stmt = $conn->prepare("INSERT INTO employees (name, email, position) VALUES (?, ?, ?)");
        $stmt->bind_param("sss", $_POST['name'], $_POST['email'], $_POST['position']);
        $stmt->execute();
    } elseif (isset($_POST['update'])) {
        $stmt = $conn->prepare("UPDATE employees SET name=?, email=?, position=? WHERE id=?");
        $stmt->bind_param("sssi", $_POST['name'], $_POST['email'], $_POST['position'], $_POST['id']);
        $stmt->execute();
    }
} elseif (isset($_GET['delete'])) {
    $conn->query("DELETE FROM employees WHERE id=" . $_GET['delete']);
}

$employees = $conn->query("SELECT * FROM employees");
?>

<!DOCTYPE html>
<html>
<head>
    <title>TechNova Employee Management</title>
    <style>
        body { font-family: Arial, sans-serif; margin: 20px; }
        table { border-collapse: collapse; width: 100%; margin-top: 20px; }
        th, td { border: 1px solid #ddd; padding: 8px; text-align: left; }
        th { background-color: #f2f2f2; }
        form { margin-bottom: 20px; background: #f9f9f9; padding: 15px; border-radius: 5px; }
        input { padding: 8px; margin: 5px; }
        button { padding: 8px 15px; background: #4CAF50; color: white; border: none; cursor: pointer; }
        button:hover { background: #45a049; }
        a { color: #2196F3; text-decoration: none; margin-right: 10px; }
        a:hover { text-decoration: underline; }
    </style>
</head>
<body>
    <h1>Employee Management</h1>
    <form method="post">
        <input type="hidden" name="id" value="<?= isset($_GET['edit']) ? $_GET['edit'] : '' ?>">
        <input type="text" name="name" placeholder="Name" required
               value="<?= isset($_GET['edit']) ? $conn->query("SELECT name FROM employees WHERE id=" . $_GET['edit'])->fetch_row()[0] : '' ?>">
        <input type="email" name="email" placeholder="Email" required
```

```
                value="<?= isset($_GET['edit']) ? $conn->query("SELECT email FROM employees
WHERE id=" . $_GET['edit'])->fetch_row()[0] : " ?>">
        <input type="text" name="position" placeholder="Position" required
                value="<?= isset($_GET['edit']) ? $conn->query("SELECT position FROM employees
WHERE id=" . $_GET['edit'])->fetch_row()[0] : " ?>">
        <?php if (isset($_GET['edit'])): ?>
            <button type="submit" name="update">Update</button>
            <a href="./">Cancel</a>
        <?php else: ?>
            <button type="submit" name="add">Add Employee</button>
        <?php endif; ?>
    </form>

