Step-by-Step Guide: Deploying a 3-Tier Application on a Linux Server

Setting Up MongoDB (Database Layer)

Update the package list: sudo apt update

Install MongoDB: sudo apt-get install -y mongodb-org

Start and enable MongoDB service:

```
sudo systemctl start mongod

sudo systemctl enable mongod
```

Check MongoDB status: sudo systemctl status mongod

Connect to the MongoDB shell: mongosh

Setting Up the Backend (Node.js Application)

Install Node.js and npm: sudo apt install -y nodejs

Clone the application source: git clone https://github.com/BL-AniketChile/NodeJs-API.git

Edit the .env file:

```
nano .env
```

Add the following variables:

```
MONGODB_URL=mongodb://localhost:27017/demo

PORT=3000
```

Create a service file for the Node.js application:

```
cd /etc/systemd/system

nano nodeapp.service
```

Add the following content:

```
[Unit]

Description=Node.js Application Service

After=network.target
```

```
[Service]

User=ubuntu

Group=ubuntu

WorkingDirectory=/home/ubuntu/NodeJs-API

ExecStart=/usr/bin/node server.js

Restart=always

RestartSec=10

[Install]

WantedBy=multi-user.target
```

Start and enable the Node.js application:

```
sudo systemctl start nodeapp

sudo systemctl enable nodeapp

sudo systemctl status nodeapp
```

Optional: Use PM2 to manage the application:

```
sudo npm install pm2 -g

pm2 start server.js
```

Setting Up the Frontend (Apache Web Server)

Install Apache web server:

```
sudo apt update

sudo apt install apache2
```

Start and enable Apache:

```
sudo systemctl start apache2

sudo systemctl enable apache2
```

Enable Apache proxy modules:

```
sudo a2enmod proxy

sudo a2enmod proxy_http
```

Configure Apache as a reverse proxy:

Create a configuration file:

```
sudo nano /etc/apache2/sites-available/nodeapp.conf
```

Add the following content:

```
<VirtualHost *:80>
    ServerName default
    ProxyRequests Off
    ProxyPass / http://localhost:3000/
    ProxyPassReverse / http://localhost:3000/
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```

Restart Apache: sudo systemctl restart apache2

Update EC2 security group:

Add an inbound rule for HTTP (Port 80) with your IP address.

Accessing the Application

Use the following URL to access the application:

http://<Public_IP_of_EC2_instance>/hello_world

Apache will forward requests on port 80 to the Node.js application on port 3000.