

Practice Business Case - Bianca Niemann Grocery Store

Deliverables:

1. A functional diagram including keys, data types and constraints.
2. SQL code for building the Database.
3. Code for creating 10 entries on each table.
4. Code to test the database using JOIN and SELECT statements. </aside>

Grocery Store Business Case

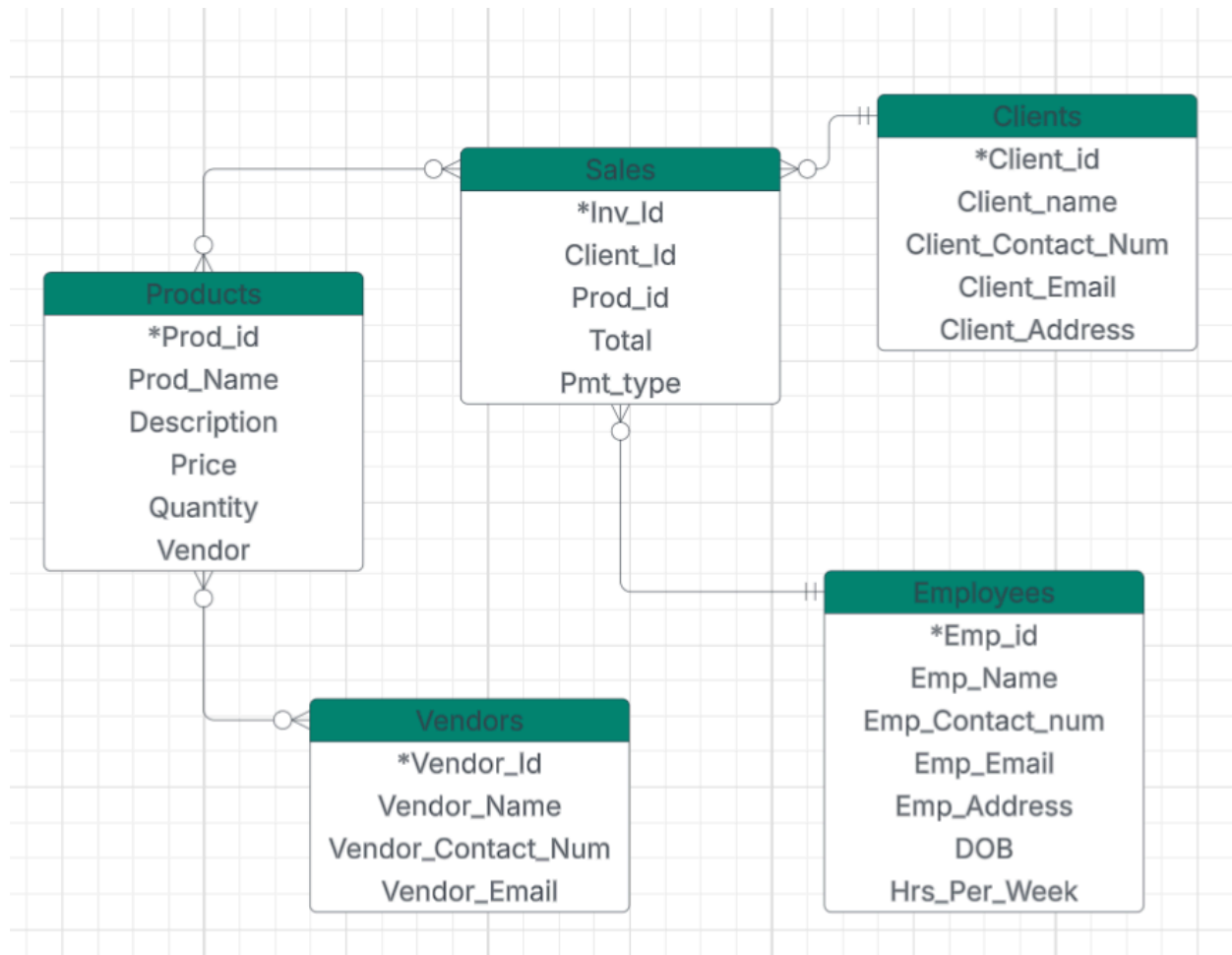
Our client is the owner of a local grocery store, after a brief interview, here is the information we have about their needs.

