“LIBRARY MANAGEMENT SYSTEM”

(FOR SQL MODULE)

PRESENTED BY

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UNDER THE GUIDANCE OF

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BATCH DETAILS: MASTER IN DATA SCIENCE AND ANALYTICS WITH AI

BRANCH: THANE (3-5)

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LIBRARY MANAGEMENT SYSTEM

1. DESCRIPTION:

Following database schema is designed to function as a backend storage database for a web application built to manage a library.

By storing information in a relational database, all the tasks related to daily functioning of the library can be performed easily and much more efficiently. Some of the benefits of using this system is to store data over traditional paper registers are as follows:

- Updating and modifying booklist in the library is much easier and efficient.
- Maintaining customer details and their account is easy and efficient.
- Calculations like due payments can be done automatically by DBMS, thus eliminating human error.
- RDBMS provides many ways to analyze available data, thus helping in making more informed decisions about inventory management and other aspects of library management.

This database contains 5 tables:

1. Author
2. Type (Genre of book)
3. Book
4. Customer

5. Transaction

   How these tables/entities are related to each other is shown pictorially on next page through ER diagram, i.e., Entity Relationship Diagram.

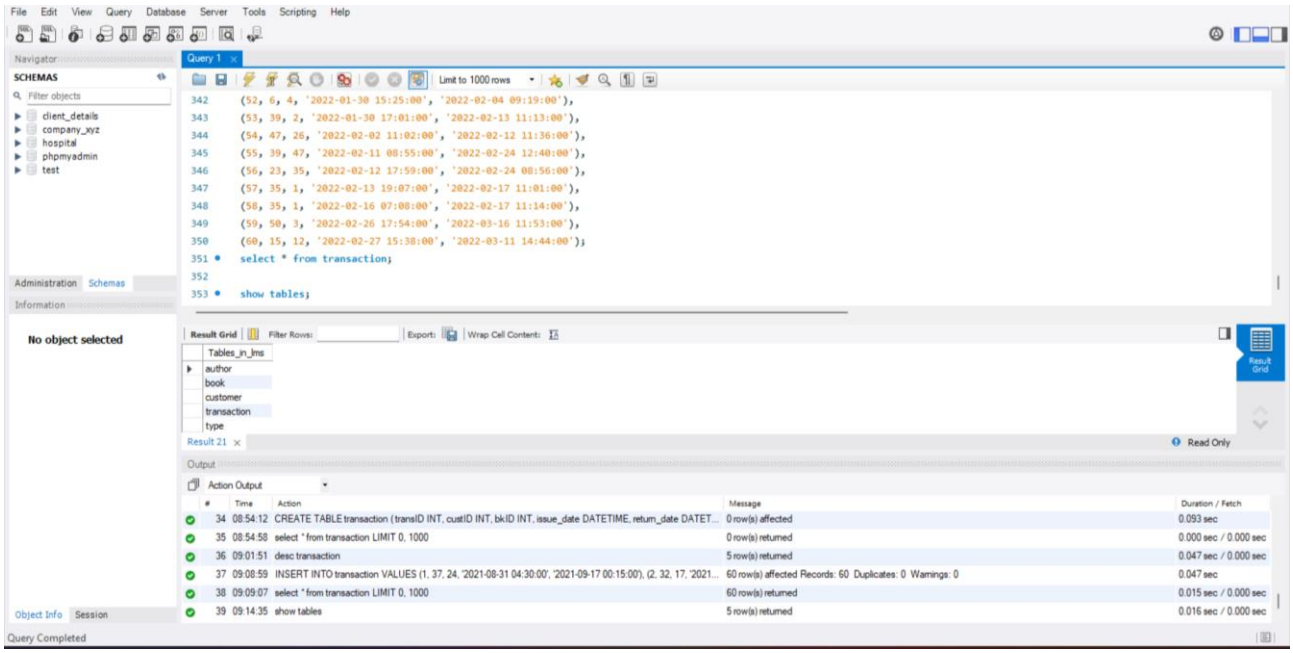
This database contains 5 tables:

1. Author
2. Type (Genre of book)
3. Book
4. Customer
5. Transaction

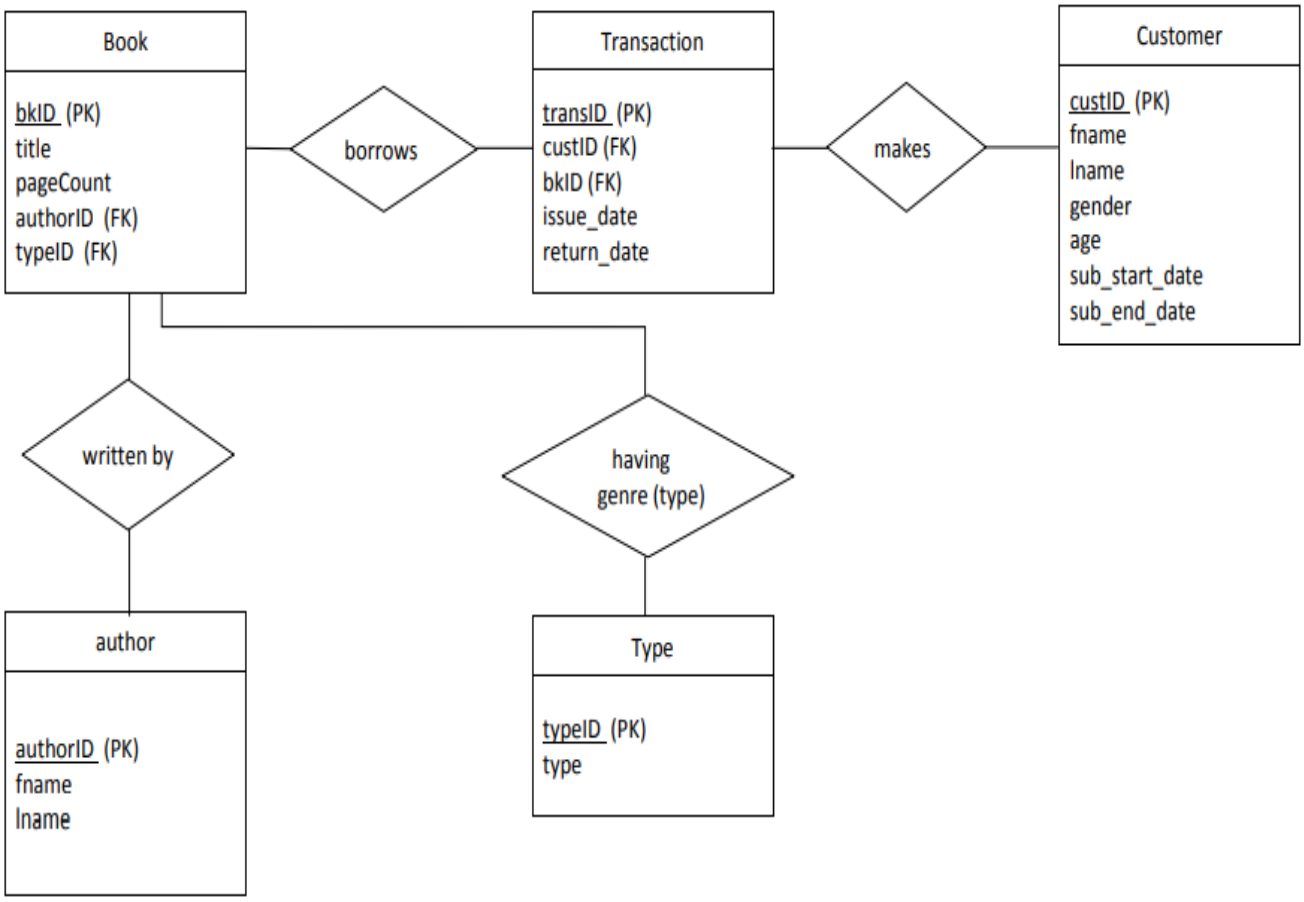
Query:

Show tables;

Output:



2. ER-DIAGRAM (ENTITY RELATION – DIAGRAM) FOR LIBRARY MANAGEMENT SYSTEM:



3. DESCRIPTIONS:

- **AUTHOR:**

```
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| authorID  | int (11)    | NO   | PRI | NULL    |       |
| fname     | varchar (50)| YES  |     | NULL    |       |
| lname     | varchar (50)| YES  |     | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
```

Query:

Create database LMS;

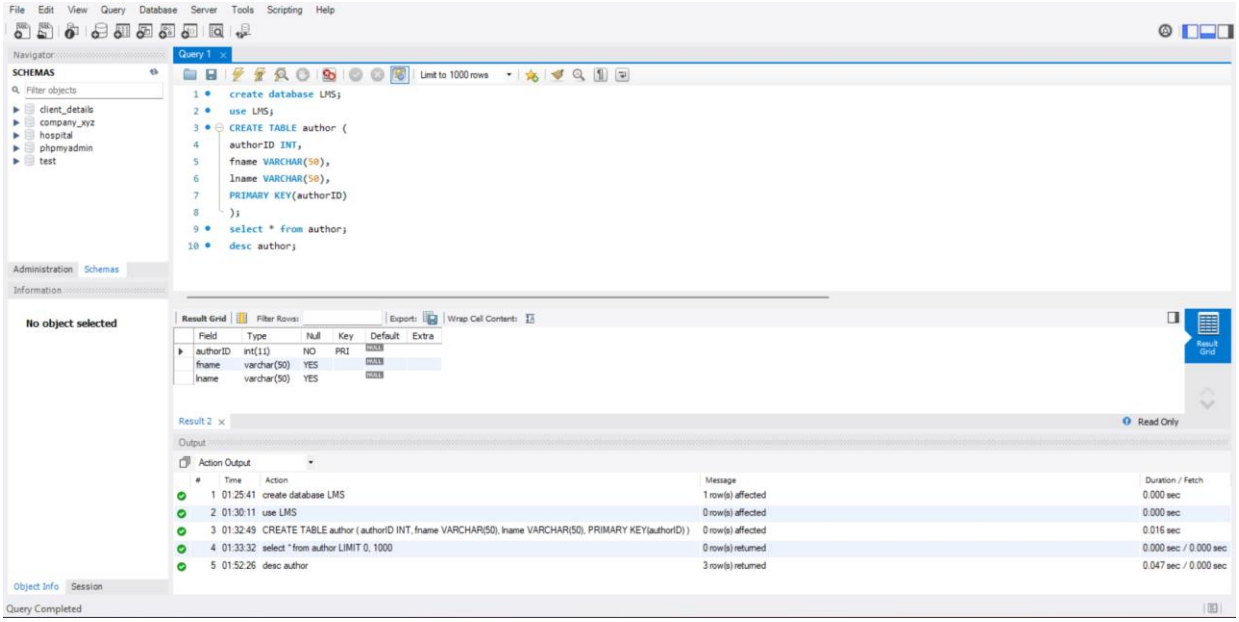
use LMS;

create table author (authorID int, fname varchar (50), lname varchar (50), primary key(authorID));

select * from author;

desc author;

Output:



- **TYPE (GENRE):**

```
+..........+.......................+.........+.......+..............+.........+
| Field   | Type          | Null | Key | Default | Extra |
+..........+.......................+.........+.......+..............+.........+
| typeID | int (11)      | NO   | PRI | NULL    |       |
| type   | varchar (50) | YES  |     | NULL    |       |
+..........+.......................+.........+.......+..............+.........+
```

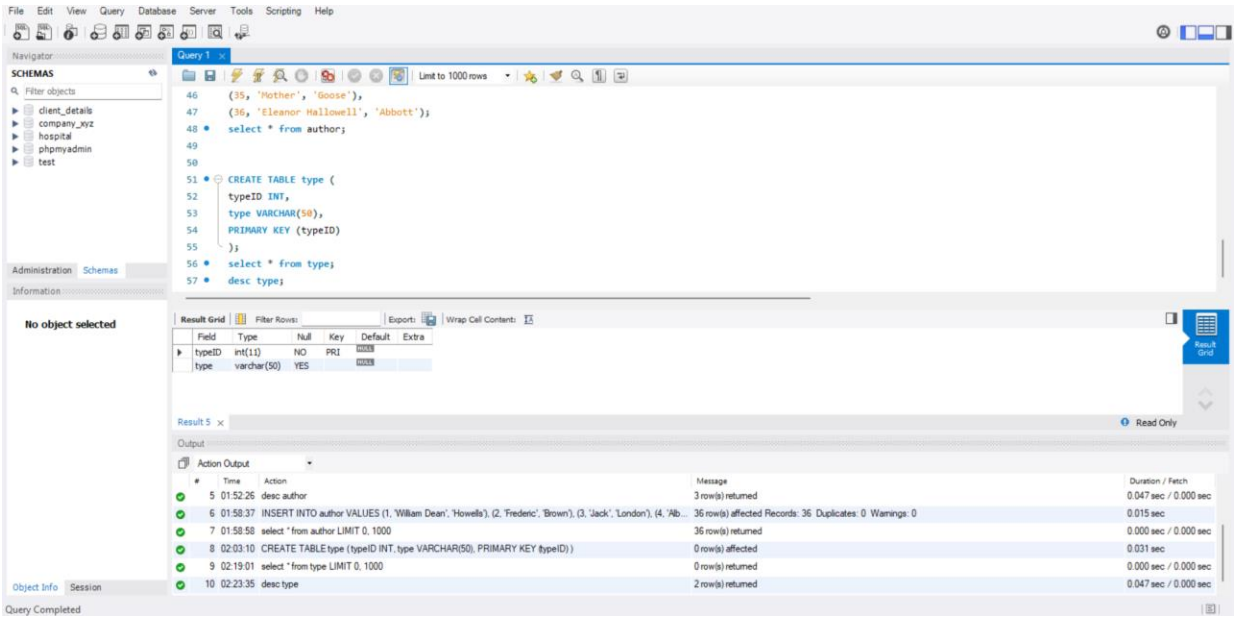
Query:

create table type (typeID int, type varchar (50), primary key (typeID));

select * from type;

desc type;

