

The code contains a series of commands to install and configure the Nominatim geocoding software on a Linux server. Here is a breakdown of each command :

*%userName should be replaced by userprofile%*

```
1. sudo apt install -y python3-behave
```

Installs the Python Behave package.

```
2. sudo apt install -y php-codesniffer
```

Installs the PHP CodeSniffer package.

```
3. sudo apt install -y phpunit
```

Installs the PHP Unit Testing package.

```
4. sudo apt install -y pylint
```

Installs the Python Pylint package.

```
5. sudo python38 -m pip install -y python-dotenv
```

Installs the Python dotenv package.

```
6. sudo apt install -y osm2pgsql
```

Installs the OSM2PGSQL tool for working with OpenStreetMap data.

```
7. sudo apt install -y cmake
```

Installs the CMake build system.

```
8. sudo snap install -y cmake
```

Installs an additional version of CMake from the Snap store.

```
9. sudo apt install -y python3-pip
```

Installs Python 3 pip package manager.

```
10. sudo apt install -y acl
```

Installs the Access Control Lists package for managing file permissions.

```
11. sudo pip install -U pytest
```

Upgrades the Python pytest package.

```
12. sudo apt install -y php-cgi unzip recode
```

Installs additional PHP packages.

```
13. sudo apt install -y apache2 libapache2-mod-php
```

Installs the Apache web server and the PHP module for Apache.

```
14. sudo apt install -y net-tools
```

Installs a package containing various network tools.

```
15. sudo apt-get install -y osmctools
```

Installs the OSMCTools package for working with OpenStreetMap data.

```
16. sudo apt install -y php-cgi
```

Installs an additional PHP package required by Nominatim.

```
17. sudo apt install -y build-essential cmake g++ libboost-dev  
libboost-system-dev libboost-filesystem-dev libexpat1-dev  
zlib1g-dev libbz2-dev libpq-dev liblua5.3-dev lua5.3  
postgresql-server-dev-14 postgresql-14-postgis-3  
postgresql-contrib-14 postgresql-14-postgis-3-scripts  
php-cli php-pgsql php-intl libicu-dev python3-dotenv  
python3-psycopg2 python3-psutil python3-jinja2 python3-icu  
python3-datrie
```

Installs various libraries and dependencies required by Nominatim.

```
18. sudo useradd -d /srv/nominatim -s /bin/bash -m nominatim
```

Creates a new system user named "nominatim" with a home directory of  
"/srv/nominatim".

```
19. export USERNAME=nominatim and export  
USERHOME=/srv/nominatim
```

Set environment variables for the username and home directory of the nominatim user.

```
20. visudo
```

Opens the sudoers configuration file for editing.

21. `%userName ALL=(ALL) ALL`

`%nominatim ALL=(ALL) ALL`

`%postgres ALL=(ALL) ALL`

Add new entries to the sudoers configuration file granting various privileges to the "userName", "nominatim", and "postgres" users.

22. `sudo chmod a+x $USERHOME`

This changes the permissions of the home directory of the current user to allow execution of files.

23. `sudo setfacl -R -m u:postgres:rwX /srv/nominatim/`

This grants read, write, and execute permissions to the user "postgres" on the directory "/srv/nominatim/" and all its contents.

24. `sudo systemctl restart postgresql`

This restarts the PostgreSQL database service.

25. `sudo -u postgres -i`

This switches to the user "postgres" and opens a new interactive shell.

26. `sudo -u postgres createuser -s $USERNAME`

This creates a PostgreSQL user with superuser privileges and the same name as the current user.

27. `sudo -u postgres createuser www-data`

This creates a PostgreSQL user named "www-data".

28. `su username`

This switches to a user named "username".

29. `sudo -i`

This opens a new interactive shell with root privileges.

30. `export USERNAME=nominatim`

This sets an environment variable named "USERNAME" to "nominatim".

