Assignment – 3

Question 1:

In an organization, number of departments exists. Each department has a name &amp; unique code. Number of employees work in each department. Each employee has unique employee code. Detailed information like name, address, city, basic, date of join are also stored. In a leave register for each employee leave records are kept showing leave type (CL/EL/ML etc.), from-date and to-date. When an employee retires or resigns then all the leave information pertaining to him are also deleted. Basic salary must be within Rs.5000 to Rs.9000. A department cannot be deleted if any employee record refers to it. Valid grades are A/B/C. Employee name must be in uppercase only. Default value for joining date is system date.

Design &amp; implement the tables with necessary constraints to support the scenario depicted above.

Solution:

Creating Department table:

CREATE TABLE DEPARTMENT (

DEPT\_CODE VARCHAR(16) PRIMARY KEY,

DEPT\_NAME VARCHAR(50) NOT NULL

);

MariaDB [assignment\_3]> DESC DEPARTMENT;

+-----------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-----------+-------------+------+-----+---------+-------+

| DEPT\_CODE | varchar(16) | NO | PRI | NULL | |

| DEPT\_NAME | varchar(50) | NO | | NULL | |

+-----------+-------------+------+-----+---------+-------+

Creating Department table:

CREATE TABLE EMPLOYEE (

EMP\_CODE VARCHAR(16) PRIMARY KEY,

EMP\_NAME VARCHAR(50) CHECK (EMP\_NAME = upper(EMP\_NAME)),

DEPT\_CODE VARCHAR(16) NOT NULL,

SEX CHAR(1) CHECK (SEX IN ('M', 'F')),

ADDRESS VARCHAR(100),

CITY VARCHAR(50),

STATE VARCHAR(50),

PIN INTEGER,

BASIC INTEGER CHECK (BASIC BETWEEN 5000 AND 9000),

JN\_DT DATE DEFAULT (current\_date()),

GRADE CHAR(1) CHECK (GRADE IN ('A', 'B', 'C')),

FOREIGN KEY (DEPT\_CODE)

REFERENCES DEPARTMENT (DEPT\_CODE)

ON DELETE RESTRICT

);

MariaDB [assignment\_3]> DESC EMPLOYEE;

+-----------+--------------+------+-----+-----------+-------+

| Field | Type | Null | Key | Default | Extra |

+-----------+--------------+------+-----+-----------+-------+

| EMP\_CODE | varchar(16) | NO | PRI | NULL | |

| EMP\_NAME | varchar(50) | YES | | NULL | |

| DEPT\_CODE | varchar(16) | NO | MUL | NULL | |

| SEX | char(1) | YES | | NULL | |

| ADDRESS | varchar(100) | YES | | NULL | |

| CITY | varchar(50) | YES | | NULL | |

| STATE | varchar(50) | YES | | NULL | |

| PIN | int(11) | YES | | NULL | |

| BASIC | int(11) | YES | | NULL | |

| JN\_DT | date | YES | | curdate() | |

| GRADE | char(1) | YES | | NULL | |

+-----------+--------------+------+-----+-----------+-------+

Creating Leave\_Record table:

CREATE TABLE LEAVE\_RECORD (

LEAVE\_ID INTEGER PRIMARY KEY,

EMP\_CODE VARCHAR(16) NOT NULL,

LEAVE\_TYPE VARCHAR(10) CHECK (LEAVE\_TYPE IN ('CL', 'EL', 'ML')),

FROM\_DATE DATE,

TO\_DATE DATE,

FOREIGN KEY (EMP\_CODE)

REFERENCES EMPLOYEE (EMP\_CODE)

ON DELETE CASCADE

);

MariaDB [assignment\_3]> DESC LEAVE\_RECORD;

+------------+-------------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+------------+-------------+------+-----+---------+-------+

| LEAVE\_ID | int(11) | NO | PRI | NULL | |

| EMP\_CODE | varchar(16) | NO | MUL | NULL | |

| LEAVE\_TYPE | varchar(10) | YES | | NULL | |

| FROM\_DATE | date | YES | | NULL | |

| TO\_DATE | date | YES | | NULL | |

+------------+-------------+------+-----+---------+-------+

Inserting data in Department table:

INSERT INTO DEPARTMENT (DEPT\_CODE, DEPT\_NAME)

VALUES

('D001', 'Sales'),

('D002', 'Marketing'),

('D003', 'Finance');

