

Readme

This guide will walk you through the setup and execution of your web project. We will begin by setting up the Apache web server, followed by the installation of Node.js and other required tools. Lastly, we will initialize and run the provided application.

Prerequisites:

- Ubuntu
- Root (sudo) privileges on the system

Step-by-Step Guide:

1. Set Up Apache:

a. Start Apache service:

Initiate the Apache service to make it ready to serve web pages.

```
1 | sudo systemctl start apache2
```

b. Test Apache:

Open your web browser and type in your server IP address. You should be greeted by Apache's default welcome page, indicating that the server is up and running.

c. Understanding Apache's Document Root:

By default, Apache serves files from `/var/www/html/`. This is where you can place your web files.

If you wish to serve multiple websites or prefer a different directory, proceed to use VirtualHosts as explained in the next section.

d. Setting up VirtualHosts:

For example, to set up a new virtual host for a site:

- Apache's VirtualHosts feature allows you to host multiple websites on a single server. Each site can have its own configuration and directory.

```
1 | sudo mkdir /var/www/well_map.com
```

- **Directory Creation:** Start by creating a dedicated directory for your new website's files.

```
1 | sudo nano /etc/apache2/sites-available/well_map.com.conf
```

- **Configuration File:** For each site, a configuration file dictates how requests should be handled.

```
1 <VirtualHost *:80>
2     ServerAdmin webmaster@well_map.com
3     ServerName well_map.com
4     ServerAlias www.well_map.com
5     DocumentRoot /var/www/well_map.com
6     ErrorLog ${APACHE_LOG_DIR}/error.log
7     CustomLog ${APACHE_LOG_DIR}/access.log combined
8 </VirtualHost>
```

Populate the file with the provided configuration, adjusting values like `ServerName` to match your domain name.

- **Activating the New Site:** Once set up, inform Apache about the new site and restart the service.

```
1 sudo a2ensite well_map.com.conf
2 sudo systemctl restart apache2
```

2. Configure Firewall:

If you're using UFW (Uncomplicated Firewall), which simplifies firewall management, you need to permit HTTP and HTTPS traffic for your Apache server to communicate with the outside world:

```
1 sudo ufw allow 'Apache Full'
```

3. Setting Up Node.js:

If you have older versions of node or nodejs installed, purge them:

```
1 sudo apt-get --purge remove node
2 sudo apt-get --purge remove nodejs
3 sudo apt-get autoremove
```

Install `curl` if not already installed:

```
1 sudo apt install curl
```

Add Node.js PPA for version 20.x and install:

```
1 curl -sL https://deb.nodesource.com/setup_20.x | sudo -E bash -
2 sudo apt-get install -y nodejs
```

Verify Node.js and npm installation:

```
1 node -v
2 npm -v
```

Create a new OpenLayers application named `well-map` and start it:

```
1 | sudo npm create ol-app well-map
2 | cd well-map
3 | sudo npm start
```

Set appropriate ownership for your website directory:

```
1 | sudo chown -R haoyue:haoyue /var/www/well_map.com/
```

4. Update Your Web App:

Replace the contents of your web application with the provided files:

- `index.html`
- `main.js`
- `style.css`

Additionally, add the following new files to your app:

- `data.csv`
- `store.py`
- `api_server.py`
- `oil-well.svg`

5. Installing Python Tools:

Update your package list and install pip for Python 3:

```
1 | sudo apt update
2 | sudo apt install python3-pip
```

Install necessary Python packages:

```
1 | pip3 install pandas pymysql mysql-connector-python flask flask_cors
```

6. Run Python Scripts:

Execute the provided Python scripts:

```
1 | python3 store.py
2 | python3 api_server.py
```

phpMyAdmin

Server: localhost:3306 » Database: lab5 » Table: well_data

Recent Favorites

New

- information_schema
- lab5
 - New
 - well_data
- mysql
- performance_schema
- phpMyAdmin
- phpmyadmin
- sys

te features are not available.

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Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Active	Oil
Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Active	Oil
Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Active	Oil
ken	11082.0	20481.0	Cased Hole	76768.0	Barrels	Sand Frac	Not Available	4440376.0	9679.0	42.3	Active	Oil
ken	10882.0	20300.0	36	74826.0	Barrels	Sand Frac	Not Available	4539124.0	8672.0	41.2	Inactive	Oil
ken	10162.0	20440.0	Cased Hole	74475.0	Barrels	Sand Frac	Not Available	4519292.0	8877.0	43.6	Active	Oil

Console

localhost:5173/#

haoyue@haoyue-VirtualBox: /var/www/well_map.com/well-map

haoyue@haoyue-Virtual... x haoyue@haoyue-Virtual... x haoyue@haoyue-Virtual... x

WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.

* Running on http://127.0.0.1:5000

Press CTRL+C to quit

* Restarting with stat

* Debugger is active!

