System-Level CLI Commands

1. **sudo -i -u postgres**
   - **Function**: Switches to the postgres user to manage PostgreSQL databases and services.
2. **psql**
   - **Function**: Launches the PostgreSQL interactive terminal for SQL queries and database management.
3. **psql -U allan -d airbnb**
   - **Function**: Connects to the airbnb database as user allan for direct SQL interaction.
4. **psql -U postgres**
   - **Function**: Connects to PostgreSQL as the postgres user for administrative tasks.
5. **createdb airbnb**
   - **Function**: Creates a new database named airbnb.
6. **dropdb airbnb**
   - **Function**: Deletes the airbnb database.
7. **pg_dump airbnb > airbnb_backup.sql**
   - **Function**: Exports the airbnb database schema and data to a SQL file for backup.
8. **pg_dumpall > all_databases_backup.sql**
   - **Function**: Exports all databases (including airbnb) to a SQL file.
9. **psql airbnb < airbnb_backup.sql**
   - **Function**: Restores the airbnb database from a backup SQL file.
10. **psql -U postgres < all_databases_backup.sql**
    - **Function**: Restores all databases from a pg_dumpall backup.
11. **createuser allan**
    - **Function**: Creates a new PostgreSQL user named allan.
12. **dropuser allan**
    - **Function**: Deletes the PostgreSQL user allan.
13. **service postgresql start**
    - **Function**: Starts the PostgreSQL server.
14. **service postgresql stop**
    - **Function**: Stops the PostgreSQL server.
15. **service postgresql restart**
    - **Function**: Restarts the PostgreSQL server to apply configuration changes.
16. **service postgresql status**
    - **Function**: Checks the running status of the PostgreSQL server.
17. **pg_ctlcluster 14 main start**
    - **Function**: Starts a specific PostgreSQL cluster (e.g., version 14, main cluster) on Ubuntu.
18. **pg_ctlcluster 14 main stop**
    - **Function**: Stops a specific PostgreSQL cluster.
19. **pg_ctlcluster 14 main restart**
    - **Function**: Restarts a specific PostgreSQL cluster.
20. **vacuumdb airbnb**
    - **Function**: Performs maintenance by cleaning and optimizing the airbnb database.
21. **reindexdb airbnb**

- **Function**: Rebuilds indexes in the airbnb database to improve performance.

22. **pg_restore --dbname=airbnb backup.tar**
    - **Function**: Restores the airbnb database from a tar-format backup created by pg_dump.

23. **psql -f script.sql airbnb**
    - **Function**: Executes an SQL script file (e.g., table creation) on the airbnb database.

24. **pg_isready**
    - **Function**: Checks if the PostgreSQL server is running and accepting connections.

25. **pg_controldata**
    - **Function**: Displays control information about the PostgreSQL data directory.

26. **pg_config**
    - **Function**: Shows configuration details of the PostgreSQL installation (e.g., version, paths).

27. **initdb /path/to/data**
    - **Function**: Initializes a new PostgreSQL database cluster.

28. **pg_basebackup -D /path/to/backup**
    - **Function**: Creates a binary backup of the PostgreSQL database cluster.

29. **psql -V**
    - **Function**: Displays the PostgreSQL version.

30. **pgbench -i airbnb**
    - **Function**: Initializes the airbnb database with benchmarking data for performance testing.

31. **pgbench airbnb**
    - **Function**: Runs a benchmark test on the airbnb database to measure performance.

32. **chown -R postgres:postgres /path/to/data**
    - **Function**: Sets correct permissions for the PostgreSQL data directory.

33. **chmod 700 /path/to/data**
    - **Function**: Restricts access to the PostgreSQL data directory for security.

34. **nano /etc/postgresql/14/main/postgresql.conf**
    - **Function**: Edits the PostgreSQL configuration file to adjust settings (e.g., port, memory).

35. **nano /etc/postgresql/14/main/pg_hba.conf**
    - **Function**: Edits the PostgreSQL authentication file to configure client access.

psql Meta-Commands (Inside psql)

1. **\l**
   - **Function**: Lists all databases (e.g., airbnb, airbnd_clone_bd, postgres).
2. **\c airbnb**
   - **Function**: Connects to the airbnb database for querying or management.
3. **\dt**
   - **Function**: Lists all tables in the current database (e.g., users, property).
4. **\d users**
   - **Function**: Shows the structure of the users table (columns, types, constraints).
5. **\di**
   - **Function**: Lists all indexes in the current database (e.g., idx_user_email).

6. **\du**
    - **Function**: Lists all database roles/users (e.g., allan, postgres).
7. **\dn**
    - **Function**: Lists all schemas in the current database (e.g., public).
8. **\dv**
    - **Function**: Lists all views in the current database.
9. **\df**
    - **Function**: Lists all functions in the current database (e.g., update_updated_at_column).
10. **\q**
    - **Function**: Exits the psql interactive terminal.
11. **\i script.sql**
    - **Function**: Executes SQL commands from a file (e.g., to create tables or insert data).
12. **\o output.txt**
    - **Function**: Redirects query output to a file (output.txt).
13. **\e**
    - **Function**: Opens the last query in an editor for modification.
14. **\z**
    - **Function**: Lists access privileges for all tables in the current database.
15. **\conninfo**
    - **Function**: Displays information about the current database connection.
16. **\password allan**
    - **Function**: Sets or changes the password for user allan.
17. **\g**
    - **Function**: Executes the previous query again.
18. **\watch 5**
    - **Function**: Repeats the previous query every 5 seconds for monitoring.
19. **\dt+**
    - **Function**: Lists tables with additional details (e.g., size, description).
20. **\d+ users**
    - **Function**: Shows detailed structure of the users table, including indexes and constraints.
21. **\copy users TO 'users.csv' CSV HEADER**
    - **Function**: Exports the users table to a CSV file.
22. **\copy users FROM 'users.csv' CSV HEADER**
    - **Function**: Imports data into the users table from a CSV file.
23. **\set**
    - **Function**: Lists all psql variables.
24. **\unset variable**
    - **Function**: Unsets a psql variable.
25. **\timing**
    - **Function**: Toggles timing of query execution to measure performance.

Notes

- **Context**: Commands are tailored for your Ubuntu environment (PostgreSQL 14.17, user allan, database airbnb).
- **Execution**:
  - System-level commands (e.g., createdb, pg_dump) are run in the terminal as postgres or with sudo.
  - psql meta-commands (e.g., \l, \dt) are used inside the psql prompt.
- **Project Relevance**:
  - Use \dt, \d users, \di to verify tables (users, property, etc.) and indexes.
  - Use psql -f script.sql airbnb or \i script.sql to run your table creation or data insertion scripts.
  - Use pg_dump for backing up your airbnb database before submission.
- **Troubleshooting**: If a command fails, check permissions (e.g., sudo), ensure PostgreSQL is running (service postgresql status), or verify the database exists (\l).

If you need help using a specific command (e.g., running a script, exporting data) or have a task from your ALX project (e.g., normalization, ERD), let me know with a direct request!