MariaDB [assignment\_3]> SELECT \* FROM DEPARTMENT;

+-----------+-----------+

| DEPT\_CODE | DEPT\_NAME |

+-----------+-----------+

| D001 | Sales |

| D002 | Marketing |

| D003 | Finance |

+-----------+-----------+

Inserting data in Employee table:

INSERT INTO EMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, GRADE)

VALUES

('E0010', 'John Doe', 'D001', 'M', '123 Main St', 'New York', 'NY', 12345, 6000, 'A'),

('E0011', 'Jane Smith', 'D001', 'F', '456 Elm St', 'Los Angeles', 'CA', 67890, 7000, 'B'),

('E0012', 'Michael Johnson', 'D002', 'M', '789 Oak St', 'Chicago', 'IL', 98765, 8000, 'C'),

('E0013', 'Emily Brown', 'D002', 'F', '321 Pine St', 'Houston', 'TX', 54321, 5500, 'A'),

('E0014', 'David Wilson', 'D003', 'M', '654 Cedar St', 'Miami', 'FL', 13579, 9000, 'B');

MariaDB [assignment\_3]> SELECT \* FROM EMPLOYEE;

+----------+-----------------+-----------+------+--------------+-------------+-------+-------+-------+------------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_CODE | SEX | ADDRESS | CITY | STATE | PIN | BASIC | JN\_DT | GRADE |

+----------+-----------------+-----------+------+--------------+-------------+-------+-------+-------+------------+-------+

| E0010 | John Doe | D001 | M | 123 Main St | New York | NY | 12345 | 6000 | 2023-06-10 | A |

| E0011 | Jane Smith | D001 | F | 456 Elm St | Los Angeles | CA | 67890 | 7000 | 2023-06-10 | B |

| E0012 | Michael Johnson | D002 | M | 789 Oak St | Chicago | IL | 98765 | 8000 | 2023-06-10 | C |

| E0013 | Emily Brown | D002 | F | 321 Pine St | Houston | TX | 54321 | 5500 | 2023-06-10 | A |

| E0014 | David Wilson | D003 | M | 654 Cedar St | Miami | FL | 13579 | 9000 | 2023-06-10 | B |

+----------+-----------------+-----------+------+--------------+-------------+-------+-------+-------+------------+-------+

Inserting data in Leave\_record table:

INSERT INTO LEAVE\_RECORD (LEAVE\_ID, EMP\_CODE, LEAVE\_TYPE, FROM\_DATE, TO\_DATE)

VALUES

(1, 'E0010', 'CL', '2023-02-01', '2023-02-02'),

(2, 'E0011', 'EL', '2023-03-15', '2023-03-20'),

(3, 'E0012', 'ML', '2023-04-10', '2023-04-15'),

(4, 'E0013', 'CL', '2023-05-10', '2023-05-10'),

(5, 'E0014', 'EL', '2023-06-01', '2023-06-05');

MariaDB [assignment\_3]> SELECT \* FROM LEAVE\_RECORD;

+----------+----------+------------+------------+------------+

| LEAVE\_ID | EMP\_CODE | LEAVE\_TYPE | FROM\_DATE | TO\_DATE |

+----------+----------+------------+------------+------------+

| 1 | E0010 | CL | 2023-02-01 | 2023-02-02 |

| 2 | E0011 | EL | 2023-03-15 | 2023-03-20 |

| 3 | E0012 | ML | 2023-04-10 | 2023-04-15 |

| 4 | E0013 | CL | 2023-05-10 | 2023-05-10 |

| 5 | E0014 | EL | 2023-06-01 | 2023-06-05 |

+----------+----------+------------+------------+------------+

Question 2:

Try to violate the constraints that you have implemented in the table &amp; note, what happens. [Try with suitable INSERT/UPDATE/DELETE instruction]

Solution:

Violate foreign key integrity constraint:

INSERT INTO EMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_CODE, SEX, BASIC)

VALUES ('E002', 'john doe', 'D0010', 'M', 5500);

ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails

(`assignment\_3`.`employee`, CONSTRAINT `employee\_ibfk\_1` FOREIGN KEY (`DEPT\_CODE`) REFERENCES `department` (`DEPT\_CODE`))

Violate salary range constraint:

INSERT INTO EMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_CODE, SEX, BASIC)

VALUES ('E002', 'Jane Smith', 'D002', 'F', 9500);

