RDBMS PROJECT FILE

Submitted for the partial fulfilment of the Degree of

Bachelor of Technology

(Computer Science and Engineering)

Submitted By:

Sparsh Gagneja
D_3CSB_1

1706522

Submitted To:

Pf. Mandeep Kaur

Department of Computer Science & Engineering **Guru Nanak Dev Engineering College, Ludhiana**

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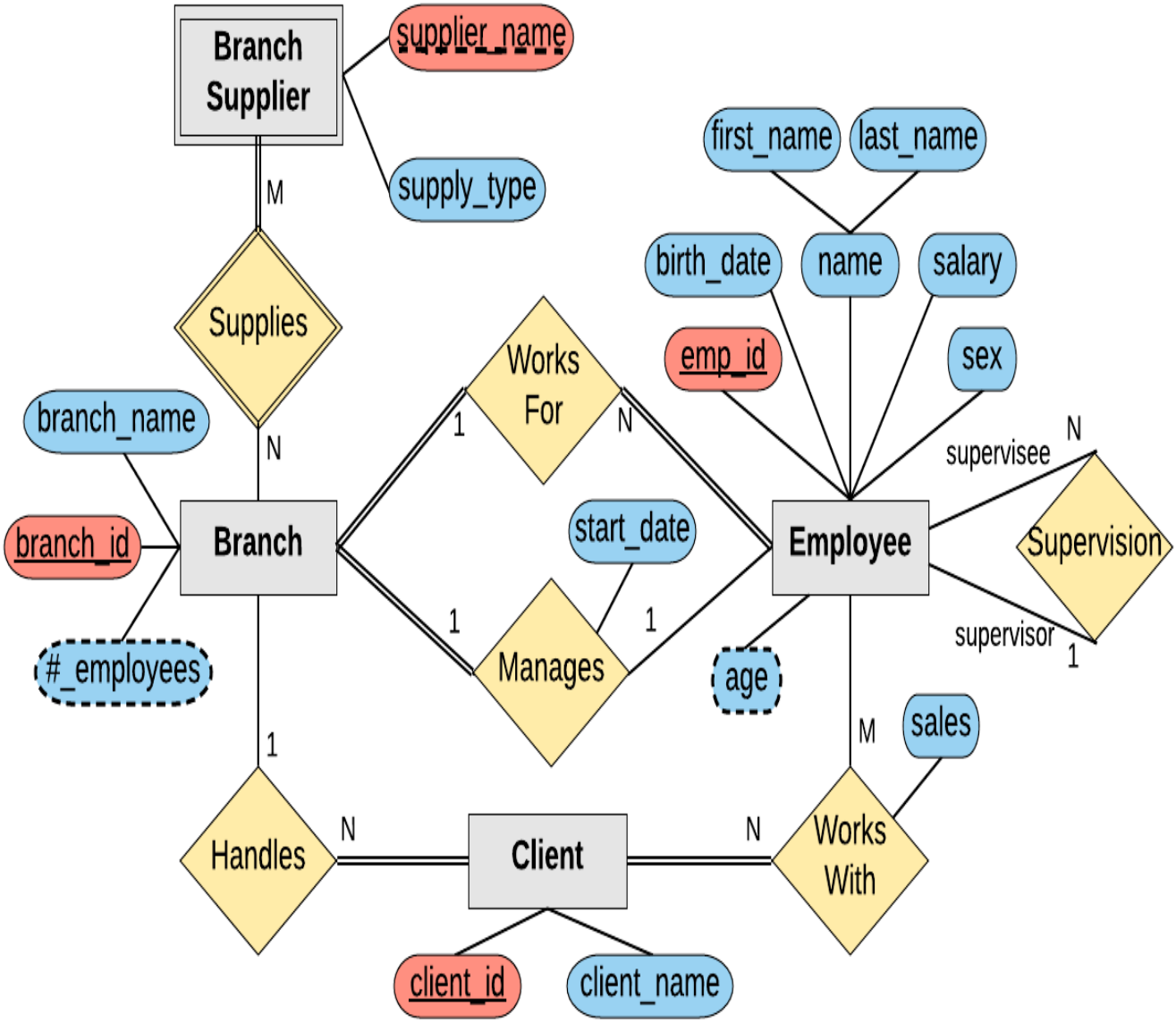
INTRODUCTION

