

Exercise 1: SQLite Local Environment

Duration: ~20 minutes

Objective

Set up a fast local development environment with SQLite and VSCode. Create the HR database, populate it with data, and run your first queries.

Part 1: Install VSCode Database Client (~5 min)

1. Open VSCode
2. Go to Extensions (`Ctrl+Shift+X` / `Cmd+Shift+X`)
3. Search and install **Database Client** (by Weijan Chen)
4. It supports SQLite out of the box (no extra driver needed)
5. Restart VSCode if prompted

Part 2: Create the Database with Python (~5 min)

No installation needed. Python includes `sqlite3` in the standard library.

Option A: Raw SQL (sqlite3)

```
cd bts-bdp-exercises/s5
python scripts/create_hr_raw.py
```

This creates `hr_database.db` with 5 tables and sample data.

Option B: SQLAlchemy ORM

```
pip install sqlalchemy
python scripts/create_hr_sqlalchemy.py
```

Same result, different approach. Compare both scripts to see the difference.

Part 3: Connect VSCode Database Client to SQLite (~5 min)

1. Click the **Database** icon in the left sidebar
2. Click the **+** button to create a new connection
3. Select **SQLite**
4. **Database File:** browse to `bts-bdp-exercises/s5/hr_database.db`
5. Click **Connect**

Part 4: Explore and Query (~5 min)

1. In Database Client, expand your connection to see the 5 tables
2. Click **New Query** (or open a `.sql` file)
3. Run these queries:

```
-- Check all tables
SELECT name FROM sqlite_master WHERE type='table' ORDER BY name;

-- Count records
SELECT 'department' AS tbl, COUNT(*) AS n FROM department
UNION ALL SELECT 'employee', COUNT(*) FROM employee
UNION ALL SELECT 'project', COUNT(*) FROM project
UNION ALL SELECT 'employee_project', COUNT(*) FROM employee_project
UNION ALL SELECT 'salary_history', COUNT(*) FROM salary_history;

-- First look at employees
SELECT e.first_name, e.last_name, e.salary, d.name AS department
FROM employee e
JOIN department d ON e.department_id = d.id
ORDER BY e.last_name;
```

4. Verify you see 5 departments, 12 employees, 6 projects

Deliverable

- Screenshot of VSCode Database Client connected to your SQLite database with query results visible