Output:



- **BOOK:**

```
+-----------+-------------+------+-----+---------+-------+
| Field     | Type        | Null | Key | Default | Extra |
+-----------+-------------+------+-----+---------+-------+
| bkID      | int (11)    | NO   | PRI | NULL    |       |
| title     | varchar (50)| YES  |     | NULL    |       |
| pageCount | int (11)    | YES  |     | NULL    |       |
| authorID  | int (11)    | YES  | MUL | NULL    |       |
| typeID    | int (11)    | YES  | MUL | NULL    |       |
+-----------+-------------+------+-----+---------+-------+
```

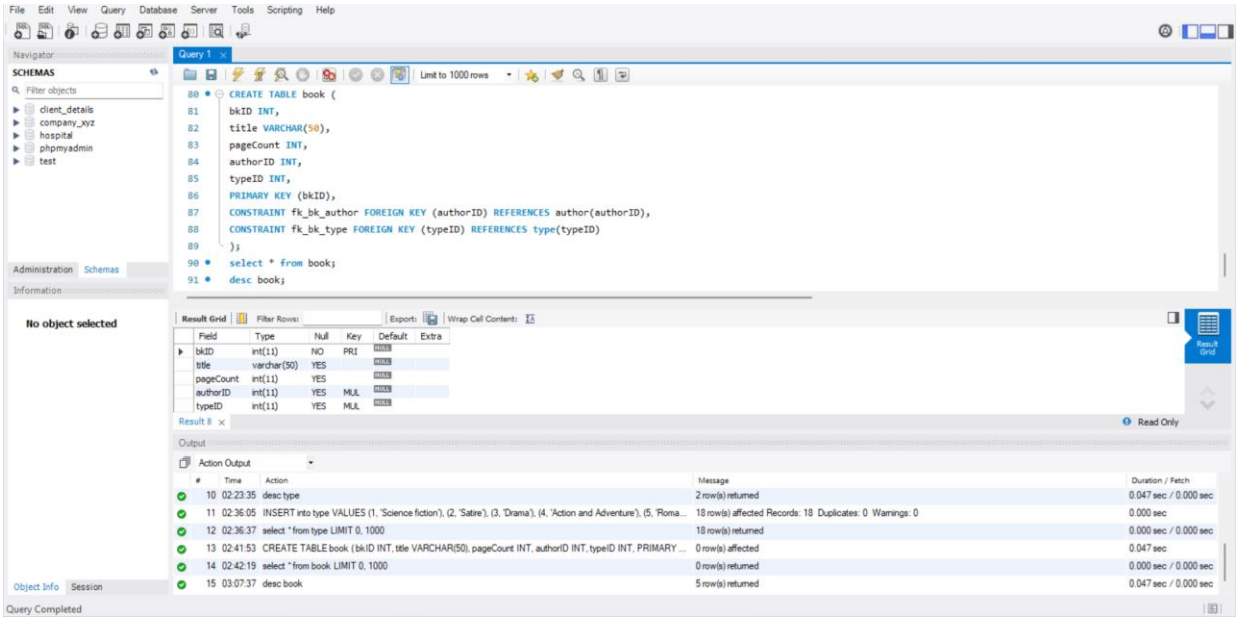
Query:

create table book (bkID int, title varchar (50), pageCount int, authorID int, typeID int, primary key (bkID), constraint fk_bk_author foreign key (authorID) references author(authorID), constraint fk_bk_type foreign key (typeID) references type(typeID));

select * from book;

desc book;

Output:



- **CUSTOMER:**

Field	Type	Null	Key	Default	Extra
custID	int (11)	NO	PRI	NULL	
fname	varchar (30)	YES		NULL	
lname	varchar (30)	YES		NULL	
gender	varchar (5)	YES		NULL	
age	int (3)	YES		NULL	
sub_start_date	date	YES		NULL	
sub_end_date	date	YES		NULL	

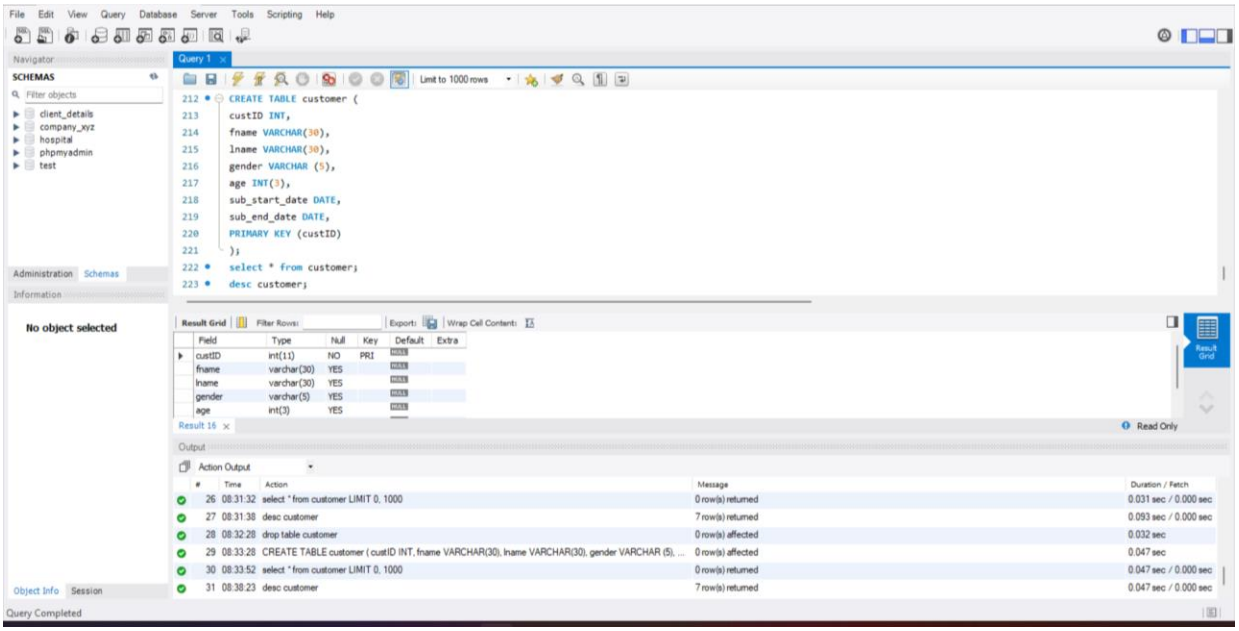
Query:

```
create table customer (custID int, fname varchar (30), lname varchar (30), gender varchar (5), age int (3), sub_start_date date, sub_end_date date, primary key (custID));

select * from customer;

desc customer;
```

Output:



- **TRANSACTION:**

```
+.................+.............+.......+.....+.............+.........+
| Field        | Type      | Null | Key | Default | Extra |
+.................+.............+.......+.....+.............+.........+
| transID        | int (11)  | NO      | PRI | NULL        |
| custID         | int (11)  | YES     | MUL | NULL        |
| bkID           | int (11)  | YES     | MUL | NULL        |
| issue_date     | datetime | YES      |     | NULL        |
| return_date    | datetime | YES      |     | NULL        |
+.................+.............+.......+.....+.............+.........+
```

Query:

create table transaction (transID int, custID int, bkID int, issue_date datetime, return_date datetime,

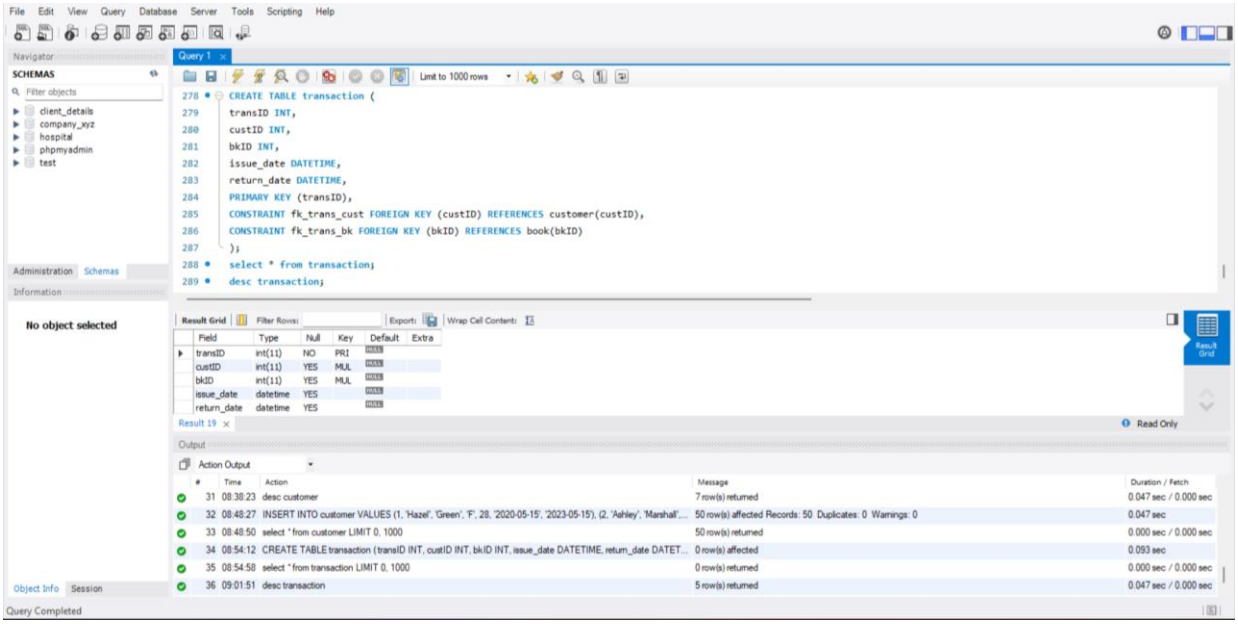
primary key (transID), constraint fk_trans_cust foreign key (custID) references customer(custID),

constraint fk_trans_bk foreign key (bkID) references book(bkID));

select * from transaction;

desc transaction;

Output:


File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
client_details
company_xyz
hospital
phpmyadmin
test
Administration Schemas
Information
No object selected
Object Info Session
Query 1
Limit to 1000 rows
278 CREATE TABLE transaction (
279 transID INT,
280 custID INT,
281 bkID INT,
282 issue_date DATETIME,
283 return_date DATETIME,
284 PRIMARY KEY (transID),
285 CONSTRAINT fk_trans_cust FOREIGN KEY (custID) REFERENCES customer(custID),
286 CONSTRAINT fk_trans_bk FOREIGN KEY (bkID) REFERENCES book(bkID)
287);
288 select * from transaction;
289 desc transaction;
Result Grid Filter Rows: Export: Wrap Cell Content:
Field Type Null Key Default Extra
transID int(11) NO PRI NULL
custID int(11) YES MUL NULL
bkID int(11) YES MUL NULL
issue_date datetime YES NULL
return_date datetime YES NULL
Result 19
Read Only
Output
Action Output
Time Action Message Duration / Fetch
31 08:38:23 desc customer 7 row(s) returned 0.047 sec / 0.000 sec
32 08:48:27 INSERT INTO customer VALUES (1, 'Hazel', 'Green', 'F', 28, '2020-05-15', '2023-05-15'), (2, 'Ashley', 'Marshall',... 50 row(s) affected Records: 50 Duplicates: 0 Warnings: 0 0.047 sec
33 08:48:50 select * from customer LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
34 08:54:12 CREATE TABLEtransaction (transID INT, custID INT, bkID INT, issue_date DATETIME, return_date DATET... 0 row(s) affected 0.093 sec
35 08:54:58 select * from transaction LIMIT 0, 1000 0 row(s) returned 0.000 sec / 0.000 sec
36 09:01:51 desc transaction 5 row(s) returned 0.047 sec / 0.000 sec
Query Completed