ERROR 4025 (23000): CONSTRAINT `employee.BASIC` failed for `assignment\_3`.`employee`

Violate grade range constraint:

INSERT INTO EMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_CODE, SEX, BASIC, GRADE)

VALUES ('E002', 'Jane Smith', 'D002', 'F', 9500, 'D');

ERROR 4025 (23000): CONSTRAINT `employee.BASIC` failed for `assignment\_3`.`employee`

Violate salary range constraint:

INSERT INTO EMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_CODE, SEX, BASIC, GRADE)

VALUES ('E002', 'jane Smith', 'D002', 'F', 3000, 'C');

ERROR 4025 (23000): CONSTRAINT `employee.BASIC` failed for `assignment\_3`.`employee`

Using update instruction:

select \* from employee;

update employee

set DEPT\_CODE = 'D010'

where emp\_code = 'E0010';

ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails

(`assignment\_3`.`employee`, CONSTRAINT `employee\_ibfk\_1` FOREIGN KEY (`DEPT\_CODE`) REFERENCES `department` (`DEPT\_CODE`))

Using delete instruction:

DELETE FROM DEPARTMENT WHERE DEPT\_CODE = 'D0010';

MariaDB [assignment\_3]> DELETE FROM DEPARTMENT WHERE DEPT\_CODE = 'D0010';

Query OK, 0 rows affected (0.001 sec)

Question 3:

1. Create a view showing employee code, name, dcode &amp; Basic For a particular department.
2. Try to ensure a row into the view with valid department &amp; also with invalid ones.
3. Find the newly inserted row in the table from which view was created.
4. Try to increment basic by Rs.100/.
5. Check it in the original table.
6. Delete the view.

Solution:

Part a:

MariaDB [assignment\_3]> CREATE VIEW EmployeeView AS

-> SELECT EMP\_CODE, EMP\_NAME, DEPT\_CODE, BASIC

-> FROM EMPLOYEE

-> WHERE DEPT\_CODE = 'D001';

Query OK, 0 rows affected

MariaDB [assignment\_3]> SELECT \* FROM EMPLOYEEVIEW;

+----------+------------+-----------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_CODE | BASIC |

+----------+------------+-----------+-------+

| E0010 | John Doe | D001 | 6000 |

| E0011 | Jane Smith | D001 | 7000 |

+----------+------------+-----------+-------+

Part b:

MariaDB [assignment\_3]> INSERT INTO EMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_CODE, SEX, BASIC,

-> VALUES ('E003', 'janey Smith', 'D001', 'F', 8000, 'C');

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds

to your MariaDB server version for the right syntax to use near 'VALUES

('E003', 'janey Smith', 'D001', 'F', 8000, 'C')' at line 2

MariaDB [assignment\_3]> SELECT \* FROM EMPLOYEEVIEW;

+----------+------------+-----------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_CODE | BASIC |

+----------+------------+-----------+-------+

| E0010 | John Doe | D001 | 6100 |

| E0011 | Jane Smith | D001 | 7000 |

+----------+------------+-----------+-------+

Part c:

MariaDB [assignment\_3]> SELECT \* FROM EMPLOYEE, EMPLOYEEVIEW

-> WHERE EMPLOYEE.EMP\_CODE = EMPLOYEEVIEW.EMP\_CODE;

+----------+------------+-----------+------+-------------+-------------+-------+-------+-------+------------+-------+----------+------------+-----------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_CODE | SEX | ADDRESS | CITY | STATE | PIN | BASIC | JN\_DT | GRADE | EMP\_CODE | EMP\_NAME | DEPT\_CODE | BASIC |

+----------+------------+-----------+------+-------------+-------------+-------+-------+-------+------------+-------+----------+------------+-----------+-------+

| E0010 | John Doe | D001 | M | 123 Main St | New York | NY | 12345 | 6000 | 2023-06-10 | A | E0010 | John Doe | D001 | 6000 |

| E0011 | Jane Smith | D001 | F | 456 Elm St | Los Angeles | CA | 67890 | 7000 | 2023-06-10 | B | E0011 | Jane Smith | D001 | 7000 |

+----------+------------+-----------+------+-------------+-------------+-------+-------+-------+------------+-------+----------+------------+-----------+-------+

Part d:

MariaDB [assignment\_3]> UPDATE EMPLOYEE SET BASIC = BASIC + 100

-> WHERE DEPT\_CODE = 'D001';

