

## ASSIGNMENT-1

### ▪ CREATE A TABLES:-

**Department**

**Employee**

**Salarylog**

**Emplog**

.open database1.db

```
CREATE TABLE Department (  
    Dept_id text PRIMARY KEY,  
    Dept_name TEXT NOT NULL  
);
```

```
CREATE TABLE Employee (  
    Emp_id text PRIMARY KEY,  
    Dept_id INTEGER NOT NULL,  
    Emp_name TEXT NOT NULL,  
    Mobile TEXT NOT NULL,  
    Email TEXT NOT NULL,  
    Age INTEGER NOT NULL CHECK (Age > 18 AND Age < 100),  
    City TEXT NOT NULL,  
    Salary REAL CHECK (Salary > 10000),  
    FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id)  
);
```

```
CREATE TABLE Salarylog (  
    Emp_id INTEGER,  
    Old_salary REAL,  
    New_salary REAL,  
    Date TEXT,  
    FOREIGN KEY (Emp_id) REFERENCES Employee(Emp_id)  
);
```

```
CREATE TABLE Employ (  
    Emp_id INTEGER,
```

```
Emp_name TEXT,  
Dept_id INTEGER,  
Salary REAL,  
Date TEXT,  
FOREIGN KEY (Emp_id) REFERENCES Employee(Emp_id),  
FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id)  
);  
.table
```

**OUTPUT:-**

```
sqlite> .table  
Department  Employ      Employee    Salarylog  
sqlite>
```

## 1. TRIGGER

1. Create trigger before insert on table department to check if the dept\_id starts with 'D' or not. If it not starts with 'd' then abort the insert.

```
CREATE TRIGGER trg_check_deptid
BEFORE INSERT ON Department
FOR EACH ROW
BEGIN
  SELECT
    CASE
      WHEN SUBSTR(NEW.Dept_id, 1, 1) != 'D' THEN
        RAISE(ABORT, 'Dept_id must start with D')
      END;
END;
```

2. Create trigger before insert on table employee to check if the emp\_id starts with 'E' or not. If it not starts with 'e' then abort the insert.

```
CREATE TRIGGER trg_check_empid
BEFORE INSERT ON Employee
FOR EACH ROW
BEGIN
  SELECT
    CASE
      WHEN SUBSTR(NEW.Emp_id, 1, 1) != 'E' THEN
        RAISE(ABORT, 'Emp_id must start with E')
      END;
END;
```

- 3. Create a trigger on employee table which track record of salary change of each employee.  
For salary logs use table salarylog.**

```
CREATE TRIGGER trg_salary_change  
AFTER UPDATE OF Salary ON Employee  
FOR EACH ROW  
WHEN OLD.Salary != NEW.Salary  
BEGIN  
    INSERT INTO Salarylog (Emp_id, Old_salary, New_salary, Date)  
    VALUES (OLD.Emp_id, OLD.Salary, NEW.Salary, DATE('now'));  
END;
```

- 4. Create a trigger on employee table which has back up of all the employees who are removed from the table. Use table emplog for the same.**

```
CREATE TRIGGER trg_backup_employee  
BEFORE DELETE ON Employee  
FOR EACH ROW  
BEGIN  
    INSERT INTO Employ (Emp_id, Emp_name, Dept_id, Salary, Date)  
    VALUES (OLD.Emp_id, OLD.Emp_name, OLD.Dept_id, OLD.Salary, DATE('now'));  
END;
```

## 2. QUERIES

### 1. Insert appropriate records in department and employee tables.

INSERT INTO Department VALUES ('D1', 'HR');

INSERT INTO Department VALUES ('D2', 'Account');

INSERT INTO Department VALUES ('D3', 'IT');

INSERT INTO Department VALUES ('D4', 'Marketing');

INSERT INTO Department VALUES ('D5', 'Finance');

INSERT INTO Department VALUES ('D6', 'Customer Service');

.mode table

select\*from Department;

```
sqlite> .mode table
sqlite> select*from Department;
+-----+-----+
| Dept_id | Dept_name |
+-----+-----+
| D1      | HR        |
| D2      | Account   |
| D3      | IT        |
| D4      | Marketing |
| D5      | Finance   |
| D6      | Customer Service |
+-----+-----+
sqlite>
```