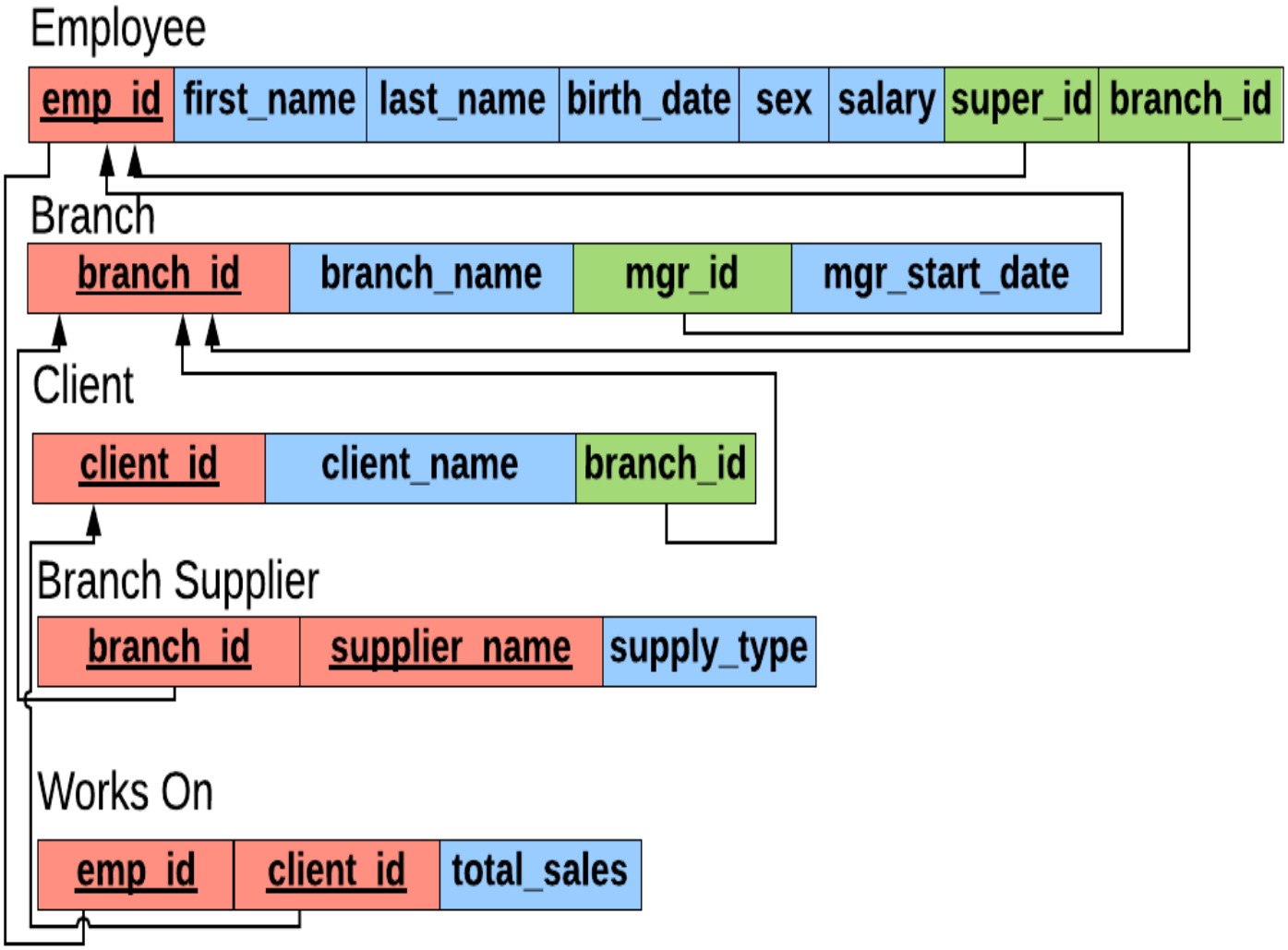
We need to create a database schema design based on the following (simplified) requirements of the COMPANY Database:

- The company is organized into branches. Each branch has a name, unique ID and an employee who manages the branch. We keep track of the branch supplier by storing the records of the supplier name and the supply type. A branch may have several branch suppliers.
- Each branch handles a number of clients.
- We store each employee's ID number, address, salary, sex, and birthdate.
- Each employee works for one branch but may work with several clients.
- One employee manages one branch. We keep a track of the start time of management for the employee for a branch.
- We also keep track of the directed supervisor of each employee and the supervisee associated with each employee.
- An employee may work with a number of clients.
- For each client, we keep track of their name, unique ID, relationship to the employee.

