Database Project
Santa Clara University

Title: Ebook Repository

In this application, customers can search the ebooks in the database using search criteria like Author name, Book title, publisher name, Genre, Price, availability to rent. The database will provide search results based on the criteria and display the results to the customer. If the customer wants to rent a book, the database will check if it is available for rent. If the book is available for rent then the book will be issued to the customer.

Entities:

1) **Books:**
   Attributes: Book_id, Title, Genre, Price, Author_id, Publisher_name

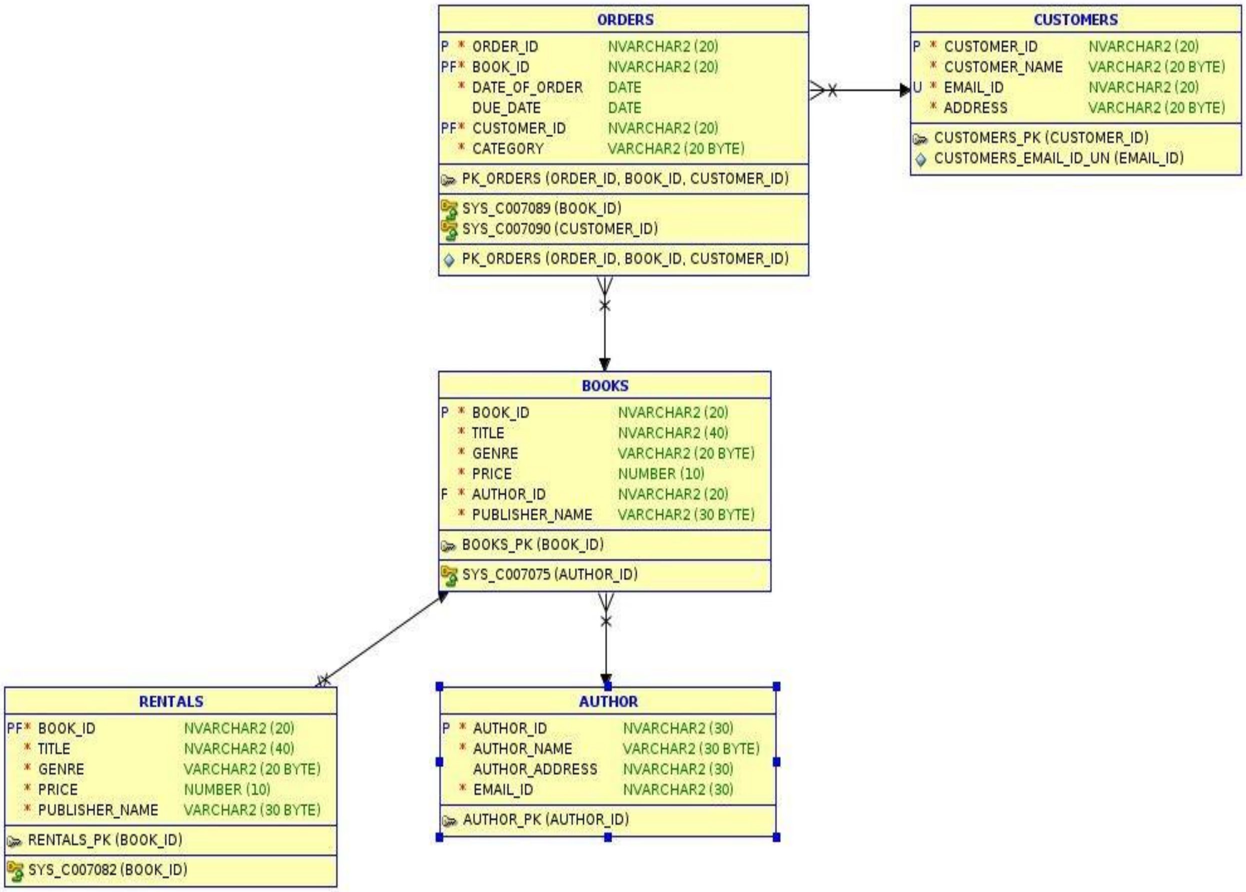
2) **Author:**
   Attributes: Author_id, Author_name, Author_address, Email

3) **Customers:**
   Attributes: Custome_id, Customer_name, Email_id, Address

4) **Rentals:**
   Attributes: Book_id, Title, Genre, Price, Publisher_name

5) **Orders:**
   Attributes: Order_id, Book_id, Date_of_order, Due_date, Customer_id, Cat

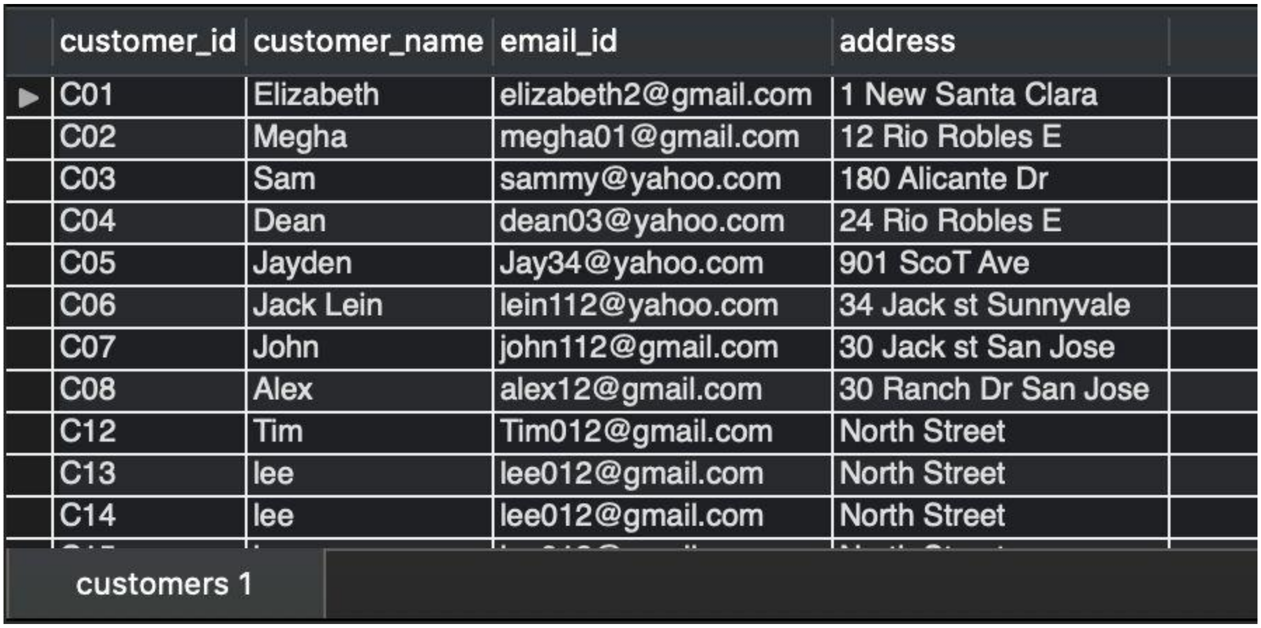
ER Diagram:


ORDERS
P * ORDER_ID NVARCHAR2 (20)
PF* BOOK_ID NVARCHAR2 (20)
* DATE_OF_ORDER DATE
DUE_DATE DATE
PF* CUSTOMER_ID NVARCHAR2 (20)
* CATEGORY VARCHAR2 (20 BYTE)
PK_ORDERS (ORDER_ID, BOOK_ID, CUSTOMER_ID)
SYS_C007089 (BOOK_ID)
SYS_C007090 (CUSTOMER_ID)
PK_ORDERS (ORDER_ID, BOOK_ID, CUSTOMER_ID)
CUSTOMERS
P * CUSTOMER_ID NVARCHAR2 (20)
* CUSTOMER_NAME VARCHAR2 (20 BYTE)
U * EMAIL_ID NVARCHAR2 (20)
* ADDRESS VARCHAR2 (20 BYTE)
CUSTOMERS_PK (CUSTOMER_ID)
CUSTOMERS_EMAIL_ID_UN (EMAIL_ID)
BOOKS
P * BOOK_ID NVARCHAR2 (20)
* TITLE NVARCHAR2 (40)
* GENRE VARCHAR2 (20 BYTE)
* PRICE NUMBER (10)
F * AUTHOR_ID NVARCHAR2 (20)
* PUBLISHER_NAME VARCHAR2 (30 BYTE)
BOOKS_PK (BOOK_ID)
SYS_C007075 (AUTHOR_ID)
RENTALS
PF* BOOK_ID NVARCHAR2 (20)
* TITLE NVARCHAR2 (40)
* GENRE VARCHAR2 (20 BYTE)
* PRICE NUMBER (10)
* PUBLISHER_NAME VARCHAR2 (30 BYTE)
RENTALS_PK (BOOK_ID)
SYS_C007082 (BOOK_ID)
AUTHOR
P * AUTHOR_ID NVARCHAR2 (30)
* AUTHOR_NAME VARCHAR2 (30 BYTE)
AUTHOR_ADDRESS NVARCHAR2 (30)
* EMAIL_ID NVARCHAR2 (30)
AUTHOR_PK (AUTHOR_ID)