- Products: Name, Description, Price, Quantity, Vendor.
- Sales: Client, Products, Total, Payment Format.
- Clients: Name, Contact Information.
- Employees: Name, Phone#, Email, Address, DoB, Hours Worked per Week.
- Vendors: Name, Contact Information. </aside>

ER Model:

- ❖ Products: *Prod_id, Prod_Name, Description, Price, Quantity, Vendor
 - ❖ Sales: *Inv_id, Client_Name, Products, Total, Pmt_type
 - ❖ Clients: *Client_id, Client_Name, Client_Contact_num, Client_Email, Client_Address
 - ❖ Employees: *Emp_id, Emp_Name, Emp_Contact_num, Emp_Email, Emp_Address, DOB, Hrs_per_wk
 - ❖ Vendors: *Vendor_id, Vendor_name, Vendor_Contact_num, Vendor_Email
-
- One Product can have many Vendors and One Vendor can have many products (Many to many)
 - One sales can have one client and one client can have many sales (one to many)
 - One sales can have many products and one product can have many sales (many to many)
 - One sales can have one employee and one employee can have many sales (one to many)

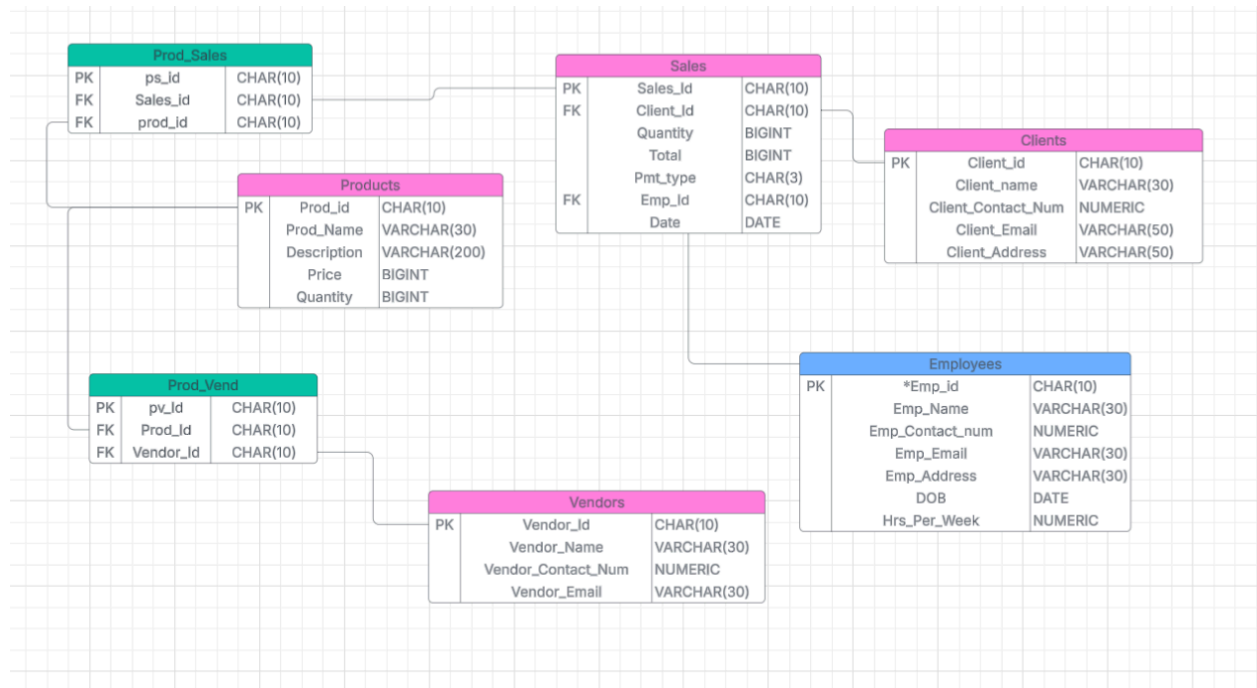
ERD (Entity relationship diagram)



Relational Model:

- ❖ **Products**: Prod_id, Prod_Name, Description, Price, Quantity, vendor_id(fk)
- ❖ **Prod_Vend**: pv_id, Prod_id(fk), Vendor_id(fk) (New in between table)
- ❖ **Vendors**: Vendor_id, Vendor_name, Vendor_Contact_num, Vendor_Email
- ❖ **Sales**: Sales_Id, Client_Id(fk), Total, Pmt_type, Quantity, Emp_Id(fk), Date
- ❖ **Prod_Sales**: ps_id, Sales_Id(fk), Prod_Id(fk) (New in between table)
- ❖ **Clients**: Client_id, Client_Name, Client_Contact_num, Client_Email, Client_Address, Inv_id(fk)
- ❖ **Employees**: Emp_id, Emp_Name, Emp_Contact_num, Emp_Email, Emp_Address, DOB, Hrs_per_wk, Inv_Id(fk)