Company ER Diagram



Company Database Schema



ENTITY DESCRIPTION

EMPLOYEE

FIELD	DATATYPE	KEY
Emp_id	Int	Primary key
First_name	VARCHAR(40)	
Last_name	VARCHAR(40)	
Birth_day	DATE	
SEX	VARCHAR(1)	
Salary	Int	
Super_id	Int	
Branch_id	Int	

QUERIES

```
CREATE TABLE employee (
  emp_id INT PRIMARY KEY,
  first_name VARCHAR(40),
  last_name VARCHAR(40),
  birth_day DATE,
  sex VARCHAR(1),
  salary INT,
  super_id INT,
  branch_id INT,
FOREIGN KEY(branch_id) REFERENCES branch(branch_id) ON DELETE SET NULL,
FOREIGN KEY(super_id) REFERENCES employee(emp_id) ON DELETE SET NULL
);
```

BRANCH

FIELD	DATATYPE	KEY
Branch_id	Int	Primary key
branch_name	VARCHAR(40)	
Mgr_id	Int	Foreign key
Mgr_start_date	Date	

QUERIES

```
CREATE TABLE branch (
  branch_id INT PRIMARY KEY,
  branch_name VARCHAR(40),
  mgr_id INT,
  mgr_start_date DATE,
  FOREIGN KEY(mgr_id) REFERENCES employee(emp_id)
ON DELETE SET NULL
);
```

CLIENT

FIELD	DATATYPE	KEY
client_id	Int	Primary key
client_name	VARCHAR(40)	
branch_id	Int	Foreign key

QUERIES

```
CREATE TABLE client (
  client_id INT PRIMARY KEY,
  client_name VARCHAR(40),
  branch_id INT,
  FOREIGN KEY(branch_id) REFERENCES
branch(branch_id) ON DELETE SET NULL
);
```

WORKS_WITH

FIELD	DATATYPE	KEY
Emp_id	Int	Primary key
Client_id	Int	Foreign key
Total_sales	Int	

QUERIES

```
CREATE TABLE works_with (
  emp_id INT,
  client_id INT,
  total_sales INT,
  PRIMARY KEY(emp_id, client_id),
  FOREIGN KEY(emp_id) REFERENCES
employee(emp_id) ON DELETE CASCADE,
  FOREIGN KEY(client_id) REFERENCES
client(client_id) ON DELETE CASCADE
);
```

BRANCH_SUPPLIER

FIELD	DATATYPE	KEY
branch_id	Int	Primary key
Supplier_name	VARCHAR(40)	Primary key
Supply_type	VARCHAR(40)	

QUERIES

```
CREATE TABLE branch_supplier (
  branch_id INT,
  supplier_name VARCHAR(40),
  supply_type VARCHAR(40),
  PRIMARY KEY(branch_id, supplier_name),
  FOREIGN KEY(branch_id) REFERENCES
branch(branch_id) ON DELETE CASCADE
);
```

TABLE DATA

mysql> select * from employee;

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	100	Varun	Singh	1999-11-17	M	250000	*NULL*	1
2	101	Sparsh	Gagneja	1999-05-11	M	110000	100	1
3	102	John	Smith	1989-03-15	M	75000	100	2
4	103	Jennie	Martin	1981-06-25	F	63000	102	2
5	104	Kelly	Kapoor	1990-02-05	F	55000	102	2
6	105	Punit	Singh	1988-02-19	M	69000	102	2
7	106	Tejeshwar	Singh	1969-09-05	M	78000	100	3
8	107	Jack	Smith	1973-07-22	M	65000	106	3
9	108	Jim	Halpert	1978-10-01	M	71000	106	3

mysql> select * from branch;

	branch_id	branch_name	mgr_id	mgr_start_date
1	1	Corporate	100	2014-02-09
2	2	CSE	102	1992-04-06
3	3	IT	106	1998-02-13

mysql> select * from client;

	client_id	client_name	branch_id
1	400	Dunmore Highschool	2
2	401	Lackawana Country	2
3	402	FedEx	3
4	403	John Daly Law, LLC	3
5	404	Scranton Whitepages	2
6	405	Times Newspaper	3
7	406	FedEx	2

mysql> select * from works_with;

	emp_id	client_id	total_sales
1	105	400	55000
2	102	401	267000
3	108	402	22500
4	107	403	5000
5	108	403	12000
6	105	404	33000
7	107	405	26000
8	102	406	15000
9	105	406	130000

mysql> select * from branch_supplier;

	branch_id	supplier_name	supply_type
1	2	Hammer Mill	Paper
2	2	Uni-ball	Writing Utensils
3	3	Patriot Paper	Paper
4	2	J.T. Forms & Labels	Custom Forms
5	3	Uni-ball	Writing Utensils
6	3	Hammer Mill	Paper
7	3	Stamford Lables	Custom Forms

QUERIES EXECUTED

1.Find all employees ordered by salary

SELECT * from employee ORDER BY salary DESC;

