

PROGRAM 2

Consider the following database for a banking enterprise.

BRANCH (branch-name: String, branch-city: String, assets: real)

ACCOUNTS (accno: int, branch-name: String, balance: real)

DEPOSITOR (customer-name: String, customer-street: String, customer-city: String)

LOAN (loan-number: int, branch-name: String, amount: real)

BORROWER (customer-name: String, loan-number: int)

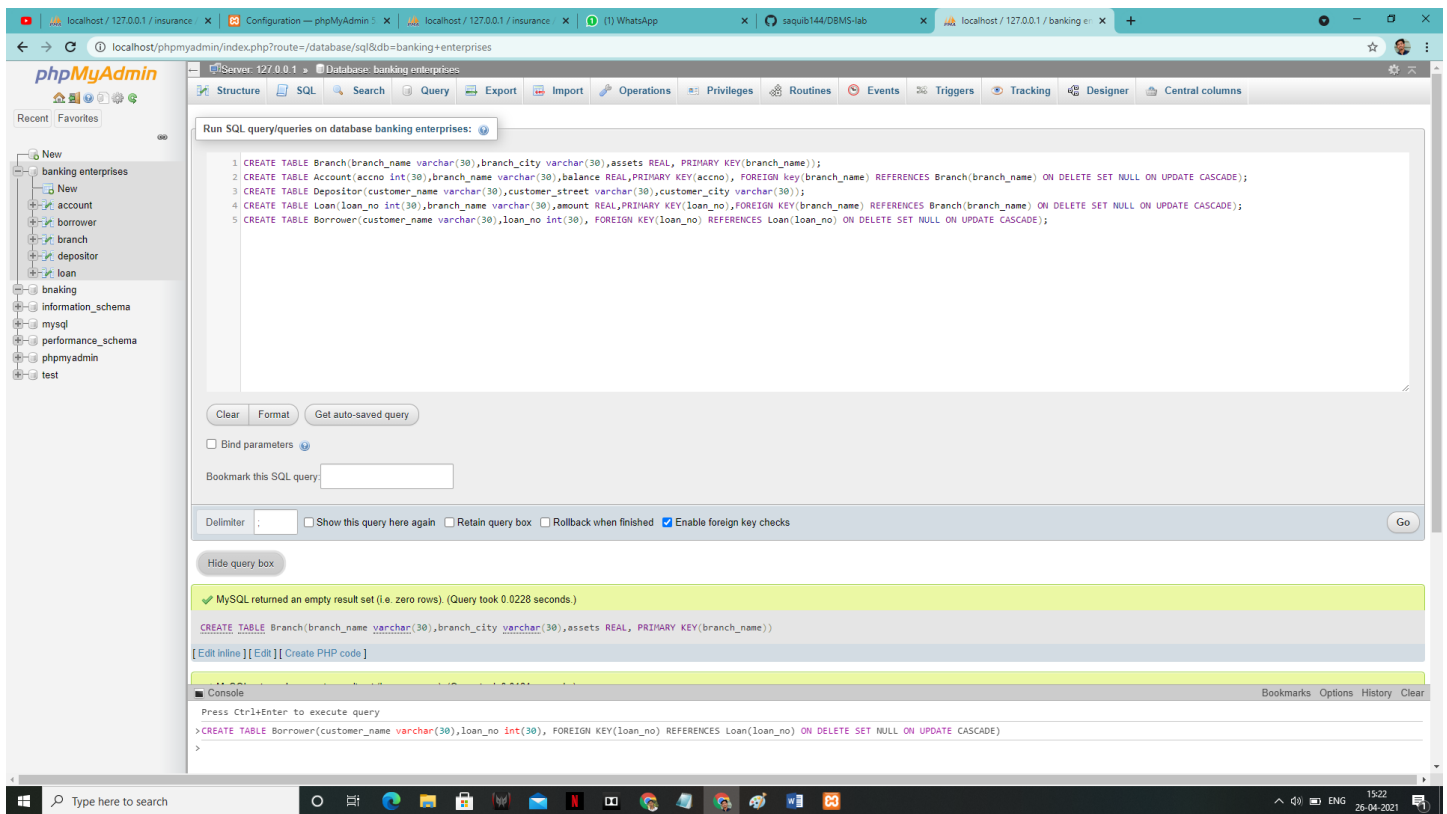
1) Create the above tables by properly specifying the primary keys and the foreign keys.

