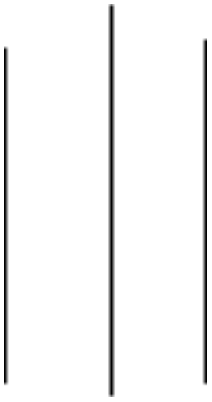
Kathmandu University

Dhulikhel, Kavre



Subject:COMP 232

Lab Work:I

Submitted by:

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Group.:Computer Engineering

Level : 2nd year / 2nd sem

Submitted to:

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Following database schema is defined for bank. Read it carefully and make a logical design.
Branch(branch_id , staff_id, branch_add, assets)
Customer(cust_id cust_name, cust_add, cust_phone, cust_dob)
Loan(loan_number, branch_id, amount)
Borrower(cust_id, loan_number)
Account(account_number, branch_id, balance)
Depositor(cust_id, account_number)
Staff(staff_id, staff_name, staff_add)

1. Create a database of your name and create the tables as specified above.

```
drop database if exists prashant1_bank;
create database if not EXISTS prashant1_bank;
use prashant1_bank;

CREATE table Staff(
   staff_id int AUTO_INCREMENT,
   staff_name varchar(255) not null,
   staff_address varchar(255),
   primary key(staff_id)
);

create table Branch (
   branch_id int primary key not null,
   staff_id int not null,
   branch_address varchar(255) not null,
   assets varchar(255),
   foreign key (staff_id) references Staff(staff_id) on
 delete cascade on update cascade
);

create table Customer(
   customer_id int primary key not null,
   customer_name varchar(50) not null,
   customer_address varchar(255),
   customer_phone numeric(13),
   customer_DOB varchar(55)
);

create table Loan(
   loan_number numeric(10) primary key not null,
   branch_id int not null,
```

```
   amount int,
   foreign key (branch_id) references Branch(branch_id) on
 delete cascade on update cascade
);

CREATE table Borrower(
   customer_id int primary key not null,
   branch_id int not null,
   balance int,
   foreign key (customer_id) references Customer(customer_id)
 on delete cascade on update cascade,
   foreign key (branch_id) references Branch(branch_id) on
 delete cascade on update cascade
);

CREATE table Account(
   account_number varchar(5) primary key not null,
   branch_id int not null,
   balance int,
   foreign key (branch_id) references Branch(branch_id) on
 delete cascade on update cascade
);

CREATE table Depositor(
   customer_id int not null,
   account_number varchar(5) not null,
   primary key (customer_id,account_number),
   foreign key (customer_id) references Customer(customer_id)
 on delete cascade on update cascade,
   foreign key (account_number) references
 Account(account_number) on delete cascade on update cascade
);
```