// Table Customers

```
CREATE TABLE customers (
        customer_id NVARCHAR2(20) NOT NULL,
        customer_name VARCHAR2(20) NOT NULL,
        email_id NVARCHAR2(20) NOT NULL,
        address VARCHAR2(20) NOT NULL,
        Primary key(customer_id),
        UNIQUE(email_id)
);

INSERT INTO customers VALUES ('C01','Elizabeth','eliza2@gmail.com','1 New Santa Clara');
INSERT INTO customers VALUES ('C02','Megha','megha01@gmail.com','12 Rio Robles E');
INSERT INTO customers VALUES ('C03','Sam','sammy@yahoo.com','180 Alicante Dr');
INSERT INTO customers VALUES ('C04','Dean','dean03@yahoo.com','24 Rio Robles E');
INSERT INTO customers VALUES('C05','Jayden','Jay34@yahoo.com','901 ScoT Ave');
INSERT INTO customers VALUES('C06','Jack Lein','lein112@yahoo.com','34 Jack st Sunnyvale');
INSERT INTO customers VALUES('C07','John','john112@gmail.com','30 Jack st San Jose');
INSERT INTO customers VALUES('C08','Alex','alex12@gmail.com','30 Ranch Dr San Jose');
```

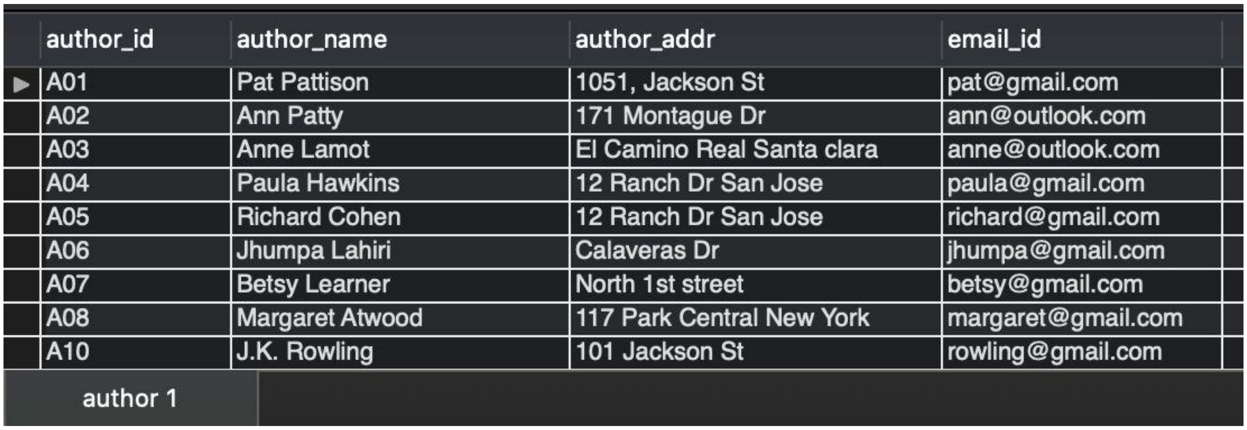


customer_id	customer_name	email_id	address
C01	Elizabeth	elizabeth2@gmail.com	1 New Santa Clara
C02	Megha	megha01@gmail.com	12 Rio Robles E
C03	Sam	sammy@yahoo.com	180 Alicante Dr
C04	Dean	dean03@yahoo.com	24 Rio Robles E
C05	Jayden	Jay34@yahoo.com	901 ScoT Ave
C06	Jack Lein	lein112@yahoo.com	34 Jack st Sunnyvale
C07	John	john112@gmail.com	30 Jack st San Jose
C08	Alex	alex12@gmail.com	30 Ranch Dr San Jose
C12	Tim	Tim012@gmail.com	North Street
C13	lee	lee012@gmail.com	North Street
C14	lee	lee012@gmail.com	North Street

//Table Author

```
CREATE TABLE author (
        author_id NVARCHAR2(30) NOT NULL,
        author_name VARCHAR2(30) NOT NULL,
        author_address NVARCHAR2(30),
        email_id NVARCHAR2(30) NOT NULL,
        PRIMARY KEY(author_id)
);
```

```
INSERT INTO author VALUES ('A01','Pat Pattison','1051, Jackson St.','pat@gmail.com');
INSERT INTO author VALUES ('A02','Ann Patty','171 Montague Dr','ann@outlook.com');
INSERT INTO author VALUES ('A03','Anne Lamot','El Camino Real Santa clara','anne@outlook.com');
INSERT INTO author VALUES ('A04','Paula Hawkins','12 Ranch Dr San Jose','paula@gmail.com');
INSERT INTO author VALUES ('A05','Richard Cohen','12 Ranch Dr San Jose','richard@gmail.com');
INSERT INTO author VALUES('A06','Jhumpa Lahiri','Calaveras Dr','jhumpa@gmail.com');
INSERT INTO author VALUES('A07','Betsy Learner','North 1st street','betsy@gmail.com');
INSERT INTO author VALUES('A08','Margaret Atwood','117 Park Central New York','t');
```

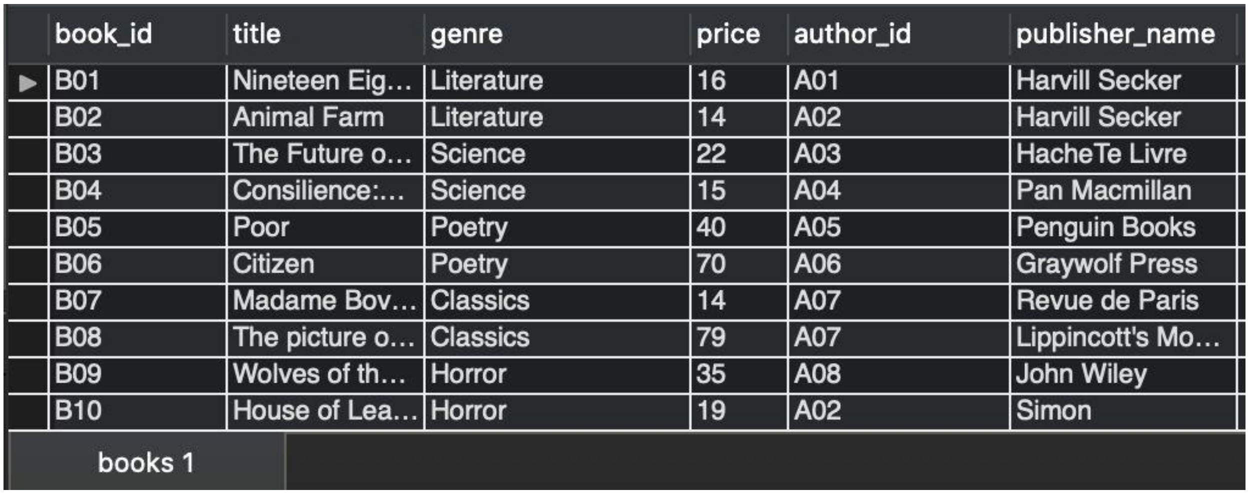


	author_id	author_name	author_addr	email_id
▶	A01	Pat Pattison	1051, Jackson St	pat@gmail.com
	A02	Ann Patty	171 Montague Dr	ann@outlook.com
	A03	Anne Lamot	El Camino Real Santa clara	anne@outlook.com
	A04	Paula Hawkins	12 Ranch Dr San Jose	paula@gmail.com
	A05	Richard Cohen	12 Ranch Dr San Jose	richard@gmail.com
	A06	Jhumpa Lahiri	Calaveras Dr	jhumpa@gmail.com
	A07	Betsy Learner	North 1st street	betsy@gmail.com
	A08	Margaret Atwood	117 Park Central New York	margaret@gmail.com
	A10	J.K. Rowling	101 Jackson St	rowling@gmail.com