INSERT INTO Employee VALUES ('E01', 'D1', 'Radha', '9876543210', 'radha@gmail.com', 25, 'Surat', 120000);

INSERT INTO Employee VALUES ('E02', 'D2', 'Rama', '9865321470', 'rama@gmail.com', 29, 'Ahmedabad', 90000);

INSERT INTO Employee VALUES ('E03', 'D1', 'Mahira', '9999888877', 'mahira@gmail.com', 30, 'Baroda', 130000);

INSERT INTO Employee VALUES ('E04', 'D3', 'Ravi', '9988776655', 'ravi@gmail.com', 35, 'Rajkot', 85000);

INSERT INTO Employee VALUES ('E05', 'D4', 'Simran', '9988771122', 'simran@gmail.com', 28, 'Jamnagar', 65000);

INSERT INTO Employee VALUES ('E06', 'D2', 'Anjali', '9876123450', 'anjali@gmail.com', 26, 'Bhavnagar', 72000);

INSERT INTO Employee VALUES ('E07', 'D5', 'Yash', '9845123460', 'yash@gmail.com', 40, 'Surat', 99000);

```
INSERT INTO Employee VALUES ('E08', 'D1', 'Kavita', '9781234567', 'kavita@gmail.com', 38, 'Vadodara', 78000);
```

```
INSERT INTO Employee VALUES ('E09', 'D4', 'Meera', '9876543100', 'meera@gmail.com', 32, 'Nadiad', 94000);
```

```
INSERT INTO Employee VALUES ('E10', 'D3', 'Vikram', '9966554433', 'vikram@gmail.com', 34, 'Anand', 102000);
```

```
INSERT INTO Employee VALUES ('E11', 'D2', 'Sita', '9990001112', 'sita@gmail.com', 22, 'Bharuch', 56000);
```

```
INSERT INTO Employee VALUES ('E12', 'D5', 'Arjun', '9811122233', 'arjun@gmail.com', 45, 'Surat', 88000);
```

```
INSERT INTO Employee VALUES ('E13', 'D1', 'Naina', '9933445566', 'naina@gmail.com', 31, 'Valsad', 87000);
```

```
INSERT INTO Employee VALUES ('E14', 'D3', 'Amit', '9776655443', 'amit@gmail.com', 50, 'Navsari', 110000);
```

```
INSERT INTO Employee VALUES ('E15', 'D2', 'Mona', '9988773322', 'mona@gmail.com', 24, 'Surat', 61000);
```

```
INSERT INTO Employee VALUES ('E16', 'D4', 'Komal', '9765432190', 'komal@gmail.com', 29, 'Ahmedabad', 99000);
```

```
INSERT INTO Employee VALUES ('E17', 'D5', 'Raj', '9988123456', 'raj@gmail.com', 60, 'Surat', 115000);
```

```
INSERT INTO Employee VALUES ('E18', 'D1', 'Neha', '9887766554', 'neha@gmail.com', 33, 'Junagadh', 70000);
```

```
INSERT INTO Employee VALUES ('E19', 'D3', 'Divya', '9856231458', 'divya@gmail.com', 21, 'Palanpur', 67000);
```

```
INSERT INTO Employee VALUES ('E20', '6', 'Isha', '9767894321', 'isha@gmail.com', 27, 'Ahmedabad', 75000);
```

```
select*from Employee;
```

```
sqlite> select*from Employee;
```