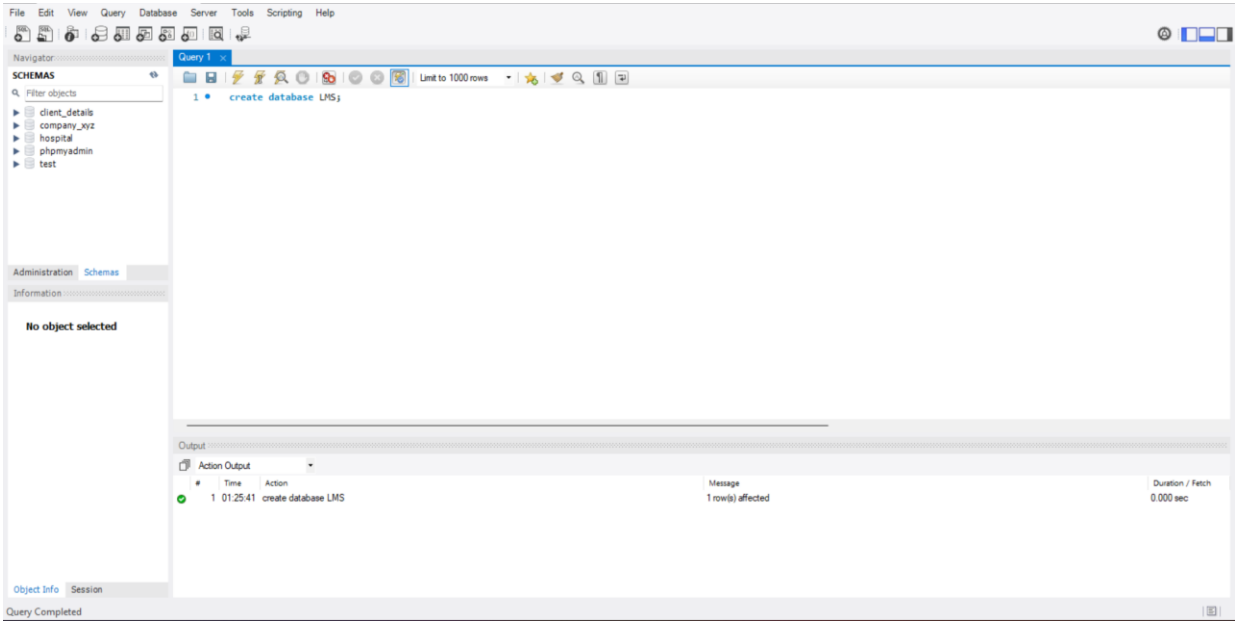
4. COMMANDS:

- **Create Database: lms**

  Query:

  Create database LMS;

  Output:



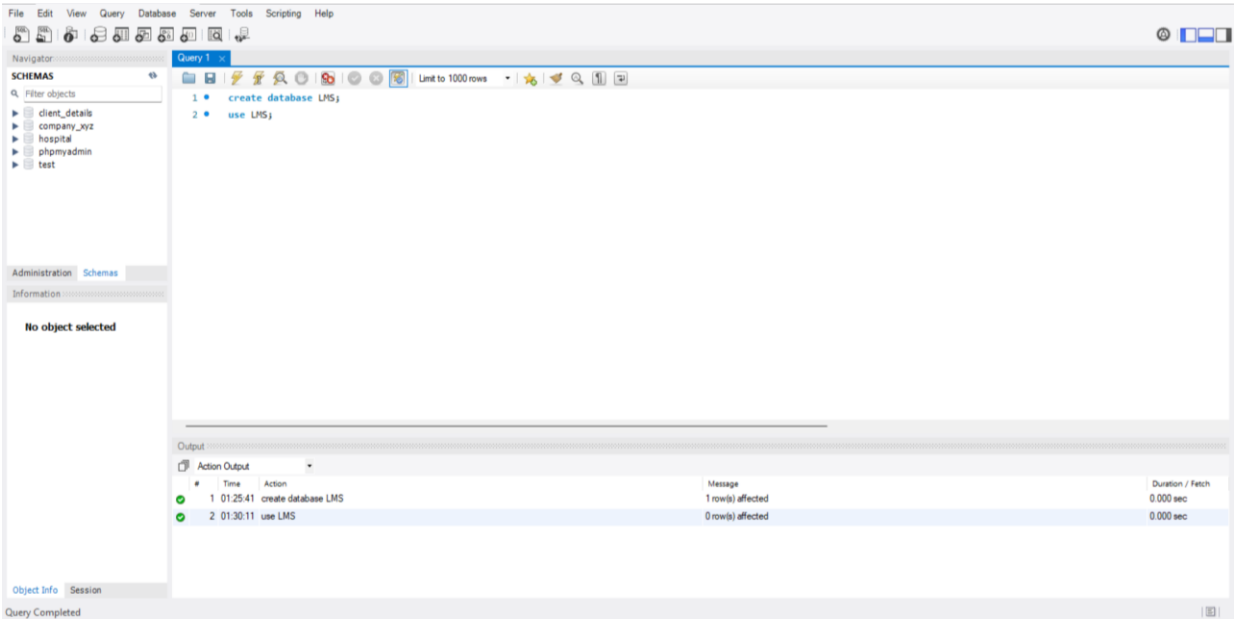
- **Select Database: lms;**

  Query:

  Create database LMS;

  Use LMS;

  Output:



- **Create table named author:**

  Query:

  Create database LMS;

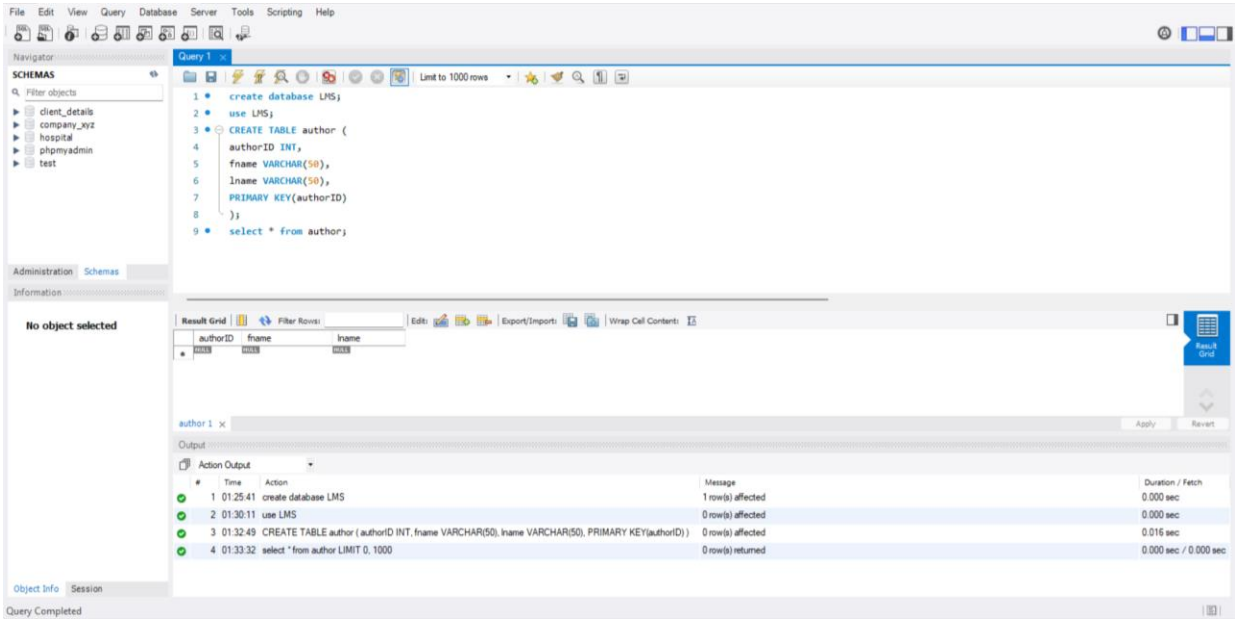
  use LMS;

  create table author (authorID int, fname varchar (50), lname varchar (50),

  primary key(authorID));

  select * from author;

  Output:



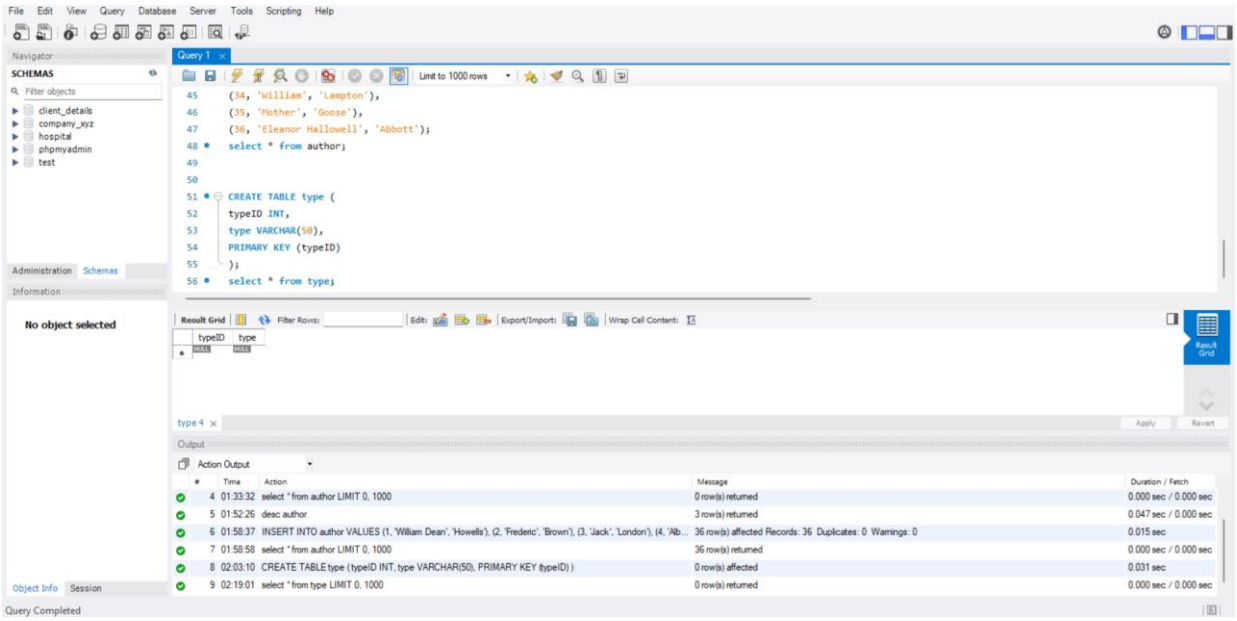
- **Create table named type:**

  Query:

  Create table type (typeID int, type varchar (50), primary key (typeID));

  select * from type;

  Output:



- **Create table named book:**

  PRIMARY KEY (bkID),

  CONSTRAINT fk_bk_author FOREIGN KEY (authorID) REFERENCES author(authorID), CONSTRAINT fk_bk_type FOREIGN KEY (typeID) REFERENCES type(typeID);

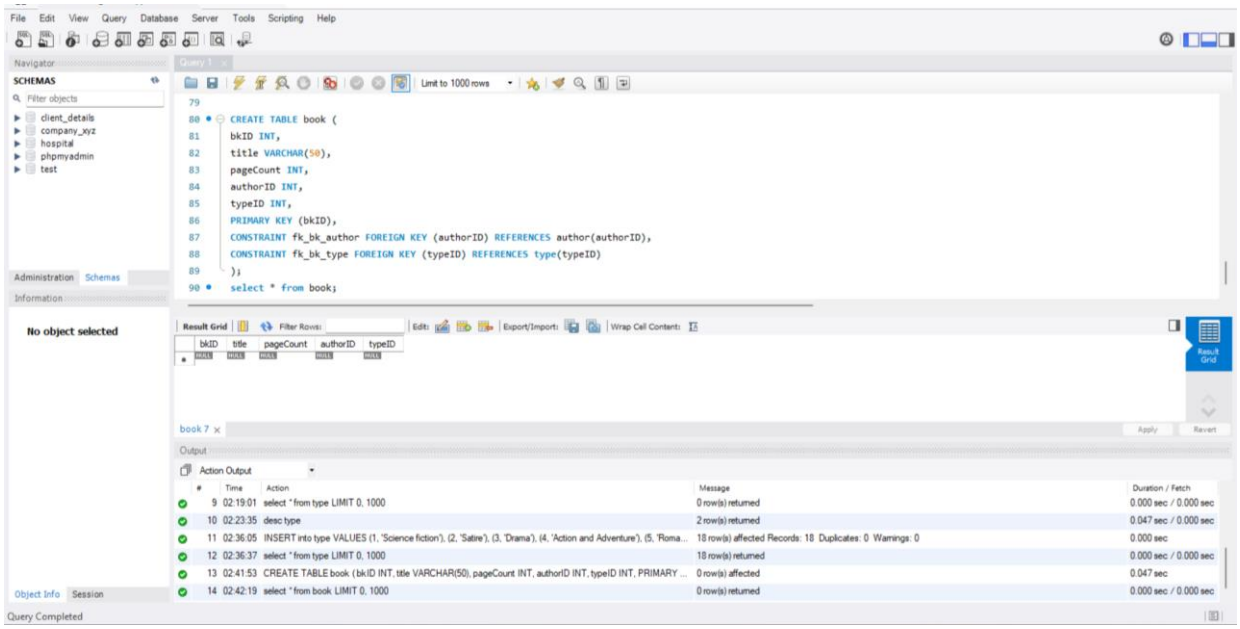
  Query:

  Create table book (bkID int, title varchar (50), pageCount int, authorID int, typeID int,

  primary key (bkID), constraint fk_bk_author foreign key (authorID) references author(authorID), constraint fk_bk_type foreign key (typeID) references type(typeID));

  select * from book;

  Output:



- **Create table named customer:**

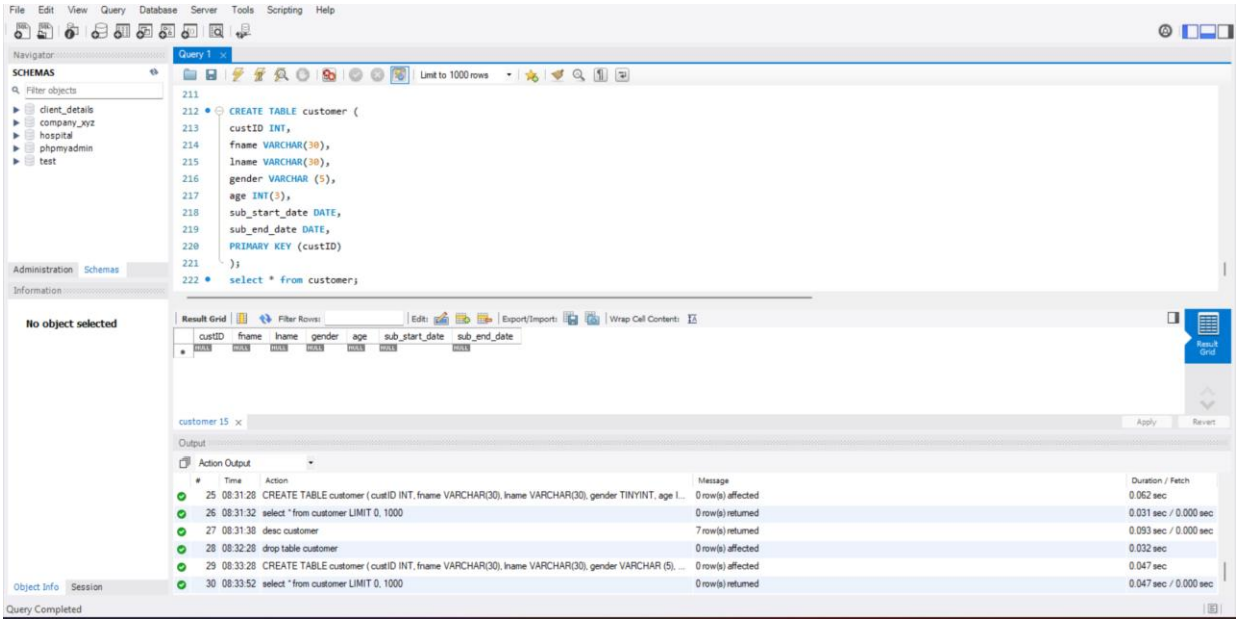
  Query:

  Create table customer (custID int, fname varchar (30), lname varchar (30),

gender varchar (5), age int (3), sub_start_date date, sub_end_date date, primary key (custID));

select * from customer;

Output:



- **Create table named transaction:**

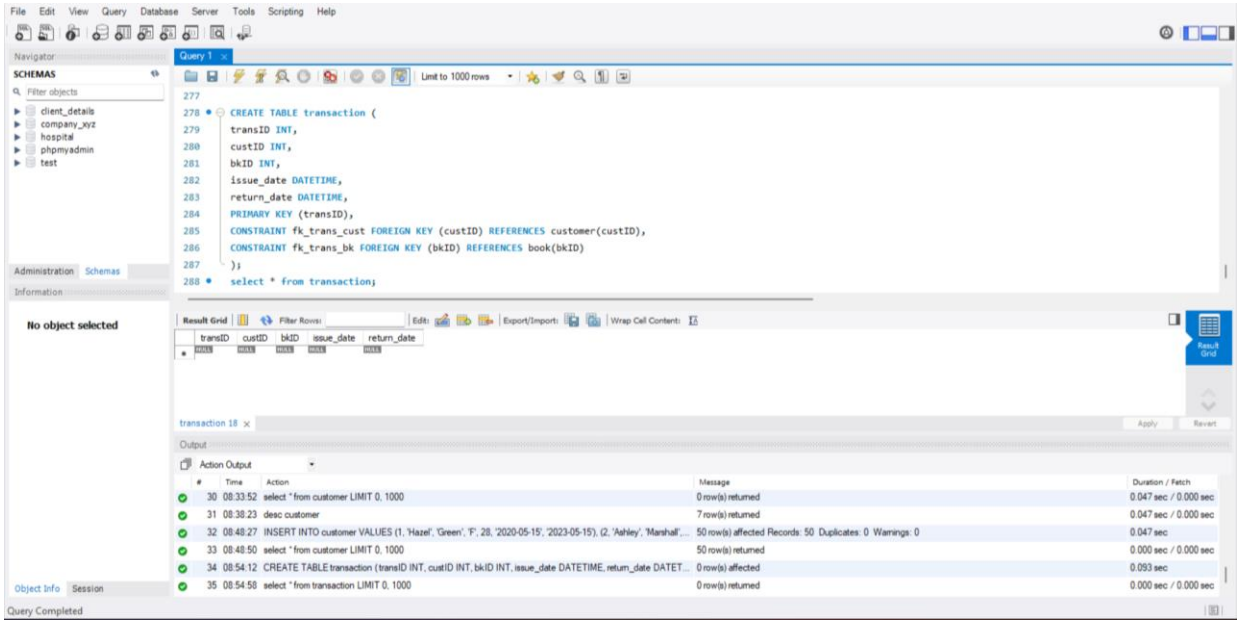
  CONSTRAINT fk_trans_cust FOREIGN KEY (custID) REFERENCES customer(custID), CONSTRAINT fk_trans_bk FOREIGN KEY (bkID) REFERENCES book(bkID));

  Query:

  create table transaction (transID int, custID int, bkID int, issue_date datetime, return_date datetime, primary key (transID), constraint fk_trans_cust foreign key (custID) references customer(custID), constraint fk_trans_bk foreign key (bkID) references book(bkID));

  select * from transaction;

  Output:


File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
client_details
company_xyz
hospital
phpmyadmin
test
Administration Schemas
Information
No object selected
Object Info Session
Query 1
Limit to 1000 rows
277
278 CREATE TABLE transaction (
279 transID INT,
280 custID INT,
281 bkID INT,
282 issue_date DATETIME,
283 return_date DATETIME,
284 PRIMARY KEY (transID),
285 CONSTRAINT fk_trans_cust FOREIGN KEY (custID) REFERENCES customer(custID),
286 CONSTRAINT fk_trans_bk FOREIGN KEY (bkID) REFERENCES book(bkID)
287);
288 select * from transaction;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
transID custID bkID issue_date return_date
NULL NULL NULL NULL NULL
transaction 18
Apply
Revert
Output
Action Output
Time Action Message Duration / Fetch
30 08:33:52 select * from customer LIMIT 0, 1000 0 row(s) returned 0.047 sec / 0.000 sec
31 08:38:23 desc customer 7 row(s) returned 0.047 sec / 0.000 sec
32 08:48:27 INSERT INTO customer VALUES (1, 'Hazel', 'Green', 'F', 28, '2020-05-15', '2023-05-15'), (2, 'Ashley', 'Marshall',... 50 row(s) affected Records: 50 Duplicates: 0 Warnings: 0 0.047 sec
33 08:48:50 select * from customer LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
34 08:54:12 CREATE TABLE transaction (transID INT, custID INT, bkID INT, issue_date DATETIME, return_date DATET... 0 row(s) affected 0.093 sec
35 08:54:58 select * from transaction LIMIT 0, 1000 0 row(s) returned 0.000 sec / 0.000 sec
Query Completed

- **Populate “author” table:**

  INSERT INTO author VALUES

  (1, 'William Dean', 'Howells'),

  (2, 'Frederic', 'Brown'),

  (3, 'Jack', 'London'),

  (4, 'Albert', 'Blaisdell'),

  (5, 'Ellis', 'Butler'),

  (6, 'Arthur', 'Machen'),

  (7, 'Titus', 'Lucretius'),

  (8, 'Rabindranath', 'Tagore'),

  (9, 'Isaac', 'Asimov'),

  (10, 'Charles', 'Dickens'),

  (11, 'Ralph Waldo', 'Emerson'),

  (12, 'Dorothy', 'Canfield'),

  (13, 'Givoanni', 'Boccaccio'),

  (14, 'George', 'Orwell'),

  (15, 'Publius', 'Ovid'),

  (16, 'Robert Louis', 'Stevenson'),

  (17, 'Virginia', 'Woolf'),

  (18, 'George', 'Eliot'),

  (19, 'Amelia B.', 'Edwards'),

  (20, 'Fyodor', 'Dostoevsky'),

  (21, 'Emily', 'Dickinson'),

  (22, 'Edna', 'Ferber'),

  (23, 'Joseph Sheridan', 'LeFanu'),

  (24, 'John', 'DosPassos'),

  (25, 'Ruth', 'Stuart'),

(26, 'Vladimir', 'Nabokov'),

(27, 'Johanna', 'Spyri'),

(28, 'Ernest', 'Dowson'),

(29, 'Mary Hallock', 'Foote'),

(30, 'Zane', 'Grey'),

(31, 'H. P.', 'Lovecraft'),

(32, 'Samuel', 'Pepys'),

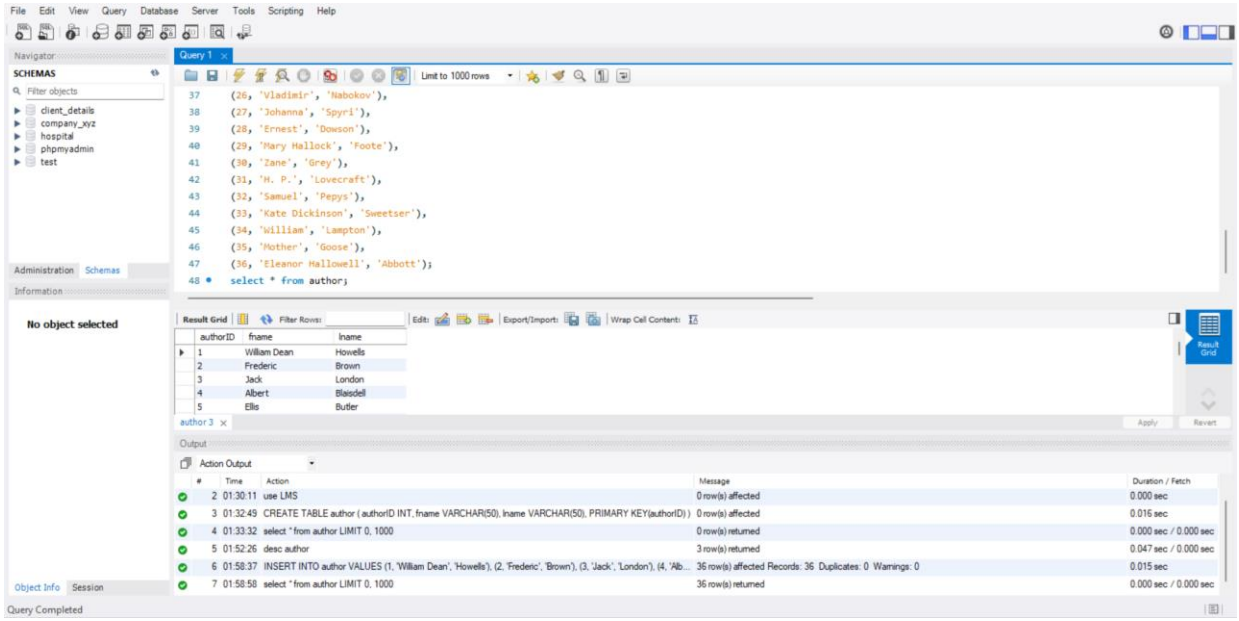
(33, 'Kate Dickinson', 'Sweetser'),

(34, 'William', 'Lampton'),

(35, 'Mother', 'Goose'),

(36, 'Eleanor Hallowell', 'Abbott')

Output:



- **Populate “type” table:**

  INSERT into type VALUES

  (1, 'Science fiction'),

  (2, 'Satire'),

  (3, 'Drama'),

  (4, 'Action and Adventure'),

  (5, 'Romance'),

  (6, 'Mystery'),

  (7, 'Horror'),

  (8, 'Health'),

  (9, 'Guide'),

  (10, 'Diaries'),

  (11, 'Comics'),

  (12, 'Diaries'),

  (13, 'Journals'),

  (14, 'Biographies'),

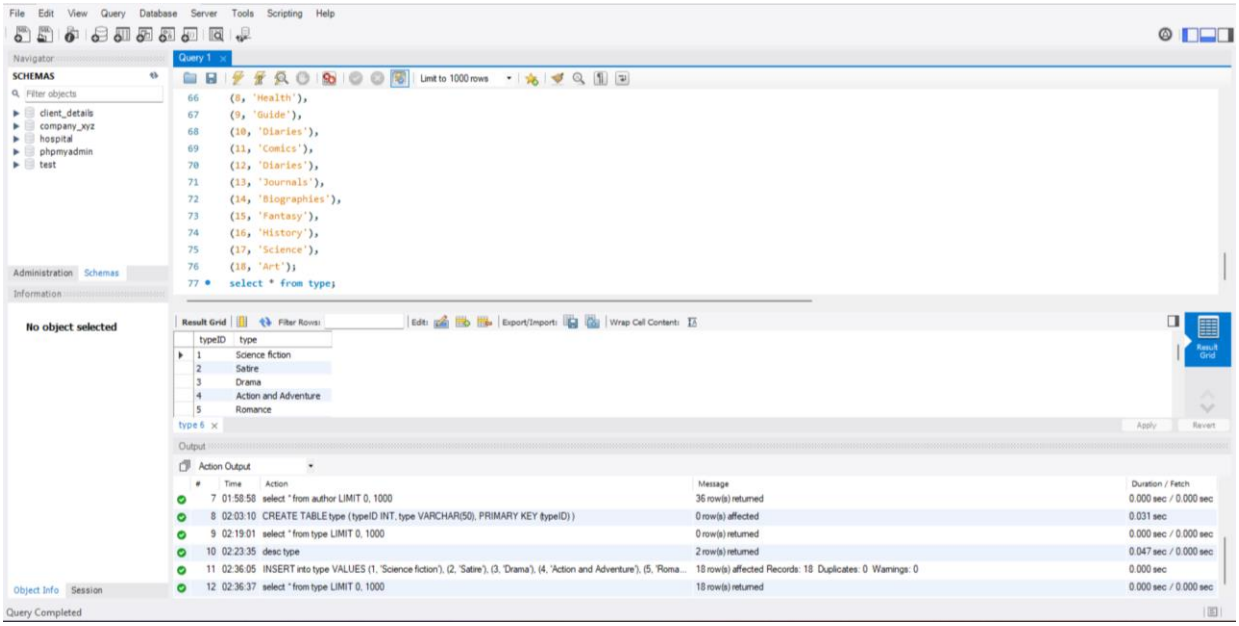
  (15, 'Fantasy'),

  (16, 'History'),

  (17, 'Science'),

  (18, 'Art');

  Output:


File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
client_details
company_xyz
hospital
phpmyadmin
test
Administration Schemas
Information
No object selected
Object Info Session
Query 1
Limit to 1000 rows
(8, 'Health'),
(9, 'Guide'),
(10, 'Diaries'),
(11, 'Comics'),
(12, 'Diaries'),
(13, 'Journals'),
(14, 'Biographies'),
(15, 'Fantasy'),
(16, 'History'),
(17, 'Science'),
(18, 'Art');
select * from type;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
typeID type
1 Science fiction
2 Satire
3 Drama
4 Action and Adventure
5 Romance
type 6
Apply
Revert
Output
Action Output
Time Action Message Duration / Fetch
7 01:58:58 select * from author LIMIT 0, 1000 36 row(s) returned 0.000 sec / 0.000 sec
8 02:03:10 CREATE TABLE type (typeID INT, type VARCHAR(50), PRIMARY KEY (typeID)) 0 row(s) affected 0.031 sec
9 02:19:01 select * from type LIMIT 0, 1000 0 row(s) returned 0.000 sec / 0.000 sec
10 02:23:35 desc type 2 row(s) returned 0.047 sec / 0.000 sec
11 02:36:05 INSERT into type VALUES (1, 'Science fiction'), (2, 'Satire'), (3, 'Drama'), (4, 'Action and Adventure'), (5, 'Roma... 18 row(s) affected Records: 18 Duplicates: 0 Warnings: 0 0.000 sec
12 02:36:37 select * from type LIMIT 0, 1000 18 row(s) returned 0.000 sec / 0.000 sec
Query Completed

- **Populate “book” table:**

  INSERT INTO book VALUES

  (1, 'A Daughter of the Snows', 199, 3, 9),

  (2, 'The Near East: 10,000 Years of History', 298, 9, 13),

  (3, 'The Cocoon: A Rest-Cure Comedy', 90, 25, 12),

  (4, 'The Freakshow Murders', 321, 2, 3),

  (5, 'Pharaohs, Fellahs and Explorers', 367, 19, 9),

  (6, 'Hard Times', 293, 10, 1),

  (7, 'A Modern Instance', 222, 1, 12),

  (8, 'The Real Mother Goose', 88, 35, 1),

  (9, 'A Thousand Miles Up the Nile', 110, 19, 18),

  (10, 'Children of Blood and Bone', 137, 7, 13),

  (11, 'A pushcart at the curb', 95, 24, 1),

  (12, 'The Desert and the Sown', 126, 29, 10),

  (13, 'Three Soldiers', 223, 24, 16),

  (14, 'The End of Eternity', 168, 9, 1),

  (15, 'Annie Kilburn', 291, 1, 12),

  (16, 'A Touch of Sun and Other Stories', 141, 29, 9),

  (17, 'Show Boat', 151, 22, 18),

  (18, 'The Call of the Wild', 362, 3, 18),

  (19, 'My Mark Twain', 339, 1, 9),

  (20, 'Broken Ties', 134, 8, 5),

  (21, 'Short Stories From American History', 305, 4, 8),

  (22, 'Mrs Rosie and the Priest', 104, 13, 14),

  (23, 'So Big', 209, 22, 3),

  (24, 'Monsieur Maurice ', 92, 19, 8),

  (25, 'The Master of Ballantrae', 236, 16, 13),

(26, 'The Unlived Life of Little Mary Ellen', 99, 25, 6),

(27, 'Mouse - The Last Train', 184, 2, 14),

(28, 'Edith Bonham', 122, 29, 7),

(29, 'Maybe Mother Goose', 161, 35, 14),

(30, 'The Noble Gases', 321, 9, 5),

(31, 'Rainy Week', 98, 36, 7),

(32, 'A Hazard of New Fortunes', 144, 1, 4),

(33, 'A Plot for Murder', 108, 2, 13),

(34, 'Nature', 357, 11, 8),

(35, 'Hickory Dickory Dock', 326, 35, 6),

(36, 'Big Fat Hen', 232, 35, 12),

(37, 'The Lone Star Ranger', 328, 30, 9),

(38, 'The Great Fire of London', 252, 32, 9),

(39, 'White Nights', 265, 20, 14),

(40, 'In a Glass Darkly', 173, 23, 9),

(41, 'Fanny herself', 248, 22, 10),

(42, 'Loaded', 273, 2, 4),

(43, 'A Foregone Conclusion', 121, 1, 15),

(44, 'The Hill of Dreams', 175, 6, 6),

(45, 'Adventure', 217, 3, 8),

(46, 'A Tagore Reader', 285, 8, 4),

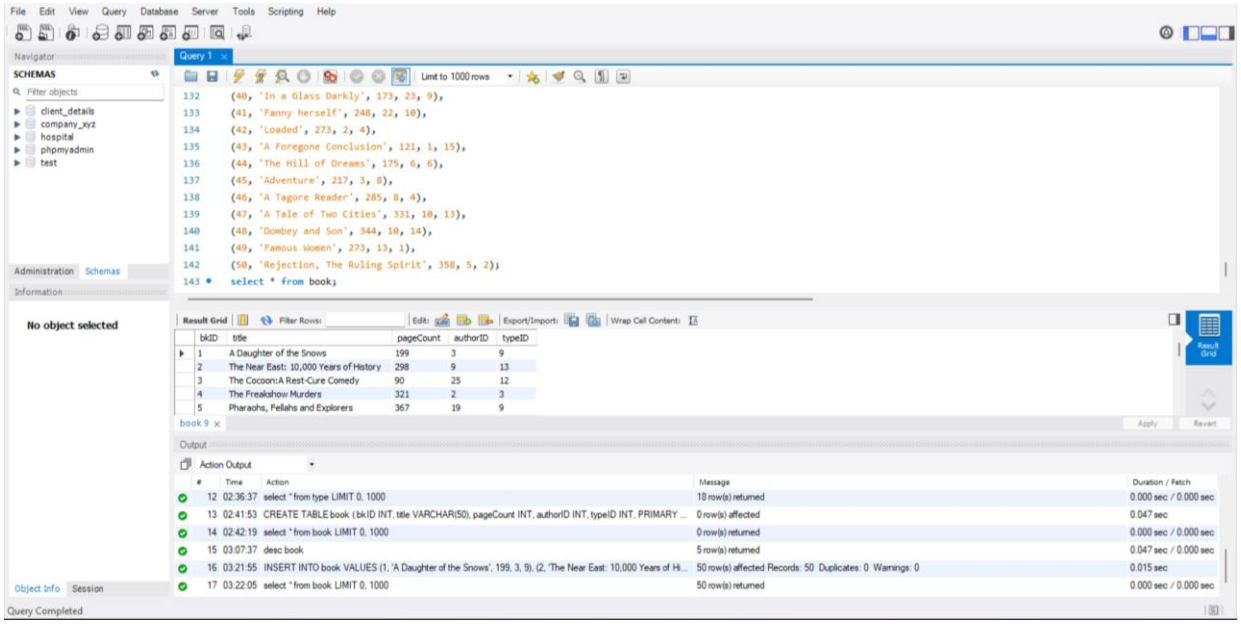
(47, 'A Tale of Two Cities', 331, 10, 13),

(48, 'Dombey and Son', 344, 10, 14),

(49, 'Famous Women', 273, 13, 1),

(50, 'Rejection, The Ruling Spirit', 358, 5, 2);

Output:

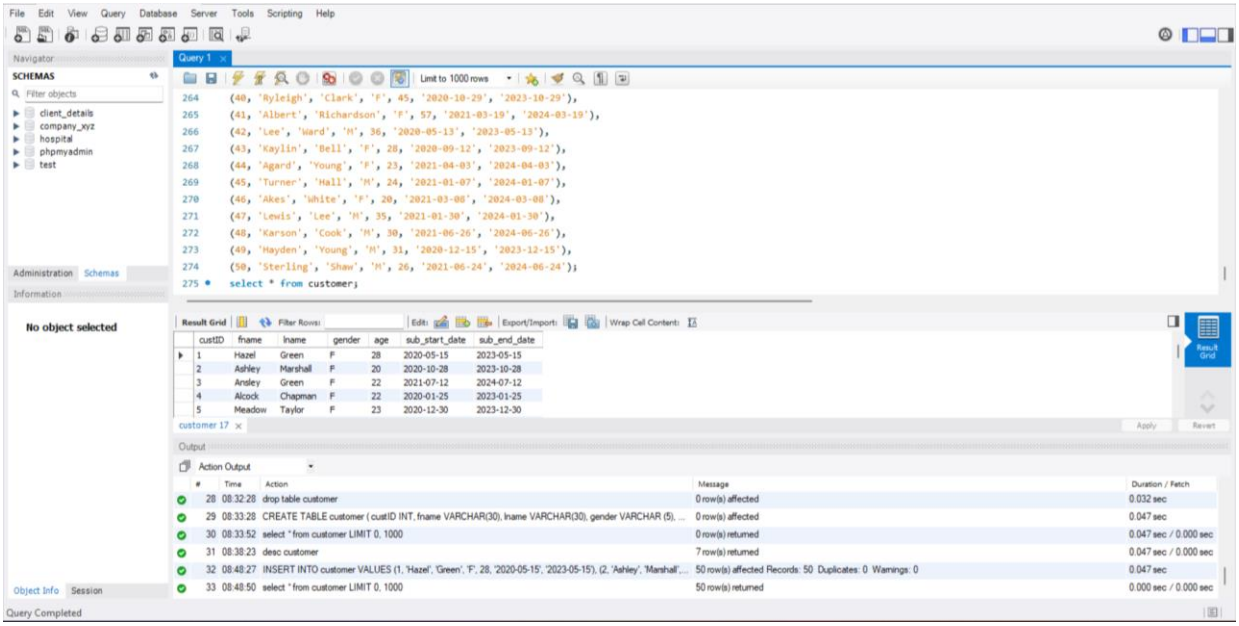

File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
client_details
company_xyz
hospital
phpmyadmin
test
Administration Schemas
Information
No object selected
Object Info Session
Query 1
Limit to 1000 rows
(40, 'In a Glass Darkly', 173, 23, 9),
(41, 'Fanny herself', 248, 22, 10),
(42, 'Loaded', 273, 2, 4),
(43, 'A Foregone Conclusion', 121, 1, 15),
(44, 'The Hill of Dreams', 175, 6, 6),
(45, 'Adventure', 217, 3, 8),
(46, 'A Tagore Reader', 285, 8, 4),
(47, 'A Tale of Two Cities', 331, 10, 13),
(48, 'Dombey and Son', 344, 10, 14),
(49, 'Famous Women', 273, 13, 1),
(50, 'Rejection, The Ruling Spirit', 358, 5, 2);
select * from book;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
bkID title pageCount authorID typeID
1 A Daughter of the Snows 199 3 9
2 The Near East: 10,000 Years of History 298 9 13
3 The Cocoon:A Rest-Cure Comedy 90 25 12
4 The Freakshow Murders 321 2 3
5 Pharaohs, Fellahs and Explorers 367 19 9
book 9
Apply
Revert
Output
Action Output
Time Action Message Duration / Fetch
12 02:36:37 select * from type LIMIT 0, 1000 18 row(s) returned 0.000 sec / 0.000 sec
13 02:41:53 CREATE TABLE book (bkID INT, title VARCHAR(50), pageCount INT, authorID INT, typeID INT, PRIMARY ... 0 row(s) affected 0.047 sec
14 02:42:19 select * from book LIMIT 0, 1000 0 row(s) returned 0.000 sec / 0.000 sec
15 03:07:37 desc book 5 row(s) returned 0.047 sec / 0.000 sec
16 03:21:55 INSERT INTO book VALUES (1, 'A Daughter of the Snows', 199, 3, 9), (2, 'The Near East: 10,000 Years of Hi... 50 row(s) affected Records: 50 Duplicates: 0 Warnings: 0 0.015 sec
17 03:22:05 select * from book LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
Query Completed

- **Populate “customer” table:**

```
INSERT INTO customer VALUES
(1, 'Hazel', 'Green', 'F', 28, '2020-05-15', '2023-05-15'),
(2, 'Ashley', 'Marshall', 'F', 20, '2020-10-28', '2023-10-28'),
(3, 'Ansley', 'Green', 'F', 22, '2021-07-12', '2024-07-12'),
(4, 'Alcock', 'Chapman', 'F', 22, '2020-01-25', '2023-01-25'),
(5, 'Meadow', 'Taylor', 'F', 23, '2020-12-30', '2023-12-30'),
(6, 'Green', 'Wright', 'M', 32, '2020-03-09', '2023-03-09'),
(7, 'Paxton', 'Foster', 'M', 34, '2020-03-03', '2023-03-03'),
(8, 'Gray', 'King', 'M', 62, '2020-06-26', '2023-06-26'),
(9, 'Jones', 'Collins', 'M', 25, '2020-01-26', '2023-01-26'),
(10, 'Leslie', 'Young', 'F', 42, '2020-02-10', '2023-02-10'),
(11, 'Hailey', 'Hill', 'F', 27, '2021-01-16', '2024-01-16'),
(12, 'Washington', 'Martin', 'M', 24, '2021-05-23', '2024-05-23'),
(13, 'Ramirez', 'Green', 'M', 33, '2020-08-28', '2023-08-28'),
(14, 'Morgan', 'Smith', 'M', 29, '2021-05-15', '2024-05-15'),
(15, 'Perez', 'Baker', 'M', 53, '2020-10-27', '2023-10-27'),
(16, 'Alfie', 'Watson', 'M', 26, '2021-04-05', '2024-04-05'),
(17, 'Madison', 'Jackson', 'F', 35, '2021-02-15', '2024-02-15'),
(18, 'Beverly', 'Moore', 'F', 22, '2020-11-19', '2023-11-19'),
(19, 'Kaden', 'Anderson', 'M', 26, '2021-11-11', '2024-11-11'),
(20, 'Carter', 'Adams', 'M', 27, '2021-07-08', '2024-07-08'),
(21, 'Ackland', 'Adams', 'F', 28, '2021-05-19', '2024-05-19'),
(22, 'Hadley', 'Parker', 'F', 37, '2020-11-21', '2023-11-21'),
(23, 'Henderson', 'Cook', 'M', 38, '2021-08-06', '2024-08-06'),
(24, 'Wright', 'Young', 'M', 35, '2021-05-14', '2024-05-14'),
(25, 'Lindsey', 'Wilkinson', 'F', 28, '2021-10-08', '2024-10-08'),
```

(26, 'Wren', 'Chapman', 'F', 25, '2021-11-06', '2024-11-06'),
(27, 'Love', 'Chapman', 'F', 19, '2021-10-15', '2024-10-15'),
(28, 'Wes', 'Bell', 'M', 23, '2021-01-25', '2024-01-25'),
(29, 'Tyler', 'Carter', 'M', 27, '2021-08-24', '2024-08-24'),
(30, 'Edwin', 'Cook', 'M', 39, '2021-08-17', '2024-08-17'),
(31, 'Sally', 'Wood', 'F', 45, '2020-06-07', '2023-06-07'),
(32, 'Nelson', 'Smith', 'M', 27, '2020-11-15', '2023-11-15'),
(33, 'Arabelle', 'Brown', 'F', 52, '2021-03-11', '2024-03-11'),
(34, 'Carter', 'Harrison', 'M', 21, '2021-11-30', '2024-11-30'),
(35, 'Baker', 'Bell', 'M', 20, '2021-03-24', '2024-03-24'),
(36, 'Cherish', 'Cooper', 'F', 34, '2020-01-31', '2023-01-31'),
(37, 'Remington', 'Wright', 'M', 29, '2020-08-14', '2023-08-14'),
(38, 'Edwards', 'King', 'M', 24, '2020-02-01', '2023-02-01'),
(39, 'Harleigh', 'Taylor', 'F', 26, '2020-05-05', '2023-05-05'),
(40, 'Ryleigh', 'Clark', 'F', 45, '2020-10-29', '2023-10-29'),
(41, 'Albert', 'Richardson', 'F', 57, '2021-03-19', '2024-03-19'),
(42, 'Lee', 'Ward', 'M', 36, '2020-05-13', '2023-05-13'),
(43, 'Kaylin', 'Bell', 'F', 28, '2020-09-12', '2023-09-12'),
(44, 'Agard', 'Young', 'F', 23, '2021-04-03', '2024-04-03'),
(45, 'Turner', 'Hall', 'M', 24, '2021-01-07', '2024-01-07'),
(46, 'Akes', 'White', 'F', 20, '2021-03-08', '2024-03-08'),
(47, 'Lewis', 'Lee', 'M', 35, '2021-01-30', '2024-01-30'),
(48, 'Karson', 'Cook', 'M', 30, '2021-06-26', '2024-06-26'),
(49, 'Hayden', 'Young', 'M', 31, '2020-12-15', '2023-12-15'),
(50, 'Sterling', 'Shaw', 'M', 26, '2021-06-24', '2024-06-24');

Output:


File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
client_details
company_xyz
hospital
phpmyadmin
test
Administration Schemas
Information
No object selected
Object Info Session
Query 1
Limit to 1000 rows
264 (40, 'Ryleigh', 'Clark', 'F', 45, '2020-10-29', '2023-10-29'),
265 (41, 'Albert', 'Richardson', 'F', 57, '2021-03-19', '2024-03-19'),
266 (42, 'Lee', 'Ward', 'M', 36, '2020-05-13', '2023-05-13'),
267 (43, 'Kaylin', 'Bell', 'F', 28, '2020-09-12', '2023-09-12'),
268 (44, 'Agard', 'Young', 'F', 23, '2021-04-03', '2024-04-03'),
269 (45, 'Turner', 'Hall', 'M', 24, '2021-01-07', '2024-01-07'),
270 (46, 'Akes', 'White', 'F', 20, '2021-03-08', '2024-03-08'),
271 (47, 'Lewis', 'Lee', 'M', 35, '2021-01-30', '2024-01-30'),
272 (48, 'Karson', 'Cook', 'M', 30, '2021-06-26', '2024-06-26'),
273 (49, 'Hayden', 'Young', 'M', 31, '2020-12-15', '2023-12-15'),
274 (50, 'Sterling', 'Shaw', 'M', 26, '2021-06-24', '2024-06-24');
275 select * from customer;
Result Grid Filter Rows: Edit: Export/Import: Wrap Cell Content:
custID fname lname gender age sub_start_date sub_end_date
1 Hazel Green F 28 2020-05-15 2023-05-15
2 Ashley Marshall F 20 2020-10-28 2023-10-28
3 Ansley Green F 22 2021-07-12 2024-07-12
4 Alcock Chapman F 22 2020-01-25 2023-01-25
5 Meadow Taylor F 23 2020-12-30 2023-12-30
customer 17
Apply Revert
Output
Action Output
Time Action Message Duration / Fetch
28 08:32:28 drop table customer 0 row(s) affected 0.032 sec
29 08:33:28 CREATE TABLE customer (custID INT, fname VARCHAR(30), lname VARCHAR(30), gender VARCHAR (5), ... 0 row(s) affected 0.047 sec
30 08:33:52 select * from customer LIMIT 0, 1000 0 row(s) returned 0.047 sec / 0.000 sec
31 08:38:23 desc customer 7 row(s) returned 0.047 sec / 0.000 sec
32 08:48:27 INSERT INTO customer VALUES (1, 'Hazel', 'Green', 'F', 28, '2020-05-15', '2023-05-15'), (2, 'Ashley', 'Marshall',... 50 row(s) affected Records: 50 Duplicates: 0 Warnings: 0 0.047 sec
33 08:48:50 select * from customer LIMIT 0, 1000 50 row(s) returned 0.000 sec / 0.000 sec
Query Completed

- **Populate “transaction” table:**

```
INSERT INTO transaction VALUES
(1, 37, 24, '2021-08-31 04:30:00', '2021-09-17 00:15:00'),
(2, 32, 17, '2021-10-01 14:28:00', '2021-10-07 11:22:00'),
(3, 40, 29, '2021-10-02 10:45:00', '2021-10-10 17:16:00'),
(4, 36, 44, '2021-10-03 15:57:00', '2021-10-09 10:43:00'),
(5, 11, 16, '2021-10-07 13:19:00', '2021-10-15 18:55:00'),
(6, 29, 34, '2021-10-09 08:32:00', '2021-10-14 08:17:00'),
(7, 23, 26, '2021-10-09 15:48:00', '2021-10-21 10:51:00'),
(8, 3, 34, '2021-10-10 19:55:00', '2021-10-15 09:20:00'),
(9, 37, 50, '2021-10-14 10:25:00', '2021-10-14 12:52:00'),
(10, 36, 39, '2021-10-16 08:53:00', '2021-10-29 18:47:00'),
(11, 47, 14, '2021-10-24 10:50:00', '2021-11-05 18:19:00'),
(12, 32, 30, '2021-10-24 13:48:00', '2021-10-28 19:33:00'),
(13, 7, 33, '2021-10-27 08:10:00', '2021-11-10 14:34:00'),
(14, 32, 12, '2021-10-27 09:27:00', '2021-11-13 18:23:00'),
(15, 44, 19, '2021-10-29 14:39:00', '2021-11-07 18:34:00'),
(16, 11, 1, '2021-11-03 15:11:00', '2021-11-04 19:42:00'),
(17, 15, 3, '2021-11-06 11:51:00', '2021-11-12 11:49:00'),
(18, 4, 36, '2021-11-06 16:24:00', '2021-11-11 14:00:00'),
(19, 8, 44, '2021-11-12 14:02:00', '2021-11-13 15:21:00'),
(20, 33, 21, '2021-11-14 20:35:00', '2021-11-30 07:56:00'),
(21, 23, 18, '2021-11-16 07:40:00', '2021-11-24 11:57:00'),
(22, 13, 29, '2021-11-17 18:29:00', '2021-11-18 11:27:00'),
(23, 42, 31, '2021-11-19 18:54:00', '2021-12-05 14:59:00'),
(24, 11, 48, '2021-11-20 17:26:00', '2021-11-26 08:16:00'),
```

