

ADS Experiment 2

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Statement

Experiment Description:

This experiment involves the creation of object types, inheritance, and object tables, with operations on these objects using SQL.

Implementation

Step 1: Create Base Type **Person**

```
CREATE OR REPLACE TYPE Person AS OBJECT (  
    fname VARCHAR2(50),  
    lname VARCHAR2(50),  
    dob DATE,  
    MEMBER FUNCTION FullName RETURN VARCHAR2,  
    MEMBER FUNCTION OnDate RETURN DATE  
) NOT FINAL;
```

Step 2: Create Body for Type **Person**

```
CREATE OR REPLACE TYPE BODY Person AS  
    MEMBER FUNCTION FullName RETURN VARCHAR2 IS  
    BEGIN  
        RETURN fname || ' ' || lname;  
    END;  
  
    MEMBER FUNCTION OnDate RETURN DATE IS  
    BEGIN  
        RETURN dob;  
    END;  
END;
```

Step 3: Create Derived Type **EmpObj**

```
CREATE OR REPLACE TYPE EmpObj UNDER Person (  
    job VARCHAR2(50),  
    sal NUMBER,  
    da NUMBER,  
    doj DATE,  
    MEMBER FUNCTION Earn RETURN NUMBER,  
    OVERRIDING MEMBER FUNCTION OnDate RETURN DATE  
);
```

Step 4: Create Body for Type EmpObj

```
CREATE OR REPLACE TYPE BODY EmpObj AS  
    MEMBER FUNCTION Earn RETURN NUMBER IS  
    BEGIN  
        RETURN sal + da;  
    END;  
  
    OVERRIDING MEMBER FUNCTION OnDate RETURN DATE IS  
    BEGIN  
        RETURN doj;  
    END;  
END;
```

Step 5: Create and Insert Data into Table employees

Create Table employees

```
CREATE TABLE employees OF EmpObj;
```

Insert Data into employees

```
INSERT INTO employees VALUES (EmpObj('Pranav', 'Phirke', DATE  
'2003-06-26', 'Software Engineer', 60000, 10000, DATE  
'2023-02-01'));  
INSERT INTO employees VALUES (EmpObj('Dhairyasheel', 'Phalke', DATE  
'2003-03-01', 'Software Developer', 50000, 10000, DATE  
'2023-02-10'));  
INSERT INTO employees VALUES (EmpObj('Varad', 'Khedkar', DATE  
'2003-04-10', 'Analyst', 70000, 10000, DATE '2023-04-01'));  
INSERT INTO employees VALUES (EmpObj('Arya', 'Mane', DATE  
'2003-01-01', 'Tester', 80000, 10000, DATE '2023-05-01'));
```

```
INSERT INTO employees VALUES (EmpObj('Digvijay', 'Patil', DATE
'2003-06-12', 'HR Specialist', 45000, 10000, DATE '2023-07-11'));
```

Query the Data from **employees** Table

```
SELECT e.FullName(), e.OnDate(), e.Earn()
FROM employees e;
```

Step 6: Create **People** Base Type and Derived Types

Base Type **People**

```
CREATE OR REPLACE TYPE People AS OBJECT (
    fname VARCHAR2(50),
    lname VARCHAR2(50),
    mname VARCHAR2(50),
    birth_date DATE
) NOT FINAL;
```

Derived Types

```
CREATE OR REPLACE TYPE Student UNDER People (
    grade NUMBER,
    class VARCHAR2(50),
    parent_name VARCHAR2(100)
);
```

```
CREATE OR REPLACE TYPE Teacher UNDER People (
    classes_taught VARCHAR2(100),
    skills VARCHAR2(100),
    employment_info VARCHAR2(100)
);
```

```
CREATE OR REPLACE TYPE Parent UNDER People (
    children VARCHAR2(100)
);
```

Step 7: Create Tables for **students**, **teachers**, and **parents**

Create Tables

```
CREATE TABLE students OF Student (  
    PRIMARY KEY (fname, lname)  
);
```

```
CREATE TABLE teachers OF Teacher (  
    PRIMARY KEY (fname, lname)  
);
```

```
CREATE TABLE parents OF Parent (  
    PRIMARY KEY (fname, lname)  
);
```

Insert Data into students

```
INSERT INTO students VALUES ('Pranav', 'Phirke', 'D', DATE  
'2003-07-10', 9, 'Class A', 'Sachin Phirke');  
INSERT INTO students VALUES ('Aryan', 'Patil', 'S', DATE  
'2003-05-22', 8, 'Class B', 'Sachin Patil');  
INSERT INTO students VALUES ('Reema', 'Desai', 'B', DATE  
'2003-01-05', 7, 'Class D', 'Babaso Desai');  
INSERT INTO students VALUES ('Ishwari', 'Deshmukh', 'R', DATE  
'2003-08-12', 11, 'Class E', 'Satish Deshmukh');  
INSERT INTO students VALUES ('Varad', 'Khedkar', 'S', DATE  
'2003-02-18', 12, 'Class F', 'Prafulla Khedkar');  
INSERT INTO students VALUES ('Dhairyasheel', 'Phalke', 'R', DATE  
'2003-09-25', 6, 'Class G', 'Mahendra Phalke');  
INSERT INTO students VALUES ('Aditya', 'Patil', 'S', DATE  
'2003-11-15', 10, 'Class C', 'Suresh Patil');
```