Emp_id	Dept_id	Emp_name	Mobile	Email	Age	City	Salary
E01	D1	Radha	9876543210	radha@gmail.com	25	Surat	120000.0
E02	D2	Rama	9865321470	rama@gmail.com	29	Ahmedabad	90000.0
E03	D1	Mahira	9999888877	mahira@gmail.com	30	Baroda	130000.0
E04	D3	Ravi	9988776655	ravi@gmail.com	35	Rajkot	85000.0
E05	D4	Simran	9988771122	simran@gmail.com	28	Jamnagar	65000.0
E06	D2	Anjali	9876123450	anjali@gmail.com	26	Bhavnagar	72000.0
E07	D5	Yash	9845123460	yash@gmail.com	40	Surat	99000.0
E08	D1	Kavita	9781234567	kavita@gmail.com	38	Vadodara	78000.0
E09	D4	Meera	9876543100	meera@gmail.com	32	Nadiad	94000.0
E10	D3	Vikram	9966554433	vikram@gmail.com	34	Anand	102000.0
E11	D2	Sita	9990001112	sita@gmail.com	22	Bharuch	56000.0
E12	D5	Arjun	9811122233	arjun@gmail.com	45	Surat	88000.0
E13	D1	Naina	9933445566	naina@gmail.com	31	Valsad	87000.0
E14	D3	Amit	9776655443	amit@gmail.com	50	Navsari	110000.0
E15	D2	Mona	9988773322	mona@gmail.com	24	Surat	61000.0
E16	D4	Komal	9765432190	komal@gmail.com	29	Ahmedabad	99000.0
E17	D5	Raj	9988123456	raj@gmail.com	60	Surat	115000.0
E18	D1	Neha	9887766554	neha@gmail.com	33	Junagadh	70000.0
E19	D3	Divya	9856231458	divya@gmail.com	21	Palanpur	67000.0
E20	6	Isha	9767894321	isha@gmail.com	27	Ahmedabad	75000.0

```
sqlite>
```

```
INSERT INTO salarylog (Emp_id, Old_salary, New_salary, Date) VALUES
```

```
('E01', 15000, 18000, '2025-07-01'),
```

```
('E12', 20000, 23000, '2025-07-05'),
```

```
('E03', 18000, 20000, '2025-07-10'),
```

```
('E14', 25000, 27000, '2025-07-15'),
```

```
('E05', 22000, 25000, '2025-07-20');
```

```
select * from Salarylog;
```

```
sqlite> select * from Salarylog;
```

Emp_id	Old_salary	New_salary	Date
E01	15000.0	18000.0	2025-07-01
E12	20000.0	23000.0	2025-07-05
E03	18000.0	20000.0	2025-07-10
E14	25000.0	27000.0	2025-07-15
E05	22000.0	25000.0	2025-07-20

```
sqlite>
```

```
INSERT INTO employ (Emp_id, Emp_name, Dept_id, Salary, Date) VALUES
```

```
('E11', 'Rahul Mehta', 'D1', 18000, '2025-07-01'),
```

```
('E02', 'Priya Sharma', 'D1', 23000, '2025-07-05'),
```

```
('E13', 'Amit Patel', 'D1', 20000, '2025-07-10'),
```

```
('E04', 'Neha Joshi', 'D1', 27000, '2025-07-15'),
```

```
('E15', 'Vikas Singh', 'D1', 25000, '2025-07-20');
```

```
select * from Employ;
```

```
sqlite> select * from Employ;
```

Emp_id	Emp_name	Dept_id	Salary	Date
E11	Rahul Mehta	D1	18000.0	2025-07-01
E02	Priya Sharma	D1	23000.0	2025-07-05
E13	Amit Patel	D1	20000.0	2025-07-10
E04	Neha Joshi	D1	27000.0	2025-07-15
E15	Vikas Singh	D1	25000.0	2025-07-20

```
sqlite>
```

## 2. Find the employees name who works in “HR” department.

```
SELECT Emp_name FROM Employee
```

```
WHERE Dept_id = (SELECT Dept_id FROM Department WHERE Dept_name = 'HR');
```

```
sqlite> SELECT Emp_name FROM Employee
...> WHERE Dept_id = (SELECT Dept_id FROM Department WHERE Dept_name = 'HR');
+-----+
| Emp_name |
+-----+
| Radha    |
| Mahira   |
| Kavita   |
| Naina    |
| Neha     |
+-----+
sqlite>
```

