3a

DROP TABLE IF EXISTS Books, Customers, Carts, Orders, Order\_items CASCADE;

CREATE TABLE Books (

isbn TEXT UNIQUE,

title TEXT NOT NULL,

authors TEXT NOT NULL,

year INTEGER,

edition TEXT NOT NULL

CHECK (edition in (“paperback”, “hardcover”, “ebook”))

publisher TEXT,

number\_pages INTEGER

CHECK (number\_pages == null or number pages > 0),

prices NUMERIC

CHECK (prices > 0),

PRIMARY KEY (isbn)

};

CREATE TABLE Customers (

cust\_id INTEGER UNIQUE,

name TEXT NOT NULL,

email TEXT,

PRIMARY KEY (cust\_id)

);

CREATE TABLE Carts (

cust\_id INTEGER,

isbn TEXT,

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id),

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

CREATE TABLE Orders (

order\_id INTEGER UNIQUE,

order\_date DATE,

cust\_id TEXT,

PRIMARY KEY (order\_id),

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id) ­

);

CREATE TABLE Order\_items (

order\_id INTEGER,

isbn TEXT,

FOREIGN KEY (order\_id) REFERENCES Orders (order\_id)

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

3b. Change the data constraint of order\_timestamp from DATE to TIMESTAMP. Add UNIQUE constraint to the attribute.

3c 1.

DROP TABLE IF EXISTS Books, Customers, Carts, Orders, Order\_items CASCADE;

CREATE TABLE Books (

isbn TEXT UNIQUE,

title TEXT NOT NULL,

authors TEXT NOT NULL,

year INTEGER,

edition TEXT NOT NULL

CHECK (edition in (“paperback”, “hardcover”, “ebook”))

publisher TEXT,

number\_pages INTEGER

CHECK (number\_pages == null or number pages > 0),

prices NUMERIC

CHECK ((prices > 0 and edition <> “ebook”) or (prices >= 30 and edition == “ebook”))

PRIMARY KEY (isbn)

};

CREATE TABLE Customers (

cust\_id INTEGER UNIQUE,

name TEXT NOT NULL,

email TEXT,

PRIMARY KEY (cust\_id)

);

CREATE TABLE Carts (

cust\_id INTEGER,

isbn TEXT,

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id),

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

CREATE TABLE Orders (

order\_id INTEGER UNIQUE,

order\_date DATE,

cust\_id TEXT,

PRIMARY KEY (order\_id),

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id) ­

);

CREATE TABLE Order\_items (

order\_id INTEGER,

isbn TEXT,

FOREIGN KEY (order\_id) REFERENCES Orders (order\_id)

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

3c 2. Cannot be expressed

3C 3.

DROP TABLE IF EXISTS Books, Customers, Carts, Orders, Order\_items CASCADE;

CREATE TABLE Books (

isbn TEXT UNIQUE,

title TEXT NOT NULL,

authors TEXT NOT NULL,

year INTEGER,

edition TEXT NOT NULL

CHECK (edition in (“paperback”, “hardcover”, “ebook”))

publisher TEXT,

number\_pages INTEGER

CHECK (number\_pages == null or number pages > 0),

prices NUMERIC

CHECK ((prices > 0 and edition <> “ebook”) or (prices >= 30 and edition == “ebook”))

PRIMARY KEY (isbn)

};

CREATE TABLE Customers (

cust\_id INTEGER UNIQUE,

name TEXT NOT NULL,

email TEXT,

PRIMARY KEY (cust\_id)

);

CREATE TABLE Carts (

cust\_id INTEGER,

isbn TEXT,

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id),

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

CREATE TABLE Orders (

order\_id INTEGER UNIQUE,

order\_date DATE,

cust\_id TEXT,

PRIMARY KEY (order\_id),

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id) ­

);

CREATE TABLE Order\_items (

order\_id INTEGER,

isbn TEXT,

FOREIGN KEY (order\_id) REFERENCES Orders (order\_id)

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

3C 4.

DROP TABLE IF EXISTS Books, Customers, Carts, Orders, Order\_items CASCADE;

CREATE TABLE Books (

isbn TEXT UNIQUE,

title TEXT NOT NULL,

authors TEXT NOT NULL,

year INTEGER,

edition TEXT NOT NULL

CHECK (edition in (“paperback”, “hardcover”, “ebook”))

publisher TEXT,

CHECK (publisher <> “ACME” or (publisher == “ACME” and year >= 2010 and edition == “ebook”)

number\_pages INTEGER

CHECK (number\_pages == null or number pages > 0),

prices NUMERIC

CHECK (prices > 0),

PRIMARY KEY (isbn)

};

CREATE TABLE Customers (

cust\_id INTEGER UNIQUE,

name TEXT NOT NULL,

email TEXT,

PRIMARY KEY (cust\_id)

);

CREATE TABLE Carts (

cust\_id INTEGER,

isbn TEXT,

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id),

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);

CREATE TABLE Orders (

order\_id INTEGER UNIQUE,

order\_date DATE,

cust\_id TEXT,

PRIMARY KEY (order\_id),

FOREIGN KEY (cust\_id) REFERENCES Customers (cust\_id) ­

);

CREATE TABLE Order\_items (

order\_id INTEGER,

isbn TEXT,

FOREIGN KEY (order\_id) REFERENCES Orders (order\_id)

FOREIGN KEY (isbn) REFERENCES Books (isbn)

);