31. `export USERHOME=/srv/nominatim`

This sets an environment variable named "USERHOME" to "/srv/nominatim".

32. `cd $USERHOME`

This changes the current directory to the value of the "USERHOME" environment variable.

33. `wget https://nominatim.org/release/Nominatim-4.2.0.tar.bz2`

This downloads the Nominatim source code.

34. `tar xf Nominatim-4.2.0.tar.bz2`

This extracts the downloaded archive.

35. `mkdir build`

This creates a new directory named "build".

36. `cd build`

This changes the current directory to "build".

37. `sudo cmake /srv/nominatim/Nominatim-4.2.0`

This configures the Nominatim build using CMake.

38. `sudo make`

This compiles the Nominatim source code.

39. `sudo make install`

This installs Nominatim on the system.

40. `cd ..`

This changes the current directory to the parent directory of "build".

41. `mkdir /srv/nominatim/nominatim-project`

This creates a new directory named "nominatim-project" in "/srv/nominatim/".

42. `mkdir /srv/nominatim/nominatim-project/website`

This creates a new directory named "website" inside  
"/srv/nominatim/nominatim-project/".

43. `sudo setfacl -R -m u:nominatim:rwX /srv/nominatim/`

This grants read, write, and execute permissions to the user "nominatim" on  
"/srv/nominatim/" and all its contents.

44. `sudo setfacl -R -m u:postgres:rwX /srv/nominatim/`

This grants read, write, and execute permissions to the user "postgres" on "/srv/nomin

45. `mkdir nominatim-planet`

creates a new directory called nominatim-planet in the current working directory.



46. `cd /srv/nominatim/nominatim-planet`

changes the current working directory to /srv/nominatim/nominatim-planet.

47. `export PROJECT_DIR=/srv/nominatim/nominatim-planet`

exports the environment variable PROJECT\_DIR and sets it to  
/srv/nominatim/nominatim-planet.

48. `cd $PROJECT_DIR`

changes the current working directory to the value of the PROJECT\_DIR environment variable.

49. `wget`

`https://www.nominatim.org/data/wikimedia-importance.sql.gz`

downloads a compressed SQL file from the specified URL.

50. `wget`

`https://download.geofabrik.de/asia/india-latest.osm.pbf`

downloads a compressed OpenStreetMap data file for India from the specified URL.

51. `sudo -u postgres -i`

switches to the postgres user and starts a new interactive shell session as that user.

52. `nano /etc/postgresql/14/main/postgresql.conf`  
opens the PostgreSQL configuration file in the Nano text editor.

53. `listen_addresses = 'localhost'`

`shared_buffers = 2GB`

`maintenance_work_mem = 10GB`

`autovacuum_work_mem = 2GB`

`work_mem = 50MB`

`effective_cache_size = 24GB`

`synchronous_commit = off`

`max_wal_size = 1GB`

```
checkpoint_timeout = 10min
```

```
checkpoint_completion_target = 0.9
```

The subsequent lines modify various configuration settings for PostgreSQL, such as `listen_addresses`, `shared_buffers`, `maintenance_work_mem`, `autovacuum_work_mem`, `work_mem`, `effective_cache_size`, `synchronous_commit`, `max_wal_size`, `checkpoint_timeout`, and `checkpoint_completion_target`.

```
54. su userName
```

switches to the `userName` user.

```
55. sudo -i
```

starts a new interactive shell session with elevated privileges.

```
56. sudo systemctl restart postgresql
```

restarts the PostgreSQL service.

```
57. sudo -u postgres -i
```

switches to the `postgres` user and starts a new interactive shell session as that user.

```
58. cd
```

changes the current working directory to the home directory of the current user.

```
59. nominatim import --osm-file  
    /srv/nominatim/nominatim-planet/india-latest.osm.pbf 2>&1 |  
    tee setup.log
```