    <table>
        <tr>
            <th>ID</th>
            <th>Name</th>
            <th>Email</th>
            <th>Position</th>
            <th>Created At</th>
            <th>Actions</th>
        </tr>
        <?php while ($employee = $employees->fetch_assoc()): ?>
        <tr>
            <td><?= $employee['id'] ?></td>
            <td><?= $employee['name'] ?></td>
            <td><?= $employee['email'] ?></td>
            <td><?= $employee['position'] ?></td>
            <td><?= $employee['created_at'] ?></td>
            <td>
                <a href="?edit=<?= $employee['id'] ?>">Edit</a>
                <a href="?delete=<?= $employee['id'] ?>" onclick="return confirm('Are you
sure?')">Delete</a>
            </td>
        </tr>
        <?php endwhile; ?>
    </table>
</body>
</html>
```

Then configure nginx for php
run sudo nano /etc/nginx/sites-available/abacial_app then put this file

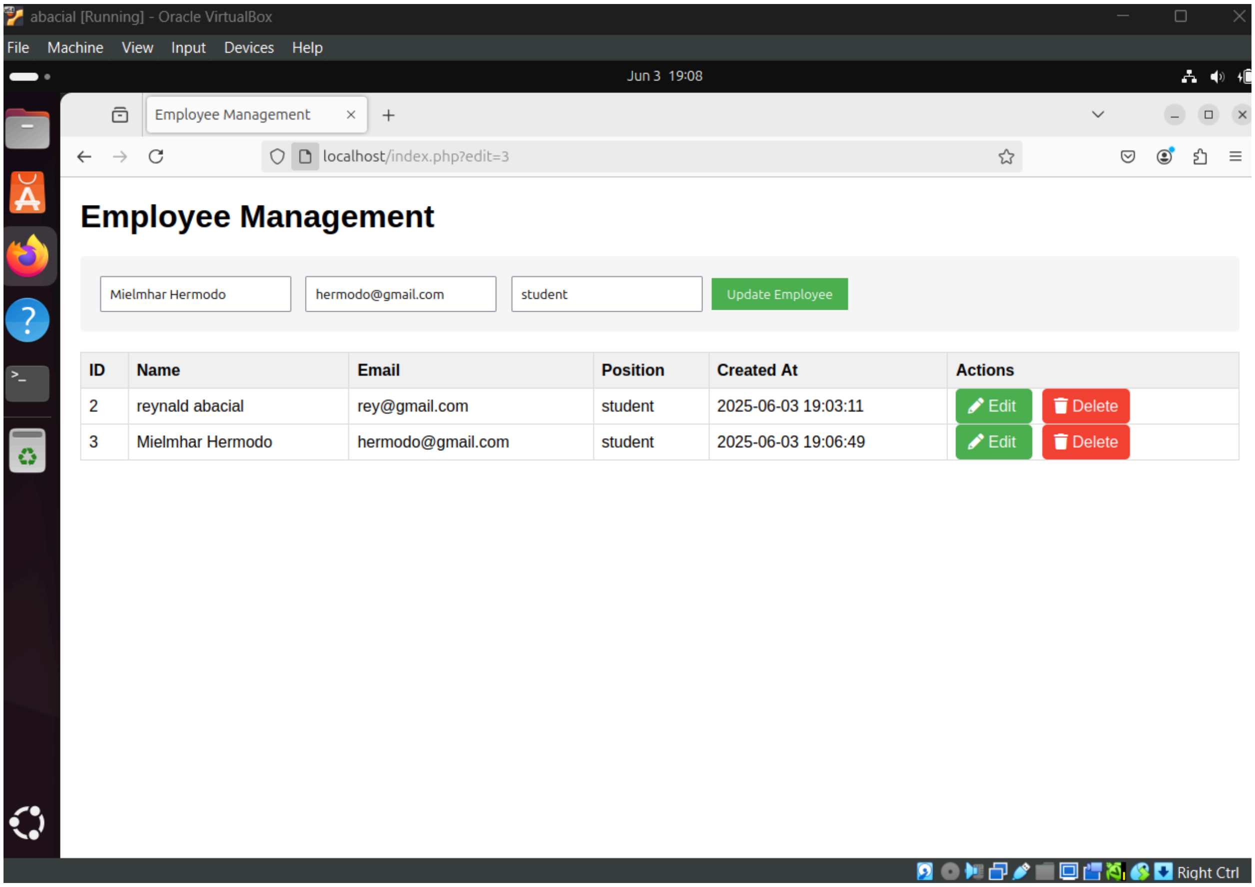
```
server {
	listen 80;
	server_name localhost;
	root /var/www/abacial_app;
	index index.php index.html index.htm;

	location / {
		try_files $uri $uri/ =404;
	}

	location ~ \.php$ {
		include snippets/fastcgi-php.conf;
		fastcgi_pass unix:/var/www/run/php/php7.4-fpm.sock;
		fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
		Include fastcgi_params;
	}