(25, 29, 42, '2021-11-23 12:20:00', '2021-11-24 10:13:00'),
(26, 37, 48, '2021-11-24 12:45:00', '2021-11-27 10:13:00'),
(27, 7, 20, '2021-11-26 19:55:00', '2021-12-03 15:55:00'),
(28, 39, 31, '2021-12-02 12:51:00', '2021-12-17 08:13:00'),
(29, 49, 17, '2021-12-14 10:11:00', '2021-12-21 09:41:00'),
(30, 37, 3, '2021-12-14 12:11:00', '2021-12-14 12:13:00'),
(31, 1, 49, '2021-12-15 15:21:00', '2021-12-17 09:45:00'),
(32, 49, 10, '2021-12-16 11:16:00', '2022-01-02 13:42:00'),
(33, 34, 26, '2021-12-19 17:38:00', '2021-12-30 09:59:00'),
(34, 21, 28, '2021-12-21 11:05:00', '2022-01-06 17:13:00'),
(35, 31, 14, '2021-12-22 09:48:00', '2022-01-06 16:37:00'),
(36, 10, 20, '2021-12-22 14:12:00', '2021-12-22 16:44:00'),
(37, 25, 50, '2021-12-22 15:27:00', '2021-12-29 08:56:00'),
(38, 25, 32, '2021-12-22 19:01:00', '2022-01-04 11:16:00'),
(39, 11, 24, '2021-12-26 19:09:00', '2022-01-11 19:14:00'),
(40, 45, 31, '2021-12-28 19:35:00', '2022-01-07 09:41:00'),
(41, 36, 17, '2022-01-05 12:30:00', '2022-01-08 17:51:00'),
(42, 21, 16, '2022-01-07 12:04:00', '2022-01-12 16:31:00'),
(43, 27, 47, '2022-01-11 16:47:00', '2022-01-11 17:20:00'),
(44, 1, 23, '2022-01-12 08:13:00', '2022-01-22 13:34:00'),
(45, 11, 1, '2022-01-14 10:22:00', '2022-01-26 13:43:00'),
(46, 5, 20, '2022-01-14 13:19:00', '2022-01-22 10:37:00'),
(47, 22, 14, '2022-01-16 18:40:00', '2022-02-02 12:10:00'),
(48, 14, 14, '2022-01-19 13:28:00', '2022-01-23 19:36:00'),
(49, 45, 9, '2022-01-27 12:06:00', '2022-02-02 15:06:00'),
(50, 20, 13, '2022-01-27 13:47:00', '2022-02-10 11:31:00'),
(51, 24, 18, '2022-01-29 15:54:00', '2022-02-02 08:59:00'),

(52, 6, 4, '2022-01-30 15:25:00', '2022-02-04 09:19:00'),

(53, 39, 2, '2022-01-30 17:01:00', '2022-02-13 11:13:00'),

(54, 47, 26, '2022-02-02 11:02:00', '2022-02-12 11:36:00'),

(55, 39, 47, '2022-02-11 08:55:00', '2022-02-24 12:40:00'),

(56, 23, 35, '2022-02-12 17:59:00', '2022-02-24 08:56:00'),

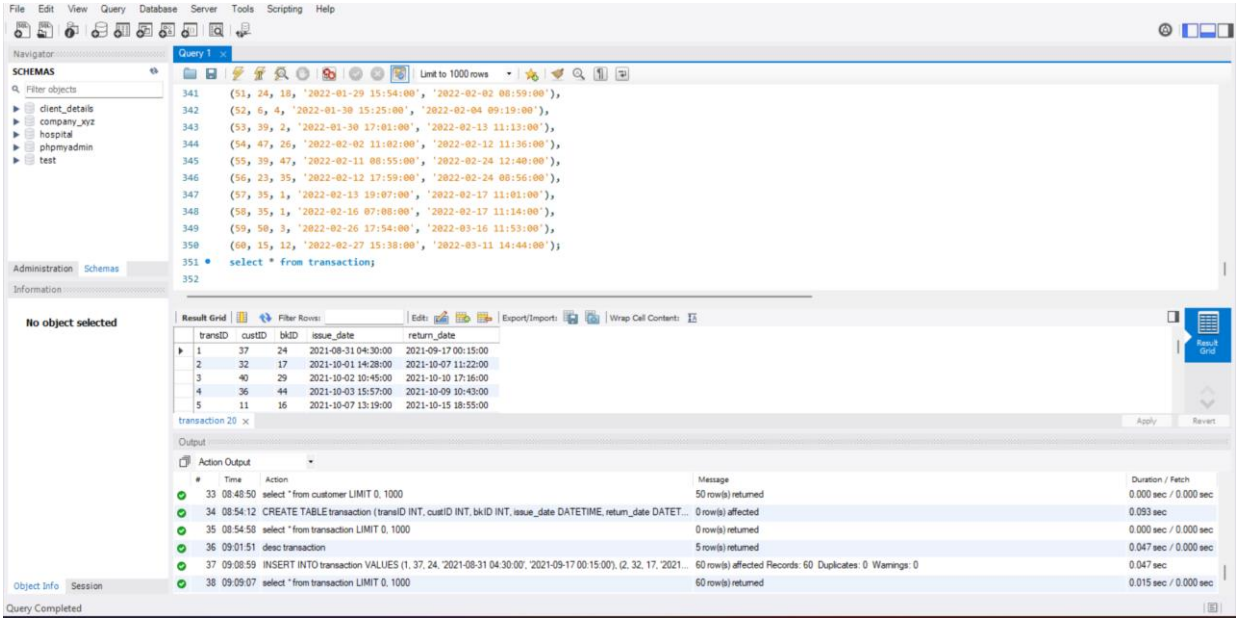
(57, 35, 1, '2022-02-13 19:07:00', '2022-02-17 11:01:00'),

(58, 35, 1, '2022-02-16 07:08:00', '2022-02-17 11:14:00'),

(59, 50, 3, '2022-02-26 17:54:00', '2022-03-16 11:53:00'),

(60, 15, 12, '2022-02-27 15:38:00', '2022-03-11 14:44:00');

Output:



5. SUB-QUERIES:

1. **Select customers who have not borrowed any book from library**

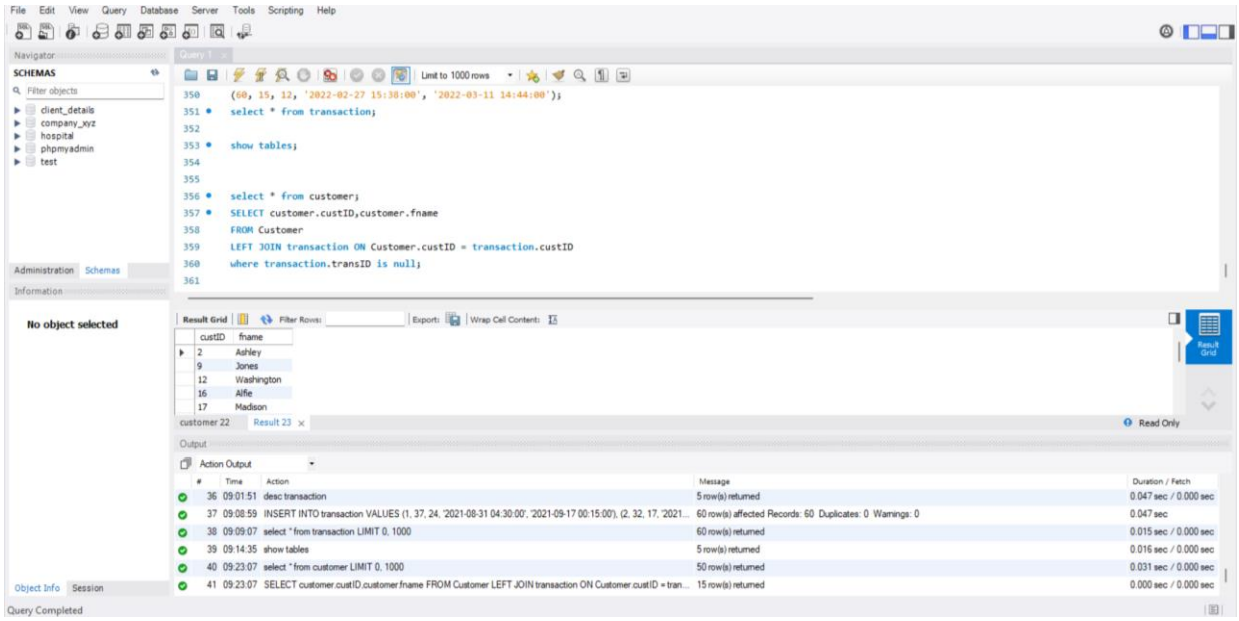
Result:

custID	name
2	Ashley Marshall
9	Jones Collins
12	Washington Martin
16	Alfie Watson
17	Madison Jackson
18	Beverly Moore
19	Kaden Anderson
26	Wren Chapman
28	Wes Bell
30	Edwin Cook
38	Edwards King
41	Albert Richardson
43	Kaylin Bell
46	Akes White
48	Karson Cook

Query:

```
select * from customer;
select customer. custID,customer.fname from customer left join transaction on customer.custID = transaction.custID where transaction.transID is null;
```

Output:



2. Select book with highest page count

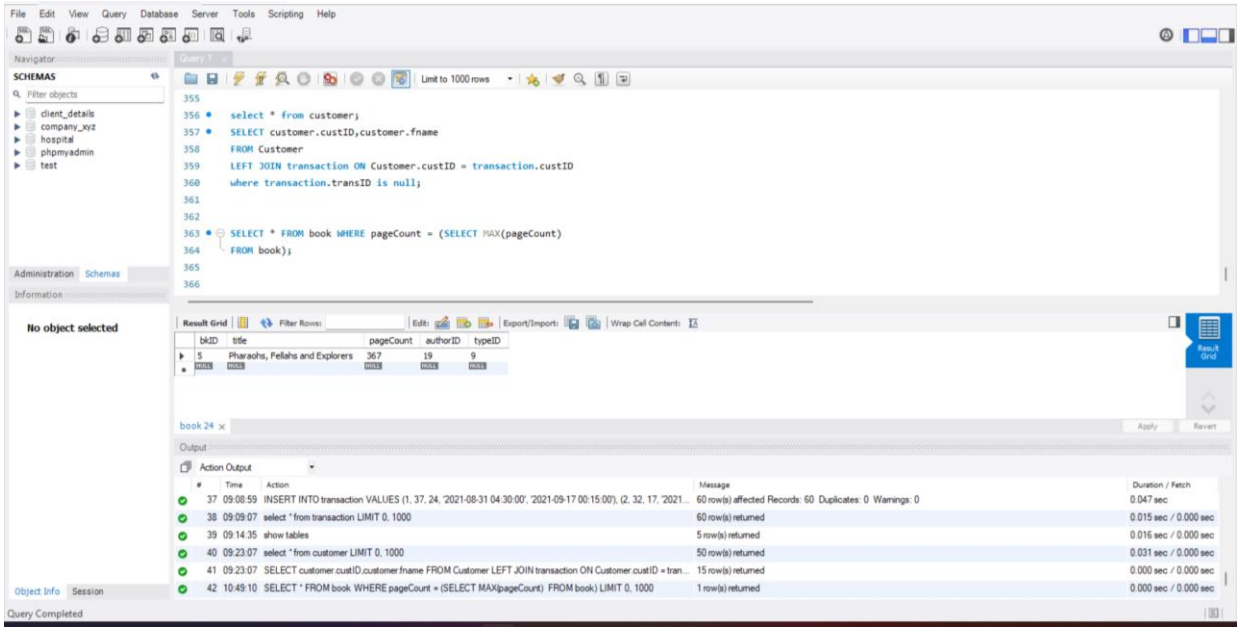
Result:

bkID	title
5	Pharaohs, Fellahs and Explorers

Query:

Select * from book where pagecount = (select max (pagecount) from book);

Output:



3. Select customer who has borrowed some book for longest period

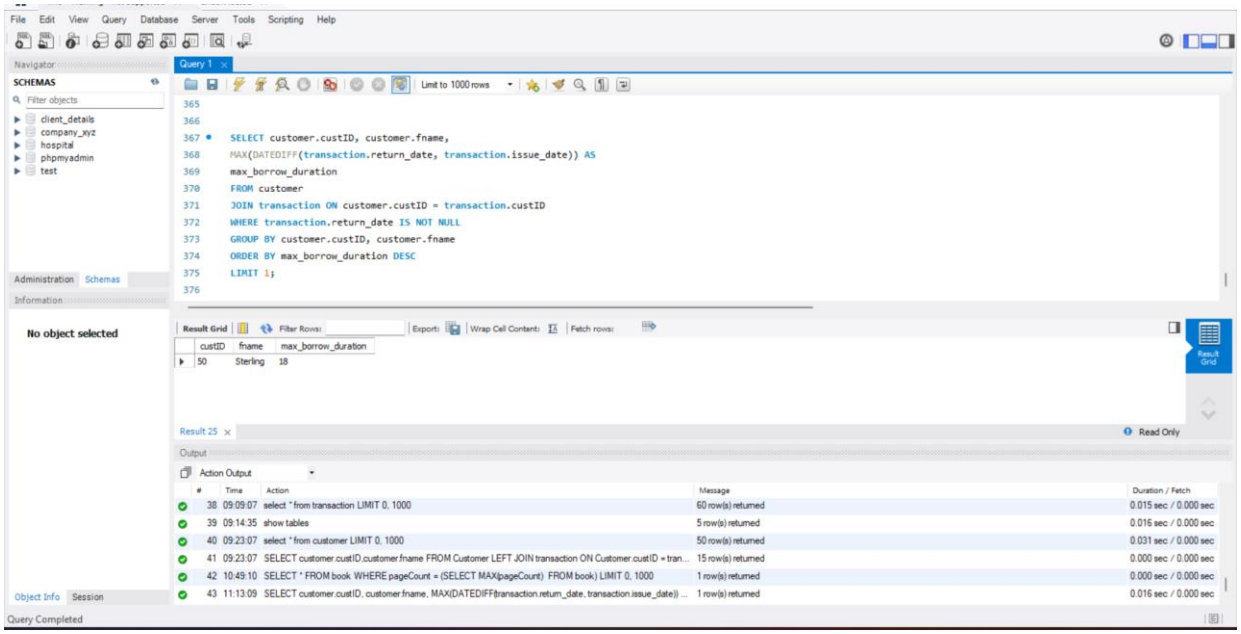
Result:

custID	name
50	Sterling Shaw

Query:

Select customer.custID, customer. fname, max (datediff (transaction.return_date, transaction.issue_date)) as max_borrow_duration from customer join transaction on customer.custID = transaction.custID where transaction.return_date is not null group by customer.custid, customer.fname order by max_borrow_duration desc limit 1;

Output:



(P.T.O for queries involving joins)

6. JOINS:

1. **Display list of all books along with their authors**

Result:

bkID	title	author
1	A Daughter of the Snows	Jack London
2	The Near East: 10,000 Years of History	Isaac Asimov
3	The Cocoon: A Rest-Cure Comedy	Ruth Stuart
4	The Freakshow Murders	Frederic Brown
5	Pharaohs, Fellahs and Explorers	Amelia B. Edwards
6	Hard Times	Charles Dickens
7	A Modern Instance	William Dean Howells
8	The Real Mother Goose	Mother Goose
9	A Thousand Miles Up the Nile	Amelia B. Edwards
10	Children of Blood and Bone	Titus Lucretius
11	A pushcart at the curb	John DosPassos
12	The Desert and the Sown	Mary Hallock Foote
13	Three Soldiers	John DosPassos
14	The End of Eternity	Isaac Asimov
15	Annie Kilburn	William Dean Howells
16	A Touch of Sun and Other Stories	Mary Hallock Foote
17	Show Boat	Edna Ferber
18	The Call of the Wild	Jack London
19	My Mark Twain	William Dean Howells
20	Broken Ties	Rabindranath Tagore

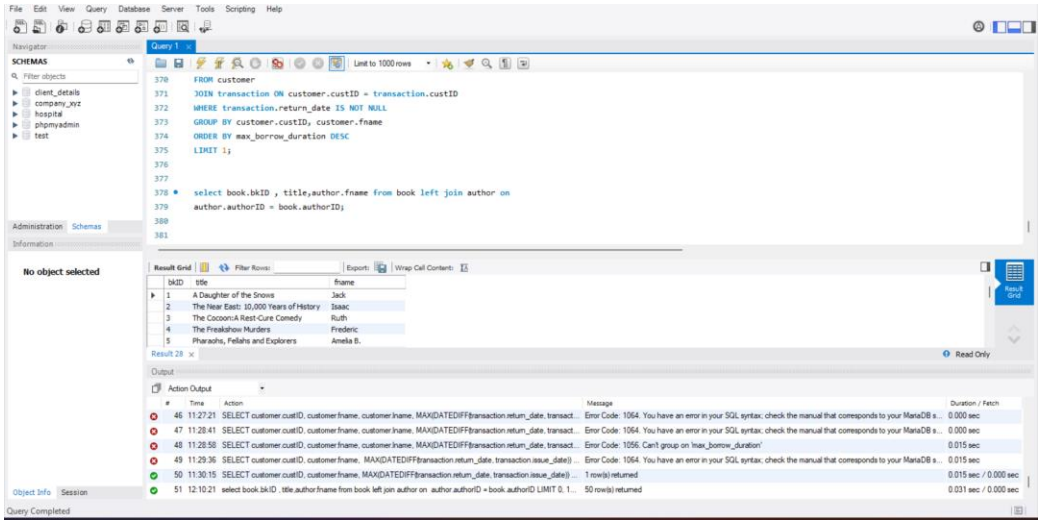
21	Short Stories From American History	Albert Blaisdell
22	Mrs Rosie and the Priest	Givoanni Boccaccio
23	So Big	Edna Ferber
24	Monsieur Maurice	Amelia B. Edwards
25	The Master of Ballantrae	Robert Louis Stevenson
26	The Unlived Life of Little Mary Ellen	Ruth Stuart
27	Mouse - The Last Train	Frederic Brown
28	Edith Bonham	Mary Hallock Foote
29	Maybe Mother Goose	Mother Goose
30	The Noble Gases	Isaac Asimov
31	Rainy Week	Eleanor Hallowell Abbott
32	A Hazard of New Fortunes	William Dean Howells
33	A Plot for Murder	Frederic Brown
34	Nature	Ralph Waldo Emerson
35	Hickory Dickory Dock	Mother Goose
36	Big Fat Hen	Mother Goose
37	The Lone Star Ranger	Zane Grey
38	The Great Fire of London	Samuel Pepys
39	White Nights	Fyodor Dostoevsky
40	In a Glass Darkly	Joseph Sheridan LeFanu
41	Fanny herself	Edna Ferber
42	Loaded	Frederic Brown
43	A Foregone Conclusion	William Dean Howells
44	The Hill of Dreams	Arthur Machen
45	Adventure	Jack London
46	A Tagore Reader	Rabindranath Tagore

47	A Tale of Two Cities	Charles Dickens
48	Dombey and Son	Charles Dickens
49	Famous Women	Givoanni Boccaccio
50	Rejection, The Ruling Spirit	Ellis Butler

Query:

Select book.bkID , title,author.fname from book left join author on author.authorID = book.authorID;

Output:



2. **Display list of top 20 most borrowed books**

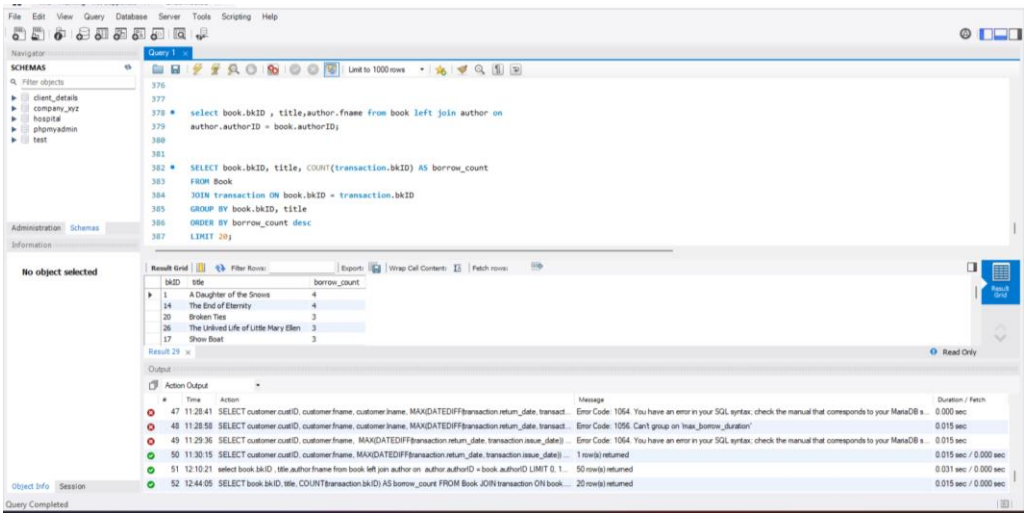
Result:

bkID	title	times_borrowed
1	A Daughter of the Snows	4
14	The End of Eternity	4
3	The Cocoon: A Rest-Cure Comedy	3
17	Show Boat	3
20	Broken Ties	3
26	The Unlived Life of Little Mary Ellen	3
31	Rainy Week	3
12	The Desert and the Sown	2
16	A Touch of Sun and Other Stories	2
18	The Call of the Wild	2
24	Monsieur Maurice	2
29	Maybe Mother Goose	2
34	Nature	2
44	The Hill of Dreams	2
47	A Tale of Two Cities	2
48	Dombey and Son	2
50	Rejection, The Ruling Spirit	2
2	The Near East: 10,000 Years of History	1
4	The Freakshow Murders	1
9	A Thousand Miles Up the Nile	1

Query:

```
Select book.bkID, title, count(transaction.bkID) as borrow_count from book
join transaction on book.bkID = transaction.bkID group by book.bkID, title
order by borrow_count desc limit 20;
```

Output:

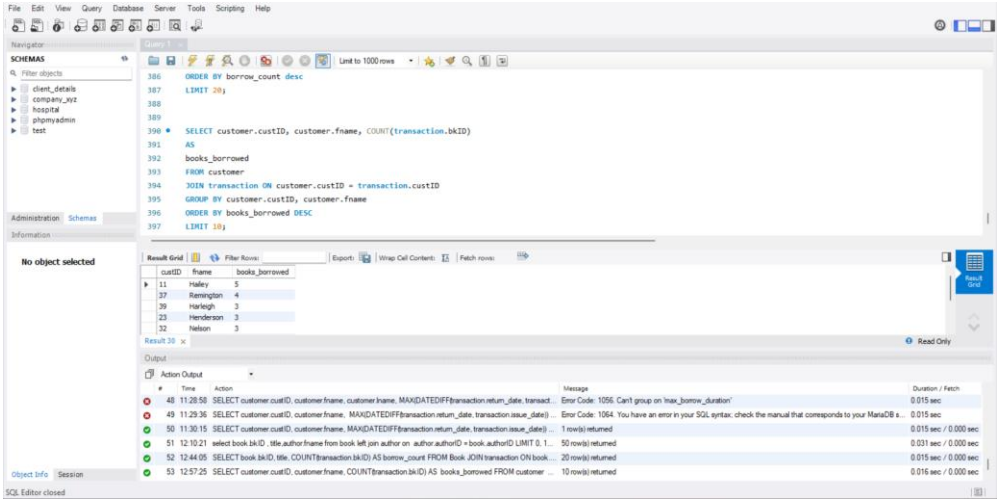

File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
client_details
company_xyz
hospital
phpmyadmin
test
Query 1
Limit to 1000 rows
376
377
378 • select book.bkID , title,author.fname from book left join author on
379 author.authorID = book.authorID;
380
381
382 • SELECT book.bkID, title, COUNT(transaction.bkID) AS borrow_count
383 FROM Book
384 JOIN transaction ON book.bkID = transaction.bkID
385 GROUP BY book.bkID, title
386 ORDER BY borrow_count desc
387 LIMIT 20;
Administration Schemas
Information
No object selected
Result Grid
bkID title borrow_count
1 A Daughter of the Snows 4
14 The End of Eternity 4
20 Broken Ties 3
26 The Unlived Life of Little Mary Ellen 3
17 Show Boat 3
Result 29
Read Only
Output
Action Output
47 11:28:41 SELECT customer.custID, customer.fname, customer.lname, MAX(DATEDIFF(transaction.return_date, transact... Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your MariaDB s... 0.000 sec
48 11:28:58 SELECT customer.custID, customer.fname, customer.lname, MAX(DATEDIFF(transaction.return_date, transact... Error Code: 1056. Can't group on 'max_borrow_duration' 0.015 sec
49 11:29:36 SELECT customer.custID, customer.fname, MAX(DATEDIFF(transaction.return_date, transaction.issue_date)) ... Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your MariaDB s... 0.015 sec
50 11:30:15 SELECT customer.custID, customer.fname, MAX(DATEDIFF(transaction.return_date, transaction.issue_date)) ... 1 row(s) returned 0.015 sec / 0.000 sec
51 12:10:21 select book.bkID , title,author.fname from book left join author on author.authorID = book.authorID LIMIT 0, 1... 50 row(s) returned 0.031 sec / 0.000 sec
52 12:44:05 SELECT book.bkID, title, COUNT(transaction.bkID) AS borrow_count FROM Book JOIN transaction ON book.... 20 row(s) returned 0.015 sec / 0.000 sec
Object Info Session
Query Completed

3. Display list of top 10 customers who have borrowed most books

Result:

custID	name	books_borrowed
11	Hailey Hill	5
37	Remington Wright	4
23	Henderson Cook	3
32	Nelson Smith	3
36	Cherish Cooper	3
39	Harleigh Taylor	3
49	Hayden Young	2
7	Paxton Foster	2
15	Perez Baker	2
21	Ackland Adams	2

Query:

Select customer.custID, customer.fname, count(transaction.bkID) as books_borrowed from customer join transaction on customer.custID = transaction.custID group by customer.custID, customer.fname order by books_borrowed desc limit 10;

Output: