**EDRplus Data Generation from Relational Model**

CREATE TABLE CUSTOMER

(

Birthdate DATE NOT NULL,

Phone\_number INT NOT NULL,

Name VARCHAR(100) NOT NULL,

Password VARCHAR(100) NOT NULL,

Country VARCHAR(100) NOT NULL,

Postcode VARCHAR(50) NOT NULL,

City VARCHAR(100) NOT NULL,

Street VARCHAR(100) NOT NULL,

Building\_number INT NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

PRIMARY KEY (Customer\_email)

);

CREATE TABLE PRODUCT

(

Warranty\_length VARCHAR(100) NOT NULL,

Brand VARCHAR(100) NOT NULL,

Color VARCHAR(50) NOT NULL,

Description VARCHAR(400) NOT NULL,

Dimensions VARCHAR(20) NOT NULL,

Price NUMERIC NOT NULL,

Product\_name VARCHAR(100) NOT NULL,

Stock INT NOT NULL,

Weight INT NOT NULL,

Product\_number INT NOT NULL,

Category VARCHAR(100) NOT NULL,

PRIMARY KEY (Product\_number)

);

CREATE TABLE Basket

(

Basket\_ID VARCHAR(100) NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

PRIMARY KEY (Basket\_ID),

FOREIGN KEY (Customer\_email) REFERENCES CUSTOMER(Customer\_email)

);

CREATE TABLE Payment

(

Payment\_method VARCHAR(100) NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

PRIMARY KEY (Payment\_method, Customer\_email),

FOREIGN KEY (Customer\_email) REFERENCES CUSTOMER(Customer\_email)

);

CREATE TABLE Debit\_O\_Credit

(

Card\_number INT NOT NULL,

Expiration DATE NOT NULL,

Verification\_code VARCHAR(50) NOT NULL,

Name\_on\_card VARCHAR(100) NOT NULL,

Default\_status VARCHAR(5) NOT NULL,

Payment\_method VARCHAR(100) NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

PRIMARY KEY (Card\_number),

FOREIGN KEY (Payment\_method, Customer\_email) REFERENCES Payment(Payment\_method, Customer\_email)

);

CREATE TABLE Voucher\_O\_Gift

(

Serial\_number INT NOT NULL,

Current\_balance NUMERIC NOT NULL,

Total\_amount NUMERIC NOT NULL,

Expiration DATE NOT NULL,

Payment\_method VARCHAR(100) NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

PRIMARY KEY (Serial\_number),

FOREIGN KEY (Payment\_method, Customer\_email) REFERENCES Payment(Payment\_method, Customer\_email)

);

CREATE TABLE Review

(

Review\_number INT NOT NULL,

Review\_text VARCHAR(1000) NOT NULL,

Product\_name VARCHAR(100) NOT NULL,

Date DATE NOT NULL,

Ranking INT NOT NULL,

Product\_number INT NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

PRIMARY KEY (Review\_number),

FOREIGN KEY (Product\_number) REFERENCES PRODUCT(Product\_number),

FOREIGN KEY (Customer\_email) REFERENCES CUSTOMER(Customer\_email)

);

CREATE TABLE Basket\_contains

(

Quantity INT NOT NULL,

Product\_number INT NOT NULL,

Basket\_ID VARCHAR(100) NOT NULL,

PRIMARY KEY (Product\_number, Basket\_ID),

FOREIGN KEY (Product\_number) REFERENCES PRODUCT(Product\_number),

FOREIGN KEY (Basket\_ID) REFERENCES Basket(Basket\_ID)

);

CREATE TABLE Delivery

(

Order\_number INT NOT NULL,

Date\_delivered DATE NOT NULL,

Status VARCHAR(100) NOT NULL,

Customer\_address VARCHAR(200) NOT NULL,

Tracking\_number INT NOT NULL,

PRIMARY KEY (Tracking\_number)

);

CREATE TABLE Orders

(

Order\_number INT NOT NULL,

Total NUMERIC NOT NULL,

Subtotal NUMERIC NOT NULL,

Grand\_total NUMERIC NOT NULL,

Deduction\_O\_Promotion CHAR NOT NULL,

Order\_date DATE NOT NULL,

Customer\_email VARCHAR(200) NOT NULL,

Tracking\_number INT NOT NULL,

PRIMARY KEY (Order\_number),

FOREIGN KEY (Customer\_email) REFERENCES CUSTOMER(Customer\_email),

FOREIGN KEY (Tracking\_number) REFERENCES Delivery(Tracking\_number)

