**Project 1. Part 2.**

Chang Liu (cl3390) Haoyan Zhang (hz2400)

1.Revised ER-diagram and Updated SQL Schema

1. Change on ER-diagram

The picture below shows the final ER-diagram applied in our SQL schema design. In the revised version, we deleted the “Review\_details” entity and linked its attributes directly to the review relation set to ensure that for each pair of buyer and book there should be exactly one review. (Also the buyer who reviewed a book should be ordered the book before.) This is satisfied by making “loginID” and “isbn” collectively become the primary key for relation set “review”. Considering users may delete their account, we set reviews for users who delete their account by “deleted” to protect their privacy (shown in our SQL schema).

Another change is for entity “Histories”. This “Histories” entity contains click information by each users including ISBN of books users viewed and the time when the click is happened.



This is the original version of ER-diagram in Part1.



1. SQL Schema ( Under Postgresql Account: cl3900 )

1.

CREATE TABLE Users (

loginID VARCHAR(15),

password VARCHAR(20) NOT NULL,

firstName VARCHAR(20),

lastName VARCHAR(20) NOT NULL,

email VARCHAR(50),

phoneNumber VARCHAR(10) CHECK(phonenumber~’[0-9]{10}’),

credit NUMERIC(7,2) CHECK(credit>=0),

CONSTRAINT User\_pk PRIMARY KEY (loginID),

UNIQUE (email)

);

2.

CREATE TABLE Buyers (

loginID VARCHAR(20),

FOREIGN KEY (loginID) REFERENCE Users

ON DELETE CASCADE,

PRIMARY KEY (loginID)

);

3.

CREATE TABLE Sellers (

loginID VARCHAR(20),

FOREIGN KEY (loginID) REFERENCES Users

ON DELETE CASCADE,

PRIMARY KEY (loginID)

);

4.

CREATE TABLE Addresses (

city VARCHAR(20),

address VARCHAR(50),

zip INTEGER NOT NULL,

state VARCHAR(20) NOT NULL,

PRIMARY KEY (city, address)

);

5.

CREATE TABLE Live\_in (

loginID VARCHAR(20) DEFAULT 'UNLISTED',

city VARCHAR(20),

address VARCHAR(50),

FOREIGN KEY (loginID) REFERENCES Buyers

ON DELETE SET DEFAULT,

FOREIGN KEY (city, address) REFERENCES Addresses

ON DELETE CASCADE,

PRIMARY KEY (loginID, city, address)

);

6.

CREATE TABLE Orders\_Make\_Send (

orderID SERIAL,

makeDate DATE NOT NULL,

sendDate DATE NOT NULL,

loginID VARCHAR(20) NOT NULL DEFAULT ‘Deleted’,

city VARCHAR(20),

address VARCHAR(50 ),

FOREIGN KEY (loginID) REFERENCES Buyers

ON DELETE SET DEFAULT,

FOREIGN KEY (city, address) REFERENCES Addresses,

PRIMARY KEY (orderID)

);

7.

CREATE TABLE Books\_Provide (

isbn VARCHAR(20),

bookName VARCHAR(200) NOT NULL,

author VARCHAR(200) NOT NULL,

price NUMERIC(7,2) NOT NULL CHECK(price>=0),

credit\_cost NUMERIC(7,2) NOT NULL CHECK(credit\_cost>=0 AND price>=credit\_cost),

quantity INTEGER NOT NULL CHECK(quantity>=1),

provide\_date DATE NOT NULL,

PRIMARY KEY (isbn),

loginID VARCHAR(20) NOT NULL DEFAULT 'Deleted',

FOREIGN KEY (loginID) REFERENCES Sellers

ON DELETE SET DEFAULT

);

CREATE TABLE Provide\_details (

isbn VARCHAR(20),

bookName VARCHAR(200) NOT NULL,

author VARCHAR(200) NOT NULL,

price NUMERIC(7,2) NOT NULL CHECK(price>=0),

credit\_cost NUMERIC(7,2) NOT NULL CHECK(credit\_cost>=0 AND price>=credit\_cost),

quantity INTEGER NOT NULL CHECK(quantity>=1),

provide\_date DATE NOT NULL,

PRIMARY KEY (isbn, loginID, provide\_date),

loginID VARCHAR(20) NOT NULL DEFAULT 'Deleted',

FOREIGN KEY (loginID) REFERENCES Sellers

ON DELETE SET DEFAULT

);

8.

CREATE TABLE Review (

loginID VARCHAR(20),

isbn VARCHAR(50),

review\_date DATE,

content VARCHAR(3000),

rate INTEGER CHECK(rate>0 AND rate<=5),

FOREIGN KEY (loginID) REFERENCES Buyers,

FOREIGN KEY (isbn) REFERENCES Books\_Provide,

PRIMARY KEY (loginID, isbn)

);

9.

CREATE TABLE Order\_of (

orderID Serial,

isbn VARCHAR(50),

FOREIGN KEY (orderID) REFERENCES Orders\_Make\_Send,

FOREIGN KEY (isbn) REFERENCES Books\_Provide,

PRIMARY KEY (orderID, isbn)

);

10.

CREATE TABLE Categories (

cname VARCHAR(20),

PRIMARY KEY (cname)

);

11.

CREATE TABLE Belong\_to (

isbn VARCHAR(50),

cname VARCHAR(20),

FOREIGN KEY(isbn) REFERENCES Books\_Provide,

FOREIGN KEY (cname) REFERENCES Categories,

PRIMARY KEY (isbn, cname)

);

12.

CREATE TABLE Histories (

loginID VARCHAR(20),

history\_date DATE,

isbn VARCHAR(50) DEFAULT ' Deleted ',

FOREIGN KEY(isbn) REFERENCES Books\_Provide

ON DELETE SET DEFAULT,

FOREIGN KEY (loginID) REFERENCES Users

ON DELETE CASCADE,

PRIMARY KEY (loginID, history\_date,isbn)

);

2. Data populated in the database

There are some data shown for several tables in our database. The whole data can be seen at the appending excel file and our database.

Users

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| loginID | password | fistname | lastname | email | phoneNumber | credit |
| js | js!1230 | Jenny | Stones | js1990@gmail.com | 949313918 | 0 |
| as | 32349503 | Andrew | Stones | andrew@yahoo.com | 815369667 | 25.6 |
| am23 | Alexm!2324 | Alex | Matthew | am3321@columbia.edu | 503296300 | 10 |
| adrian | @am3945 | Adrian | Matthew | am@hotmail.com | 330765562 | 0 |
| …… |

Buyers

|  |
| --- |
| loginID |
| js |
| as |
| … |

Addresses

|  |  |  |  |
| --- | --- | --- | --- |
| city | addresse | zip | state |
| Addison | 16 Route 70 | 60101 | IL |
| Bellmore | 625 Holly Drive | 11710 | NY |
| Baltimore | 114 Route 6 | 21206 | MD |

Live in

|  |  |  |
| --- | --- | --- |
| loginID | city | address |
| js | Addison | 16 Route 70 |
| as | Bellmore | 625 Holly Drive |
| adrian | Baltimore | 114 Route 6 |