//Table books

```
CREATE  TABLE  books (
        book_id NVARCHAR2(20) NOT NULL,
        title NVARCHAR2(40) NOT NULL,
        genre VARCHAR2(20) NOT NULL,
        price NUMBER(10,0) NOT NULL,
        author_id NVARCHAR2(20) NOT NULL,
        publisher_name VARCHAR2(30) NOT NULL,
        PRIMARY KEY(book_id),
        FOREIGN KEY(author_id) references author(author_id) ON DELETE CASCADE
);

INSERT INTO books VALUES ('B01','Nineteen Eighty Four','Literature','16','A01','Harvill Secker');
INSERT INTO books VALUES ('B02','Animal Farm','Literature','14','A02','Harvill Secker,');
INSERT INTO books VALUES ('B03','The Future of Life','Science', '22','A03','Hache Te Livre');
INSERT INTO books VALUES ('B04','Consilience: The Unity of Knowledge','Science','15','A03','Pan Macmillan');
INSERT INTO books VALUES ('B05','Poor','Poetry','40','A05','Penguin Books');
INSERT INTO books VALUES ('B06','Citizen','Poetry','70','A06','Graywolf Press');
INSERT INTO books VALUES ('B07','Madame Bovary','Classics’','14','A07','Revue de Paris');
INSERT INTO books VALUES ('B08','The picture of Dorain Gray','Classics’','79','A07','Lippincotts Monthly Magazine');
INSERT INTO books VALUES ('B09','Wolves of the Calla','Horror','35','A08','John Wiley');
INSERT INTO books VALUES ('B10','House of Leaves','Horror','19','A02','c');
```

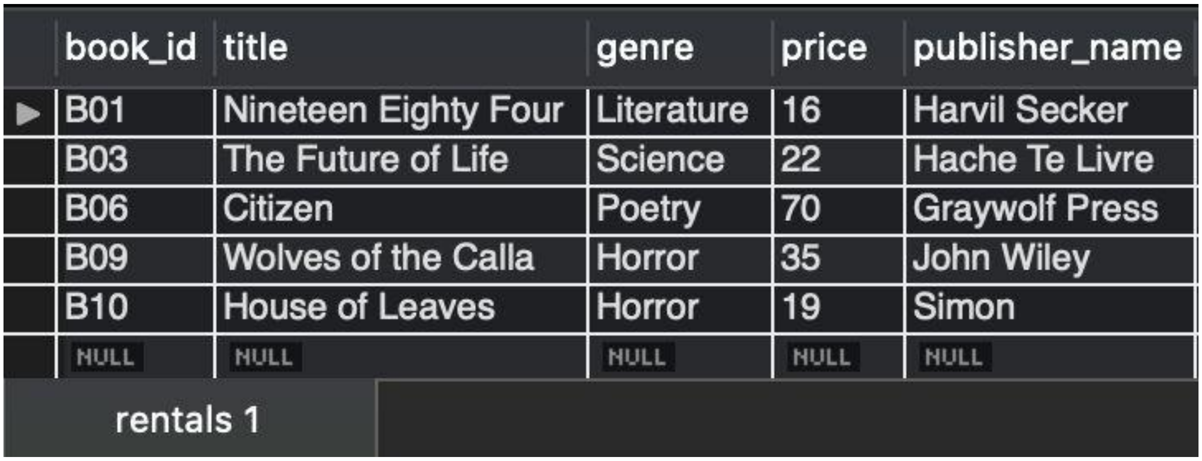


	book_id	title	genre	price	author_id	publisher_name
▶	B01	Nineteen Eig…	Literature	16	A01	Harvill Secker
	B02	Animal Farm	Literature	14	A02	Harvill Secker
	B03	The Future o…	Science	22	A03	HacheTe Livre
	B04	Consilience:…	Science	15	A04	Pan Macmillan
	B05	Poor	Poetry	40	A05	Penguin Books
	B06	Citizen	Poetry	70	A06	Graywolf Press
	B07	Madame Bov…	Classics	14	A07	Revue de Paris
	B08	The picture o…	Classics	79	A07	Lippincott's Mo…
	B09	Wolves of th…	Horror	35	A08	John Wiley
	B10	House of Lea…	Horror	19	A02	Simon

//Table Rentals(books eligible for rent)

```
CREATE TABLE  rentals (
        book_id NVARCHAR2(20) NOT NULL,
        title NVARCHAR2(40) NOT NULL,
        genre VARCHAR2(20) NOT NULL,
        price NUMBER(10,0) NOT NULL,
        publisher_name VARCHAR2(30) NOT NULL,
        PRIMARY KEY (book_id),
        FOREIGN KEY (book_id) REFERENCES books(book_id) ON DELETE CASCADE
);

INSERT INTO rentals VALUES ('B01', 'Nineteen Eighty Four','Literature','16','Harvill Secker');
INSERT INTO rentals VALUES ('B03','The Future of Life','Science', '22','Hache Te Livre');
INSERT INTO rentals VALUES ('B06','Citizen','Poetry','70','Graywolf Press');
INSERT INTO rentals VALUES ('B09','Wolves of the Calla','Horror','35','John Wiley');
INSERT INTO rentals VALUES ('B10','House of Leaves','Horror','19','Simon');
```

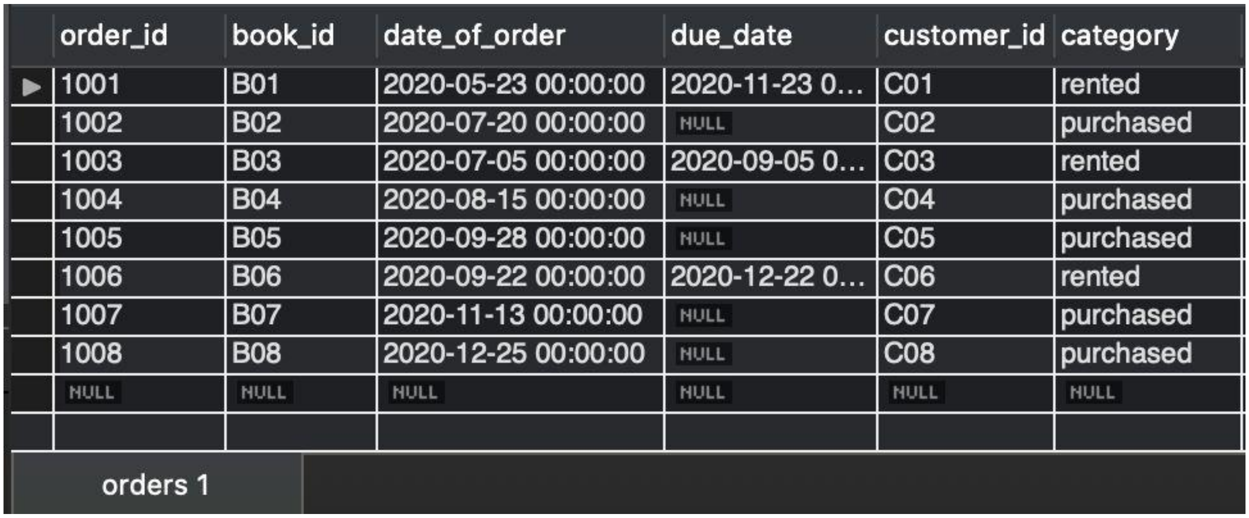


	book_id	title	genre	price	publisher_name
▶	B01	Nineteen Eighty Four	Literature	16	Harvil Secker
	B03	The Future of Life	Science	22	Hache Te Livre
	B06	Citizen	Poetry	70	Graywolf Press
	B09	Wolves of the Calla	Horror	35	John Wiley
	B10	House of Leaves	Horror	19	Simon
	NULL	NULL	NULL	NULL	NULL

//Table orders

```
CREATE TABLE orders (
        order_id NVARCHAR2(20) NOT NULL,
        book_id NVARCHAR2(20) NOT NULL,
        date_of_order DATE NOT NULL,
        due_date DATE,
        customer_id NVARCHAR2(20) NOT NULL,
        category VARCHAR2(20) NOT NULL,
        CONSTRAINT PK_ORDERS PRIMARY KEY(order_id, book_id, customer_id),
        FOREIGN KEY (book_id) REFERENCES BOOKS(book_id) ON DELETE CASCADE,
        FOREIGN KEY (customer_id) REFERENCES CUSTOMERS(customer_id) ON DELETE CASCADE
);

INSERT INTO orders VALUES ('1001','B01','23-05-2020', '23-11-2020','C01', 'rented');
INSERT INTO orders VALUES ('1002','B02','20-07-2020', '','C02', 'purchased');
INSERT INTO orders VALUES ('1003','B03','05-07-2020','05-09-2020','C03', 'rented');
INSERT INTO orders VALUES ('1004','B04','15-08-2020', '', 'C04', 'purchased');
INSERT INTO orders VALUES ('1005','B05','28-09-2020', '', 'C05', 'purchased');
INSERT INTO orders VALUES ('1006','B06','22-09-2020','22-12-2020','C06', 'rented');
INSERT INTO orders VALUES ('1007','B07','13-11-2020','','C07', 'purchased');
INSERT INTO orders VALUES ('1008','B08','25-12-2020', '','C08', 'purchased');
```



