Advanced Database System (Lab)

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Problem Statement 1:

Create a super type person

Person: attributes -->fname (first name), lname (last name) dob (date of birth)
Methods -->FullName(to return full name), OnDate(return dob)

Create a sub type EmpObj which will inherit the person type attributes and methods.
Empobj (inherits Person): attributes --> job, sal, da(allowance), doj(date of joining)
Methods -- > Earn (return earning), OnDate(overriding return doj)

Problem Statement 2:

Implementing Table Inheritance in SQL Server

The following entities in a "School" database:

Super type: People

Sub types:

- Students
- Teachers
- Parents

Each of those entities has many of the same attributes, such as first name, last name, middle name, and birth date. Yet, we must separate them into multiple tables because we need to store and track different data for students, teachers and parents: students have grades and classes and parents; teachers have classes taught, skills, employment information, and so on.

PROBLEM STATEMENT 1:

```
CREATE TYPE PersonType AS OBJECT
(
   fname VARCHAR(50),
   lname VARCHAR(50),
   dob DATE,
   MEMBER FUNCTION FullName
      RETURN VARCHAR,
   MEMBER FUNCTION OnDate
      RETURN DATE
) NOT FINAL;

CREATE OR REPLACE TYPE BODY personType AS
   MEMBER FUNCTION FullName
      RETURN VARCHAR IS
   BEGIN
      RETURN fname || ' ' || lname;
   END FullName;

   MEMBER FUNCTION OnDate
      RETURN DATE IS
   BEGIN
      RETURN dob;
   END OnDate;
END;
```

--**Creating Employee Table**

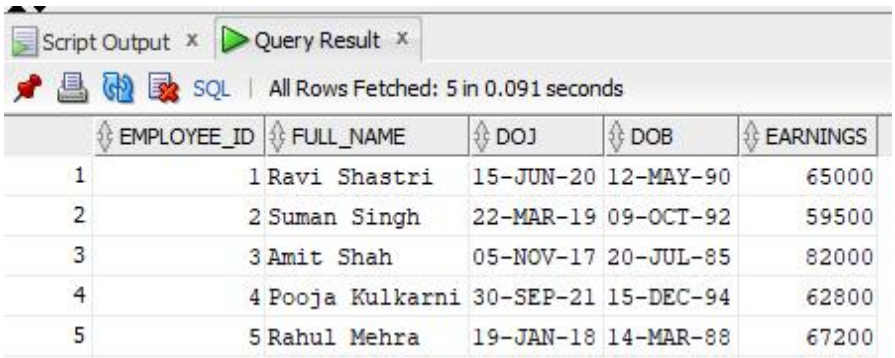
```
CREATE TABLE EMPLOYEES OF EMPOBJTYPE;

INSERT INTO EMPLOYEES VALUES ('Ravi', 'Shastri', TO_DATE('12-05-90',
   'DD-MM-YY'), 1, 'Software Engineer', 60000, 5000, TO_DATE('15-06-20', 'DD-MM-YY'));
INSERT INTO EMPLOYEES VALUES ('Suman', 'Singh', TO_DATE('09-10-92',
   'DD-MM-YY'), 2, 'Data Analyst', 55000, 4500, TO_DATE('22-03-19', 'DD-MM-YY'));
INSERT INTO EMPLOYEES VALUES ('Amit', 'Shah', TO_DATE('20-07-85',
   'DD-MM-YY'), 3, 'Project Manager', 75000, 7000, TO_DATE('05-11-17', 'DD-MM-YY'));
INSERT INTO EMPLOYEES VALUES ('Pooja', 'Kulkarni', TO_DATE('15-12-94',
   'DD-MM-YY'), 4, 'HR Manager', 58000, 4800, TO_DATE('30-09-21', 'DD-MM-YY'));
INSERT INTO EMPLOYEES VALUES ('Rahul', 'Mehra', TO_DATE('14-03-88',
   'DD-MM-YY'), 5, 'DevOps Engineer', 62000, 5200, TO_DATE('19-01-18', 'DD-MM-YY'));
```

--**Query:**

--**Display employee Id, Employee Full Name, Employee Date of joining,**

--Employee Date of Birth and Employee Earning for all employees.

```
SELECT
   e.employee_id,
   e.FullName() AS FULL_NAME,
   e.OnDate() AS DOJ,
   e.dob AS DOB,
   e.Earn() AS EARNINGS
FROM EMPLOYEES e;
```