Query OK, 2 rows affected

Rows matched: 2 Changed: 2 Warnings: 0

Part e:

MariaDB [assignment\_3]> SELECT \* FROM EMPLOYEE;

+----------+-----------------+-----------+------+--------------+-------------+-------+-------+-------+------------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_CODE | SEX | ADDRESS | CITY | STATE | PIN | BASIC | JN\_DT | GRADE |

+----------+-----------------+-----------+------+--------------+-------------+-------+-------+-------+------------+-------+

| E0010 | John Doe | D001 | M | 123 Main St | New York | NY | 12345 | 6100 | 2023-06-10 | A |

| E0011 | Jane Smith | D001 | F | 456 Elm St | Los Angeles | CA | 67890 | 7100 | 2023-06-10 | B |

| E0012 | Michael Johnson | D002 | M | 789 Oak St | Chicago | IL | 98765 | 8000 | 2023-06-10 | C |

| E0013 | Emily Brown | D002 | F | 321 Pine St | Houston | TX | 54321 | 5500 | 2023-06-10 | A |

| E0014 | David Wilson | D003 | M | 654 Cedar St | Miami | FL | 13579 | 9000 | 2023-06-10 | B |

+----------+-----------------+-----------+------+--------------+-------------+-------+-------+-------+------------+-------+

Part f:

DROP VIEW EmployeeView;

Question 4:

1. Create a view Showing empcode, name, deptname, basic, leave type, from date &amp; to date.
2. Try to insert a row in the view. Check what happens?
3. Try to increment basic by Rs.100.
4. Delete the view.

Solution:

Part a:

CREATE VIEW EMPLOYEELEAVEVIEW AS

SELECT EMPLOYEE.EMP\_CODE, EMPLOYEE.EMP\_NAME, DEPARTMENT.DEPT\_NAME, EMPLOYEE.BASIC,

LEAVE\_RECORD.LEAVE\_TYPE, LEAVE\_RECORD.FROM\_DATE, LEAVE\_RECORD.TO\_DATE

FROM EMPLOYEE, DEPARTMENT, LEAVE\_RECORD

WHERE EMPLOYEE.DEPT\_CODE = DEPARTMENT.DEPT\_CODE

AND EMPLOYEE.EMP\_CODE = LEAVE\_RECORD.EMP\_CODE;

MariaDB [assignment\_3]> select \* from EMPLOYEELEAVEVIEW;

+----------+-----------------+-----------+-------+------------+------------+------------+

| EMP\_CODE | EMP\_NAME | DEPT\_NAME | BASIC | LEAVE\_TYPE | FROM\_DATE | TO\_DATE |

+----------+-----------------+-----------+-------+------------+------------+------------+

| E0010 | John Doe | Sales | 6100 | CL | 2023-02-01 | 2023-02-02 |

| E0011 | Jane Smith | Sales | 7100 | EL | 2023-03-15 | 2023-03-20 |

| E0012 | Michael Johnson | Marketing | 8000 | ML | 2023-04-10 | 2023-04-15 |

| E0013 | Emily Brown | Marketing | 5500 | CL | 2023-05-10 | 2023-05-10 |

| E0014 | David Wilson | Finance | 9000 | EL | 2023-06-01 | 2023-06-05 |

+----------+-----------------+-----------+-------+------------+------------+------------+

Part b:

MariaDB [assignment\_3]> insert into EmployeeLeaveView (EMP\_CODE, EMP\_NAME, DEPT\_NAME, BASIC, LEAVE\_TYPE, FROM\_DATE, TO\_DATE)

-> values

-> ('E0015', 'jon snow', 'Sales', 7000, 'CL', '2023-02-01', '2023-02-02' );

ERROR 1393 (HY000): Can not modify more than one base table through a join view 'assignment\_3.employeeleaveview'

Part c:

MariaDB [assignment\_3]> UPDATE EMPLOYEE SET BASIC = BASIC + 100;

ERROR 4025 (23000): CONSTRAINT `employee.BASIC` failed for `assignment\_3`.`employee`

Part d:

DROP VIEW EmployeeLeaveView;

Question 5:

1. Create a table having empcode , Name, deptname, &amp; basic From the existing tables along with the records of the employee who are in a particular department (say, d1) and with a basic Rs. 7000/-
2. From the existing table, add the employees with the basic salary greater than or equal to 7000/-
3. Alter the table to add a net pay column.
4. Replace net pay with 1.5\* Basic.
5. Try to remove the net pay column.

