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Experiment No 3

Implement Horizontal and Vertical Fragmentation and perform operations

Problem Statement

Create a global conceptual schema emp (eno, ename, city, salary) wit eno as a primary key and insert 10 records.

```
CREATE TABLE emp (
    eno INT PRIMARY KEY,
    ename VARCHAR(50),
    city VARCHAR(50),
    salary DECIMAL(10, 2)
);

INSERT INTO emp (eno, ename, city, salary) VALUES (1, 'Alice', 'New York', 14000);
INSERT INTO emp (eno, ename, city, salary) VALUES (2, 'Bob', 'Los Angeles', 16000);
INSERT INTO emp (eno, ename, city, salary) VALUES (3, 'Charlie', 'Chicago', 15000);
INSERT INTO emp (eno, ename, city, salary) VALUES (4, 'David', 'Houston', 18000);
INSERT INTO emp (eno, ename, city, salary) VALUES (5, 'Eve', 'Phoenix', 12000);
INSERT INTO emp (eno, ename, city, salary) VALUES (6, 'Frank', 'Philadelphia', 20000);
INSERT INTO emp (eno, ename, city, salary) VALUES (7, 'Grace', 'San Antonio', 25000);
INSERT INTO emp (eno, ename, city, salary) VALUES (8, 'Heidi', 'San Diego', 11000);
INSERT INTO emp (eno, ename, city, salary) VALUES (9, 'Ivan', 'Dallas', 17000);
INSERT INTO emp (eno, ename, city, salary) VALUES (10, 'Judy', 'San Jose', 15500);
```

1. Find the salary of all employees.

select salary from emp;

Script Output × Query Result ×

SQL | All Rows Fetched: 10 in 0.008 seconds

	SALARY
1	14000
2	16000
3	15000
4	18000
5	12000
6	20000
7	25000
8	11000
9	15500
10	17000

2. Find the name of all employees where salary = 15000.

SELECT ename FROM emp WHERE salary = 15000;

Script Output × Query Result ×

SQL | All Rows Fetched: 1 in 0.003 seconds

	ENAME
1	Charlie

3. Find the employee's name and city where employee salary is between 15000 to 25000.

SELECT ename, city FROM emp WHERE salary BETWEEN 15000 AND 25000;

Script Output | Query Result

SQL | All Rows Fetched: 7 in 0 seconds

	ENAME	CITY
1	Bob	Los Angeles
2	Charlie	Chicago
3	David	Houston
4	Frank	Philadelphia
5	Grace	San Antonio
6	Judy	San Jose
7	Ivan	Dallas

4. Find the employee's name and city where employee number is known.

```
select ename,city
from emp
where eno is not null;
```

Script Output | Query Result

SQL | All Rows Fetched: 10 in 0.004 seconds

	ENAME	CITY
1	Alice	New York
2	Bob	Los Angeles
3	Charlie	Chicago
4	David	Houston
5	Eve	Phoenix
6	Frank	Philadelphia
7	Grace	San Antonio
8	Heidi	San Diego
9	Judy	San Jose
10	Ivan	Dallas

Horizontal Fragmentation:

Divide emp into horizontal fragments using the condition that emph1 contains the tuples with salary<=15000 and emph2 with salary>15000.

CREATE TABLE hFragament1 AS SELECT * FROM emp WHERE salary <= 15000;

CREATE TABLE hFragment2 AS SELECT * FROM emp WHERE salary > 15000;

SELECT *FROM hFragament1;

Script Output x | Query Result x

SQL | All Rows Fetched: 4 in 0.005 seconds

	ENO	ENAME	CITY	SALARY
1	1	Alice	New York	14000
2	3	Charlie	Chicago	15000
3	5	Eve	Phoenix	12000
4	8	Heidi	San Diego	11000

SELECT *FROM hFragment2;

Script Output × Query Result ×

SQL | All Rows Fetched: 6 in 0.005 seconds

	ENO	ENAME	CITY	SALARY
1	2	Bob	Los Angeles	16000
2	4	David	Houston	18000
3	6	Frank	Philadelphia	20000
4	7	Grace	San Antonio	25000
5	10	Judy	San Jose	15500
6	9	Ivan	Dallas	17000

Vertical Fragmentation:

Divide emp into vertical fragments using the condition that empv1 contains the attributes (eno, ename) and empv2 contains the attributes (eno, city, salary)

CREATE TABLE vFragment1 AS SELECT eno, ename FROM emp;

CREATE TABLE vFragment2 AS SELECT eno, city, salary FROM emp;

SELECT *FROM vFragment1;

Script Output | Query Result

SQL | All Rows Fetched: 10 in 0.005 seconds

	ENO	ENAME
1	1	Alice
2	2	Bob
3	3	Charlie
4	4	David
5	5	Eve
6	6	Frank
7	7	Grace
8	8	Heidi
9	10	Judy
10	9	Ivan

SELECT *FROM vFragment2;

Script Output | Query Result

SQL | All Rows Fetched: 10 in 0.004 seconds

	ENO	CITY	SALARY
1	1	New York	14000
2	2	Los Angeles	16000
3	3	Chicago	15000
4	4	Houston	18000
5	5	Phoenix	12000
6	6	Philadelphia	20000
7	7	San Antonio	25000
8	8	San Diego	11000
9	10	San Jose	15500
10	9	Dallas	17000