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PostgreSQL Installation and Configuration Manual

This manual provides a step-by-step guide on installing and configuring PostgreSQL on a system running Ubuntu or an Ubuntu-based distribution. PostgreSQL is a powerful, open-source object-relational database system. By following this guide, you will install PostgreSQL, ensure it's running, switch to the PostgreSQL user, change the default user password, and test the connection.

1. Update System Packages

Before installing any new software, it's crucial to update your system's package index and upgrade all your system's packages to their latest versions. This ensures compatibility and security. Open a terminal and execute the following commands:

```
$ sudo apt update
$ sudo apt upgrade
```

2. Install PostgreSQL

After updating your system, you are ready to install PostgreSQL along with the `postgresql-contrib` package, which adds some additional utilities and functionality. Run the following command in the terminal:

```
$ sudo apt install postgresql postgresql-contrib
```

3. Verify Installation

Once the installation process completes, ensure that PostgreSQL is installed and running properly. Use the following command to check the status of PostgreSQL:

```
$ sudo systemctl status postgresql
```

4. Switch to the PostgreSQL User

PostgreSQL creates a user named `postgres` during installation. This user is the superuser for the PostgreSQL instance. To perform operations such as creating databases or users, you need to switch to this user. Execute the following command:

```
$ sudo -i -u postgres
```

Once switched, you can access the PostgreSQL prompt by entering:

```
$ psql
```

5. Change the Default User Password

For security reasons, it's recommended to change the default password for the `postgres` user. At the PostgreSQL prompt, execute the following command, replacing `admin` with a strong password of your choice:

```
ALTER USER postgres WITH PASSWORD 'admin';
```

6. Test the Connection

After configuring your PostgreSQL server, it's a good practice to test if it's ready to accept connections. Exit the PostgreSQL prompt (by typing `\q`) and the `postgres` user account (by typing `exit`), then run:

```
$ sudo pg_isready
```

This command checks the connection status of your PostgreSQL server. A response indicating that the server is ready to accept connections confirms a successful setup.

Conclusion

Congratulations! You have successfully installed and configured PostgreSQL on your system. You can now begin creating databases, adding users, and developing applications with one of the most advanced open-source database management systems available.

Remember, this guide covers basic installation and configuration. PostgreSQL offers a wide range of features and settings that can be customized to suit your specific needs. For more advanced configurations and features, refer to the official PostgreSQL documentation.