## 3. Find the employee who has maximum salary.

```
SELECT * FROM Employee
```

```
ORDER BY Salary DESC LIMIT 1;
```

```
sqlite> SELECT * FROM Employee
...> ORDER BY Salary DESC LIMIT 1;
+-----+-----+-----+-----+-----+-----+-----+-----+
| Emp_id | Dept_id | Emp_name | Mobile | Email | Age | City | Salary |
+-----+-----+-----+-----+-----+-----+-----+
| E03    | D1      | Mahira   | 9999888877 | mahira@gmail.com | 30 | Baroda | 130000.0 |
+-----+-----+-----+-----+-----+-----+-----+
sqlite>
```

## 4. Find all the details of employees whose name's second and last letter is 'a'. Ex. Rama, Radha, Mahira...

```
SELECT * FROM Employee
```

```
WHERE SUBSTR(Emp_name, 2, 1) = 'a' AND SUBSTR(Emp_name, -1) = 'a';
```

```
sqlite> SELECT * FROM Employee
...> WHERE SUBSTR(Emp_name, 2, 1) = 'a' AND SUBSTR(Emp_name, -1) = 'a';
+-----+-----+-----+-----+-----+-----+-----+-----+
| Emp_id | Dept_id | Emp_name | Mobile | Email | Age | City | Salary |
+-----+-----+-----+-----+-----+-----+-----+
| E01    | D1      | Radha    | 9876543210 | radha@gmail.com | 25 | Surat | 120000.0 |
| E02    | D2      | Rama     | 9865321470 | rama@gmail.com | 29 | Ahmedabad | 90000.0 |
| E03    | D1      | Mahira   | 9999888877 | mahira@gmail.com | 30 | Baroda | 130000.0 |
| E08    | D1      | Kavita   | 9781234567 | kavita@gmail.com | 38 | Vadodara | 78000.0 |
| E13    | D1      | Naina    | 9933445566 | naina@gmail.com | 31 | Valsad | 87000.0 |
+-----+-----+-----+-----+-----+-----+-----+
sqlite>
```



### 5. Display all the employees whose age is less than 30 and working in Account department.

```
SELECT * FROM Employee
```

```
WHERE Age < 30 AND Dept_id = (SELECT Dept_id FROM Department WHERE Dept_name = 'Account');
```

```
sqlite> SELECT * FROM Employee
...> WHERE Age < 30 AND Dept_id = (SELECT Dept_id FROM Department WHERE Dept_name = 'Account');
```

Emp_id	Dept_id	Emp_name	Mobile	Email	Age	City	Salary
E02	D2	Rama	9865321470	rama@gmail.com	29	Ahmedabad	90000.0
E06	D2	Anjali	9876123450	anjali@gmail.com	26	Bhavnagar	72000.0
E11	D2	Sita	9990001112	sita@gmail.com	22	Bharuch	56000.0
E15	D2	Mona	9988773322	mona@gmail.com	24	Surat	61000.0

### 6. Display customer name and city who have salary more than 100000.

```
SELECT Emp_name, City FROM Employee
```

```
WHERE Salary > 100000;
```

```
sqlite> SELECT Emp_name, City FROM Employee
...> WHERE Salary > 100000;
```

Emp_name	City
Radha	Surat
Mahira	Baroda
Vikram	Anand
Amit	Navsari
Raj	Surat

### 7. Display total number of employees working in each department.

```
SELECT Dept_id, COUNT(*) AS Total_Employees
```

```
FROM Employee
```

```
GROUP BY Dept_id;
```

```
sqlite> SELECT Dept_id, COUNT(*) AS Total_Employees
...> FROM Employee
...> GROUP BY Dept_id;
```

Dept_id	Total_Employees
6	1
D1	5
D2	4
D3	4
D4	3
D5	3

#### 8. Count total salary for each department.

```
SELECT Dept_id, SUM(Salary) AS Total_Salary
FROM Employee
GROUP BY Dept_id;
```

```
sqlite> SELECT Dept_id, SUM(Salary) AS Total_Salary
...> FROM Employee
...> GROUP BY Dept_id;
```

Dept_id	Total_Salary
6	75000.0
D1	485000.0
D2	279000.0
D3	364000.0
D4	258000.0
D5	302000.0

#### 9. Display all the employees in descending order of their age.

```
SELECT * FROM Employee
ORDER BY Age DESC;
```

```
sqlite> SELECT * FROM Employee
...> ORDER BY Age DESC;
```

