**PostgreSQL Configuration, Setup & Troubleshooting Guide**

**PostgreSQL Setup & Troubleshooting Guide**

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| Step # | Action | Command / Process | Windows Shortcut (If Applicable) | Why It's Needed? |
| 1 | **Install PostgreSQL** | Download and install from [PostgreSQL official site](https://www.postgresql.org/download/). |  | Required to set up PostgreSQL on Windows. |
| 2 | **Set Up Environment Variables** | Add C:\Program Files\PostgreSQL\17\bin to system PATH. | **Win + R**, type sysdm.cpl, go to **Advanced** → **Environment Variables** | Allows running psql from any terminal. |
| 3 | **Verify Installation** | Run psql --version in CMD. | **Win + X**, then select **Command Prompt (Admin)** | Confirms PostgreSQL is installed and accessible. |
| 4 | **Login as Superuser (postgres)** | psql -U postgres -d postgres |  | Grants access to PostgreSQL for initial configuration. |
| 5 | **Check Existing Users** | SELECT usename FROM pg\_user; |  | Identifies existing PostgreSQL users. |
| 6 | **Create a New User (WT-mc-student-19425)** | CREATE USER "WT-mc-student-19425" WITH PASSWORD 'YourPassword'; |  | Adds a new database user for specific access. |
| 7 | **Grant Login Privileges** | ALTER ROLE "WT-mc-student-19425" WITH LOGIN; |  | Ensures the new user can log in. |
| 8 | **Grant Database Access** | GRANT ALL PRIVILEGES ON DATABASE postgres TO "WT-mc-student-19425"; |  | Allows the user to interact with the postgres database. |
| 9 | **Test User Login** | psql -U WT-mc-student-19425 -d postgres |  | Confirms the new user can access PostgreSQL. |
| 10 | **Reset Password (if needed)** | ALTER USER "WT-mc-student-19425" WITH PASSWORD 'NewPassword'; |  | Fixes authentication issues when a password is incorrect. |
| 11 | **Fix "Password Authentication Failed" Error** | Modify pg\_hba.conf and set authentication to md5. Restart PostgreSQL. | **Win + R**, type notepad C:\Program Files\PostgreSQL\17\data\pg\_hba.conf | Ensures PostgreSQL allows password authentication. |
| 12 | **Restart PostgreSQL (if needed)** | net stop postgresql → net start postgresql | **Win + X**, then select **Windows Terminal (Admin)** | Applies configuration changes. |
| 13 | **Manually Create a Database (if PostGIS install failed)** | CREATE DATABASE my\_spatial\_db; \c my\_spatial\_db; CREATE EXTENSION postgis; |  | Initializes a spatial database manually. |
| 14 | **Verify PostGIS Installation** | SELECT postgis\_version(); |  | Confirms PostGIS is correctly installed and functional. |
| 15 | **Exit PostgreSQL** | \q |  | Exits psql after setup. |

**What We Accomplished 🚀**

* **Successfully installed and configured PostgreSQL on Windows**
* **Fixed path issues to access psql**
* **Created and configured a new PostgreSQL user (WT-mc-student-19425)**
* **Resolved authentication failures by managing user roles and passwords**
* **Fixed PostgreSQL access errors by modifying pg\_hba.conf**
* **Manually created a spatial database after PostGIS installation failed**

**Next Steps 🎯**

Would you like to:

1. **Create tables and insert data** into PostgreSQL?
2. **Work with PostGIS** for geospatial operations?
3. **Connect PostgreSQL to an application (Python, Java, etc.)?**

Let me know what you’d like to do next! 😊