[It may require no. of steps]

Solution:

Part a:

CREATE TABLE FILTEREDEMPLOYEE AS

SELECT EMPLOYEE.EMP\_CODE, EMPLOYEE.EMP\_NAME, DEPARTMENT.DEPT\_NAME, EMPLOYEE.BASIC

FROM EMPLOYEE, DEPARTMENT

WHERE EMPLOYEE.DEPT\_CODE = DEPARTMENT.DEPT\_CODE

AND DEPARTMENT.DEPT\_CODE = 'D001'

AND EMPLOYEE.BASIC = 7000;

MariaDB [assignment\_3]> SELECT \* FROM FILTEREDEMPLOYEE;

+----------+------------+-----------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_NAME | BASIC |

+----------+------------+-----------+-------+

| E0011 | Jane Smith | Sales | 7000 |

+----------+------------+-----------+-------+

Part b:

INSERT INTO FILTEREDEMPLOYEE (EMP\_CODE, EMP\_NAME, DEPT\_NAME, BASIC)

SELECT EMPLOYEE.EMP\_CODE, EMPLOYEE.EMP\_NAME, DEPARTMENT.DEPT\_NAME, EMPLOYEE.BASIC

FROM EMPLOYEE, DEPARTMENT

WHERE EMPLOYEE.DEPT\_CODE = DEPARTMENT.DEPT\_CODE AND BASIC >= 7000;

MariaDB [assignment\_3]> SELECT \* FROM FILTEREDEMPLOYEE;

+----------+-----------------+-----------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_NAME | BASIC |

+----------+-----------------+-----------+-------+

| E0011 | Jane Smith | Sales | 7000 |

| E0011 | Jane Smith | Sales | 7000 |

| E0012 | Michael Johnson | Marketing | 8000 |

| E0014 | David Wilson | Finance | 9000 |

+----------+-----------------+-----------+-------+

Part c:

ALTER TABLE FILTEREDEMPLOYEE

ADD COLUMN NET\_PAY INTEGER;

MariaDB [assignment\_3]> SELECT \* FROM FILTEREDEMPLOYEE;

+----------+-----------------+-----------+-------+---------+

| EMP\_CODE | EMP\_NAME | DEPT\_NAME | BASIC | NET\_PAY |

+----------+-----------------+-----------+-------+---------+

| E0011 | Jane Smith | Sales | 7000 | NULL |

| E0011 | Jane Smith | Sales | 7000 | NULL |

| E0012 | Michael Johnson | Marketing | 8000 | NULL |

| E0014 | David Wilson | Finance | 9000 | NULL |

+----------+-----------------+-----------+-------+---------+

Part d:

UPDATE FILTEREDEMPLOYEE

SET NET\_PAY = 1.5 \* BASIC;

MariaDB [assignment\_3]> SELECT \* FROM FILTEREDEMPLOYEE;

+----------+-----------------+-----------+-------+---------+

| EMP\_CODE | EMP\_NAME | DEPT\_NAME | BASIC | NET\_PAY |

+----------+-----------------+-----------+-------+---------+

| E0011 | Jane Smith | Sales | 7000 | 10500 |

| E0011 | Jane Smith | Sales | 7000 | 10500 |

| E0012 | Michael Johnson | Marketing | 8000 | 12000 |

| E0014 | David Wilson | Finance | 9000 | 13500 |

+----------+-----------------+-----------+-------+---------+

Part e:

ALTER TABLE FILTEREDEMPLOYEE

DROP COLUMN NET\_PAY;

MariaDB [assignment\_3]> SELECT \* FROM FILTEREDEMPLOYEE;

+----------+-----------------+-----------+-------+

| EMP\_CODE | EMP\_NAME | DEPT\_NAME | BASIC |

+----------+-----------------+-----------+-------+

| E0011 | Jane Smith | Sales | 7000 |

| E0011 | Jane Smith | Sales | 7000 |

| E0012 | Michael Johnson | Marketing | 8000 |

| E0014 | David Wilson | Finance | 9000 |

+----------+-----------------+-----------+-------+

Question 6:

Drop all the tables that you have created.

Solution:

DROP TABLE FILTEREDEMPLOYEE;

DROP TABLE LEAVE\_RECORD;

DROP TABLE EMPLOYEE;

DROP TABLE DEPARTMENT;