Functional Design Diagram:



SQL Code to create the tables

```
CREATE TABLE Sales (
    Sales_Id CHAR(10) PRIMARY KEY,
    Client_Id CHAR(10) NOT NULL,
    Quantity BIGINT,
    Total BIGINT,
    Pmt_Type CHAR(3),
    Emp_Id CHAR(10),
    Sales_Date DATE,
    FOREIGN KEY(Client_Id) REFERENCES Clients(Client_Id),
    FOREIGN KEY(Emp_Id) REFERENCES Employees(Emp_Id)
);

CREATE TABLE Clients (
    Client_Id CHAR(10) PRIMARY KEY,
    Client_Name VARCHAR(30) NOT NULL,
    Client_Contact_Num NUMERIC,
    Client_Email VARCHAR(50),
    Client_Address VARCHAR(50)
);

CREATE TABLE Employees (
```

```

    Emp_Id CHAR(10) PRIMARY KEY,
    Emp_Name VARCHAR(30) NOT NULL,
    Emp_Contact_Num NUMERIC,
    Emp_Email VARCHAR(50),
    Emp_Address VARCHAR(50),
    DOB DATE,
    Hrs_Per_week NUMERIC
);
CREATE TABLE Vendors (
    Vendor_Id CHAR(10) PRIMARY KEY,
    Vendor_Name VARCHAR(30) NOT NULL,
    Vendor_Contact_Num NUMERIC,
    Vendor_Email VARCHAR(30)
);
--This joins the Products and Vendors tables as many to many relationship
CREATE TABLE Prod_Vend (
    pv_id CHAR(10) PRIMARY KEY,
    Prod_Id CHAR(10),
    Vendor_Id CHAR(10),
    FOREIGN KEY(Vendor_Id) REFERENCES Vendors(Vendor_Id)
);
CREATE TABLE Products (
    Prod_Id CHAR(10) PRIMARY KEY,
    Prod_Name VARCHAR(30) NOT NULL,
    Description VARCHAR(200),
    Price BIGINT,
    Quantity BIGINT
);
--This joins the Products and Sales tables as many to many relationship
CREATE TABLE Prod_Sales (
    ps_id CHAR(10) PRIMARY KEY,
    Prod_Id CHAR(10),
    Sales_Id CHAR(10),
    FOREIGN KEY(Sales_Id) REFERENCES Vendors(Sales_Id)
);

```

CODE TO CREATE THE DATA IN THE TABLES

-- Tables to insert data

```
INSERT INTO Sales (Sales_Id, Client_Id, Total, Pmt_type, Quantity, Emp_Id, Sales_Date)
```

```
VALUES
```

```
('S001', 'C001', 120.50, 'CC', 3, 'E101', '2024-03-01'),  
( 'S002', 'C002', 89.99, 'Cs', 2, 'E102', '2024-03-02'),  
( 'S003', 'C003', 150.00, 'BT', 5, 'E103', '2024-03-03'),  
( 'S004', 'C001', 75.25, 'Cs', 1, 'E101', '2024-03-04'),  
( 'S005', 'C004', 210.10, 'CC', 4, 'E104', '2024-03-05'),  
( 'S006', 'C005', 60.00, 'Cs', 2, 'E105', '2024-03-06'),  
( 'S007', 'C002', 95.75, 'CC', 3, 'E102', '2024-03-07'),  
( 'S008', 'C003', 180.00, 'BT', 6, 'E103', '2024-03-08'),  
( 'S009', 'C004', 110.30, 'CC', 2, 'E104', '2024-03-09'),  
( 'S010', 'C005', 99.99, 'Cs', 3, 'E105', '2024-03-10');
```

```
INSERT INTO Clients (Client_Id, Client_Name, Client_Contact_Num, Client_Email, Client_Address)
```

```
VALUES
```

```
('C001', 'Alice Smith', 491511223344, 'alice.smith@email.com', '123 Main St, Berlin'),  
( 'C002', 'Bob Johnson', 491512334455, 'bob.johnson@email.com', '456 Elm St, Munich'),  
( 'C003', 'Charlie Lee', 491513445566, 'charlie.lee@email.com', '789 Oak Ave, Hamburg'),  
( 'C004', 'Diana Miller', 491514556677, 'diana.miller@email.com', '321 Pine Rd, Cologne'),  
( 'C005', 'Evan Davis', 491515667788, 'evan.davis@email.com', '654 Maple Ln, Frankfurt');
```

```
INSERT INTO Employees (Emp_Id, Emp_Name, Emp_Contact_Num, Emp_Email, Emp_Address, DOB, Hrs_Per_week)
```

```
VALUES
```

```
('E001', 'John Becker', 491611112222, 'john.becker@email.com', '12 River Rd, Berlin', '1990-05-15', 40),  
( 'E002', 'Sophie Krause', 491622223333, 'sophie.krause@email.com', '88 Lake St, Munich', '1988-07-22', 38),  
( 'E003', 'Liam Schwarz', 491633334444, 'liam.schwarz@email.com', '34 Hill Ave, Hamburg', '1992-03-10', 40),  
( 'E004', 'Mia Vogel', 491644445555, 'mia.vogel@email.com', '56 Valley Rd, Cologne', '1995-11-05', 35),  
( 'E005', 'Noah Weber', 491655556666, 'noah.weber@email.com', '90 Forest Ln, Frankfurt', '1985-12-18', 42);
```

```
INSERT INTO Vendors (Vendor_Id, Vendor_Name, Vendor_Contact_Num,  
Vendor_Email)
```