Emp_id	Dept_id	Emp_name	Mobile	Email	Age	City	Salary
E17	D5	Raj	9988123456	raj@gmail.com	60	Surat	115000.0
E14	D3	Amit	9776655443	amit@gmail.com	50	Navsari	110000.0
E12	D5	Arjun	9811122233	arjun@gmail.com	45	Surat	88000.0
E07	D5	Yash	9845123460	yash@gmail.com	40	Surat	99000.0
E08	D1	Kavita	9781234567	kavita@gmail.com	38	Vadodara	78000.0
E04	D3	Ravi	9988776655	ravi@gmail.com	35	Rajkot	85000.0
E10	D3	Vikram	9966554433	vikram@gmail.com	34	Anand	102000.0
E18	D1	Neha	9887766554	neha@gmail.com	33	Junagadh	70000.0
E09	D4	Meera	9876543100	meera@gmail.com	32	Nadiad	94000.0
E13	D1	Naina	9933445566	naina@gmail.com	31	Valsad	87000.0
E03	D1	Mahira	9999888877	mahira@gmail.com	30	Baroda	130000.0
E02	D2	Rama	9865321470	rama@gmail.com	29	Ahmedabad	90000.0
E16	D4	Komal	9765432190	komal@gmail.com	29	Ahmedabad	99000.0
E05	D4	Simran	9988771122	simran@gmail.com	28	Jamnagar	65000.0
E20	6	Isha	9767894321	isha@gmail.com	27	Ahmedabad	75000.0
E06	D2	Anjali	9876123450	anjali@gmail.com	26	Bhavnagar	72000.0
E01	D1	Radha	9876543210	radha@gmail.com	25	Surat	120000.0
E15	D2	Mona	9988773322	mona@gmail.com	24	Surat	61000.0
E11	D2	Sita	9990001112	sita@gmail.com	22	Bharuch	56000.0
E19	D3	Divya	9856231458	divya@gmail.com	21	Palanpur	67000.0

### 10. Display the employee from each department who is having maximum salary.

```
SELECT * FROM Employee e
```

```
WHERE Salary = (
```

```
SELECT MAX(Salary)
```

```
FROM Employee
```

```
WHERE Dept_id = e.Dept_id
```

```
);
```

```
sqlite> SELECT * FROM Employee e
...> WHERE Salary = (
(x1...> SELECT MAX(Salary)
(x1...> FROM Employee
(x1...> WHERE Dept_id = e.Dept_id
(x1...> );
```

Emp_id	Dept_id	Emp_name	Mobile	Email	Age	City	Salary
E02	D2	Rama	9865321470	rama@gmail.com	29	Ahmedabad	90000.0
E03	D1	Mahira	9999888877	mahira@gmail.com	30	Baroda	130000.0
E14	D3	Amit	9776655443	amit@gmail.com	50	Navsari	110000.0
E16	D4	Komal	9765432190	komal@gmail.com	29	Ahmedabad	99000.0
E17	D5	Raj	9988123456	raj@gmail.com	60	Surat	115000.0
E20	6	Isha	9767894321	isha@gmail.com	27	Ahmedabad	75000.0

## 11. Count total salary increment given to all employees in July month of 2024.

```
SELECT SUM(New_salary - Old_salary) AS Total_Increment
```

```
FROM Salarylog
```

```
WHERE strftime('%m', Date) = '07' AND strftime('%Y', Date) = '2024';
```

```
sqlite> SELECT SUM(New_salary - Old_salary) AS Total_Increment
...> FROM Salarylog
...> WHERE strftime('%m', Date) = '07' AND strftime('%Y', Date) = '2024';
+-----+
| Total_Increment |
+-----+
|                  |
+-----+
```

## 12. Export employee table into employee.csv file.

```
.mode csv
```

```
.headers on
```

```
.output employee.csv
```

```
SELECT * FROM Employee;
```

```
.output stdout
```