);

CREATE TABLE HAS

(

Quantity INT NOT NULL,

Subtotal NUMERIC NOT NULL,

Fees NUMERIC NOT NULL,

Product\_number INT NOT NULL,

Order\_number INT NOT NULL,

PRIMARY KEY (Product\_number, Order\_number),

FOREIGN KEY (Product\_number) REFERENCES PRODUCT(Product\_number),

FOREIGN KEY (Order\_number) REFERENCES Orders(Order\_number)

);

CREATE TABLE Returns

(

Ticket\_number INT NOT NULL,

Due\_date DATE NOT NULL,

Refund\_amount NUMERIC NOT NULL,

Status VARCHAR(100) NOT NULL,

Start\_date DATE NOT NULL,

Order\_number INT NOT NULL,

PRIMARY KEY (Ticket\_number),

FOREIGN KEY (Order\_number) REFERENCES Orders(Order\_number)

);

**Synthetic Data Creation for Database Population - ChatGPT**

INSERT INTO CUSTOMER VALUES ('1990-05-15', 1234567890, 'John Doe', 'password123', 'USA', '12345', 'New York', 'Broadway', 123, 'john.doe@email.com');

INSERT INTO CUSTOMER VALUES ('1985-10-20', 9876543210, 'Jane Smith', 'securepass', 'UK', 'SW1A 1AA', 'London', 'Baker Street', 221, 'jane.smith@email.com');

INSERT INTO CUSTOMER VALUES ('1992-03-08', 5551234567, 'Alice Johnson', 'alicepass', 'Canada', 'M5V 2T6', 'Toronto', 'Queen Street', 456, 'alice.johnson@email.com');

INSERT INTO CUSTOMER VALUES ('1988-12-01', 3339998888, 'Bob Brown', 'bobsecret', 'Australia', '2000', 'Sydney', 'George Street', 789, 'bob.brown@email.com');

INSERT INTO CUSTOMER VALUES ('1995-07-30', 4447771111, 'Emma Wilson', 'emmapass', 'Germany', '10115', 'Berlin', 'Unter den Linden', 10, 'emma.wilson@email.com');

INSERT INTO CUSTOMER VALUES ('1987-09-22', 2223334444, 'Michael Chen', 'mikepass', 'China', '200000', 'Shanghai', 'Nanjing Road', 888, 'michael.chen@email.com');

INSERT INTO CUSTOMER VALUES ('1993-11-05', 7778889999, 'Sophie Martin', 'sophiepass', 'France', '75001', 'Paris', 'Rue de Rivoli', 15, 'sophie.martin@email.com');

INSERT INTO CUSTOMER VALUES ('1991-02-14', 1112223333, 'David Kim', 'davidpass', 'South Korea', '04524', 'Seoul', 'Gangnam-daero', 521, 'david.kim@email.com');

INSERT INTO CUSTOMER VALUES ('1989-06-18', 6665554444, 'Maria Garcia', 'mariapass', 'Spain', '28013', 'Madrid', 'Gran Vía', 32, 'maria.garcia@email.com');

INSERT INTO CUSTOMER VALUES ('1994-08-27', 9990001111, 'Ahmed Hassan', 'ahmedpass', 'Egypt', '11511', 'Cairo', 'Tahrir Square', 1, 'ahmed.hassan@email.com');

INSERT INTO CUSTOMER VALUES ('1986-04-03', 3334445555, 'Olivia Taylor', 'oliviapass', 'Canada', 'V6B 4Y8', 'Vancouver', 'Robson Street', 789, 'olivia.taylor@email.com');

INSERT INTO CUSTOMER VALUES ('1997-01-12', 8887776666, 'Liam Johnson', 'liampass', 'USA', '90210', 'Los Angeles', 'Rodeo Drive', 42, 'liam.johnson@email.com');

INSERT INTO CUSTOMER VALUES ('1984-12-09', 2221110000, 'Elena Petrova', 'elenapass', 'Russia', '101000', 'Moscow', 'Red Square', 1, 'elena.petrova@email.com');