VALUES

```
('V001', 'Tech Supplies Co.', 491701112233, 'info@techsupplies.com'),  
('V002', 'Office Essentials', 491702223344, 'sales@officeessentials.com'),  
('V003', 'Smart Hardware Ltd.', 491703334455, 'support@smarthardware.com'),  
('V004', 'Green Paper Goods', 491704445566, 'orders@greenpaper.com'),  
('V005', 'Print Perfect', 491705556677, 'contact@printperfect.com'),  
('V006', 'Secure IT GmbH', 491706667788, 'service@secureitgmbh.de'),  
('V007', 'Coffee & More', 491707778899, 'hello@coffeeandmore.com'),  
('V008', 'CleanPro Services', 491708889900, 'info@cleanpro.de'),  
('V009', 'Pro Furniture AG', 491709990011, 'furniture@proag.com'),  
('V010', 'Stationery Hub', 491710101112, 'help@stationeryhub.com');
```

```
INSERT INTO Products (Prod_Id, Prod_Name, Description, Price, Quantity)
```

VALUES

```
('P001', 'Wireless Mouse', 'Ergonomic wireless mouse with USB receiver', 2500, 120),  
('P002', 'Mechanical Keyboard', 'Backlit mechanical keyboard with blue switches', 7500,  
80),  
('P003', 'USB-C Hub', '7-in-1 USB-C hub with HDMI, USB 3.0, and SD card reader',  
4500, 150),  
('P004', 'Laptop Stand', 'Adjustable aluminum laptop stand', 3000, 60),  
('P005', 'Office Chair', 'Mesh back ergonomic office chair with wheels', 15000, 30),  
('P006', 'Notebook A4', 'Pack of 3 ruled A4 notebooks', 1200, 200),  
('P007', 'Ballpoint Pens', 'Box of 50 black ink pens', 900, 300),  
('P008', 'Printer Ink', 'Compatible black ink cartridge for HP printers', 2200, 90),  
('P009', 'Monitor 24"', '24-inch full HD LED monitor', 12000, 45),  
('P010', 'Desk Organizer', 'Multi-compartment wooden desk organizer', 1800, 110);
```

```
INSERT INTO Prod_Vend (pv_id, Prod_Id, Vendor_Id)
```