The screenshot shows the phpMyAdmin interface for a database named 'banking enterprises'. The 'Tables' tab is selected, displaying a list of tables: account, borrower, branch, depositor, and loan. The 'Create table' dialog is open, showing the 'Name' field and 'Number of columns' set to 4. The console at the bottom shows the SQL command to create the 'Borrower' table with a foreign key to the 'Loan' table.

Table	Action	Rows	Type	Collation	Size	Overhead
account	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 K B	-
borrower	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 K B	-
branch	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 K B	-
depositor	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 K B	-
loan	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 K B	-
5 tables	Sum	0	InnoDB	utf8mb4_general_ci	128.0 K B	0 B

Console

```
Press Ctrl+Enter to execute query
> CREATE TABLE Borrower(customer_name varchar(30), loan_no int(30), FOREIGN KEY(loan_no) REFERENCES Loan(loan_no) ON DELETE SET NULL ON UPDATE CASCADE)
>
```



2) Enter at least 5 tuples for each relation.

‘BRANCH’ table:

localhost/phpmyadmin/index.php?route=/table/sql&db=banking+enterprises&table=branch

Server: 127.0.0.1 Database: banking enterprises Table: branch

Run SQL query/queries on table banking enterprises.branch:

```
1 INSERT INTO Branch(branch_name,branch_city,assets) VALUES('jp nagar','bengaluru',15000000),('ashok agar','mumbai',57000000),('shrinagar','delhi',15000000),('tipppasandra','bengaluru',9800000),('jayaganar','tamil nadu',6000000);
```

SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

5 rows inserted. (Query took 0.0069 seconds)

```
INSERT INTO Branch(branch_name,branch_city,assets) VALUES('jp nagar','bengaluru',15000000),('ashok agar','mumbai',57000000),('shrinagar','delhi',15000000),('tipppasandra','bengaluru',9800000),('jayaganar','tamil nadu',6000000)
```

[Edit inline] [Edit] [Create PHP code]

Console

Press Ctrl+Enter to execute query

```
>INSERT INTO Branch(branch_name,branch_city,assets) VALUES('jp nagar','bengaluru',15000000),('ashok agar','mumbai',57000000),('shrinagar','delhi',15000000),('tipppasandra','bengaluru',9800000),('jayaganar','tamil nadu',6000000)
```

localhost/phpmyadmin/index.php?route=/table/sql&server=1&db=banking+enterprises&table=branch&pos=0

Server: 127.0.0.1 Database: banking enterprises Table: branch

Showing rows 0 - 4 (5 total, Query took 0.0010 seconds)

```
SELECT * FROM `branch`
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

	branch_name	branch_city	assets
<input type="checkbox"/> Edit Delete	ashok agar	mumbai	57000000
<input type="checkbox"/> Edit Delete	jayanagar	tamil nadu	60000000
<input type="checkbox"/> Edit Delete	jp nagar	bengaluru	15000000
<input type="checkbox"/> Edit Delete	shrinagar	delhi	15000000
<input type="checkbox"/> Edit Delete	tipppasandra	bengaluru	98000000

☐ Check all With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

☐ Print ☐ Copy to clipboard ☐ Export ☐ Display chart ☐ Create view

Bookmark this SQL query

Label: ☐ Let every user access this bookmark

Bookmark this SQL query

Console

Press Ctrl+Enter to execute query

```
>INSERT INTO Branch(branch_name,branch_city,assets) VALUES('jp nagar','bengaluru',15000000),('ashok agar','mumbai',57000000),('shrinagar','delhi',15000000),('tipppasandra','bengaluru',9800000),('jayaganar','tamil nadu',6000000)
```