INSERT INTO CUSTOMER VALUES ('1996-05-25', 4443332222, 'Carlos Silva', 'carlospass', 'Brazil', '01310-100', 'São Paulo', 'Avenida Paulista', 1000, 'carlos.silva@email.com');

INSERT INTO CUSTOMER VALUES ('1993-07-19', 7776665555, 'Yuki Tanaka', 'yukipass', 'Japan', '100-0005', 'Tokyo', 'Ginza', 4, 'yuki.tanaka@email.com');

INSERT INTO PRODUCT VALUES ('2 years', 'TechBrand', 'Black', 'High-performance laptop', '35x24x2 cm', 999.99, 'Pro Laptop', 50, 2000, 1001, 'Electronics');

INSERT INTO PRODUCT VALUES ('1 year', 'FashionCo', 'Blue', 'Comfortable jeans', '32x34 inches', 59.99, 'Classic Jeans', 100, 500, 1002, 'Clothing');

INSERT INTO PRODUCT VALUES ('90 days', 'BookWorm', 'N/A', 'Bestselling novel', '15x23 cm', 24.99, 'Mystery Book', 200, 300, 1003, 'Books');

INSERT INTO PRODUCT VALUES ('5 years', 'HomePlus', 'Silver', 'Efficient blender', '20x15x30 cm', 79.99, 'Power Blender', 75, 3000, 1004, 'Home & Kitchen');

INSERT INTO PRODUCT VALUES ('1 year', 'SportMaster', 'White', 'Professional tennis racket', '68x27 cm', 149.99, 'Pro Racket', 30, 300, 1005, 'Sports');

INSERT INTO PRODUCT VALUES ('3 years', 'SoundWave', 'Black', 'Noise-cancelling headphones', '18x18x8 cm', 299.99, 'Premium Headphones', 40, 350, 1006, 'Electronics');

INSERT INTO PRODUCT VALUES ('6 months', 'GreenThumb', 'Green', 'Indoor plant pot', '25x25x30 cm', 34.99, 'Ceramic Planter', 150, 1000, 1007, 'Home & Garden');

INSERT INTO PRODUCT VALUES ('2 years', 'CookMaster', 'Stainless Steel', 'Multi-function air fryer', '30x30x40 cm', 129.99, 'Smart Air Fryer', 60, 5000, 1008, 'Home & Kitchen');

INSERT INTO PRODUCT VALUES ('1 year', 'FitLife', 'Black/Red', 'Adjustable dumbbell set', '40x20x20 cm', 199.99, 'Pro Dumbbells', 25, 10000, 1009, 'Sports');

INSERT INTO PRODUCT VALUES ('30 days', 'BeautyGlow', 'Pink', 'Vitamin C face serum', '5x5x10 cm', 39.99, 'Radiance Serum', 100, 50, 1010, 'Beauty');

INSERT INTO PRODUCT VALUES ('2 years', 'GameOn', 'Various', 'Latest gaming console', '30x25x5 cm', 499.99, 'NextGen Console', 20, 4000, 1011, 'Electronics');

INSERT INTO PRODUCT VALUES ('90 days', 'PetPal', 'Brown', 'Orthopedic dog bed', '100x70x15 cm', 89.99, 'Comfort Pet Bed', 50, 2500, 1012, 'Pets');

INSERT INTO PRODUCT VALUES ('2 years', 'ArtisanCraft', 'Walnut', 'Handmade wooden desk', '120x60x75 cm', 399.99, 'Rustic Desk', 10, 25000, 1013, 'Furniture');

INSERT INTO PRODUCT VALUES ('6 months', 'CoffeeDelight', 'Silver', 'Espresso machine', '25x30x35 cm', 249.99, 'Barista Pro', 30, 7000, 1014, 'Home & Kitchen');

INSERT INTO PRODUCT VALUES ('1 year', 'TechWear', 'Black', 'Smartwatch with health tracking', '4x4x1 cm', 199.99, 'HealthTrack Watch', 40, 50, 1015, 'Electronics');

INSERT INTO Basket VALUES ('B001', 'john.doe@email.com');

INSERT INTO Basket VALUES ('B002', 'jane.smith@email.com');

INSERT INTO Basket VALUES ('B003', 'alice.johnson@email.com');

INSERT INTO Basket VALUES ('B004', 'bob.brown@email.com');

INSERT INTO Basket VALUES ('B005', 'emma.wilson@email.com');

INSERT INTO Basket VALUES ('B006', 'michael.chen@email.com');

INSERT INTO Basket VALUES ('B007', 'sophie.martin@email.com');

INSERT INTO Basket VALUES ('B008', 'david.kim@email.com');

INSERT INTO Basket VALUES ('B009', 'maria.garcia@email.com');

INSERT INTO Basket VALUES ('B010', 'ahmed.hassan@email.com');

INSERT INTO Basket VALUES ('B011', 'olivia.taylor@email.com');

INSERT INTO Basket VALUES ('B012', 'liam.johnson@email.com');

INSERT INTO Basket VALUES ('B013', 'elena.petrova@email.com');

INSERT INTO Basket VALUES ('B014', 'carlos.silva@email.com');

INSERT INTO Basket VALUES ('B015', 'yuki.tanaka@email.com');

INSERT INTO Payment VALUES ('Creditcard', 'john.doe@email.com');

INSERT INTO Payment VALUES ('Debitcard', 'jane.smith@email.com');

INSERT INTO Payment VALUES ('Voucher', 'alice.johnson@email.com');

INSERT INTO Payment VALUES ('Gift', 'bob.brown@email.com');

INSERT INTO Payment VALUES ('Creditcard', 'emma.wilson@email.com');

INSERT INTO Payment VALUES ('Debitcard', 'michael.chen@email.com');

INSERT INTO Payment VALUES ('Voucher', 'sophie.martin@email.com');

INSERT INTO Payment VALUES ('Creditcard', 'david.kim@email.com');

INSERT INTO Payment VALUES ('Gift', 'maria.garcia@email.com');

INSERT INTO Payment VALUES ('Debitcard', 'ahmed.hassan@email.com');

INSERT INTO Payment VALUES ('Creditcard', 'olivia.taylor@email.com');

INSERT INTO Payment VALUES ('Voucher', 'liam.johnson@email.com');

INSERT INTO Payment VALUES ('Debitcard', 'elena.petrova@email.com');

INSERT INTO Payment VALUES ('Gift', 'carlos.silva@email.com');

INSERT INTO Payment VALUES ('Creditcard', 'yuki.tanaka@email.com');

INSERT INTO Debit\_O\_Credit VALUES (1111222233334444, '2025-12-31', '123', 'John Doe', 'Y', 'Creditcard', 'john.doe@email.com');

INSERT INTO Debit\_O\_Credit VALUES (5555666677778888, '2024-06-30', '456', 'Jane Smith', 'N', 'Debitcard', 'jane.smith@email.com');

INSERT INTO Debit\_O\_Credit VALUES (9999000011112222, '2026-03-31', '789', 'Emma Wilson', 'Y', 'Creditcard', 'emma.wilson@email.com');

INSERT INTO Debit\_O\_Credit VALUES (2222333344445555, '2025-09-30', '234', 'Michael Chen', 'N', 'Debitcard', 'michael.chen@email.com');

INSERT INTO Debit\_O\_Credit VALUES (6666777788889999, '2024-11-30', '567', 'David Kim', 'Y', 'Creditcard', 'david.kim@email.com');

INSERT INTO Debit\_O\_Credit VALUES (3333444455556666, '2026-07-31', '890', 'Ahmed Hassan', 'N', 'Debitcard', 'ahmed.hassan@email.com');

INSERT INTO Debit\_O\_Credit VALUES (7777888899990000, '2025-04-30', '123', 'Olivia Taylor', 'Y', 'Creditcard', 'olivia.taylor@email.com');

INSERT INTO Debit\_O\_Credit VALUES (4444555566667777, '2024-08-31', '456', 'Elena Petrova', 'N', 'Debitcard', 'elena.petrova@email.com');

INSERT INTO Debit\_O\_Credit VALUES (8888999900001111, '2026-01-31', '789', 'Yuki Tanaka', 'Y', 'Creditcard', 'yuki.tanaka@email.com');

INSERT INTO Voucher\_O\_Gift VALUES (12345, 50.00, 100.00, '2024-12-31', 'Voucher', 'alice.johnson@email.com');

INSERT INTO Voucher\_O\_Gift VALUES (67890, 75.00, 75.00, '2025-06-30', 'Gift', 'bob.brown@email.com');

INSERT INTO Voucher\_O\_Gift VALUES (13579, 25.00, 50.00, '2025-03-31', 'Voucher', 'sophie.martin@email.com');

INSERT INTO Voucher\_O\_Gift VALUES (24680, 100.00, 100.00, '2024-09-30', 'Gift', 'maria.garcia@email.com');

INSERT INTO Voucher\_O\_Gift VALUES (11223, 30.00, 60.00, '2025-01-31', 'Voucher', 'liam.johnson@email.com');

INSERT INTO Voucher\_O\_Gift VALUES (44556, 80.00, 80.00, '2024-11-30', 'Gift', 'carlos.silva@email.com');

INSERT INTO Review VALUES (1, 'Great product!', 'Pro Laptop', '2024-01-15', 5, 1001, 'john.doe@email.com');

INSERT INTO Review VALUES (2, 'Comfortable fit', 'Classic Jeans', '2024-02-20', 4, 1002, 'jane.smith@email.com');

INSERT INTO Review VALUES (3, 'Couldn''t put it down', 'Mystery Book', '2024-03-10', 5, 1003, 'alice.johnson@email.com');

INSERT INTO Review VALUES (4, 'Powerful blender', 'Power Blender', '2024-04-05', 4, 1004, 'bob.brown@email.com');

INSERT INTO Review VALUES (5, 'Professional quality', 'Pro Racket', '2024-05-01', 5, 1005, 'emma.wilson@email.com');

INSERT INTO Review VALUES (6, 'Amazing sound quality', 'Premium Headphones', '2024-05-15', 5, 1006, 'michael.chen@email.com');

INSERT INTO Review VALUES (7, 'Perfect for my plants', 'Ceramic Planter', '2024-06-01', 4, 1007, 'sophie.martin@email.com');

INSERT INTO Review VALUES (8, 'Makes cooking easier', 'Smart Air Fryer', '2024-06-15', 5, 1008, 'david.kim@email.com');

INSERT INTO Review VALUES (9, 'Great for home workouts', 'Pro Dumbbells', '2024-07-01', 4, 1009, 'maria.garcia@email.com');

INSERT INTO Review VALUES (10, 'Noticeable skin improvement', 'Radiance Serum', '2024-07-15', 5, 1010, 'ahmed.hassan@email.com');

INSERT INTO Review VALUES (11, 'Immersive gaming experience', 'NextGen Console', '2024-08-01', 5, 1011, 'olivia.taylor@email.com');

INSERT INTO Review VALUES (12, 'My dog loves it', 'Comfort Pet Bed', '2024-08-15', 4, 1012, 'liam.johnson@email.com');

INSERT INTO Review VALUES (13, 'Beautiful craftsmanship', 'Rustic Desk', '2024-09-01', 5, 1013, 'elena.petrova@email.com');

INSERT INTO Review VALUES (14, 'Barista-quality coffee at home', 'Barista Pro', '2024-09-15', 4, 1014, 'carlos.silva@email.com');

INSERT INTO Review VALUES (15, 'Accurate health tracking', 'HealthTrack Watch', '2024-10-01', 5, 1015, 'yuki.tanaka@email.com');

INSERT INTO Basket\_contains VALUES (1, 1001, 'B001');

INSERT INTO Basket\_contains VALUES (2, 1002, 'B002');

INSERT INTO Basket\_contains VALUES (1, 1003, 'B003');

INSERT INTO Basket\_contains VALUES (1, 1004, 'B004');

INSERT INTO Basket\_contains VALUES (1, 1005, 'B005');

INSERT INTO Basket\_contains VALUES (2, 1006, 'B006');

INSERT INTO Basket\_contains VALUES (1, 1007, 'B007');

INSERT INTO Basket\_contains VALUES (1, 1008, 'B008');

INSERT INTO Basket\_contains VALUES (3, 1009, 'B009');

INSERT INTO Basket\_contains VALUES (1, 1010, 'B010');

INSERT INTO Basket\_contains VALUES (2, 1011, 'B011');

INSERT INTO Basket\_contains VALUES (1, 1012, 'B012');

INSERT INTO Basket\_contains VALUES (1, 1013, 'B013');

INSERT INTO Basket\_contains VALUES (2, 1014, 'B014');

INSERT INTO Basket\_contains VALUES (1, 1015, 'B015');

INSERT INTO Delivery VALUES (1, '2024-01-20', 'Delivered', '123 Broadway, New York, USA', 1000001);

INSERT INTO Delivery VALUES (2, '2024-02-25', 'In Transit', '221 Baker Street, London, UK', 1000002);

INSERT INTO Delivery VALUES (3, '2024-03-15', 'Pending', '456 Queen Street, Toronto, Canada', 1000003);

INSERT INTO Delivery VALUES (4, '2024-04-10', 'Delivered', '789 George Street, Sydney, Australia', 1000004);

INSERT INTO Delivery VALUES (5, '2024-05-05', 'Cancelled', '10 Unter den Linden, Berlin, Germany', 1000005);

INSERT INTO Delivery VALUES (6, '2024-05-20', 'Delivered', '888 Nanjing Road, Shanghai, China', 1000006);

INSERT INTO Delivery VALUES (7, '2024-06-05', 'In Transit', '15 Rue de Rivoli, Paris, France', 1000007);

INSERT INTO Delivery VALUES (8, '2024-06-20', 'Pending', '521 Gangnam-daero, Seoul, South Korea', 1000008);

INSERT INTO Delivery VALUES (9, '2024-07-05', 'Delivered', '32 Gran Vía, Madrid, Spain', 1000009);

INSERT INTO Delivery VALUES (10, '2024-07-20', 'In Transit', '1 Tahrir Square, Cairo, Egypt', 1000010);

INSERT INTO Delivery VALUES (11, '2024-08-05', 'Delivered', '789 Robson Street, Vancouver, Canada', 1000011);

INSERT INTO Delivery VALUES (12, '2024-08-20', 'Pending', '42 Rodeo Drive, Los Angeles, USA', 1000012);

INSERT INTO Delivery VALUES (13, '2024-09-05', 'In Transit', '1 Red Square, Moscow, Russia', 1000013);

INSERT INTO Delivery VALUES (14, '2024-09-20', 'Delivered', '1000 Avenida Paulista, São Paulo, Brazil', 1000014);

INSERT INTO Delivery VALUES (15, '2024-10-05', 'Cancelled', '4 Ginza, Tokyo, Japan', 1000015);

INSERT INTO Delivery VALUES (16, '2024-10-20', 'Delivered', '123 Broadway, New York, USA', 1000016);

INSERT INTO Delivery VALUES (17, '2024-11-05', 'In Transit', '221 Baker Street, London, UK', 1000017);

INSERT INTO Delivery VALUES (18, '2024-11-20', 'Pending', '456 Queen Street, Toronto, Canada', 1000018);

INSERT INTO Orders VALUES (1, 999.99, 999.99, 999.99, 'N', '2024-01-18', 'john.doe@email.com', 1000001);

INSERT INTO Orders VALUES (2, 119.98, 119.98, 109.98, 'Y', '2024-02-23', 'jane.smith@email.com', 1000002);

INSERT INTO Orders VALUES (3, 24.99, 24.99, 24.99, 'N', '2024-03-13', 'alice.johnson@email.com', 1000003);

INSERT INTO Orders VALUES (4, 79.99, 79.99, 69.99, 'Y', '2024-04-08', 'bob.brown@email.com', 1000004);

INSERT INTO Orders VALUES (5, 149.99, 149.99, 149.99, 'N', '2024-05-03', 'emma.wilson@email.com', 1000005);

INSERT INTO Orders VALUES (6, 299.99, 299.99, 289.99, 'Y', '2024-05-18', 'michael.chen@email.com', 1000006);

INSERT INTO Orders VALUES (7, 34.99, 34.99, 34.99, 'N', '2024-06-03', 'sophie.martin@email.com', 1000007);

INSERT INTO Orders VALUES (8, 129.99, 129.99, 119.99, 'Y', '2024-06-18', 'david.kim@email.com', 1000008);

INSERT INTO Orders VALUES (9, 199.99, 199.99, 199.99, 'N', '2024-07-03', 'maria.garcia@email.com', 1000009);

INSERT INTO Orders VALUES (10, 39.99, 39.99, 34.99, 'Y', '2024-07-18', 'ahmed.hassan@email.com', 1000010);

INSERT INTO Orders VALUES (11, 499.99, 499.99, 489.99, 'Y', '2024-08-02', 'olivia.taylor@email.com', 1000011);

INSERT INTO Orders VALUES (12, 89.99, 89.99, 89.99, 'N', '2024-08-17', 'liam.johnson@email.com', 1000012);