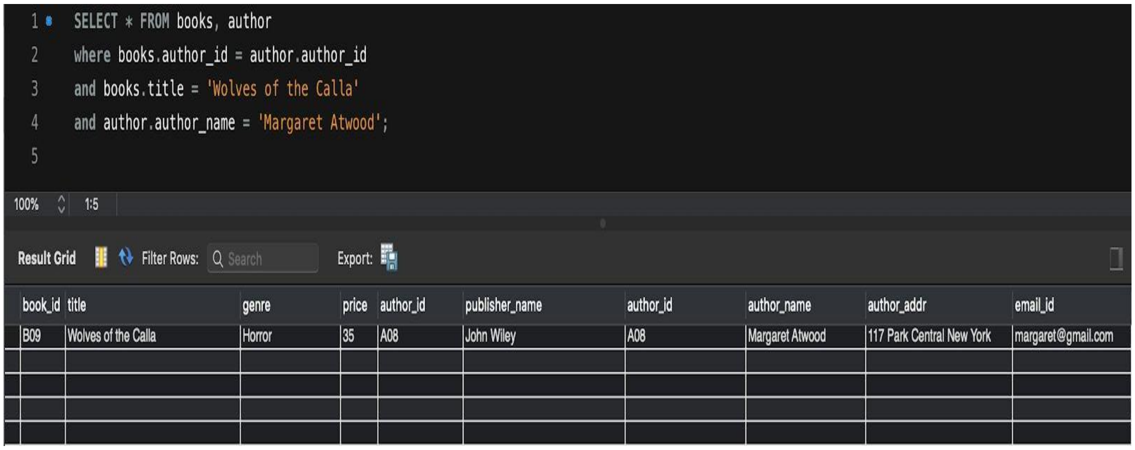
	order_id	book_id	date_of_order	due_date	customer_id	category
▶	1001	B01	2020-05-23 00:00:00	2020-11-23 0…	C01	rented
	1002	B02	2020-07-20 00:00:00	NULL	C02	purchased
	1003	B03	2020-07-05 00:00:00	2020-09-05 0…	C03	rented
	1004	B04	2020-08-15 00:00:00	NULL	C04	purchased
	1005	B05	2020-09-28 00:00:00	NULL	C05	purchased
	1006	B06	2020-09-22 00:00:00	2020-12-22 0…	C06	rented
	1007	B07	2020-11-13 00:00:00	NULL	C07	purchased
	1008	B08	2020-12-25 00:00:00	NULL	C08	purchased
	NULL	NULL	NULL	NULL	NULL	NULL

Queries :

1) **SELECT**:

a) Select e-books with title = Wolves of the Calla and author name = Margaret Atwood

```
SELECT * from books B, author A
      where B.author_id = a.author_id and
            B.title = 'Wolves of the Calla' and
            A.author_name = 'Margaret Atwood';  (1)
```

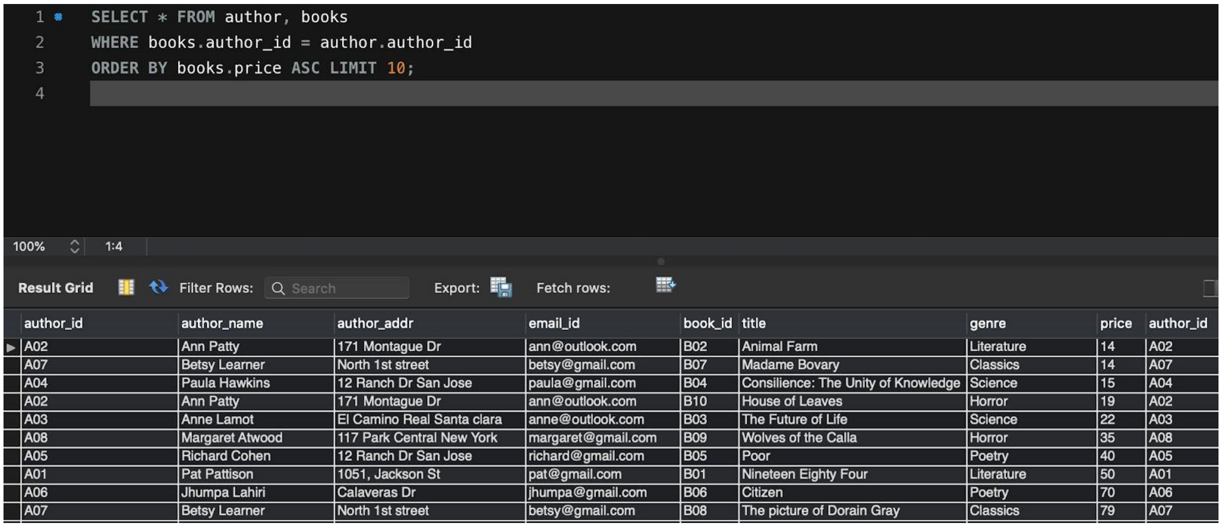


```
SELECT * FROM books, author
where books.author_id = author.author_id
and books.title = 'Wolves of the Calla'
and author.author_name = 'Margaret Atwood';
```

book_id	title	genre	price	author_id	publisher_name	author_id	author_name	author_addr	email_id
B09	Wolves of the Calla	Horror	35	A08	John Wiley	A08	Margaret Atwood	117 Park Central New York	margaret@gmail.com

b) Display top 10 cheapest ebooks

```
SELECT *
FROM author, books
WHERE books.author_id = author.author_id
ORDER BY books.price ASC LIMIT 10;
```

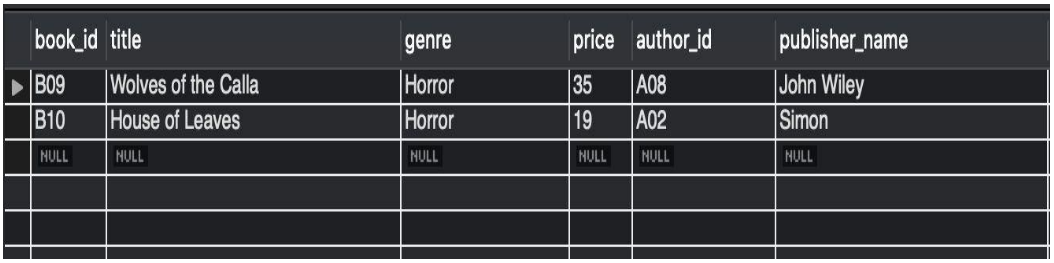


```
SELECT * FROM author, books
WHERE books.author_id = author.author_id
ORDER BY books.price ASC LIMIT 10;
```

author_id	author_name	author_addr	email_id	book_id	title	genre	price	author_id
A02	Ann Patty	171 Montague Dr	ann@outlook.com	B02	Animal Farm	Literature	14	A02
A07	Betsy Learner	North 1st street	betsy@gmail.com	B07	Madame Bovary	Classics	14	A07
A04	Paula Hawkins	12 Ranch Dr San Jose	paula@gmail.com	B04	Consilience: The Unity of Knowledge	Science	15	A04
A02	Ann Patty	171 Montague Dr	ann@outlook.com	B10	House of Leaves	Horror	19	A02
A03	Anne Lamot	El Camino Real Santa clara	anne@outlook.com	B03	The Future of Life	Science	22	A03
A08	Margaret Atwood	117 Park Central New York	margaret@gmail.com	B09	Wolves of the Calla	Horror	35	A08
A05	Richard Cohen	12 Ranch Dr San Jose	richard@gmail.com	B05	Poor	Poetry	40	A05
A01	Pat Pattison	1051, Jackson St	pat@gmail.com	B01	Nineteen Eighty Four	Literature	50	A01
A06	Jhumpa Lahiri	Calaveras Dr	jhumpa@gmail.com	B06	Citizen	Poetry	70	A06
A07	Betsy Learner	North 1st street	betsy@gmail.com	B08	The picture of Dorain Gray	Classics	79	A07

c) Select books based on genre

```
SELECT   *  FROM BOOKS
WHERE  GENRE = 'Horror'; (2)
```

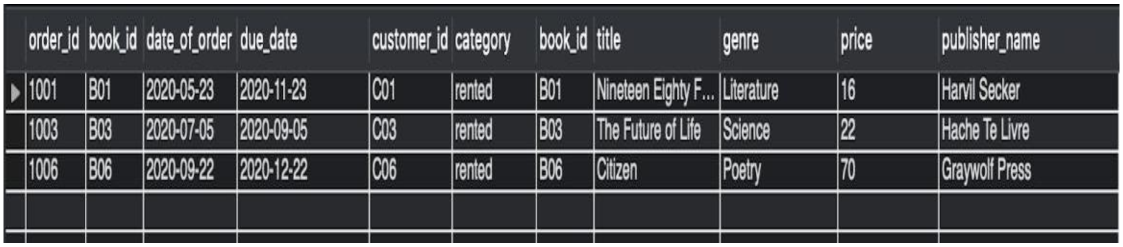


book_id	title	genre	price	author_id	publisher_name
B09	Wolves of the Calla	Horror	35	A08	John Wiley
B10	House of Leaves	Horror	19	A02	Simon
NULL	NULL	NULL	NULL	NULL	NULL