```
>SELECT * FROM `branch`
```

'ACCOUNTS' table:

localhost/127.0.0.1/insurance x Configuration — phpMyAdmin x WhatsApp x saquib144/DBMS-lab x localhost/127.0.0.1/banking x localhost/127.0.0.1/banking x Meet - opt-oafd-cqq x

localhost/phpmyadmin/index.php?route=/sql&server=1&db=banking+enterprises&table=account&pos=0

Server: 127.0.0.1 Database: banking enterprises Table: account

Showing rows 0 - 4 (5 total, Query took 0.0010 seconds)

SELECT * FROM `account`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Options

				accno	branch_name	balance
<input type="checkbox"/>	Edit	Copy	Delete	1236	jayanagar	56200
<input type="checkbox"/>	Edit	Copy	Delete	1546	shrinagar	90000
<input type="checkbox"/>	Edit	Copy	Delete	1654	jp nagar	562010
<input type="checkbox"/>	Edit	Copy	Delete	5984	ashok agar	56200
<input type="checkbox"/>	Edit	Copy	Delete	6597	tippasandra	65000

Check all With selected: Edit Copy Delete Export

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label: Let every user access this bookmark

Bookmark this SQL query

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`
>SELECT * from account
>SELECT * from depositor
```

localhost/127.0.0.1/insurance x Configuration — phpMyAdmin x WhatsApp x saquib144/DBMS-lab x localhost/127.0.0.1/banking x localhost/127.0.0.1/banking x Meet - opt-oafd-cqq x

localhost/phpmyadmin/index.php?route=/table/sql&db=banking+enterprises&table=account

Server: 127.0.0.1 Database: banking enterprises Table: account

Run SQL query/queries on table banking enterprises:account:

```
1. INSERT INTO account(accno,branch_name,balance) VALUES (1654,'jp nagar',562010),(1546,'shrinagar',90000),(1236,'jayanagar',56200),(5984,'ashok agar',56200),(6597,'tippasandra',65000);
```

accno
branch_name
balance

SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

Bind parameters

Bookmark this SQL query:

Delimiter: Show this query here again Retain query box Rollback when finished Enable foreign key checks Go

Hide query box

5 rows inserted (Query took 0.0086 seconds)

```
INSERT INTO account(accno,branch_name,balance) VALUES (1654,'jp nagar',562010),(1546,'shrinagar',90000),(1236,'jayanagar',56200),(5984,'ashok agar',56200),(6597,'tippasandra',65000)
```

[Edit inline] [Edit] [Create PHP code]

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`
>SELECT * from account
>SELECT * from depositor
```

‘DEPOSITOR’ table:

localhost / 127.0.0.1 / ins x Configuration — phpMyAdmin x (5) WhatsApp x saquib144/DBMS-lab x localhost / 127.0.0.1 / ba x localhost / 127.0.0.1 / ba x Meet - opt-oaid-cqg x Lab Program x

localhost/phpmyadmin/index.php?route=/table/sql&db=banking+enterprises&table=depositor

Server: 127.0.0.1 Database: banking enterprises Table: depositor

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on table banking enterprises.depositor:

```
1 INSERT INTO depositor(customer_name,customer_street,customer_city,accno) VALUES('hari','jp nagar','bengaluru',1236),('praveen','jayanagar','bengaluru',1546),('siddu','tippasandra','bengaluru',1654),('piyush','ashok agar','mumbai',5984),('yash','shrinaragar','bengaluru',6597);
```

customer_name
customer_street
customer_city
accno

SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

5 rows inserted. (Query took 0.0084 seconds.)