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	100	Varun	Singh	1999-11-17	M	250000	NULL	1
2	101	Sparsh	Gagneja	1999-05-11	M	110000	100	1
3	106	Tejeshwar	Singh	1969-09-05	M	78000	100	3
4	102	John	Smith	1989-03-15	M	75000	100	2
5	108	Jim	Halpert	1978-10-01	M	71000	106	3
6	105	Punit	Singh	1988-02-19	M	69000	102	2
7	107	Jack	Smith	1973-07-22	M	65000	106	3
8	103	Jennie	Martin	1981-06-25	F	63000	102	2
9	104	Kelly	Kapoor	1990-02-05	F	55000	102	2

2. Find all employees born between 1970 and 1975

SELECT * FROM employee WHERE birth_day BETWEEN '1970-01-01' AND '1975-01-01';

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	107	Jack	Smith	1973-07-22	M	65000	106	3

3. Find all female employees at branch 2

SELECT * FROM employee WHERE branch_id = 2 AND sex = 'F';

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	103	Jennie	Martin	1981-06-25	F	63000	102	2
2	104	Kelly	Kapoor	1990-02-05	F	55000	102	2

4. Find the total sales of each salesman

SELECT SUM(total_sales), emp_id FROM works_with GROUP BY client_id;

	SUM(total_sales)	emp_id
1	55000	105
2	267000	102
3	22500	108
4	17000	107
5	33000	105
6	26000	107
7	145000	102

5. Find any employee born on the 10th day of the month

SELECT * FROM employee WHERE birth_day LIKE '_____10%';

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	108	Jim	Halpert	1978-10-01	M	71000	106	3

6. Find a list of all clients & branch suppliers' names

SELECT client.client_name AS Non-Employee_Entities, client.branch_id AS Branch_ID FROM client

UNION

SELECT branch_supplier.supplier_name, branch_supplier.branch_id FROM branch_supplier;

	Non_Employee_Entities	Branch_ID
1	Dunmore Highschool	2
2	FedEx	2
3	FedEx	3
4	Hammer Mill	2
5	Hammer Mill	3
6	J.T. Forms & Labels	2
7	John Daly Law, LLC	3
8	Lackawana Country	2
9	Patriot Paper	3
10	Scranton Whitepages	2
11	Stamford Lables	3
12	Times Newspaper	3
13	Uni-ball	2
14	Uni-ball	3

7. Add the extra branch

INSERT INTO branch VALUES(5, "ME", NULL, NULL);

SELECT employee.emp_id, employee.first_name, branch.branch_name FROM employee

JOIN branch

ON employee.emp_id = branch.mgr_id;

	emp_id	first_name	branch_name
1	100	Varun	Corporate
2	102	John	CSE
3	106	Tejeshwar	IT

8. Find names of all employees who have sold over 50,000

SELECT employee.first_name, employee.last_name

FROM employee

WHERE employee.emp_id IN (SELECT works_with.emp_id

FROM works_with

WHERE works_with.total_sales > 50000);

	first_name	last_name
1	John	Smith
2	Punit	Singh

9.Update the name of Jack with Vinayak

UPDATE employee SET first_name='Vinayak' WHERE first_name='Jack';

SELECT * FROM employee;

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	100	Varun	Singh	1999-11-17	M	250000	*NULL*	1
2	101	Sparsh	Gagneja	1999-05-11	M	110000	100	1
3	102	John	Smith	1989-03-15	M	75000	100	2
4	103	Jennie	Martin	1981-06-25	F	63000	102	2
5	104	Kelly	Kapoor	1990-02-05	F	55000	102	2
6	105	Punit	Singh	1988-02-19	M	69000	102	2
7	106	Tejeshwar	Singh	1969-09-05	M	78000	100	3
8	107	Vinayak	Smith	1973-07-22	M	65000	106	3
9	108	Jim	Halpert	1978-10-01	M	71000	106	3

10. Delete the employee whose name is Vinayak

DELETE FROM employee WHERE first_name='Vinayak';

SELECT * from employee;

	emp_id	first_name	last_name	birth_day	sex	salary	super_id	branch_id
1	100	Varun	Singh	1999-11-17	M	250000	*NULL*	1
2	101	Sparsh	Gagneja	1999-05-11	M	110000	100	1
3	102	John	Smith	1989-03-15	M	75000	100	2
4	103	Jennie	Martin	1981-06-25	F	63000	102	2
5	104	Kelly	Kapoor	1990-02-05	F	55000	102	2
6	105	Punit	Singh	1988-02-19	M	69000	102	2
7	106	Tejeshwar	Singh	1969-09-05	M	78000	100	3
8	108	Jim	Halpert	1978-10-01	M	71000	106	3