	EMPLOYEE_ID	FULL_NAME	DOJ	DOB	EARNINGS
1	1	Ravi Shastri	15-JUN-20	12-MAY-90	65000
2	2	Suman Singh	22-MAR-19	09-OCT-92	59500
3	3	Amit Shah	05-NOV-17	20-JUL-85	82000
4	4	Pooja Kulkarni	30-SEP-21	15-DEC-94	62800
5	5	Rahul Mehra	19-JAN-18	14-MAR-88	67200

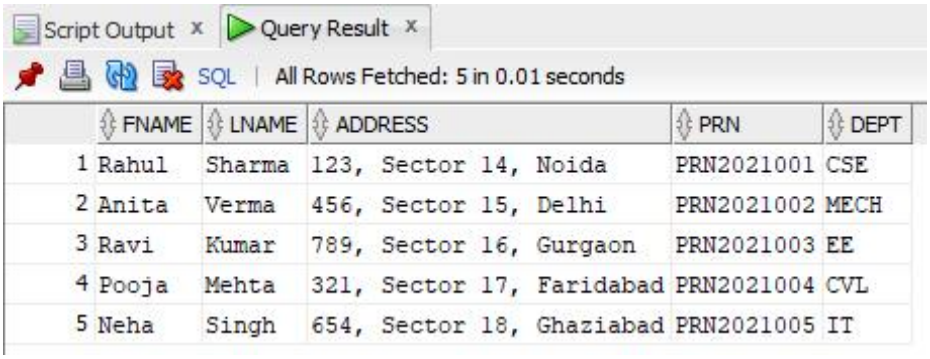
PROBLEM STATEMENT 2:

```
CREATE OR REPLACE TYPE Person AS OBJECT (
   fname VARCHAR(20),
   lname VARCHAR(20),
   address VARCHAR(30) ) NOT FINAL;

CREATE OR REPLACE TYPE Student UNDER Person (
   prn VARCHAR(20),
   dept VARCHAR(20) );

CREATE OR REPLACE TYPE Teacher UNDER Person (
   tid VARCHAR(20),
   dept VARCHAR(20),
   salary INT );

CREATE OR REPLACE TYPE Parent UNDER Person (
   contactNum VARCHAR(20),
   occupation VARCHAR(20) );

CREATE TABLE Students OF Student;
CREATE TABLE Teachers OF Teacher;
CREATE TABLE Parents OF Parent;
```

-- **Insert data into Students table**

```
INSERT INTO Students VALUES ('Rahul', 'Sharma', '123, Sector 14, Noida', 'PRN2021001', 'CSE');
INSERT INTO Students VALUES ('Anita', 'Verma', '456, Sector 15, Delhi', 'PRN2021002', 'MECH');
INSERT INTO Students VALUES ('Ravi', 'Kumar', '789, Sector 16, Gurgaon', 'PRN2021003', 'EE');
INSERT INTO Students VALUES ('Pooja', 'Mehta', '321, Sector 17, Faridabad', 'PRN2021004', 'CVL');
INSERT INTO Students VALUES ('Neha', 'Singh', '654, Sector 18, Ghaziabad', 'PRN2021005', 'IT');
```

SELECT * FROM Students;



Script Output | Query Result

SQL | All Rows Fetched: 5 in 0.01 seconds

	FNAME	LNAME	ADDRESS	PRN	DEPT
1	Rahul	Sharma	123, Sector 14, Noida	PRN2021001	CSE
2	Anita	Verma	456, Sector 15, Delhi	PRN2021002	MECH
3	Ravi	Kumar	789, Sector 16, Gurgaon	PRN2021003	EE
4	Pooja	Mehta	321, Sector 17, Faridabad	PRN2021004	CVL
5	Neha	Singh	654, Sector 18, Ghaziabad	PRN2021005	IT

-- **Insert data into Teachers table**

INSERT INTO Teachers VALUES ('Vijay', 'Patel', '12, Main Street, Ahmedabad', 'TID001', 'CSE', 50000);

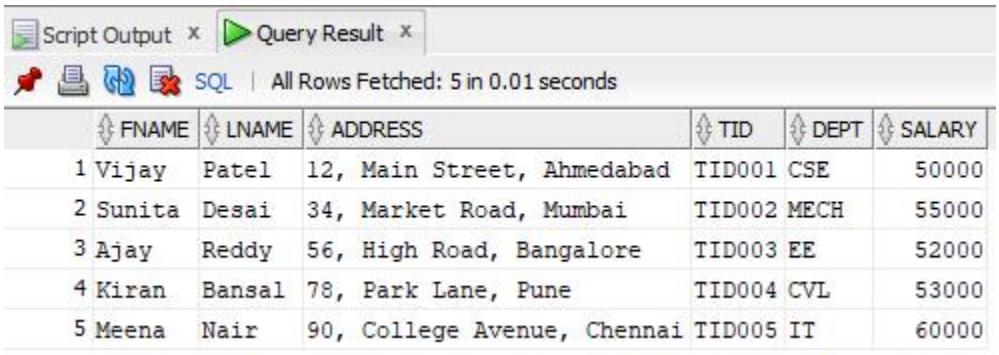
INSERT INTO Teachers VALUES ('Sunita', 'Desai', '34, Market Road, Mumbai', 'TID002', 'MECH', 55000);

INSERT INTO Teachers VALUES ('Ajay', 'Reddy', '56, High Road, Bangalore', 'TID003', 'EE', 52000);

INSERT INTO Teachers VALUES ('Kiran', 'Bansal', '78, Park Lane, Pune', 'TID004', 'CVL', 53000);

INSERT INTO Teachers VALUES ('Meena', 'Nair', '90, College Avenue, Chennai', 'TID005', 'IT', 60000);

SELECT * FROM Teachers;



Script Output | Query Result

SQL | All Rows Fetched: 5 in 0.01 seconds

	FNAME	LNAME	ADDRESS	TID	DEPT	SALARY
1	Vijay	Patel	12, Main Street, Ahmedabad	TID001	CSE	50000
2	Sunita	Desai	34, Market Road, Mumbai	TID002	MECH	55000
3	Ajay	Reddy	56, High Road, Bangalore	TID003	EE	52000
4	Kiran	Bansal	78, Park Lane, Pune	TID004	CVL	53000
5	Meena	Nair	90, College Avenue, Chennai	TID005	IT	60000

-- **Insert data into Parents table**

INSERT INTO Parents VALUES ('Raj', 'Singh', '11, Hilltop, Jaipur', '9876543210', 'Engineer');

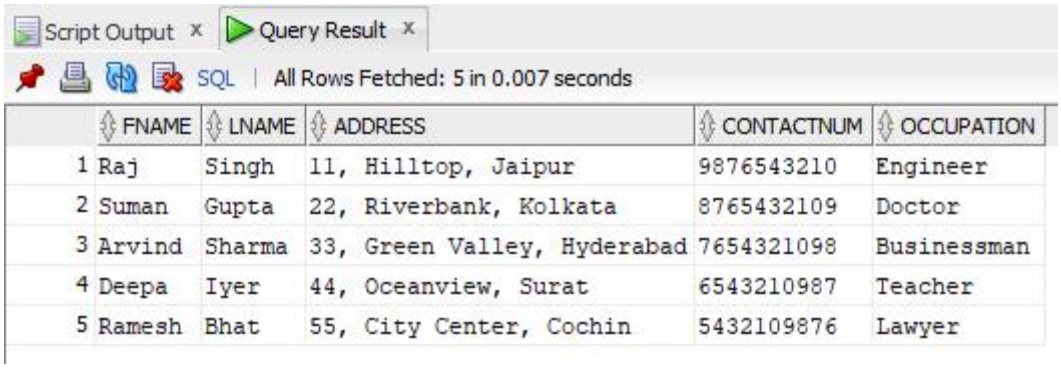
INSERT INTO Parents VALUES ('Suman', 'Gupta', '22, Riverbank, Kolkata', '8765432109', 'Doctor');

INSERT INTO Parents VALUES ('Arvind', 'Sharma', '33, Green Valley, Hyderabad', '7654321098', 'Businessman');

INSERT INTO Parents VALUES ('Deepa', 'Iyer', '44, Oceanview, Surat', '6543210987', 'Teacher');

INSERT INTO Parents VALUES ('Ramesh', 'Bhat', '55, City Center, Cochin', '5432109876', 'Lawyer');

SELECT * FROM Parents;



	FNAME	LNAME	ADDRESS	CONTACTNUM	OCCUPATION
1	Raj	Singh	11, Hilltop, Jaipur	9876543210	Engineer
2	Suman	Gupta	22, Riverbank, Kolkata	8765432109	Doctor
3	Arvind	Sharma	33, Green Valley, Hyderabad	7654321098	Businessman
4	Deepa	Iyer	44, Oceanview, Surat	6543210987	Teacher
5	Ramesh	Bhat	55, City Center, Cochin	5432109876	Lawyer