Experiment 02

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 subtype 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)

Answer below query.

- Display employee Id, Employee Full Name, Employee Date of joining, Employee Date of Birth and Employee Earning for all employees.

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.

Answer 1:

Create Data Types

```
-- PERSONTYPE Super Type Definition
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;


-- EMPOBJTYPE Sub Type Definition
CREATE TYPE EMPOBJTYPE UNDER PERSONTYPE
(
    Employee_ID NUMBER,   -- Added Employee_ID attribute
    job1 VARCHAR(50),
    sal NUMBER,
    da NUMBER,
    doj DATE,

    MEMBER FUNCTION Earn RETURN NUMBER,
    OVERRIDING MEMBER FUNCTION OnDate RETURN DATE
) NOT FINAL;

CREATE OR REPLACE TYPE BODY EMPOBJTYPE AS
    MEMBER FUNCTION Earn RETURN NUMBER IS
```

```
    BEGIN
        RETURN sal + da;
    END Earn;

    OVERRIDING MEMBER FUNCTION OnDate RETURN DATE IS
    BEGIN
        RETURN doj;
    END OnDate;
END;
```

Create *Employee* Table
```
-- Creating EMPLOYEES Table
CREATE TABLE EMPLOYEES OF EMPOBJTYPE;
```

Insert Data into the *Employee* Table
```
INSERT INTO EMPLOYEES VALUES ('Ravi', 'Kumar', 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', 'Sharma', 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', 'Singh', 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', 'Mehta', 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', 'Nair', TO_DATE('14-03-88',
'DD-MM-YY'), 5, 'DevOps Engineer', 62000, 5200, TO_DATE('19-01-18',
'DD-MM-YY'));
```
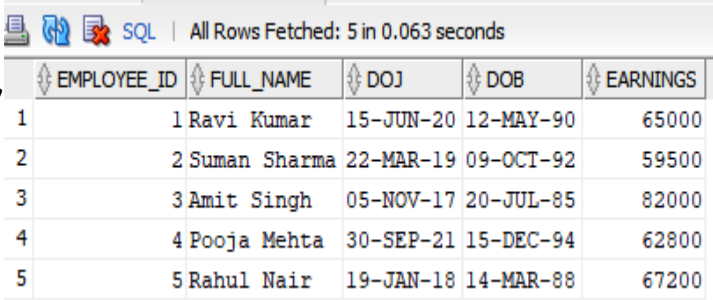   1. **Answer to the query**
```
SELECT
    e.employee_id,
    e.FullName() AS FULL_NAME,
    e.OnDate() AS DOJ,
    e.dob AS DOB,
    e.Earn() AS EARNINGS
FROM
    EMPLOYEES e;
```

SQL | All Rows Fetched: 5 in 0.063 seconds

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

Answer 2:
```
CREATE OR REPLACE TYPE Person AS OBJECT (
```

```sql
    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;
```

	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;
```

	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
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