```
INSERT INTO depositor(customer_name,customer_street,customer_city,accno) VALUES('hari','jp nagar','bengaluru',1236),('praveen','jayanagar','bengaluru',1546),('siddu','tippasandra','bengaluru',1654),('piyush','ashok agar','mumbai',5984),('yash','shrinaragar','bengaluru',6597)
```

[Edit inline] [Edit] [Create PHP code]

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`  
>SELECT * from account  
>SELECT * from depositor
```

localhost / 127.0.0.1 / ins x Configuration — phpMyAdmin x (5) WhatsApp x saquib144/DBMS-lab x localhost / 127.0.0.1 / ba x localhost / 127.0.0.1 / ba x Meet - opt-oaid-cqg x Lab Program x

localhost/phpmyadmin/index.php?route=/sql&server=1&db=banking+enterprises&table=depositor&pos=0

Server: 127.0.0.1 Database: banking enterprises Table: depositor

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 4 (5 total, Query took 0.0011 seconds.)

```
SELECT * FROM `depositor`
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table

customer_name	customer_street	customer_city	accno
hari	jp nagar	bengaluru	1236
praveen	jayanagar	bengaluru	1546
siddu	tippasandra	bengaluru	1654
piyush	ashok agar	mumbai	5984
yash	shrinaragar	bengaluru	6597

☐ Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label: ☐ Let every user access this bookmark

Bookmark this SQL query

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`  
>SELECT * from account  
>SELECT * from depositor
```

‘LOAN’ table:

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localhost/phpmyadmin/index.php?route=/table/sql&db=banking+enterprises&table=loan

Server: 127.0.0.1 Database: banking enterprises Table: loan

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on table banking enterprises.loan:

```
1 INSERT INTO loan(loan_no,branch_name,amount) VALUES(100,'jp nagar',25000),(101,'jaynagar',50000),(102,'shrinagar',69000),(103,'tippasandra',85000),(104,'ashok agar',700000);
```

loan_no
branch_name
amount

SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

5 rows inserted. (Query took 0.0108 seconds.)

```
INSERT INTO loan(loan_no,branch_name,amount) VALUES(100,'jp nagar',25000),(101,'jaynagar',50000),(102,'shrinagar',69000),(103,'tippasandra',85000),(104,'ashok agar',700000)
```

[Edit inline] [Edit] [Create PHP code]

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`  
>SELECT * from account  
>SELECT * from depositor
```

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16:38
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localhost/phpmyadmin/index.php?route=/sql&server=1&db=banking+enterprises&table=loan&pos=0

Server: 127.0.0.1 Database: banking enterprises Table: loan

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 4 (5 total. Query took 0.0009 seconds.)

```
SELECT * FROM `loan`
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

				loan_no	branch_name	amount
<input type="checkbox"/>	Edit	Copy	Delete	100	jp nagar	25000
<input type="checkbox"/>	Edit	Copy	Delete	101	jaynagar	50000
<input type="checkbox"/>	Edit	Copy	Delete	102	shrinagar	69000
<input type="checkbox"/>	Edit	Copy	Delete	103	tippasandra	85000
<input type="checkbox"/>	Edit	Copy	Delete	104	ashok agar	700000

☐ Check all With selected: Edit Copy Delete Export

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label: ☐ Let every user access this bookmark

Bookmark this SQL query

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`  
>SELECT * from account  
>SELECT * from depositor
```

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16:39
26-04-2021

'BORROWER' table:

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localhost/phpmyadmin/index.php?route=/table/sql&db=banking+enterprises&table=borrower

Server: 127.0.0.1 Database: banking enterprises Table: borrower

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on table banking enterprises.borrower:

```
1
2 INSERT INTO borrower(customer_name,loan_no) VALUES('hari',100),('siddu',101),('piyush',102),('yash',103),('praveen',104);
```

customer_name
loan_no

SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

5 rows inserted (Query took 0.0117 seconds)

```
INSERT INTO borrower(customer_name,loan_no) VALUES('hari',100),('siddu',101),('piyush',102),('yash',103),('praveen',104)
```

[Edit inline] [Edit] [Create PHP code]

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`
>SELECT * from account
>SELECT * from depositor
```

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1641 26-04-2021

localhost / 127.0.0.1 / insurance x Configuration — phpMyAdmin x (B) WhatsApp x saqub144/DBMS-lab x localhost / 127.0.0.1 / banking x localhost / 127.0.0.1 / banking x Meet - opt-oafd-cqg x

localhost/phpmyadmin/index.php?route=/sql&server=18&db=banking+enterprises&table=borrower&pos=0