INSERT INTO Orders VALUES (13, 399.99, 399.99, 389.99, 'Y', '2024-09-01', 'elena.petrova@email.com', 1000013);

INSERT INTO Orders VALUES (14, 249.99, 249.99, 249.99, 'N', '2024-09-16', 'carlos.silva@email.com', 1000014);

INSERT INTO Orders VALUES (15, 199.99, 199.99, 189.99, 'Y', '2024-10-01', 'yuki.tanaka@email.com', 1000015);

INSERT INTO Orders VALUES (16, 1299.98, 1299.98, 1289.98, 'Y', '2024-10-15', 'john.doe@email.com', 1000016);

INSERT INTO Orders VALUES (17, 119.98, 119.98, 109.98, 'Y', '2024-10-30', 'jane.smith@email.com', 1000017);

INSERT INTO Orders VALUES (18, 449.98, 449.98, 439.98, 'Y', '2024-11-14', 'alice.johnson@email.com', 1000018);

INSERT INTO HAS VALUES (1, 999.99, 0, 1001, 1);

INSERT INTO HAS VALUES (2, 119.98, 0, 1002, 2);

INSERT INTO HAS VALUES (1, 24.99, 0, 1003, 3);

INSERT INTO HAS VALUES (1, 79.99, 0, 1004, 4);

INSERT INTO HAS VALUES (1, 149.99, 0, 1005, 5);

INSERT INTO HAS VALUES (1, 299.99, 0, 1006, 6);

INSERT INTO HAS VALUES (1, 34.99, 0, 1007, 7);

INSERT INTO HAS VALUES (1, 129.99, 0, 1008, 8);

INSERT INTO HAS VALUES (1, 199.99, 0, 1009, 9);

INSERT INTO HAS VALUES (1, 39.99, 0, 1010, 10);

INSERT INTO HAS VALUES (1, 499.99, 0, 1011, 11);

INSERT INTO HAS VALUES (1, 89.99, 0, 1012, 12);

INSERT INTO HAS VALUES (1, 399.99, 0, 1013, 13);

INSERT INTO HAS VALUES (1, 249.99, 0, 1014, 14);

INSERT INTO HAS VALUES (1, 199.99, 0, 1015, 15);

INSERT INTO HAS VALUES (1, 999.99, 0, 1001, 16);

INSERT INTO HAS VALUES (1, 299.99, 0, 1006, 16);

INSERT INTO HAS VALUES (2, 119.98, 0, 1002, 17);

INSERT INTO Returns VALUES (1, '2024-02-01', 999.99, 'Denied', '2024-01-25', 1);

INSERT INTO Returns VALUES (2, '2024-03-10', 59.99, 'Pending', '2024-03-01', 2);

INSERT INTO Returns VALUES (3, '2024-03-25', 24.99, 'Denied', '2024-03-20', 3);

INSERT INTO Returns VALUES (4, '2024-04-20', 79.99, 'Pending', '2024-04-15', 4);

INSERT INTO Returns VALUES (5, '2024-05-15', 149.99, 'Cancelled', '2024-05-10', 5);

INSERT INTO Returns VALUES (6, '2024-06-01', 299.99, 'Pending', '2024-05-25', 6);

INSERT INTO Returns VALUES (7, '2024-06-15', 34.99, 'Completed', '2024-06-10', 7);

INSERT INTO Returns VALUES (8, '2024-07-01', 129.99, 'Denied', '2024-06-25', 8);

INSERT INTO Returns VALUES (9, '2024-07-15', 199.99, 'Pending', '2024-07-10', 9);

INSERT INTO Returns VALUES (10, '2024-07-30', 39.99, 'Completed', '2024-07-25', 10);

INSERT INTO Returns VALUES (11, '2024-08-15', 499.99, 'Pending', '2024-08-10', 11);

INSERT INTO Returns VALUES (12, '2024-08-30', 89.99, 'Denied', '2024-08-25', 12);

INSERT INTO Returns VALUES (13, '2024-09-15', 399.99, 'Completed', '2024-09-10', 13);

INSERT INTO Returns VALUES (14, '2024-09-30', 249.99, 'Cancelled', '2024-09-25', 14);

INSERT INTO Returns VALUES (15, '2024-10-15', 199.99, 'Pending', '2024-10-10', 15);