Emp_id	Dept_id	Emp_name	Mobile	Email	Age	City	Salary
E01	D1	Radha	9.88E+09	radha@gr	25	Surat	120000
E02	D2	Rama	9.87E+09	rama@gr	29	Ahmedab	90000
E03	D1	Mahira	1E+10	mahira@gr	30	Baroda	130000
E04	D3	Ravi	9.99E+09	ravi@gr	35	Rajkot	85000
E05	D4	Simran	9.99E+09	simran@gr	28	Jamnagar	65000
E06	D2	Anjali	9.88E+09	anjali@gr	26	Bhavnagar	72000
E07	D5	Yash	9.85E+09	yash@gr	40	Surat	99000
E08	D1	Kavita	9.78E+09	kavita@gr	38	Vadodara	78000
E09	D4	Meera	9.88E+09	meera@gr	32	Nadiad	94000
E10	D3	Vikram	9.97E+09	vikram@gr	34	Anand	102000
E11	D2	Sita	9.99E+09	sita@gr	22	Bharuch	56000
E12	D5	Arjun	9.81E+09	arjun@gr	45	Surat	88000
E13	D1	Naina	9.93E+09	naina@gr	31	Valsad	87000
E14	D3	Amit	9.78E+09	amit@gr	50	Navsari	110000
E15	D2	Mona	9.99E+09	mona@gr	24	Surat	61000
E16	D4	Komal	9.77E+09	komal@gr	29	Ahmedab	99000
E17	D5	Raj	9.99E+09	raj@gr	60	Surat	115000
E18	D1	Neha	9.89E+09	neha@gr	33	Junagadh	70000
E19	D3	Divya	9.86E+09	divya@gr	21	Palanpur	67000
E20	D6	Isha	9.77E+09	isha@gr	27	Ahmedab	75000