2) **JOIN**:

Joining of two tables with all the columns being displayed

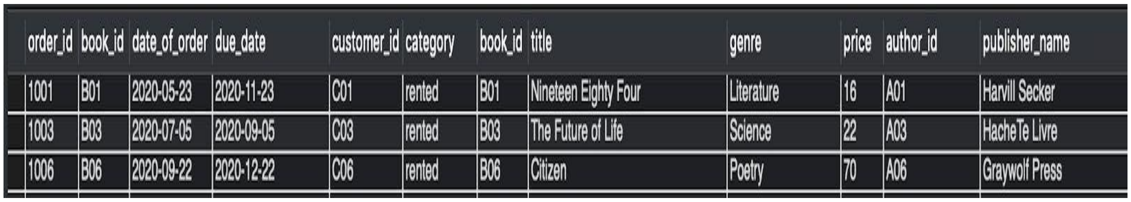
```
SELECT * FROM orders
JOIN    rentals
ON    orders.book_id = rentals.book_id;
```



order_id	book_id	date_of_order	due_date	customer_id	category	book_id	title	genre	price	publisher_name
1001	B01	2020-05-23	2020-11-23	C01	rented	B01	Nineteen Eighty F...	Literature	16	Harvil Secker
1003	B03	2020-07-05	2020-09-05	C03	rented	B03	The Future of Life	Science	22	Hache Te Livre
1006	B06	2020-09-22	2020-12-22	C06	rented	B06	Citizen	Poetry	70	Graywolf Press

joining orders and books table where category = rented

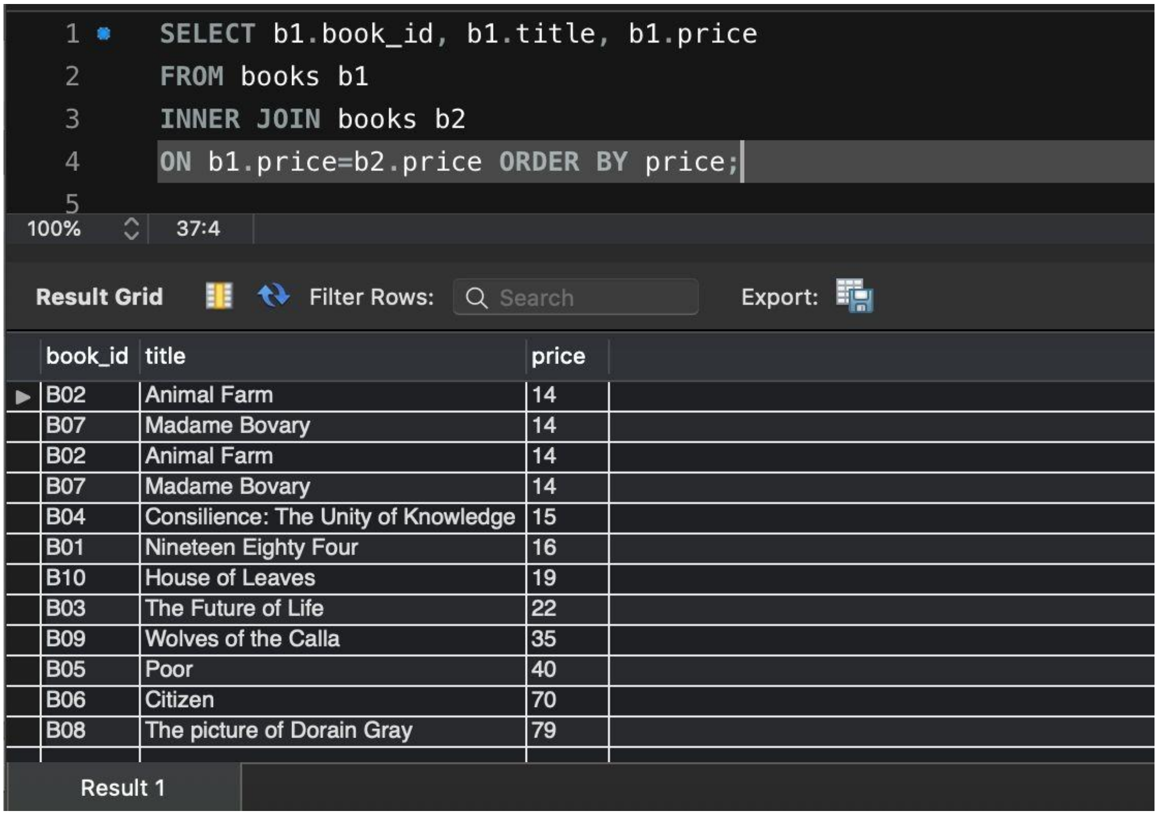
```
SELECT * FROM orders O
JOIN books B
ON   O.book_id = B.book_id
WHERE  O.category =  'rented';
```



order_id	book_id	date_of_order	due_date	customer_id	category	book_id	title	genre	price	author_id	publisher_name
1001	B01	2020-05-23	2020-11-23	C01	rented	B01	Nineteen Eighty Four	Literature	16	A01	Harvill Secker
1003	B03	2020-07-05	2020-09-05	C03	rented	B03	The Future of Life	Science	22	A03	HacheTe Livre
1006	B06	2020-09-22	2020-12-22	C06	rented	B06	Citizen	Poetry	70	A06	Graywolf Press

3) SELF JOIN:

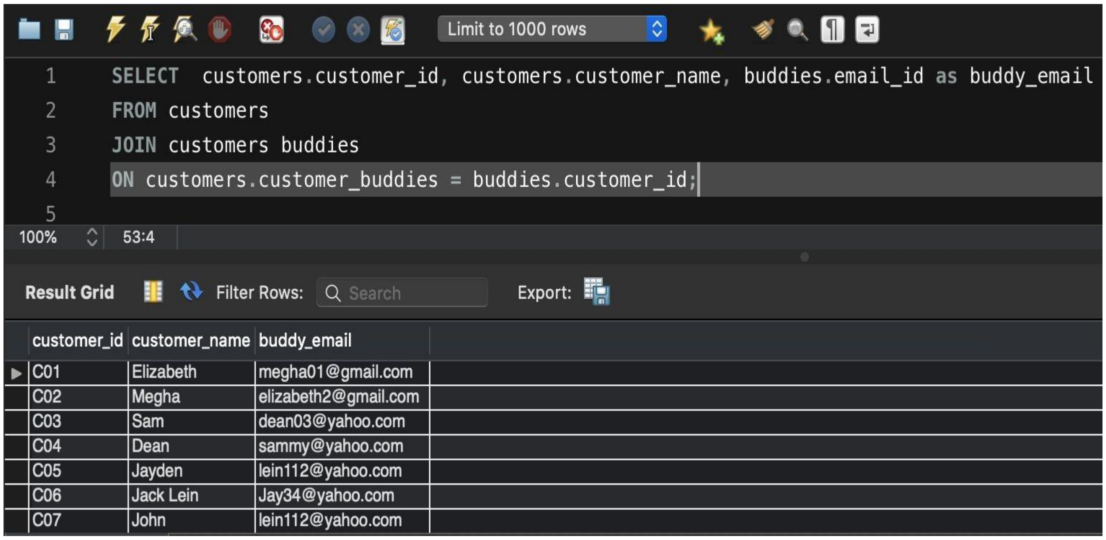
a) SELECT b1.book_id, b1.title, b1.price
FROM books b1
INNER JOIN books b2 ON b1.price = b2.price
ORDER BY price;



```
SELECT b1.book_id, b1.title, b1.price
FROM books b1
INNER JOIN books b2
ON b1.price=b2.price ORDER BY price;
```

book_id	title	price
B02	Animal Farm	14
B07	Madame Bovary	14
B02	Animal Farm	14
B07	Madame Bovary	14
B04	Consilience: The Unity of Knowledge	15
B01	Nineteen Eighty Four	16
B10	House of Leaves	19
B03	The Future of Life	22
B09	Wolves of the Calla	35
B05	Poor	40
B06	Citizen	70
B08	The picture of Dorain Gray	79

b) SELECT customers.customer_id, customers.customer_name, buddies.email_id as buddy_email
FROM customers
JOIN customers buddies
ON customers.CUSTOMER_BUDDY = buddies.customer_id;

