**Lab Exercise 8- User Authentication Methods in PostgreSQL**

**Objective**

Configure and test the following PostgreSQL authentication methods:

* MD5 (hashed password)
* SCRAM-SHA-256 (stronger hashed password)
* LDAP (directory-based)
* SSL (encrypted connection)

**Prerequisites**

* PostgreSQL installed on Windows
* Access to configuration files: pg\_hba.conf, postgresql.conf, and optionally pg\_ident.conf
* Admin rights to restart PostgreSQL service
* SQL Shell (psql) or pgAdmin for testing
* SSL certificate files if testing SSL
* LDAP server (optional if testing LDAP)

**Part 1. MD5 Authentication**

**Step 1. Create a user with a password**

CREATE ROLE md5user LOGIN PASSWORD 'md5pass';

**Step 2. Edit pg\_hba.conf**

Add the following line:

host all md5user 127.0.0.1 255.255.255.255 md5

**Step 3. Restart PostgreSQL**

Use Services or Command Prompt to restart the PostgreSQL service.

**Step 4. Test the connection**

Connect using:

psql -U md5user -h 127.0.0.1 -d postgres

**Part 2. SCRAM-SHA-256 Authentication**

**Step 1. Update postgresql.conf**

Set:

password\_encryption = scram-sha-256

**Step 2. Create a new user**

CREATE ROLE scramuser LOGIN PASSWORD 'scrampass';

**Step 3. Edit pg\_hba.conf**

Add this line:

host all scramuser 127.0.0.1 255.255.255.255 scram-sha-256

**Step 4. Restart PostgreSQL and test connection**

psql -U scramuser -h 127.0.0.1 -d postgres

**Part 3. LDAP Authentication (Optional if LDAP is available)**

**Step 1. Edit pg\_hba.conf**

Add:

host all ldapuser 127.0.0.1 255.255.255.255 ldap ldapserver=ldap.example.com ldapbasedn="dc=example,dc=com"

**Step 2. Restart PostgreSQL**

Test LDAP login with:

psql -U ldapuser -h 127.0.0.1 -d postgres

Note: Replace ldap.example.com and DN values with actual LDAP server details.

**Part 4. SSL Authentication (Optional)**

**Step 1. Enable SSL in postgresql.conf**

Set:

ssl = on

ssl\_cert\_file = 'server.crt'

ssl\_key\_file = 'server.key'

Place the certificate files in the PostgreSQL data directory.

**Step 2. Edit pg\_hba.conf**

hostssl all ssluser 127.0.0.1 255.255.255.255 md5

**Step 3. Restart PostgreSQL**

Test with:

psql "host=127.0.0.1 dbname=postgres user=ssluser sslmode=require"

**Summary Table**

| **Method** | **Config File** | **Requirement** |
| --- | --- | --- |
| MD5 | pg\_hba.conf | md5 keyword, user password set |
| SCRAM-SHA-256 | postgresql.conf | password\_encryption=scram-sha-256 |
| LDAP | pg\_hba.conf | LDAP server details |
| SSL | postgresql.conf | SSL certificates |