2. Populate at least 10 data records in each table. Your value should look realistic.

```
INSERT INTO staff (staff_name, staff_address)
VALUES ("Prashant Manandhar", "Banepa"),
   ("Ram Smith", "Kathmandu"),
   ("Pramish Shresthar", "Banepa"),
   ("Shyam Thapa", "Kavre"),
   ("Hari Bhahadur", "Bhaktapur"),
   ("Rita Dhahal", "Canada"),
   ("Ritik Adhikari", "Kathmandu"),
   ("Sakril Baral", "Banepa"),
```

```
   ("Sita Sharma", "Kavre"),
   ("Sandip Bhahadur", "Bhaktapur"),
   ("Rajkumar Dhahal", "Canada");

INSERT INTO branch (branch_id, staff_id, branch_address,
assets)
VALUES (001, 1, "Banepa", "xyz.."),
   (002, 2, "Kathmandu", "xyz.."),
   (003, 3, "Bhaktapur", "xyz.."),
   (004, 4, "Sanga", "xyz.."),
   (005, 5, "Dhulikhel", "xyz.."),
   (006, 6, "Lalitpur", "xyz.."),
   (007, 7, "Biratnagar", "xyz.."),
   (008, 8, "Canada", "xyz.."),
   (009, 9, "Pokhara", "xyz.."),
   (010, 10, "Canada", "xyz.."),
   (011, 11, "USA", "xyz..");

INSERT INTO customer (
       customer_id,
       customer_name,
       customer_address,
       customer_phone,
       customer_DOB
   )
VALUES (
       1,
       "Harper Thompson",
       "esper Peak",
       6958204371,
       "1995-07-21"
   ),
   (
       2,
       "Malik Patel",
       "Nayasadak",
       7136498250,
       "1998-03-12"
   ),
   (
       3,
       "Savannah Rodriguez",
       "Jordan",
       8372569140,
       "1991-11-29"
   ),
```

```
(
    4,
    "Leo Wong",
    " Vietnam",
    9524710368,
    "1992-09-06"
),
(
    5,
    "Lila Singh",
    "Nayasadak",
    4816302975,
    "2001-12-05"
),
(
    6,
    "Elijah Green",
    " Croatia",
    5682497301,
    "1994-05-18"
),
(
    7,
    "Amara Johnson",
    " China",
    2461783095,
    "2004-02-10"
),
(
    8,
    "Luca Davis",
    "Bolivia",
    7849325160,
    "2005-06-30"
),
(9, "Ava Kim", " Kenya", 3194578260, "1993-10-26"),
(
    10,
    "Owen Garcia",
    " Nayasadak",
    6258740931,
    "1997-01-17"
),
(
    11,
    "Isla Martinez",
```

```
        "Turkey",
        1029384756,
        "2002-08-11"
    );

INSERT INTO loan (loan_number, branch_id, amount)
VALUES (1, 001, 10000),
    (2, 005, 30000),
    (3, 001, 50000),
    (4, 009, 70000),
    (5, 003, 90000),
    (6, 001, 200000),
    (7, 003, 400000),
    (8, 001, 600000),
    (9, 006, 800000),
    (10, 010, 900000),
    (11, 008, 1200000);

INSERT INTO borrower (customer_id, branch_id, balance)
VALUES (1, 001, 100000),
    (2, 002, 700000),
    (3, 003, 800000),
    (4, 004, 19800000),
    (5, 005, 300000),
    (6, 006, 4500000),
    (7, 007, 12100000),
    (8, 008, 1600000),
    (9, 009, 18900000),
    (10, 010, 9700000),
    (11, 011, 2300000);

INSERT INTO account (account_number, branch_id, balance)
VALUES ("001A", 001, 100000),
    ("002B", 002, 700000),
    ("003A", 003, 800000),
    ("004D", 004, 19800000),
    ("005S", 005, 300000),
    ("006G", 006, 4500000),
    ("007H", 007, 12100000),
    ("008J", 008, 1600000),
    ("009L", 009, 18900000),
    ("001E", 010, 9700000),
    ("001H", 011, 2300000);

INSERT INTO depositor (customer_id, account_number)
VALUES (1, "001A"),
```

```
   (2, "002B"),
   (3, "003A"),
   (4, "004D"),
   (5, "005S"),
   (6, "006G"),
   (7, "007H"),
   (8, "008J"),
   (9, "009L"),
   (10, "001E"),
   (11, "001H");
```

3. Display all the data of each of the tables.

```
SELECT *
from staff;

SELECT *
from branch;

SELECT *
from customer;

SELECT *
from loan;

SELECT *
from borrower;

SELECT *
from account;

SELECT *
from depositor;


Outputs:
SELECT *
from staff;
```

Eemayas: SELECT * from s...

staff_id	staff_name	staff_address
Filter...	Filter...	Filter...
1	Prashant Manandhar	Banepa
2	Ram Smith	Kathmandu
3	Pramish Shresthar	Banepa
4	Shyam Thapa	Kavre
5	Hari Bhahadur	Bhaktapur
6	Rita Dhahal	Canada
7	Ritik Adhikari	Kathmandu
8	Sakril Baral	Banepa
9	Sita Sharma	Kavre
10	Sandip Bhahadur	Bhaktapur
11	Rajkumar Dhahal	Canada

```
SELECT *
from branch;
```

Eemayas: SELECT * from b...

branch_id	staff_id	branch_address	assets
Filter...	Filter...	Filter...	Filter...
1	1	Banepa	xyz..
2	2	Kathmandu	xyz..
3	3	Bhaktapur	xyz..
4	4	Sanga	xyz..
5	5	Dhulikhel	xyz..
6	6	Lalitpur	xyz..
7	7	Biratnagar	xyz..
8	8	Canada	xyz..
9	9	Pokhara	xyz..
10	10	Canada	xyz..
11	11	USA	xyz..

```
SELECT *
from customer;
```

