**This code builds a database to track users, products, shelves, cameras, images, stock levels, and alerts. It creates tables for each and shows examples of adding, reading, updating, and deleting data. Basically, it sets up the structure and proves CRUD works.**

**POSTGRE:**

|  |
| --- |
| -- Table Creation (SCHEMA)  -- 1. Users Table (Authentication & Roles)  CREATE TABLE users (  user\_id SERIAL PRIMARY KEY,  username VARCHAR(50) UNIQUE NOT NULL,  email VARCHAR(100) UNIQUE NOT NULL,  password\_hash TEXT NOT NULL,  role VARCHAR(20) NOT NULL CHECK (role IN ('admin','manager','staff')),  created\_at TIMESTAMP DEFAULT NOW(),  updated\_at TIMESTAMP DEFAULT NOW()  );  -- 2. Cameras Table  CREATE TABLE cameras (  camera\_id SERIAL PRIMARY KEY,  name VARCHAR(50) NOT NULL,  location VARCHAR(100),  rtsp\_url TEXT,  created\_at TIMESTAMP DEFAULT NOW()  );  -- 3. Shelves Table  CREATE TABLE shelves (  shelf\_id SERIAL PRIMARY KEY,  shelf\_name VARCHAR(50) NOT NULL,  camera\_id INT REFERENCES cameras(camera\_id) ON DELETE SET NULL,  location\_description TEXT  );  -- 4. Products Table  CREATE TABLE products (  product\_id SERIAL PRIMARY KEY,  name VARCHAR(50) NOT NULL,  category VARCHAR(50),  image\_url TEXT  );  -- 5. Images / Assets Table  CREATE TABLE images (  asset\_id SERIAL PRIMARY KEY,  shelf\_id INT REFERENCES shelves(shelf\_id) ON DELETE CASCADE,  product\_id INT REFERENCES products(product\_id) ON DELETE CASCADE,  filename VARCHAR(255) NOT NULL,  upload\_time TIMESTAMP DEFAULT NOW(),  processed BOOLEAN DEFAULT FALSE,  metadata JSONB  );  -- 6. Stock Levels (Time-Series Table)  CREATE TABLE stock\_levels (  stock\_id SERIAL PRIMARY KEY,  shelf\_id INT REFERENCES shelves(shelf\_id) ON DELETE CASCADE,  product\_id INT REFERENCES products(product\_id) ON DELETE CASCADE,  stock\_percentage NUMERIC(5,2) NOT NULL CHECK (stock\_percentage BETWEEN 0 AND 100),  timestamp TIMESTAMP DEFAULT NOW()  );  -- 7. Alerts Table  CREATE TABLE alerts (  alert\_id SERIAL PRIMARY KEY,  stock\_id INT REFERENCES stock\_levels(stock\_id) ON DELETE CASCADE,  alert\_type VARCHAR(50),  message TEXT,  acknowledged BOOLEAN DEFAULT FALSE,  created\_at TIMESTAMP DEFAULT NOW(),  acknowledged\_at TIMESTAMP  );  -- 1. Users Table  -- CREATE  INSERT INTO users (username, email, password\_hash, role)  VALUES ('john\_doe', 'john@example.com', 'hashed\_password', 'manager');  -- READ  SELECT \* FROM users;  -- UPDATE  UPDATE users  SET role = 'admin'  WHERE username = 'john\_doe';  -- DELETE  DELETE FROM users  WHERE username = 'john\_doe';  -- 2. Products Table  -- CREATE  INSERT INTO products (name, category, image\_url)  VALUES ('Banana', 'Fruit', 'banana.jpg'),  ('Broccoli', 'Vegetable', 'broccoli.jpg');  -- READ  SELECT \* FROM products;  -- UPDATE  UPDATE products  SET category = 'Fresh Fruit'  WHERE name = 'Banana';  -- DELETE  DELETE FROM products  WHERE name = 'Broccoli';  -- 2. Products Table  -- CREATE  INSERT INTO products (name, category, image\_url)  VALUES ('Banana', 'Fruit', 'banana.jpg'),  ('Broccoli', 'Vegetable', 'broccoli.jpg');  -- READ  SELECT \* FROM products;  -- UPDATE  UPDATE products  SET category = 'Fresh Fruit'  WHERE name = 'Banana';  -- DELETE  DELETE FROM products  WHERE name = 'Broccoli';  -- 3. Cameras Table  -- CREATE  INSERT INTO cameras (name, location, rtsp\_url)  VALUES ('Camera 1', 'Aisle 1', 'rtsp://camera1/stream');  -- READ  SELECT \* FROM cameras;  -- UPDATE  UPDATE cameras  SET location = 'Aisle 2'  WHERE name = 'Camera 1';  -- DELETE  DELETE FROM cameras  WHERE name = 'Camera 1';  -- 4. Shelves Table  -- CREATE  INSERT INTO shelves (shelf\_name, camera\_id, location\_description)  VALUES ('Shelf A', 1, 'Near entrance');  -- READ  SELECT \* FROM shelves;  -- UPDATE  UPDATE shelves  SET location\_description = 'Next to freezer'  WHERE shelf\_name = 'Shelf A';  -- DELETE  DELETE FROM shelves  WHERE shelf\_name = 'Shelf A';  -- 5. Images Table  -- CREATE  INSERT INTO images (shelf\_id, product\_id, filename, processed, metadata)  VALUES (1, 1, 'banana\_shelf1.jpg', false, '{"lighting": "good"}');  -- READ  SELECT \* FROM images;  -- UPDATE  UPDATE images  SET processed = true  WHERE filename = 'banana\_shelf1.jpg';  -- DELETE  DELETE FROM images  WHERE filename = 'banana\_shelf1.jpg';  -- 6. Stock Levels Table  -- CREATE  INSERT INTO stock\_levels (shelf\_id, product\_id, stock\_percentage)  VALUES (1, 1, 75.5),  (1, 2, 60.0);  -- READ  SELECT \* FROM stock\_levels;  -- UPDATE  UPDATE stock\_levels  SET stock\_percentage = 80.0  WHERE shelf\_id = 1 AND product\_id = 1;  -- DELETE  DELETE FROM stock\_levels  WHERE shelf\_id = 1 AND product\_id = 2;  -- 7. Alerts Table  -- CREATE  INSERT INTO alerts (stock\_id, alert\_type, message)  VALUES (1, 'Low Stock', 'Banana stock below 20%');  -- READ  SELECT \* FROM alerts;  -- UPDATE  UPDATE alerts  SET acknowledged = true, acknowledged\_at = NOW()  WHERE alert\_id = 1;  -- DELETE  DELETE FROM alerts  WHERE alert\_id = 1; |

**OUTCOME OF CRUDS:**

A black and white screen with white text

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a menu

AI-generated content may be incorrect.

A black box with white text

AI-generated content may be incorrect.