### 13. Export department table data into department.csv file.

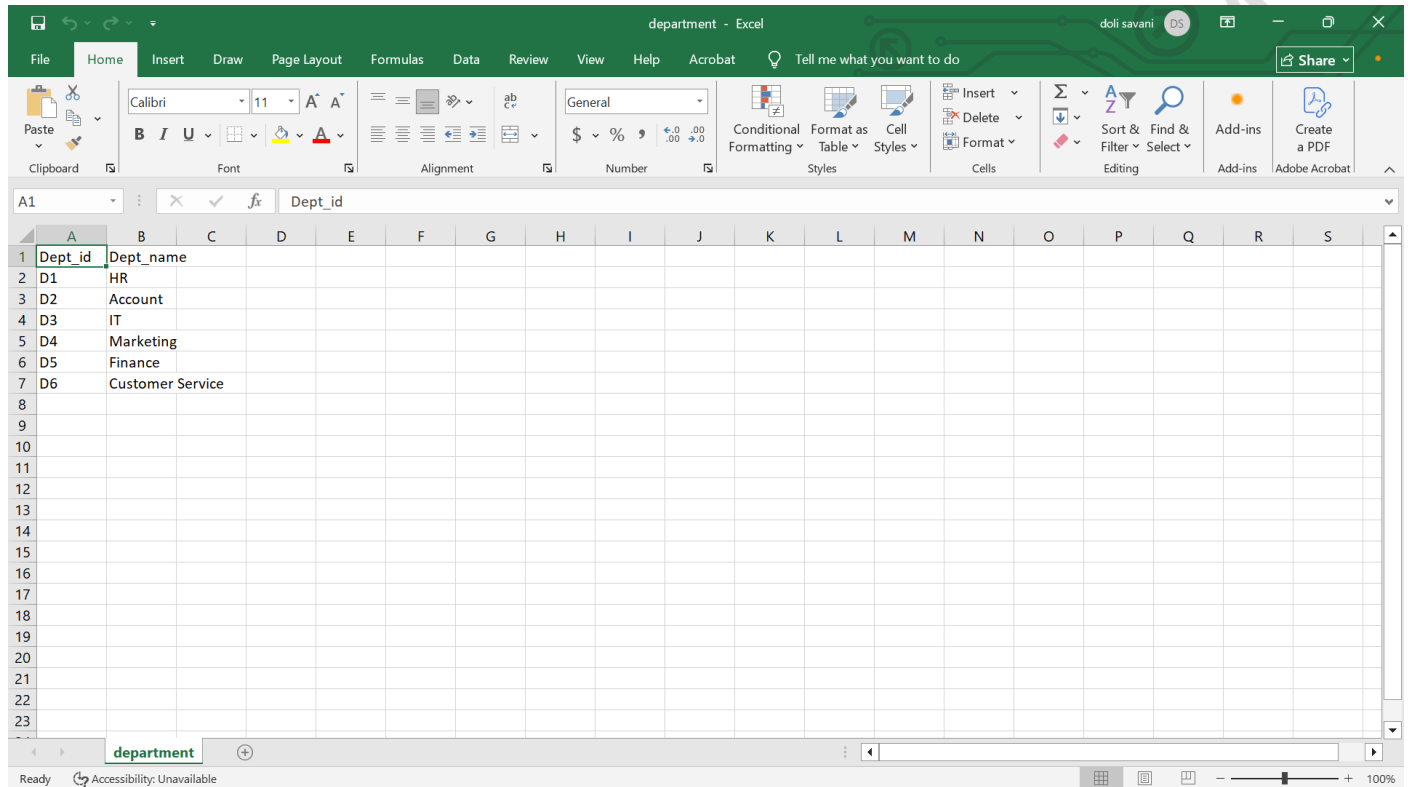
.mode csv

.headers on

.output department.csv

SELECT \* FROM Department;

.output stdout



The screenshot shows a Microsoft Excel spreadsheet titled 'department - Excel'. The data is organized into two columns: 'Dept\_id' and 'Dept\_name'. The rows contain the following data:

Dept_id	Dept_name
D1	HR
D2	Account
D3	IT
D4	Marketing
D5	Finance
D6	Customer Service

### 14. Take backup of whole database in “mycompany” file.

.backup mycompany\_backup.db

```
sqlite>  
sqlite> .backup mycompany_backup.db  
sqlite>
```

**Back\_up Database:-**

```

sqlite> .open mycompany_backup.db
sqlite> .table
Department  Employ      Employee    Salarylog
sqlite> .mode table
sqlite> select * from Employee
...> ;

```

Emp_id	Dept_id	Emp_name	Mobile	Email	Age	City	Salary
E01	D1	Radha	9876543210	radha@gmail.com	25	Surat	120000.0
E02	D2	Rama	9865321470	rama@gmail.com	29	Ahmedabad	90000.0
E03	D1	Mahira	9999888877	mahira@gmail.com	30	Baroda	130000.0
E04	D3	Ravi	9988776655	ravi@gmail.com	35	Rajkot	85000.0
E05	D4	Simran	9988771122	simran@gmail.com	28	Jamnagar	65000.0
E06	D2	Anjali	9876123450	anjali@gmail.com	26	Bhavnagar	72000.0
E07	D5	Yash	9845123460	yash@gmail.com	40	Surat	99000.0
E08	D1	Kavita	9781234567	kavita@gmail.com	38	Vadodara	78000.0
E09	D4	Meera	9876543100	meera@gmail.com	32	Nadiad	94000.0
E10	D3	Vikram	9966554433	vikram@gmail.com	34	Anand	102000.0
E11	D2	Sita	9990001112	sita@gmail.com	22	Bharuch	56000.0
E12	D5	Arjun	9811122233	arjun@gmail.com	45	Surat	88000.0
E13	D1	Naina	9933445566	naina@gmail.com	31	Valsad	87000.0
E14	D3	Amit	9776655443	amit@gmail.com	50	Navsari	110000.0
E15	D2	Mona	9988773322	mona@gmail.com	24	Surat	61000.0
E16	D4	Komal	9765432190	komal@gmail.com	29	Ahmedabad	99000.0
E17	D5	Raj	9988123456	raj@gmail.com	60	Surat	115000.0
E18	D1	Neha	9887766554	neha@gmail.com	33	Junagadh	70000.0
E19	D3	Divya	9856231458	divya@gmail.com	21	Palanpur	67000.0
E20	6	Isha	9767894321	isha@gmail.com	27	Ahmedabad	75000.0

```

sqlite>

```