Server: 127.0.0.1 Database: banking enterprises Table: borrower

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 4 (5 total, Query took 0.0009 seconds)

```
SELECT * FROM `borrower`
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

customer_name	loan_no
hari	100
siddu	101
piyush	102
yash	103
praveen	104

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label: ☐ Let every user access this bookmark

Bookmark this SQL query

Console

Press Ctrl+Enter to execute query

```
>SELECT * FROM `loan`
>SELECT * from account
>SELECT * from depositor
```

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Type here to search

1641 26-04-2021

iii. Find all the customers who have at least two accounts at the Main branch.

The screenshot shows the phpMyAdmin interface for a database named 'banking enterprises'. The left sidebar displays the database structure with tables: account, borrower, branch, depositor, loan, and test. The main panel shows a SQL query: `select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1;`. The results table shows two rows: 'hari' and 'jayanagar'. The console at the bottom shows the execution of the query and the insertion of a new loan record.

Run SQL query/queries on database banking enterprises:

```
1 select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1;
```

Showing rows 0 - 0 (1 total, Query took 0.0032 seconds)

```
select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1
```

customer_name	branch_name
hari	jayanagar

Query results operations: Print, Copy to clipboard, Export, Display chart, Create view

Console: Press Ctrl+Enter to execute query
> INSERT INTO loan(loan_no,branch_name,amount) VALUES(105,'jp nagar',653332)
> select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1
> SELECT * FROM `borrower`

iv. Find all the customers who have an account at all the branches located in a specific city.

v. Demonstrate how you delete all account tuples at every branch located in a specific city.

localhost/127.0.0.1/ ms x Configuration — phpMy x (4) WhatsApp x saquib144/DBMS-lab x localhost/127.0.0.1/ ba x localhost/127.0.0.1/ ba x Meet - opt-oaid-cq x Inbox (1055) - saquib.cs x +

localhost/phpmyadmin/index.php?route=/database/sql&db=banking+enterprises

phpMyAdmin

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New banking enterprises New account borrower branch depositor loan banking banking information_schema mysql performance_schema phpmyadmin test

Run SQL query/queries on database banking enterprises:

1 select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1;

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

Showing rows 0 - 0 (1 total. Query took 0.0032 seconds)

select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table

+ Options

customer_name	branch_name
hari	jayanagar

☐ Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

Console

Press Ctrl+Enter to execute query

```
>INSERT INTO loan(loan_no,branch_name,amount) VALUES(105,'jp nagar',653332)
>select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1
>SELECT * FROM `borrower`
```

Type here to search

17:27 26-04-2021

localhost/127.0.0.1/ ms x Configuration — phpMy x (4) WhatsApp x saquib144/DBMS-lab x localhost/127.0.0.1/ ba x localhost/127.0.0.1/ ba x Meet - opt-oaid-cq x Inbox (1055) - saquib.cs x +

localhost/phpmyadmin/index.php?route=/sql&server=1&db=banking+enterprises&table=account&pos=0

phpMyAdmin

Recent Favorites

New banking enterprises New account borrower branch depositor loan banking banking information_schema mysql performance_schema phpmyadmin test

Showing rows 0 - 2 (3 total. Query took 0.0010 seconds)

SELECT * FROM `account`

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

				accno	branch_name	balance
<input type="checkbox"/>	Edit	Copy	Delete	1236	jayanagar	56200
<input type="checkbox"/>	Edit	Copy	Delete	1546	shrinagar	90000
<input type="checkbox"/>	Edit	Copy	Delete	5984	ashok agar	56200

☐ Check all With selected: Edit Copy Delete Export

☐ Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label: ☐ Let every user access this bookmark

Bookmark this SQL query

Console

Press Ctrl+Enter to execute query

```
>INSERT INTO loan(loan_no,branch_name,amount) VALUES(105,'jp nagar',653332)
>select c.customer_name,a.branch_name from depositor c join account a on c.accno=a.accno group by c.customer_name having count(*)>1
>SELECT * FROM `borrower`
```

Type here to search

17:41 26-04-2021