This command imports the OpenStreetMap data file india-latest.osm.pbf located in /srv/nominatim/nominatim-planet/ to the Nominatim database. The 2>&1 | tee setup.log part of the command redirects both the standard output and standard error of the command to the file setup.log and also prints them on the terminal.

```
60. nominatim admin --check-database
```

This command checks if the Nominatim database is configured properly and ready to use.

```
61. nominatim import --continue indexing
```

This command continues the indexing of the imported data.

```
62. nominatim admin --check-database
```

This command checks the Nominatim database again to ensure it is still functioning properly.

```
63. cd /srv/nominatim/nominatim-planet/
```

This command changes the current directory to /srv/nominatim/nominatim-planet/.

```
64. nominatim refresh --wiki-data --importance 2>&1 | tee  
    setup.log
```

This command updates the Nominatim database with the latest wiki data and importance scores. The 2>&1 | tee setup.log part of the command redirects both the standard output

and standard error of the command to the file setup.log and also prints them on the terminal.

65. `nominatim admin --check-database`

This command checks the Nominatim database again to ensure it is still functioning properly.

66. `cp -r /var/lib/postgresql/website/  
/srv/nominatim/nominatim-project/`

This command copies the Nominatim website files from the default location /var/lib/postgresql/website/ to the new location /srv/nominatim/nominatim-project/.

67. `su userName`

This command switches to the user userName.

68. `sudo -i`

This command elevates the privileges of the user to the superuser level.

69. `sudo tee /etc/apache2/conf-available/nominatim.conf <<  
EOFAPACHECONF`

```
<Directory "/srv/nominatim/nominatim-project/website">

    Options FollowSymLinks MultiViews

    AddType text/html .php

    DirectoryIndex search.php

    Require all granted

</Directory>

Alias /nominatim /srv/nominatim/nominatim-project/website

EOFAPACHECONF
```

`sudo tee /etc/apache2/conf-available/nominatim.conf << EOFAPACHECONF`: This command creates and opens a new file `/etc/apache2/conf-available/nominatim.conf` and redirects the input from the following lines until it encounters `EOFAPACHECONF` into the file.

`<Directory "/srv/nominatim/nominatim-project/website">`: This line specifies the directory where the Nominatim website files are located.

`Options FollowSymLinks MultiViews`: This line enables the `FollowSymLinks` and `MultiViews` options for Apache.

`AddType text/html .php`: This line associates the `.php` file extension with the `text/html` MIME type.

`DirectoryIndex search.php`: This line specifies the default page to load when accessing the Nominatim website.

`Require all granted`: This line grants access to all users.

`</Directory>`: This line closes the `<Directory>` tag.

`Alias /nominatim /srv/nominatim/nominatim-project/website`

This line creates an alias for the Nominatim website URL.

`EOFAPACHECONF`: This line marks the end of the input redirection.

70. `sudo -u postgres -i`

This command switches to the postgres user.

71. `a2enconf nominatim`

This command enables the Apache2 configuration file for the Nominatim service. `a2enconf` is a tool for enabling Apache2 configuration files, and `nominatim` is the name of the configuration file that needs to be enabled.

72. `systemctl restart apache2`

This command restarts the Apache2 web server. `systemctl` is a command for managing system services in a Linux system, and `apache2` is the name of the service that needs to be restarted.

73. `systemctl status apache2`

This command displays the status of the Apache2 web server. `systemctl` is again used to manage the service, and `status` is an option that tells the command to display the current status of the service.

74. `systemctl restart postgresql`

This command restarts the PostgreSQL database service. `postgresql` is the name of the service that needs to be restarted.

75. `nominatim serve`

This command starts the Nominatim service. `nominatim` is the name of the service, and `serve` is a command that starts the service. Nominatim is an open-source tool used for geocoding and reverse geocoding of addresses.

76. run-: localhost/nominatim => OK

77. localhost/nominatim/reverse.php?format=json&lat=27.1750090510034&lon=78.04209025