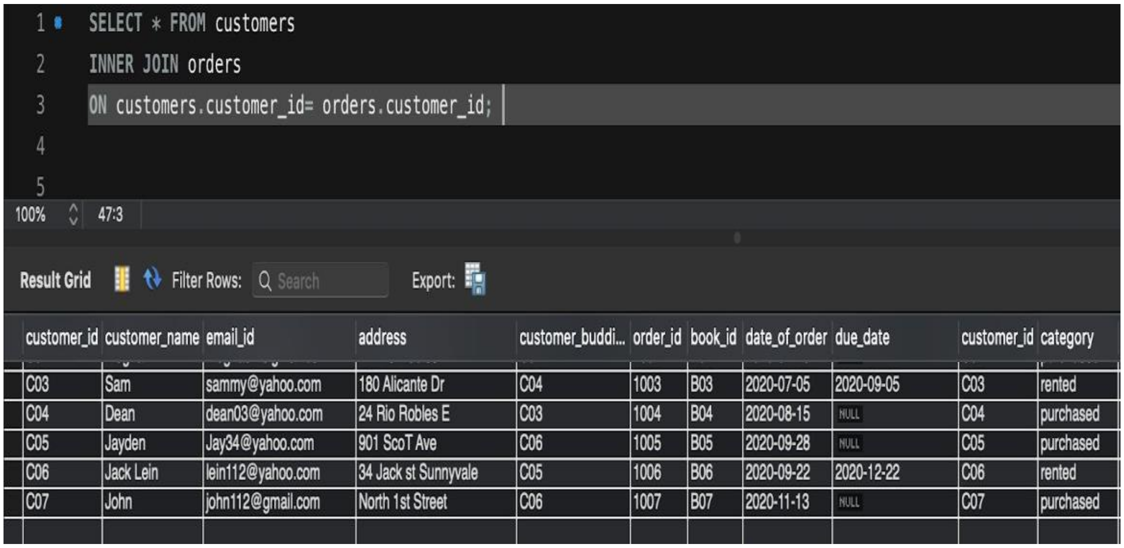


```
SELECT  customers.customer_id, customers.customer_name, buddies.email_id as buddy_email
FROM customers
JOIN customers buddies
ON customers.customer_buddies = buddies.customer_id;
```

customer_id	customer_name	buddy_email
C01	Elizabeth	megha01@gmail.com
C02	Megha	elizabeth2@gmail.com
C03	Sam	dean03@yahoo.com
C04	Dean	sammy@yahoo.com
C05	Jayden	lein112@yahoo.com
C06	Jack Lein	Jay34@yahoo.com
C07	John	lein112@yahoo.com

4) INNER JOIN:

a) Join customer and order table WITH SELECTED COLUMNS DISPLAYED
SELECT * FROM CUSTOMERS C
INNER JOIN ORDERS O
ON C.CUSTOMER_ID = O.CUSTOMER_ID; (8)



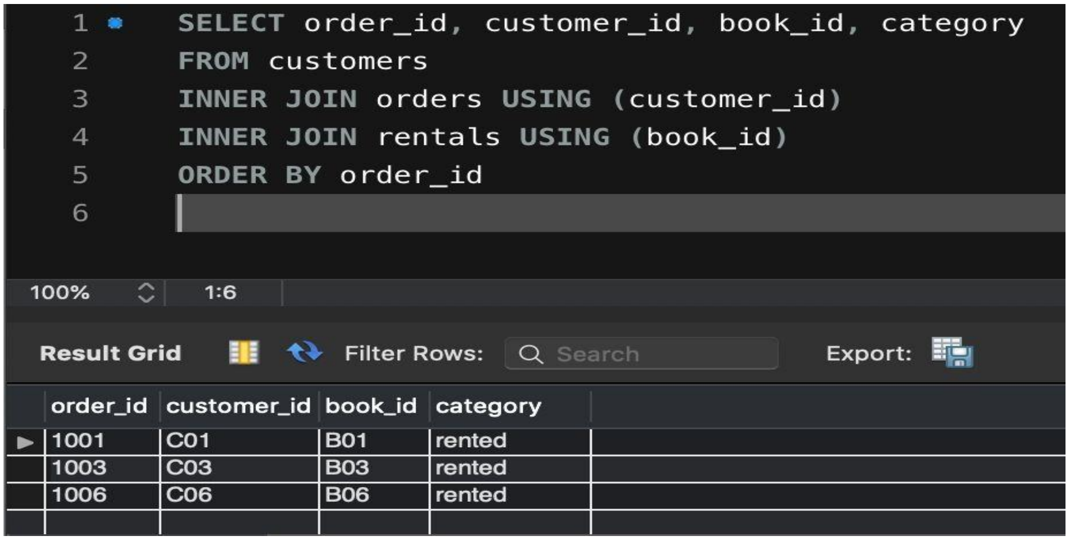
```
SELECT * FROM customers
INNER JOIN orders
ON customers.customer_id= orders.customer_id;
```

customer_id	customer_name	email_id	address	customer_buddi...	order_id	book_id	date_of_order	due_date	customer_id	category
C03	Sam	sammy@yahoo.com	180 Alicante Dr	C04	1003	B03	2020-07-05	2020-09-05	C03	rented
C04	Dean	dean03@yahoo.com	24 Rio Robles E	C03	1004	B04	2020-08-15	NULL	C04	purchased
C05	Jayden	Jay34@yahoo.com	901 ScoT Ave	C06	1005	B05	2020-09-28	NULL	C05	purchased
C06	Jack Lein	lein112@yahoo.com	34 Jack st Sunnyvale	C05	1006	B06	2020-09-22	2020-12-22	C06	rented
C07	John	john112@gmail.com	North 1st Street	C06	1007	B07	2020-11-13	NULL	C07	purchased

5) MULTI JOIN:

a) Multiple join

```
SELECT order_id, customer_id, book_id, category
FROM customers
INNER JOIN orders USING (customer_id)
INNER JOIN rentals USING (book_id)
ORDER BY order_id;
```



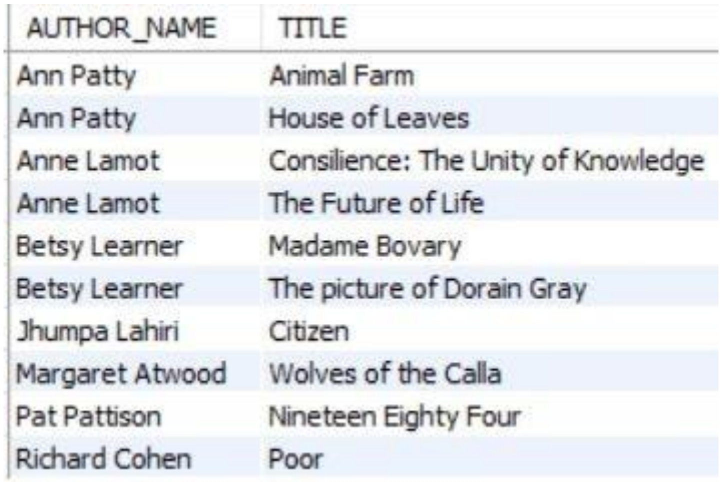
```
SELECT order_id, customer_id, book_id, category
FROM customers
INNER JOIN orders USING (customer_id)
INNER JOIN rentals USING (book_id)
ORDER BY order_id
```

order_id	customer_id	book_id	category
1001	C01	B01	rented
1003	C03	B03	rented
1006	C06	B06	rented

6) GROUP BY:

group by author_name

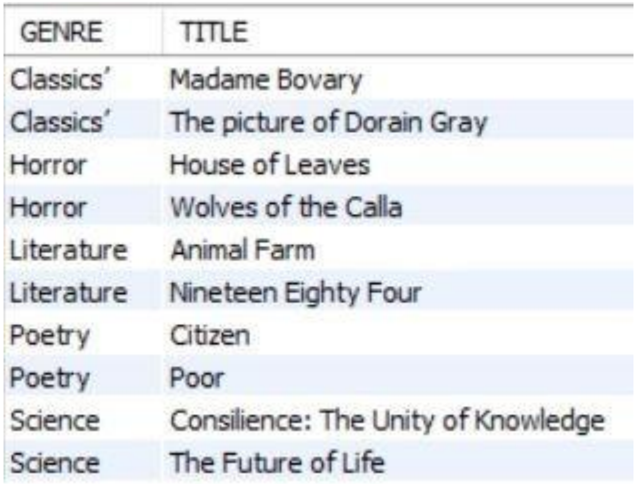
```
SELECT A.AUTHOR_NAME, TITLE
FROM   BOOKS B, AUTHOR A
WHERE   B.AUTHOR_ID = A.AUTHOR_ID
GROUP BY    A.AUTHOR_NAME, B.TITLE
ORDER BY   A.AUTHOR_NAME;
```



AUTHOR_NAME	TITLE
Ann Patty	Animal Farm
Ann Patty	House of Leaves
Anne Lamot	Consilience: The Unity of Knowledge
Anne Lamot	The Future of Life
Betsy Learner	Madame Bovary
Betsy Learner	The picture of Dorain Gray
Jhumpa Lahiri	Citizen
Margaret Atwood	Wolves of the Calla
Pat Pattison	Nineteen Eighty Four
Richard Cohen	Poor

group titles by genre

```
SELECT GENRE, TITLE FROM BOOKS
GROUP BY GENRE, TITLE
ORDER BY GENRE; (10)
```