Eemayas: SELECT * from c...

customer_id	customer_name	customer_address	customer_phone	customer_DOB
Filter...	Filter...	Filter...	Filter...	Filter...
1	Harper Thompson	esper Peak	6958204371	1995-07-21
2	Malik Patel	Nayasadak	7136498250	1998-03-12
3	Savannah Rodriguez	Jordan	8372569140	1991-11-29
4	Leo Wong	Vietnam	9524710368	1992-09-06
5	Lila Singh	Nayasadak	4816302975	2001-12-05
6	Elijah Green	Croatia	5682497301	1994-05-18
7	Amara Johnson	China	2461783095	2004-02-10
8	Luca Davis	Bolivia	7849325160	2005-06-30
9	Ava Kim	Kenya	3194578260	1993-10-26
10	Owen Garcia	Nayasadak	6258740931	1997-01-17
11	Isla Martinez	Turkey	1029384756	2002-08-11

```
SELECT *
from loan;
```

Eemayas: SELECT * from l...

loan_number	branch_id	amount
Filter...	Filter...	Filter...
1	1	10000
2	5	30000
3	1	50000
4	9	70000
5	3	90000
6	1	200000
7	3	400000
8	1	600000
9	6	800000
10	10	900000
11	8	1200000

```
SELECT *
```

```
from borrower;
```

Eemayas: SELECT * from b...

customer_id	branch_id	balance
Filter...	Filter...	Filter...
1	1	100000
2	2	700000
3	3	800000
4	4	19800000
5	5	300000
6	6	4500000
7	7	12100000
8	8	1600000
9	9	18900000
10	10	9700000
11	11	2300000

```
SELECT *
from account;
```

Eemayas: SELECT * from a...

account_number	branch_id	balance
Filter...	Filter...	Filter...
001A	1	100000
001E	10	9700000
001H	11	2300000
002B	2	700000
003A	3	800000
004D	4	19800000
005S	5	300000
006G	6	4500000
007H	7	12100000
008J	8	1600000
009L	9	18900000

```
SELECT *
from depositor;
```

Eemayas: SELECT * from d...

customer_id	account_number
Filter...	Filter...
1	001A
10	001E
11	001H
2	002B
3	003A
4	004D
5	005S
6	006G
7	007H
8	008J
9	009L

4. Add an attribute in the table staff as designation.

```
alter table staff
add designation varchar(50);
```

5. Display all the data of staff.

```
SELECT *
from staff;
```

Output:

Eemayas: SELECT * from s...

staff_id	staff_name	staff_address	designation
Filter...	Filter...	Filter...	Filter...
1	Prashant Manandhar	Banepa	NULL
2	Ram Smith	Kathmandu	NULL
3	Pramish Shresthar	Banepa	NULL
4	Shyam Thapa	Kavre	NULL
5	Hari Bhahadur	Bhaktapur	NULL
6	Rita Dhahal	Canada	NULL
7	Ritik Adhikari	Kathmandu	NULL
8	Sakril Baral	Banepa	NULL
9	Sita Sharma	Kavre	NULL
10	Sandip Bhahadur	Bhaktapur	NULL
11	Rajkumar Dhahal	Canada	NULL

6. Update your table staff with at least 2 managers, 5 Assistant, 2 officers, 1 guard.

```
UPDATE staff
SET designation = 'Manager'
WHERE staff_id = 1;

UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 2;

UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 3;

UPDATE staff
SET designation = 'officers'
WHERE staff_id = 4;

UPDATE staff
SET designation = 'guard'
WHERE staff_id = 5;

UPDATE staff
SET designation = 'Manager'
WHERE staff_id = 6;

UPDATE staff
SET designation = 'officers'
WHERE staff_id = 7;

UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 8;

UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 9;

UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 10;

UPDATE staff
SET designation = 'Manager'
WHERE staff_id = 11;
```

7. Display all the data of staff

```
select *
from staff;
```

Output:

Eemayas: select * from s...

staff_id	staff_name	staff_address	designation
Filter...	Filter...	Filter...	Filter...
1	Prashant Manandhar	Banepa	Manager
2	Ram Smith	Kathmandu	Assistant
3	Pramish Shresthar	Banepa	Assistant
4	Shyam Thapa	Kavre	officers
5	Hari Bhahadur	Bhaktapur	guard
6	Rita Dhahal	Canada	Manager
7	Ritik Adhikari	Kathmandu	officers
8	Sakril Baral	Banepa	Assistant
9	Sita Sharma	Kavre	Assistant
10	Sandip Bhahadur	Bhaktapur	Assistant
11	Rajkumar Dhahal	Canada	Manager

8. Smith is no longer staff in the bank. Update the table/s accordingly.

```
delete from staff
where staff_name like "%Smith%";
```

9. Display all the data of staff and look whether smith is still there or not.

```
SELECT *
from staff;

select *
from staff
where staff_name like "%Smith%";

Output:
SELECT *
from staff;
```

Eemayas: SELECT * from s...

staff_id	staff_name	staff_address	designation
Filter...	Filter...	Filter...	Filter...
1	Prashant Manandhar	Banepa	Manager
3	Pramish Shresthar	Banepa	Assistant
4	Shyam Thapa	Kavre	officers
5	Hari Bhahadur	Bhaktapur	guard
6	Rita Dhahal	Canada	Manager
7	Ritik Adhikari	Kathmandu	officers
8	Sakril Baral	Banepa	Assistant
9	Sita Sharma	Kavre	Assistant
10	Sandip Bhahadur	Bhaktapur	Assistant
11	Rajkumar Dhahal	Canada	Manager

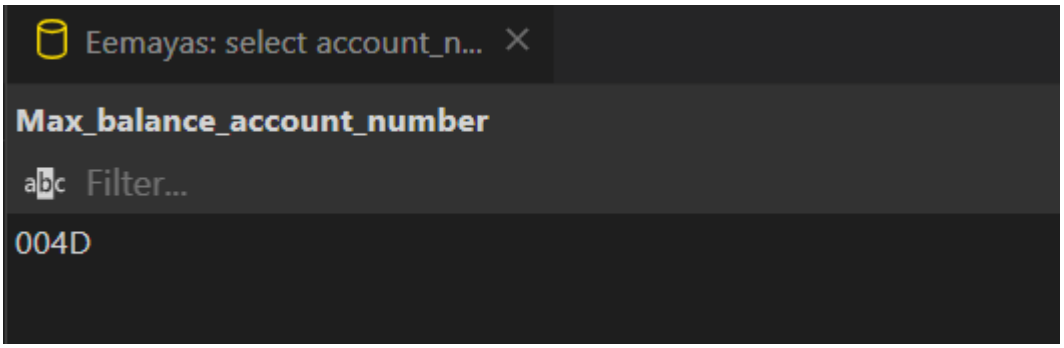
```
select *
from staff
where staff_name like "%Smith%";
```

staff_id	staff_name	staff_address	designation
Filter...	Filter...	Filter...	Filter...
No data			

10. Find the account number who has the maximum balance.

```
select account_number as Max_balance_account_number
from account
WHERE balance = (
       SELECT max(balance)
       from account
   );
```

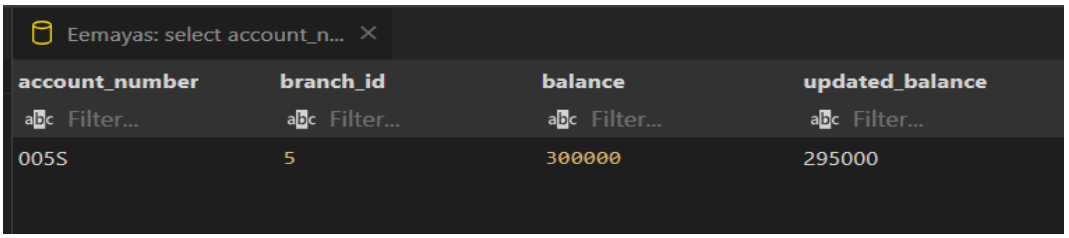
Output:



11. Can you tell me how much balance will remain after I withdrew 5000 from my account number „005S".

```
select account_number,
   branch_id,
   balance,
    (balance -5000) as updated_balance
from account
where account_number = "005S";
```

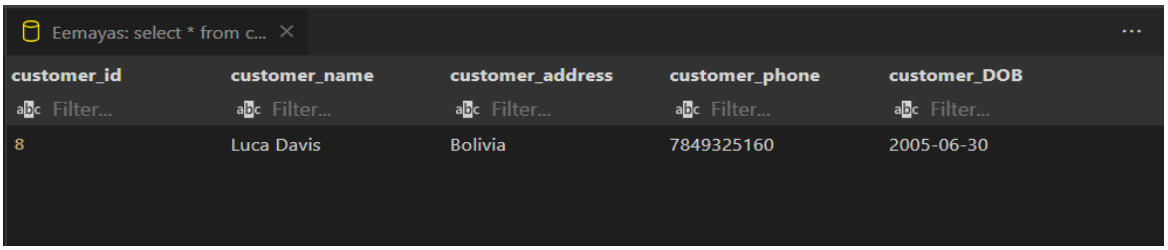
Output:



12. Find the youngest customer in the bank.

```
select *
from customer
where customer_DOB =(
       select max(customer_DOB)
       from customer
   );
```

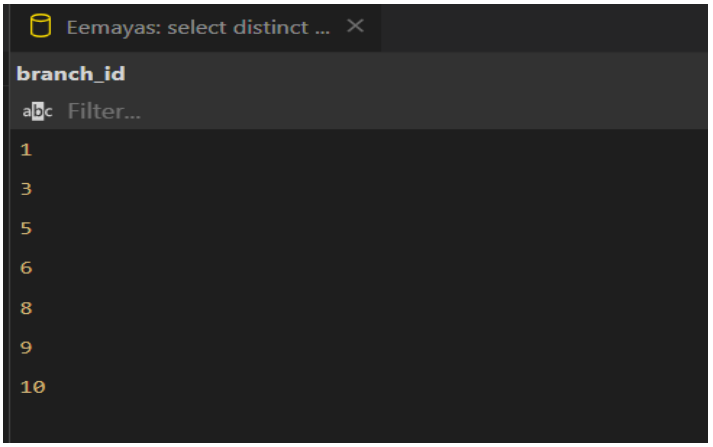
Output:



13. List the ID of the branches which has issued the loan amount greater than 10000.

```
select distinct branch_id
from loan
where amount > 10000;
```

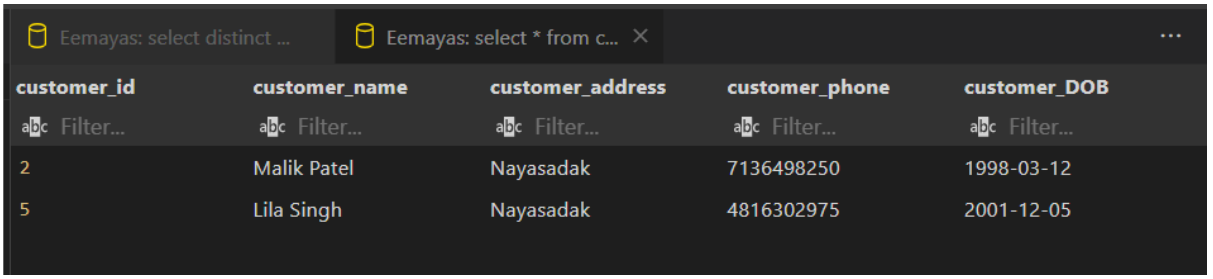
Output:



14. Can you list the number of the customer from address “Nayasadak”.

```
select *
from customer
where customer_address = "Nayasadak";
```

Output:



15. Drop database your name.

```
drop database if exists prashant1_bank;
```

Final Code:

```
-- @blockname Q1 Create database of your name and create the tables as
specified above.
drop database if exists prashant1_bank;
create database if not EXISTS prashant1_bank;
use prashant1_bank;

CREATE table Staff(
   staff_id int AUTO_INCREMENT,
   staff_name varchar(255) not null,
   staff_address varchar(255),
   primary key(staff_id)
);

create table Branch (
   branch_id int primary key not null,
   staff_id int not null,
   branch_address varchar(255) not null,
   assets varchar(255),
   foreign key (staff_id) references Staff(staff_id) on delete cascade
on update cascade
);

create table Customer(
   customer_id int primary key not null,
   customer_name varchar(50) not null,
   customer_address varchar(255),
   customer_phone numeric(13),
   customer_DOB varchar(55)
);

create table Loan(
   loan_number numeric(10) primary key not null,
   branch_id int not null,
   amount int,
   foreign key (branch_id) references Branch(branch_id) on delete
cascade on update cascade
);

CREATE table Borrower(
   customer_id int primary key not null,
   branch_id int not null,
   balance int,
   foreign key (customer_id) references Customer(customer_id) on
delete cascade on update cascade,
   foreign key (branch_id) references Branch(branch_id) on delete
cascade on update cascade
);

CREATE table Account(
   account_number varchar(5) primary key not null,
   branch_id int not null,
   balance int,
```

```
   foreign key (branch_id) references Branch(branch_id) on delete
cascade on update cascade
);

CREATE table Depositor(
   customer_id int not null,
   account_number varchar(5) not null,
   primary key (customer_id, account_number),
   foreign key (customer_id) references Customer(customer_id) on
delete cascade on update cascade,
   foreign key (account_number) references Account(account_number) on
delete cascade on update cascade
);



--@blockname Q2 Populate at least 10 data record in each tables. Your
value should look like realistic.


INSERT INTO staff (staff_name, staff_address)
VALUES ("Prashant Manandhar", "Banepa"),
   ("Ram Smith", "Kathmandu"),
   ("Pramish Shresthar", "Banepa"),
   ("Shyam Thapa", "Kavre"),
   ("Hari Bhahadur", "Bhaktapur"),
   ("Rita Dhahal", "Canada"),
   ("Ritik Adhikari", "Kathmandu"),
   ("Sakril Baral", "Banepa"),
   ("Sita Sharma", "Kavre"),
   ("Sandip Bhahadur", "Bhaktapur"),
   ("Rajkumar Dhahal", "Canada");

INSERT INTO branch (branch_id, staff_id, branch_address, assets)
VALUES (001, 1, "Banepa", "xyz.."),
   (002, 2, "Kathmandu", "xyz.."),
   (003, 3, "Bhaktapur", "xyz.."),
   (004, 4, "Sanga", "xyz.."),
   (005, 5, "Dhulikhel", "xyz.."),
   (006, 6, "Lalitpur", "xyz.."),
   (007, 7, "Biratnagar", "xyz.."),
   (008, 8, "Canada", "xyz.."),
   (009, 9, "Pokhara", "xyz.."),
   (010, 10, "Canada", "xyz.."),
   (011, 11, "USA", "xyz..");

INSERT INTO customer (
       customer_id,
       customer_name,
       customer_address,
       customer_phone,
       customer_DOB
   )
VALUES (
       1,
       "Harper Thompson",
```

```
    "esper Peak",
    6958204371,
    "1995-07-21"
),
(
    2,
    "Malik Patel",
    "Nayasadak",
    7136498250,
    "1998-03-12"
),
(
    3,
    "Savannah Rodriguez",
    "Jordan",
    8372569140,
    "1991-11-29"
),
(
    4,
    "Leo Wong",
    " Vietnam",
    9524710368,
    "1992-09-06"
),
(
    5,
    "Lila Singh",
    "Nayasadak",
    4816302975,
    "2001-12-05"
),
(
    6,
    "Elijah Green",
    " Croatia",
    5682497301,
    "1994-05-18"
),
(
    7,
    "Amara Johnson",
    " China",
    2461783095,
    "2004-02-10"
),
(
    8,
    "Luca Davis",
    "Bolivia",
    7849325160,
    "2005-06-30"
),
(9, "Ava Kim", " Kenya", 3194578260, "1993-10-26"),
(
    10,
```

```
        "Owen Garcia",
        " Nayasadak",
        6258740931,
        "1997-01-17"
    ),
    (
        11,