INSERT INTO Returns VALUES (16, '2024-11-05', 299.99, 'Pending', '2024-10-30', 16);

INSERT INTO Returns VALUES (17, '2024-11-20', 59.99, 'Pending', '2024-11-15', 17);

INSERT INTO Returns VALUES (18, '2024-12-05', 49.99, 'Pending', '2024-11-30', 18);

SQL answers to questions

**5.1**

SELECT

c.Name AS Customer\_Name,

c.Customer\_email,

o.Order\_number,

o.Order\_date,

GROUP\_CONCAT(p.Product\_name || ' (' || h.Quantity || ')', ', ') AS Products\_Ordered,

o.Grand\_total AS Total\_Paid

FROM

CUSTOMER c

JOIN

Orders o ON c.Customer\_email = o.Customer\_email

JOIN

HAS h ON o.Order\_number = h.Order\_number

JOIN

PRODUCT p ON h.Product\_number = p.Product\_number

GROUP BY

c.Customer\_email, o.Order\_number

ORDER BY

c.Name, o.Order\_date;

**5.2**

SELECT

c.Customer\_email,

c.Name,

c.Birthdate,

COALESCE(v.Current\_balance, 0) AS Gift\_Card\_Balance,

GROUP\_CONCAT(p.Product\_name || ' (' || bc.Quantity || ')') AS Products\_In\_Basket

FROM

CUSTOMER c

LEFT JOIN

Basket b ON c.Customer\_email = b.Customer\_email

LEFT JOIN

Basket\_contains bc ON b.Basket\_ID = bc.Basket\_ID

LEFT JOIN

PRODUCT p ON bc.Product\_number = p.Product\_number

LEFT JOIN

Voucher\_O\_Gift v ON c.Customer\_email = v.Customer\_email

GROUP BY

c.Customer\_email, c.Name, c.Birthdate, v.Current\_balance

HAVING

Products\_In\_Basket IS NOT NULL

ORDER BY

c.Name;

**5.3**

WITH ProductSales AS (

SELECT

p.Category,

p.Product\_name,

SUM(h.Quantity) AS TotalQuantitySold,

SUM(h.Subtotal) AS TotalSales,

ROW\_NUMBER() OVER (PARTITION BY p.Category ORDER BY SUM(h.Quantity) DESC) AS RankInCategory

FROM

PRODUCT p

JOIN

HAS h ON p.Product\_number = h.Product\_number

GROUP BY

p.Category, p.Product\_name

)

SELECT

Category,

Product\_name,

TotalQuantitySold,

TotalSales

FROM

ProductSales

WHERE

RankInCategory <= 2

ORDER BY

Category, TotalQuantitySold DESC;

**5.4**

WITH monthly\_sales AS (

SELECT

strftime('%Y', o.Order\_date) AS year,

strftime('%m', o.Order\_date) AS month,

SUM(CASE

WHEN r.Status = 'Completed' THEN h.Subtotal = 0

ELSE h.Subtotal

END) AS total\_sales

FROM

Orders o

JOIN

HAS h ON o.Order\_number = h.Order\_number

LEFT JOIN

Returns r ON o.Order\_number = r.Order\_number

GROUP BY

strftime('%Y', o.Order\_date),

strftime('%m', o.Order\_date)

)

SELECT

year,

month,

total\_sales,

CASE

WHEN LAG(total\_sales) OVER (ORDER BY year, month) = 0 THEN NULL

ELSE (total\_sales - LAG(total\_sales) OVER (ORDER BY year, month)) / LAG(total\_sales) OVER (ORDER BY year, month) \* 100

END AS sales\_growth\_percentage

FROM

monthly\_sales

ORDER BY

year, month;

**Question 6 - Stock Trigger Creation (i)**

CREATE TRIGGER check\_stock

BEFORE INSERT ON HAS

FOR EACH ROW

BEGIN

SELECT CASE

WHEN (SELECT Stock FROM PRODUCT WHERE Product\_number = NEW.Product\_number) < NEW.Quantity

THEN RAISE(ABORT, 'Insufficient stock for this product')

END;

END;

**Shouldn’t Trigger (i)**

INSERT INTO HAS VALUES (2, 119.98, 0, 1002, 17);

**Should Trigger (ii)**

INSERT INTO HAS VALUES (10000, 119.98, 0, 1002, 17);