Insert Data into parents

```
INSERT INTO parents VALUES ('Sachin', 'Phirke', 'K', DATE  
'1975-04-10', 'Pranav Phirke');  
INSERT INTO parents VALUES ('Sachin', 'Patil', 'M', DATE  
'1972-07-23', 'Aryan Patil');  
INSERT INTO parents VALUES ('Suresh', 'Patil', 'S', DATE  
'1979-05-15', 'Aditya Patil');
```

```
INSERT INTO parents VALUES ('Babaso', 'Desai', 'S', DATE
'1980-09-17', 'Reema Desai');
INSERT INTO parents VALUES ('Mahendra', 'Phalke', 'D', DATE
'1978-10-10', 'Dhairyasheel Phalke');
INSERT INTO parents VALUES ('Satish', 'Deshmukh', 'N', DATE
'1982-11-02', 'Ishwari Deshmukh');
INSERT INTO parents VALUES ('Prafulla', 'Khedkar', 'R', DATE
'1976-03-22', 'Varad Khedkar');
```

Insert Data into teachers

```
INSERT INTO teachers VALUES ('Pooja', 'Reddy', 'T', DATE
'1985-05-10', 'Math, Science', 'Math Expert', '10 Years');
INSERT INTO teachers VALUES ('Reema', 'Bose', 'D', DATE
'1983-08-30', 'Physics, Chemistry', 'Science Expert', '8 Years');
INSERT INTO teachers VALUES ('Meera', 'Iyer', 'F', DATE
'1981-12-11', 'Computer Science', 'Tech Expert', '6 Years');
INSERT INTO teachers VALUES ('Sangeeta', 'Kapoor', 'G', DATE
'1986-06-19', 'Biology, Environmental Science', 'Biology
Specialist', '9 Years');
INSERT INTO teachers VALUES ('Shalini', 'Menon', 'L', DATE
'1984-07-07', 'Geography, Economics', 'Social Studies Expert', '11
Years');
INSERT INTO teachers VALUES ('Sonar', 'Mishra', 'A', DATE
'1980-04-20', 'English, History', 'Literature Specialist', '12
Years');
INSERT INTO teachers VALUES ('Radhika', 'Desai', 'P', DATE
'1978-03-09', 'Physical Education', 'Fitness Expert', '15 Years');
```

Sample Queries

1. Display all students

```
SELECT * FROM students;
```

Reema	Desai	B	05-JAN-03	7	Class D	Babaso Desai
Ishwari	Deshmukh	R	12-AUG-03	11	Class E	Satish Deshmukh
Varad	Khedkar	S	18-FEB-03	12	Class F	Prafulla Khedkar
Dhairyasheel	Phalke	R	25-SEP-03	6	Class G	Mahendra Phalke
Aditya	Patil	S	15-NOV-03	10	Class C	Suresh Patil

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7 rows selected.

2. Display all teachers

```
SELECT * FROM teachers;
```

```
SELECT * FROM teachers
```

FNAME	LNAME	MNAME	BIRTH_DATE	CLASSES_TAUGHT	SKILLS
Sonar	Mishra	A	20-APR-80	English, History	Literature Speci
Radhika	Desai	P	09-MAR-78	Physical Education	Fitness Expert
Pooja	Reddy	T	10-MAY-85	Math, Science	Math Expert
Reema	Bose	D	30-AUG-83	Physics, Chemistry	Science Expert
Meera	Iyer	F	11-DEC-81	Computer Science	Tech Expert
Sangeeta	Kapoor	G	19-JUN-86	Biology, Environmental Science	Biology Speciali
Shalini	Menon	L	07-JUL-84	Geography, Economics	Social Studies Ex

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3. Display all parents

```
SELECT * FROM parents;
```

```
SELECT * FROM parents
```

FNAME	LNAME	MNAME	BIRTH_DATE	CHILDREN
Satish	Deshmukh	N	02-NOV-82	Ishwari Deshmukh
Prafulla	Khedkar	R	22-MAR-76	Varad Khedkar
Sachin	Phirke	K	10-APR-75	Pranav Phirke
Sachin	Patil	M	23-JUL-72	Aryan Patil
Suresh	Patil	S	15-MAY-79	Aditya Patil
Babaso	Desai	S	17-SEP-80	Reema Desai
Mahendra	Phalke	D	10-OCT-78	Dhairyasheel Phalke

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7 rows selected.