        "Isla Martinez",
        "Turkey",
        1029384756,
        "2002-08-11"
    );
INSERT INTO loan (loan_number, branch_id, amount)
VALUES (1, 001, 10000),
    (2, 005, 30000),
    (3, 001, 50000),
    (4, 009, 70000),
    (5, 003, 90000),
    (6, 001, 200000),
    (7, 003, 400000),
    (8, 001, 600000),
    (9, 006, 800000),
    (10, 010, 900000),
    (11, 008, 1200000);
INSERT INTO borrower (customer_id, branch_id, balance)
VALUES (1, 001, 100000),
    (2, 002, 700000),
    (3, 003, 800000),
    (4, 004, 19800000),
    (5, 005, 300000),
    (6, 006, 4500000),
    (7, 007, 12100000),
    (8, 008, 1600000),
    (9, 009, 18900000),
    (10, 010, 9700000),
    (11, 011, 2300000);
INSERT INTO account (account_number, branch_id, balance)
VALUES ("001A", 001, 100000),
    ("002B", 002, 700000),
    ("003A", 003, 800000),
    ("004D", 004, 19800000),
    ("005S", 005, 300000),
    ("006G", 006, 4500000),
    ("007H", 007, 12100000),
    ("008J", 008, 1600000),
    ("009L", 009, 18900000),
    ("001E", 010, 9700000),
    ("001H", 011, 2300000);
INSERT INTO depositor (customer_id, account_number)
VALUES (1, "001A"),
    (2, "002B"),
    (3, "003A"),
    (4, "004D"),
    (5, "005S"),
    (6, "006G"),
    (7, "007H"),
```

```
   (8, "008J"),
   (9, "009L"),
   (10, "001E"),
   (11, "001H");
--@blockname Display all the data of each of the tables.


SELECT *
from staff;
SELECT *
from branch;
SELECT *
from customer;
SELECT *
from loan;
SELECT *
from borrower;
SELECT *
from account;
SELECT *
from depositor;


--@blockname Q4 Add an attribute in the table staff as designation.


alter table staff
add designation varchar(50);
--@blockname Q5 Display all the data of staff.
SELECT *
from staff;


--@blockname Q6 Update your table staff with at least 2 managers, 5
Assistant, 2 officers, 1 guard.


UPDATE staff
SET designation = 'Manager'
WHERE staff_id = 1;
UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 2;
UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 3;
UPDATE staff
SET designation = 'officers'
WHERE staff_id = 4;
UPDATE staff
SET designation = 'guard'
WHERE staff_id = 5;
UPDATE staff
SET designation = 'Manager'
WHERE staff_id = 6;
UPDATE staff
```

```
SET designation = 'officers'
WHERE staff_id = 7;
UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 8;
UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 9;
UPDATE staff
SET designation = 'Assistant'
WHERE staff_id = 10;
UPDATE staff
SET designation = 'Manager'
WHERE staff_id = 11;


--@blockname Q7 Display all the data of staff


select *
from staff;


--@blockname Q8 Smith is no longer staff in the bank. Update the
table/s accordingly.


delete from staff
where staff_name like "%Smith%";


--@blockname Q9 Display all the data of staff and look whether smith
is still there or not.


SELECT *
from staff;
select *
from staff
where staff_name like "%Smith%";


--@blockname Q10. Find the account number who has the maximum balance.


select account_number as Max_balance_account_number
from account
WHERE balance = (
       SELECT max(balance)
       from account
   );


--@blockname Q11. Can you tell me how much balance will remain after I
withdrew 5000 from my account number „005S".
```

```
select account_number,
   branch_id,
   balance,
   (balance -5000) as updated_balance
from account
where account_number = "005S";


--@blockname Q12. Find the youngest customer in the bank.


select *
from customer
where customer_DOB =(
       select max(customer_DOB)
       from customer
   );


--@blockname Q13. List the ID of the branches which has issued the
loan amount greater than 10000.


select distinct branch_id
from loan
where amount > 10000;


--@blockname Q14. Can you list the number of the customer from address
“Nayasadak”.


select *
from customer
where customer_address = "Nayasadak";


--@BLOCKNAME Q15. Drop database your name.


drop database if exists prashant1_bank
```