Database Design Project

CSCI 210

# Introduction

Art’s Art is an up-and-coming art supply store that is working to keep records of customers, orders, products, and the suppliers to their store. The vison for the future of Art’s Art is to be able to supply a loyalty program through the store, helping to keep records and give curated coupons and deals to different types of customers to build a lasting clientele. First, there will be focus on gathering data in order to later compile a loyalty program.

# **Business Rules**

1. Product prices should be accurate.
2. Product quantity values reflect inventory availability.
3. Supplier contact information must be updated to maintain communication.
4. Order must be valid and list all products purchased.
5. Each line on an order will have a product.
6. Customer can buy products.
7. Each product should be from a supplier.
8. Customer emails should be unique
9. Organization information should be documented if the customer is an organization.
10. Loyalty program will be based on purchasing history.

# **Entity Relationship Diagram**

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# **Primary Key Table**

Make a table that lists the entities and the primary keys for each one.

|  |  |
| --- | --- |
| Entity | Primary Key |
| Supplier | SUP\_ID |
| Product | PRODUCT\_ID |
| Line | ORDER\_ID + LINE\_NUM |
| Order | ORDER\_ID |
| Customer | CUST\_ID |

# **Integrity Rules**

|  |  |  |  |
| --- | --- | --- | --- |
| Entity | Entity Integrity | Referential Integrity | Comments |
| Supplier | Unique identifier of SUP\_ID | No foreign keys within this table, N/A |  |
| Product | Unique identifier of PRODUCT\_ID | SUP\_ID will connect to a valid Supplier |  |
| Line | ORDER\_ID + LINE\_NUM ensures for a unique | ORDER\_ID will connect to a valid order  PRODUCT\_ID will connect to a valid product |  |
| Order | Unique identifier of ORDER\_ID | CUST\_ID will connect to a valid customer |  |
| Customer | Unique identifier of CUST\_ID | No foreign keys within this table, N/A |  |

# **Relationships**

|  |  |  |  |
| --- | --- | --- | --- |
| Entity 1 | Entity 2 | Relationship | Cardinality |
| Supplier | Product | one supplier supplies many products | 1:N |
| Product | Line | one product appears in many lines | 1:N |
| Line | Order | many lines listed in one order | N:1 |
| Customer | Order | one customer creates many orders | 1:N |

# **SQL Statements to create tables (Primary Keys highlighted in Yellow, Foreign keys highlighted in Green)**

Remember that altering tables is limited in SQLite so you have to create the primary keys and foreign keys as you create the tables.  
CREATE TABLE CUSTOMER (

    CUST\_ID INTEGER,

    CONTACT\_FNAME   VARCHAR(30) NOT NULL,

    CONTACT\_LNAME   VARCHAR(30) NOT NULL,

    CONTACT\_PHONENUM    CHAR(12) NOT NULL,

    CONTACT\_ADDRESS VARCHAR(50),

    CONTACT\_EMAIL   VARCHAR(30),

    CUST\_BALANCE    NUMERIC(7,3) NOT NULL DEFAULT 0,

    ORG\_NAME    VARCHAR(30),

    ORG\_PHONENUM    CHAR(12),

    ORG\_ADDRESS VARCHAR(50),

    ORG\_FAX CHAR(12),

    ORG\_EMAIL   CHAR(30),

    UNIQUE(CONTACT\_PHONENUM),

    PRIMARY KEY(CUST\_ID)

);

CREATE TABLE ORDERS (

    ORDER\_ID INTEGER,

    CUST\_ID INTEGER NOT NULL,

    ORDER\_DATE  CHAR(10) NOT NULL DEFAULT CURRENT\_DATE,

    ORDER\_DELIVERY\_DATE CHAR(10),

    ORDER\_TOTAL NUMERIC(7,3) NOT NULL,

    FOREIGN KEY(CUST\_ID) REFERENCES CUSTOMER(CUST\_ID),

    PRIMARY KEY(ORDER\_ID)

);

CREATE TABLE SUPPLIER (

    SUP\_ID  INTEGER,

    SUP\_NAME    TEXT NOT NULL UNIQUE,

    SUP\_ADDRESS VARCHAR(50),

    SUP\_ZIPCODE INTEGER,

    SUP\_PHONE   CHAR(12) NOT NULL,

    SUP\_CON\_FNAME   CHAR(30),

    SUP\_CON\_LNAME   CHAR(30) NOT NULL,

    SUP\_CON\_PHONE   CHAR(12) NOT NULL,

    UNIQUE(SUP\_PHONE),

    PRIMARY KEY(SUP\_ID)

);

CREATE TABLE PRODUCT (

    PRODUCT\_ID  VARCHAR(10),

    PRODUCT\_TYPE    VARCHAR(30) NOT NULL,

    SUP\_ID  INTEGER,

    PRODUCT\_PRICE   NUMERIC(7, 3) NOT NULL,

    PRODUCT\_QTY INTEGER,

    FOREIGN KEY(SUP\_ID) REFERENCES SUPPLIER(SUP\_ID),

    PRIMARY KEY(PRODUCT\_ID)

);

CREATE TABLE LINE (

    ORDER\_ID INTEGER,

    LINE\_NUM INTEGER,

    PRODUCT\_ID TEXT NOT NULL,

    PRODUCT\_PRICE NUMERIC(7,3) NOT NULL,

    LINE\_QTY INTEGER NOT NULL,

    LINE\_PRICE NUMERIC(7,3) NOT NULL,

    PRIMARY KEY (ORDER\_ID, LINE\_NUM),

    FOREIGN KEY (ORDER\_ID) REFERENCES ORDERS(ORDER\_ID),

    FOREIGN KEY(PRODUCT\_ID) REFERENCES PRODUCT(PRODUCT\_ID)

);

# **SQL Statements to insert records**

INSERT INTO SUPPLIER (SUP\_NAME, SUP\_ADDRESS, SUP\_ZIPCODE, SUP\_PHONE, SUP\_CON\_FNAME, SUP\_CON\_LNAME, SUP\_CON\_PHONE)

VALUES

('Supplier A', 12345, 54321, '111-111-1111', 'John', 'Doe', '111-111-1112'),

('Supplier B', 56789, 98765, '222-222-2222', 'Jane', 'Smith', '222-222-2223'),

('Supplier C', 98765, 56789, '333-333-3333', 'David', 'Johnson', '333-333-3334'),

('Supplier D', 54321, 12345, '444-444-4444', 'Sarah', 'Wilson', '444-444-4445'),

('Supplier E', 65432, 23456, '555-555-5555', 'Michael', 'Brown', '555-555-5556');

INSERT INTO PRODUCT (PRODUCT\_ID, PRODUCT\_TYPE, SUP\_ID, PRODUCT\_PRICE, PRODUCT\_QTY)

VALUES

('A2A2A2A2A2', 'Paintbrush Fan 8mm', 1, 5.25, 100),

('B2B2B2B2B2', 'Canvas 8x12in', 2, 12.50, 50),

('C3C3C3C3C3', 'Oil Paint 35A', 1, 4.25, 75),

('D4D4D4D4D4', 'WaterColor Red 42C', 3, 18.75, 30),

('E5E5E5E5E5', 'Posters', 2, 8.50, 60);

INSERT INTO LINE (ORDER\_ID, LINE\_NUM, PRODUCT\_ID, PRODUCT\_PRICE, LINE\_QTY, LINE\_PRICE)

VALUES

(1, 1, 'A2A2A2A2A2', 5.25, 2, 10.50),

(1, 2, 'B2B2B2B2B2', 12.50, 3, 37.50),

(2, 1, 'C3C3C3C3C3', 4.25, 1, 4.25),

(2, 2, 'D4D4D4D4D4', 18.75, 4, 75.00),

(3, 1, 'E5E5E5E5E5', 8.50, 2, 17.00);

INSERT INTO ORDERS (CUST\_ID, ORDER\_DATE, ORDER\_DELIVERY\_DATE, ORDER\_TOTAL)

VALUES

(1, '2023-09-23', '2023-09-25', 85.50),

(2, '2023-09-24', '2023-09-27', 68.00),

(3, '2023-09-25', '2023-09-28', 76.50),

(4, '2023-09-26', '2023-09-29', 89.75),

(5, '2023-09-27', '2023-09-30', 102.00);

INSERT INTO CUSTOMER (CONTACT\_FNAME, CONTACT\_LNAME, CONTACT\_PHONENUM, CONTACT\_ADDRESS, CONTACT\_EMAIL, CUST\_BALANCE, ORG\_NAME, ORG\_PHONENUM, ORG\_FAX, ORG\_EMAIL)

VALUES

('Bob', 'Ross', '555-6789', '123 Squirrel St', 'happytrees@gmail.com', 234.32, 'TV Network', '8882345', '9991234', 'TVNetwork@TVPLlace.com');

INSERT INTO CUSTOMER (CONTACT\_FNAME, CONTACT\_LNAME, CONTACT\_PHONENUM, CONTACT\_ADDRESS, CONTACT\_EMAIL, CUST\_BALANCE, ORG\_NAME, ORG\_PHONENUM, ORG\_FAX, ORG\_EMAIL)

VALUES

('Jackson', 'Pollock', '555-1234', '890 Splatter St', 'messydots@gmail.com', 2343.78, NULL, NULL, NULL, NULL);

INSERT INTO CUSTOMER (CONTACT\_FNAME, CONTACT\_LNAME, CONTACT\_PHONENUM, CONTACT\_ADDRESS, CONTACT\_EMAIL, CUST\_BALANCE, ORG\_NAME, ORG\_PHONENUM, ORG\_FAX, ORG\_EMAIL)

VALUES

('Claude', 'Monet', '555-2398', '1488 French St', 'impressionable@gmail.com', 735.50,  NULL, NULL, NULL, NULL);

INSERT INTO CUSTOMER (CONTACT\_FNAME, CONTACT\_LNAME, CONTACT\_PHONENUM, CONTACT\_ADDRESS, CONTACT\_EMAIL, CUST\_BALANCE, ORG\_NAME, ORG\_PHONENUM, ORG\_FAX, ORG\_EMAIL)

VALUES

('Salvador', 'Dali', '555-6666', '5139 Woahh St', 'surrealistictendencies@gmail.com', 165.75,  NULL, NULL, NULL, NULL);

INSERT INTO CUSTOMER (CONTACT\_FNAME, CONTACT\_LNAME, CONTACT\_PHONENUM, CONTACT\_ADDRESS, CONTACT\_EMAIL, CUST\_BALANCE, ORG\_NAME, ORG\_PHONENUM, ORG\_FAX, ORG\_EMAIL)

VALUES

('Jerry', 'Yarnell', '555-7878', '2342 Notagain St', 'westernsarecool@gmail.com', 2392.00, 'That One Enterprise', '888-2348', '999-8274', 'TOE@TOEentertainment.com');

# **Database in SQLite -- Don't forget to submit your .db file along with the document.**

In addition to the project document, attach to the submission the SQLite db file that contains the entities that have been created using SQL. Each entity should have 5 rows of data in it. (-done. ArtFinal.db)