	location ~ /\.ht {
		deny all;
	}
}
```

Then verify services start on boot
Run:

- sudo systemctl enable nginx
- sudo systemctl enable mysql
- sudo systemctl enable smbd

Verification

Accessed http://localhost/index.php in browser

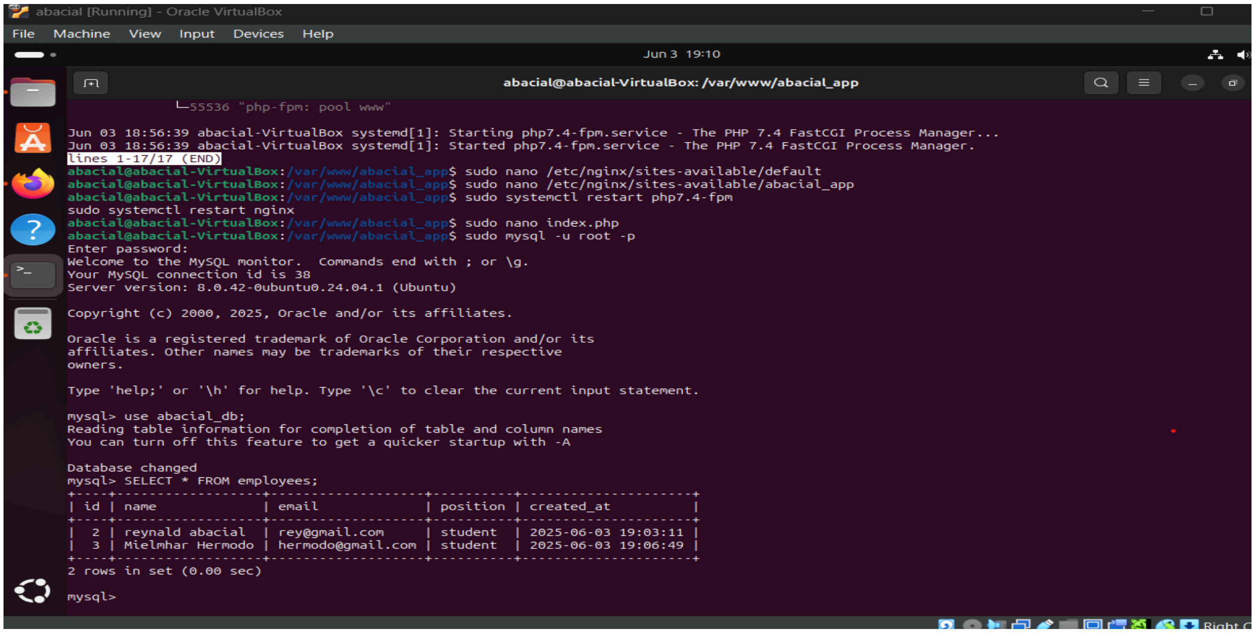


Employee Management

Mielmhar Hermodo | hermodo@gmail.com | student | Update Employee

ID	Name	Email	Position	Created At	Actions
2	reynald abacial	rey@gmail.com	student	2025-06-03 19:03:11	Edit Delete
3	Mielmhar Hermodo	hermodo@gmail.com	student	2025-06-03 19:06:49	Edit Delete

Database Verification


abacial [Running] - Oracle VirtualBox
File
Machine
View
Input
Devices
Help
Jun 3 19:10
abacial@abacial-VirtualBox: /var/www/abacial_app

```
             └─55536 "php-fpm: pool www"

Jun 03 18:56:39 abacial-VirtualBox systemd[1]: Starting php7.4-fpm.service - The PHP 7.4 FastCGI Process Manager...
Jun 03 18:56:39 abacial-VirtualBox systemd[1]: Started php7.4-fpm.service - The PHP 7.4 FastCGI Process Manager.
lines 1-17/17 (END)
abacial@abacial-VirtualBox:/var/www/abacial_app$ sudo nano /etc/nginx/sites-available/default
abacial@abacial-VirtualBox:/var/www/abacial_app$ sudo nano /etc/nginx/sites-available/abacial_app
abacial@abacial-VirtualBox:/var/www/abacial_app$ sudo systemctl restart php7.4-fpm
sudo systemctl restart nginx
abacial@abacial-VirtualBox:/var/www/abacial_app$ sudo nano index.php
abacial@abacial-VirtualBox:/var/www/abacial_app$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 38
Server version: 8.0.42-0ubuntu0.24.04.1 (Ubuntu)

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owners.

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

mysql> use abacial_db;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SELECT * FROM employees;
+----+------------------+-------------------+----------+---------------------+
| id | name             | email             | position | created_at          |
+----+------------------+-------------------+----------+---------------------+
|  2 | reynald abacial  | rey@gmail.com     | student  | 2025-06-03 19:03:11 |
|  3 | Mielmhar Hermodo | hermodo@gmail.com | student  | 2025-06-03 19:06:49 |
+----+------------------+-------------------+----------+---------------------+
2 rows in set (0.00 sec)

mysql>
```