* Debugger PIN: 250-362-886

127.0.0.1 - - [17/Oct/2023 18:49:16] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 18:49:30] "GET /get_well_data HTTP/1.1" 200 -

* Detected change in '/var/www/well_map.com/well-map/api_server.py', reloading

* Restarting with stat

* Debugger is active!

* Debugger PIN: 250-362-886

127.0.0.1 - - [17/Oct/2023 18:53:03] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 18:54:19] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 18:55:36] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 18:56:30] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 19:01:32] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 19:07:24] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 19:07:33] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 19:07:43] "GET /get_well_data HTTP/1.1" 200 -

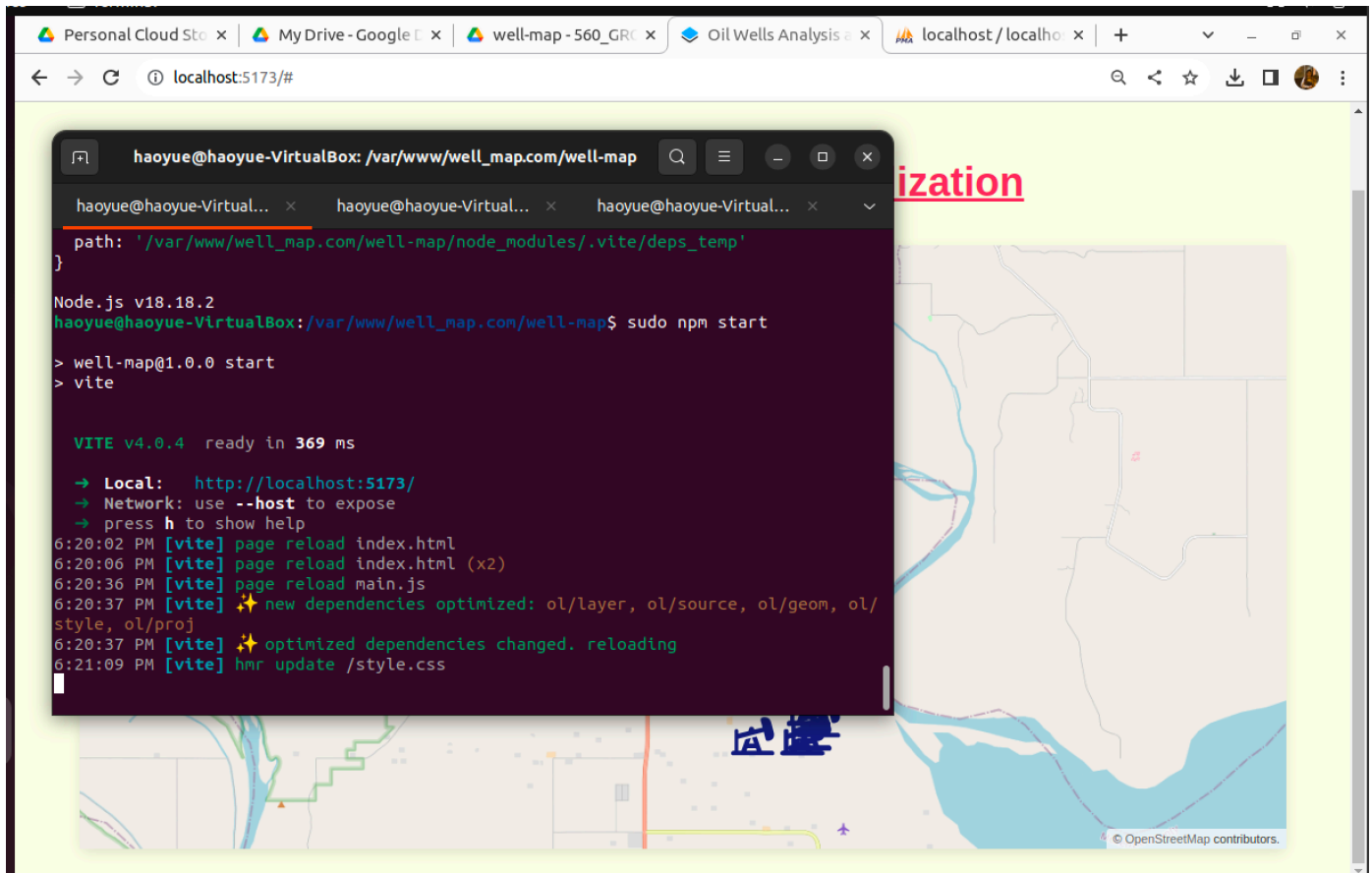
127.0.0.1 - - [17/Oct/2023 19:09:39] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 21:07:46] "GET /get_well_data HTTP/1.1" 200 -

127.0.0.1 - - [17/Oct/2023 21:07:49] "GET /get_well_data HTTP/1.1" 200 -

ization

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7. Viewing Project:

Open your web browser and navigate to:

```
1 | http://localhost:5173/
```

You should be able to see the result of your web application.

Note: It depends on the terminal information.

Oil Wells Analysis and Visualization