VALUES

```
('PV001', 'P001', 'V001'), -- Wireless Mouse from Tech Supplies Co.  
('PV002', 'P002', 'V002'), -- Mechanical Keyboard from Office Essentials  
('PV003', 'P003', 'V003'), -- USB-C Hub from Smart Hardware Ltd.  
('PV004', 'P004', 'V004'), -- Laptop Stand from Green Paper Goods  
('PV005', 'P005', 'V005'), -- Office Chair from Print Perfect  
('PV006', 'P006', 'V006'), -- Notebook A4 from Secure IT GmbH  
('PV007', 'P007', 'V007'), -- Ballpoint Pens from Coffee & More  
('PV008', 'P008', 'V008'), -- Printer Ink from CleanPro Services  
('PV009', 'P009', 'V009'), -- Monitor 24" from Pro Furniture AG  
('PV010', 'P010', 'V010'); -- Desk Organizer from Stationery Hub
```

```
INSERT INTO Prod_Sales (ps_id, Prod_Id, Sales_Id)
VALUES
('PS001', 'P001', 'S001'), -- Wireless Mouse sold in Sale 1
('PS002', 'P002', 'S002'), -- Mechanical Keyboard sold in Sale 2
('PS003', 'P003', 'S003'), -- USB-C Hub sold in Sale 3
('PS004', 'P004', 'S004'), -- Laptop Stand sold in Sale 4
('PS005', 'P005', 'S005'), -- Office Chair sold in Sale 5
('PS006', 'P006', 'S006'), -- Notebook A4 sold in Sale 6
('PS007', 'P007', 'S007'), -- Ballpoint Pens sold in Sale 7
('PS008', 'P008', 'S008'), -- Printer Ink sold in Sale 8
('PS009', 'P009', 'S009'), -- Monitor 24" sold in Sale 9
('PS010', 'P010', 'S010'); -- Desk Organizer sold in Sale 10
```

CODE TO JOIN

```
SELECT *
FROM Clients cl
LEFT JOIN Sales sa ON sa.Client_Id = cl.Client_Id;
```

1 X

Enter a SQL expression to filter results (use Ctrl+Space)

A-Z Client	A-Z Client_Nam	123 Client Contac	A-Z Client_Email	A-Z Client_Address	A-Z Sales_Ir	A-Z Cl	123 Qui	123 Total	A-Z Pmt_Type	A-Z Em	A-Z Sales_Di
C001	Alice Smith	491.511.223.344	alice.smith@email.com	123 Main St, Berlin	S001	C001	3	120,5	Credit Card	E101	2024-03-01
C001	Alice Smith	491.511.223.344	alice.smith@email.com	123 Main St, Berlin	S004	C001	1	75,25	Cash	E101	2024-03-04
C002	Bob Johnson	491.512.334.455	bob.johnson@email.com	456 Elm St, Munich	S002	C002	2	89,99	Cash	E102	2024-03-01
C002	Bob Johnson	491.512.334.455	bob.johnson@email.com	456 Elm St, Munich	S007	C002	3	95,75	Credit Card	E102	2024-03-07
C003	Charlie Lee	491.513.445.566	charlie.lee@email.com	789 Oak Ave, Hamburg	S003	C003	5	150	Bank Transfer	E103	2024-03-01
C003	Charlie Lee	491.513.445.566	charlie.lee@email.com	789 Oak Ave, Hamburg	S008	C003	6	180	Bank Transfer	E103	2024-03-01
C004	Diana Miller	491.514.556.677	diana.miller@email.com	321 Pine Rd, Cologne	S005	C004	4	210,1	Credit Card	E104	2024-03-01
C004	Diana Miller	491.514.556.677	diana.miller@email.com	321 Pine Rd, Cologne	S009	C004	2	110,3	Credit Card	E104	2024-03-01
C005	Evan Davis	491.515.667.788	evan.davis@email.com	654 Maple Ln, Frankfurt	S006	C005	2	60	Cash	E105	2024-03-01
C005	Evan Davis	491.515.667.788	evan.davis@email.com	654 Maple Ln, Frankfurt	S010	C005	3	99,99	Cash	E105	2024-03-10

```
SELECT p.Prod_Id, p.Prod_Name, s.Sales_Id, s.Total, s.Client_Id
FROM Products p
LEFT JOIN Prod_Sales ps ON p.Prod_Id = ps.Prod_Id
LEFT JOIN Sales s ON ps.Sales_Id = s.Sales_Id
```

1 X

Enter a SQL expression to filter results (use Ctrl+Space)

A-Z Prod_Id	A-Z Prod_Name	A-Z Sales_Id	123 Total	A-Z Client_Id
P001	Wireless Mouse	S001	120,5	C001
P002	Mechanical Keyboard	S002	89,99	C002
P003	USB-C Hub	S003	150	C003
P004	Laptop Stand	S004	75,25	C001
P005	Office Chair	S005	210,1	C004
P006	Notebook A4	S006	60	C005
P007	Ballpoint Pens	S007	95,75	C002
P008	Printer Ink	S008	180	C003
P009	Monitor 24"	S009	110,3	C004
P010	Desk Organizer	S010	99,99	C005