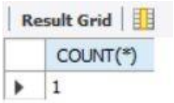


GENRE	TITLE
Classics'	Madame Bovary
Classics'	The picture of Dorain Gray
Horror	House of Leaves
Horror	Wolves of the Calla
Literature	Animal Farm
Literature	Nineteen Eighty Four
Poetry	Citizen
Poetry	Poor
Science	Consilience: The Unity of Knowledge
Science	The Future of Life

7) COUNT:

count of e-books ordered based on author name

```
SELECT COUNT(*) FROM ORDERS O, AUTHOR A, BOOKS B
WHERE O.BOOK_ID = B.BOOK_ID
AND B.AUTHOR_ID = A.AUTHOR_ID
AND A.AUTHOR_NAME = 'Ann Patty'; (1)
```



COUNT(*)
1

8) INSERT, UPDATE, DELETE:

insert a row into books

```
INSERT INTO BOOKS VALUES ('B11','The Testaments','Suspense','15','A08','Nan A. Talese');
```

update address of a customer

```
UPDATE CUSTOMERS
SET ADDRESS = '901 Scott Ave'
WHERE ADDRESS = '901 ScoT Ave';
```

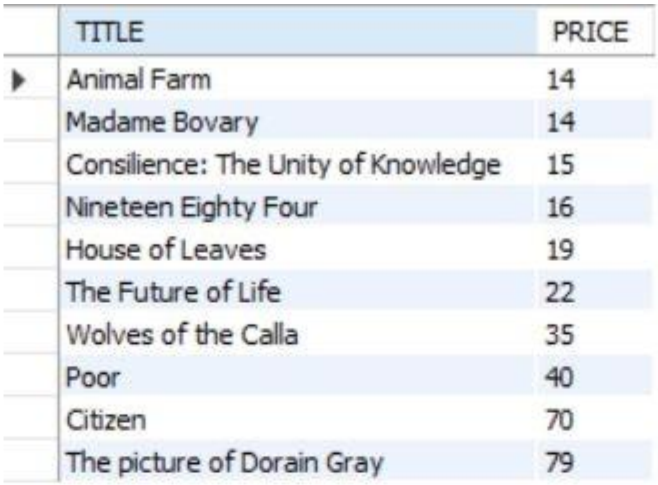
delete row from books based on title

```
DELETE FROM BOOKS WHERE title = 'The Testaments'
```

9) ORDER BY:

a) sort titles by price

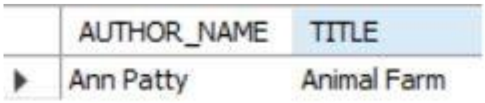
```
SELECT TITLE, PRICE FROM BOOKS
ORDER BY PRICE;  (10)
```



TITLE	PRICE
Animal Farm	14
Madame Bovary	14
Consilience: The Unity of Knowledge	15
Nineteen Eighty Four	16
House of Leaves	19
The Future of Life	22
Wolves of the Calla	35
Poor	40
Citizen	70
The picture of Dorain Gray	79

b) displays the author name and title of books with highest price

```
SELECT AUTHOR_NAME, TITLE FROM AUTHOR A, BOOKS B
WHERE B.AUTHOR_ID = A.AUTHOR_ID
AND ROWNUM <=1
ORDER BY B.PRICE ASC;
```

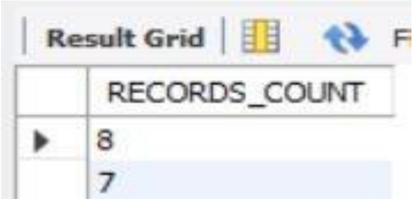


AUTHOR_NAME	TITLE
Ann Patty	Animal Farm

10) AGGREGATE :

a) Displays counts of records in author and customers table

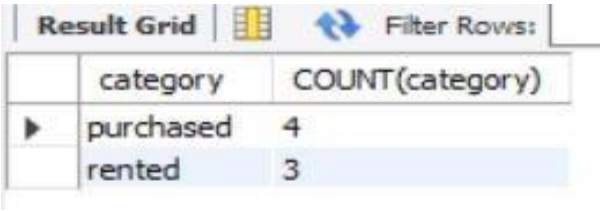
```
SELECT RECORDS_COUNT.RECORDS_COUNT
FROM
(
SELECT COUNT(*) AS RECORDS_COUNT FROM AUTHOR
UNION ALL
SELECT COUNT(*) AS RECORDS_COUNT FROM CUSTOMERS
)RECORDS_COUNT; (2)
```



RECORDS_COUNT
8
7

b) display number of e-books rented vs. purchased

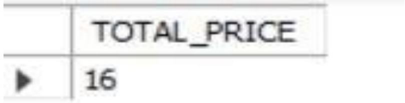
```
SELECT category, COUNT(category) FROM orders
GROUP BY category
ORDER BY category; (2)
```



category	COUNT(category)
purchased	4
rented	3

c) display total price of the order

```
SELECT SUM(PRICE) AS TOTAL_PRICE FROM BOOKS B, ORDERS O
WHERE B.BOOK_ID = O.BOOK_ID
AND ORDER_ID = '1001';
```

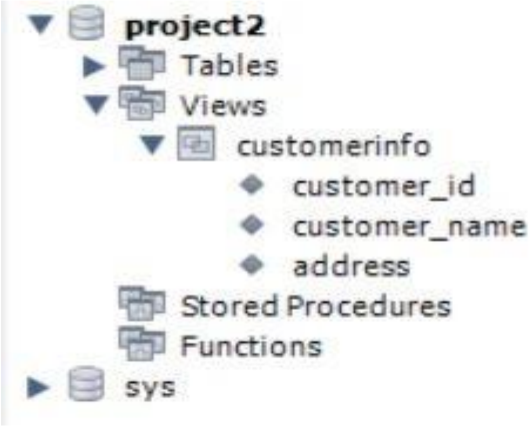


TOTAL_PRICE
16

`11) VIEW:

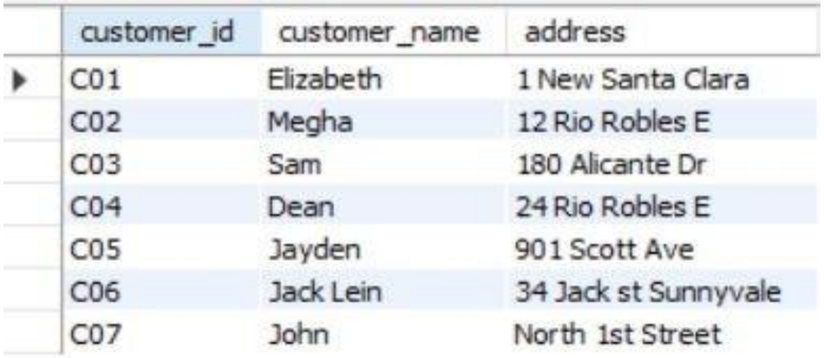
a) Creating the view

```
CREATE VIEW customerinfo
 AS
  SELECT customer_id, customer_name, address
  FROM customers;
```



b) Displaying the view

```
SELECT * FROM customerinfo;
```



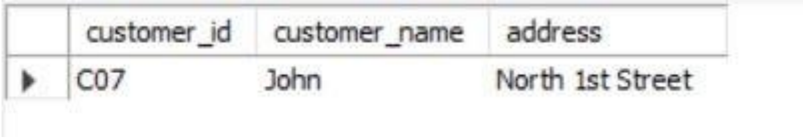
customer_id	customer_name	address
C01	Elizabeth	1 New Santa Clara
C02	Megha	12 Rio Robles E
C03	Sam	180 Alicante Dr
C04	Dean	24 Rio Robles E
C05	Jayden	901 Scott Ave
C06	Jack Lein	34 Jack st Sunnyvale
C07	John	North 1st Street

c) Updating the view

```
UPDATE customerinfo
SET
   address = 'North 1st Street'
WHERE
   customer_id= 'C07';
```

d) Verify the updated view

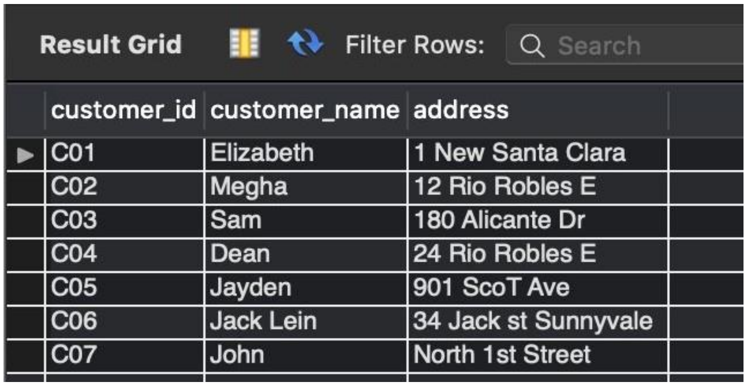
```
SELECT * FROM customerinfo WHERE customer_id='C07';
```



customer_id	customer_name	address
C07	John	North 1st Street

e) Delete a row from view

```
DELETE FROM customerinfo
WHERE
   customer_id = 'C08';
```



customer_id	customer_name	address
C01	Elizabeth	1 New Santa Clara
C02	Megha	12 Rio Robles E
C03	Sam	180 Alicante Dr
C04	Dean	24 Rio Robles E
C05	Jayden	901 ScoT Ave
C06	Jack Lein	34 Jack st Sunnyvale
C07	John	North 1st Street

12) ALTER TABLE :

a) Add new column to Customer table

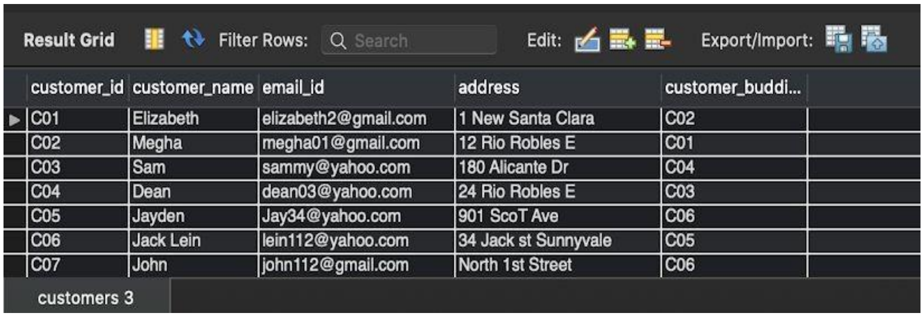
```
ALTER TABLE CUSTOMERS
ADD COLUMN  CUSTOMER_BUDDY VARCHAR(20) ;
```

b) Delete column from customer table

```
ALTER TABLE customers DROP COLUMN CUSTOMER_BUDDY;
```

13) Insert values into customer table newly added column :

```
update customers set customer_buddy ='C01' where customer_id = 'C02' ;
update customers set customer_buddy ='C02' where customer_id = 'C01' ;
update customers set customer_buddy ='C03' where customer_id = 'C04' ;
update customers set customer_buddy ='C04' where customer_id = 'C03' ;
update customers set customer_buddy ='C05' where customer_id = 'C06' ;
update customers set customer_buddy ='C06' where customer_id = 'C05' ;
update customers set customer_buddy ='C06' where customer_id = 'C07' ;
```



customer_id	customer_name	email_id	address	customer_buddi...
C01	Elizabeth	elizabeth2@gmail.com	1 New Santa Clara	C02
C02	Megha	megha01@gmail.com	12 Rio Robles E	C01
C03	Sam	sammy@yahoo.com	180 Alicante Dr	C04
C04	Dean	dean03@yahoo.com	24 Rio Robles E	C03
C05	Jayden	Jay34@yahoo.com	901 ScoT Ave	C06
C06	Jack Lein	lein112@yahoo.com	34 Jack st Sunnyvale	C05
C07	John	john112@gmail.com	North 1st Street	C06

Transactions:

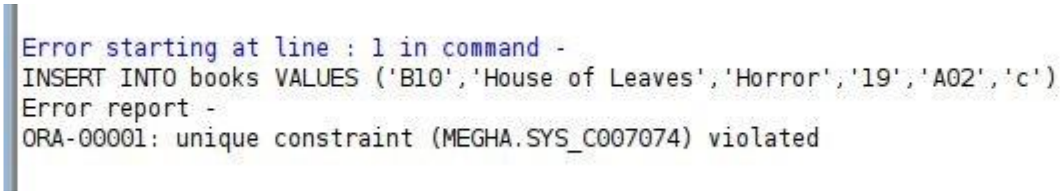
Constraint Violation:

1. **Primary Key Constraint Violation:**

   INSERT INTO books VALUES ('B10','House of Leaves','Horror','19','A02','c');

   Insert again with same book id

   INSERT INTO books VALUES ('B10','House of Leaves','Horror','19','A02','c');

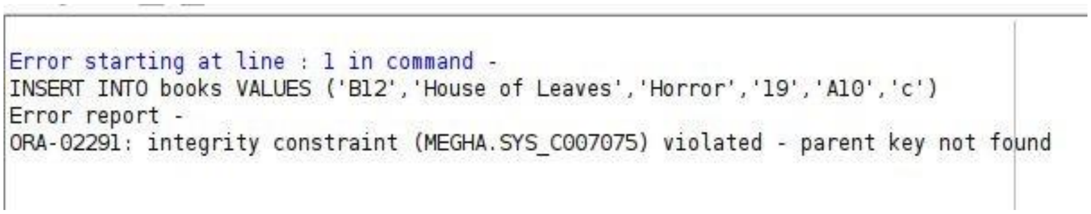


```
Error starting at line : 1 in command -
INSERT INTO books VALUES ('B10','House of Leaves','Horror','19','A02','c')
Error report -
ORA-00001: unique constraint (MEGHA.SYS_C007074) violated
```

2. **Foreign Key Constraint**

   INSERT INTO books VALUES ('B12','House of Leaves','Horror','19','A10','c');

   Author does not exist in Author table

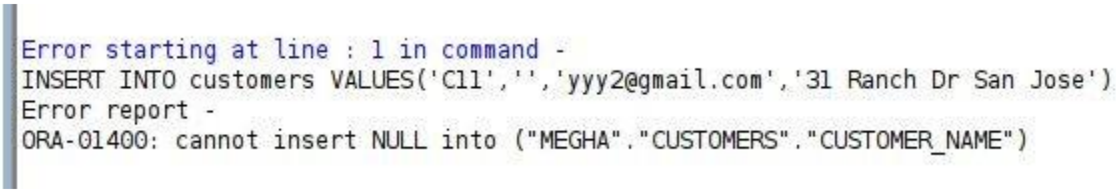


```
Error starting at line : 1 in command -
INSERT INTO books VALUES ('B12','House of Leaves','Horror','19','A10','c')
Error report -
ORA-02291: integrity constraint (MEGHA.SYS_C007075) violated - parent key not found
```

3. **Not null constraint:**

   INSERT INTO customers VALUES('C11','','yyy2@gmail.com','31 Ranch Dr San Jose');

   Customer name cannot be null.



```
Error starting at line : 1 in command -
INSERT INTO customers VALUES('C11','','yyy2@gmail.com','31 Ranch Dr San Jose')
Error report -
ORA-01400: cannot insert NULL into ("MEGHA"."CUSTOMERS"."CUSTOMER_NAME")
```

Trigger:

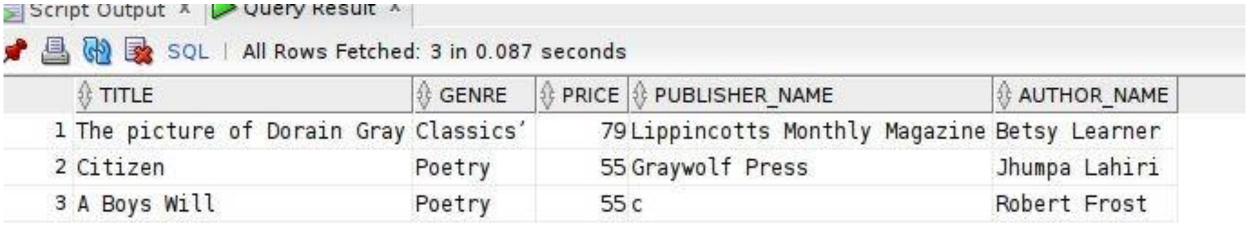
1) On update of book price, update price of book in rentals table to half of the original price

```
CREATE or replace TRIGGER  rental_book_update
AFTER UPDATE of price on books
FOR EACH ROW
BEGIN
UPDATE rentals
 set rentals.price=(:new.price/2) where rentals.book_id=(:old.book_id);
END;
```

Nested Query:

1) Details of top three most expensive books

```
SELECT * FROM
(SELECT b.title, b.genre, b.price, b.publisher_name, a.author_name
FROM books b, author a
WHERE b.author_id=a.author_id
ORDER BY b.price desc)
where ROWNUM<4;
```



All Rows Fetched: 3 in 0.087 seconds

	TITLE	GENRE	PRICE	PUBLISHER_NAME	AUTHOR_NAME
1	The picture of Dorain Gray	Classics’	79	Lippincotts Monthly Magazine	Betsy Learner
2	Citizen	Poetry	55	Graywolf Press	Jhumpa Lahiri
3	A Boys Will	Poetry	55	c	Robert Frost