

Experiment No. 2

Implement the Inheritance, Functions and Methods

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Problem Statement 1:

- Create a super type Person
 - Create a sub type EmpObj
-

```
create or replace type Person as object(  
    FirstName varchar(20),  
    LastName varchar(20),  
    DOB date,  
    member function FullName return varchar,  
    member function OnDate return date  
)not final;
```

```
create or replace body Person As  
member function FullName return varchar is  
begin return Firstname || ' ' || Lastname;  
end FullName;  
member function OnDate return date is  
begin return DOB;  
end OnDate;  
end;
```

```
create or replace type EmpObj under Person(  
    Job varchar(20),  
    Salary number,  
    DA number,  
    DOJ date,  
    member function Earn return number,  
    overriding member function OnDate return date  
);
```

```
create or replace type body EmpObj As  
member function Earn return number is  
begin return Salary;  
end Earn;  
overriding member function OnDate return date is  
begin return DOJ;  
end OnDate;  
end;
```

```
create table Employee1(  
    emp_id varchar(20) PRIMARY KEY,  
    personal_details Person,  
    job_details EmpObj  
);
```

```
insert into Employee1 values( 'E01', Person('Sam', 'Smith', to_date('2003-09-10', 'YYYY-MM-DD')),  
EmpObj('Sam', 'Smith', to_date('2003-09-10', 'YYYY-MM-DD'), 'Manager', 65000, 15000,  
to_date('2024-09-01', 'YYYY-MM-DD')));
```

```
insert into Employee1 values( 'E02',Person('Taylor', 'Swift', to_date('1995-05-11', 'YYYY-MM-DD')),
```

```
EmpObj('Taylor', 'Swift', to_date('1995-05-11', 'YYYY-MM-DD'), 'Manager', 65000, 15000, to_date('2024-09-01', 'YYYY-MM-DD')));
```

```
insert into Employee1 values('E03',Person('Selena', 'Gomez', to_date('1992-03-28', 'YYYY-MM-DD')),
```

```
EmpObj('Selena', 'Gomez', to_date('1995-03-28', 'YYYY-MM-DD'), 'Full-Stack-Developer', 95000, 15000, to_date('2024-09-01', 'YYYY-MM-DD')) );
```

```
insert into Employee1 values('E04',Person('Charlie', 'Puth', to_date('2000-07-15', 'YYYY-MM-DD')),
```

```
EmpObj('Charlie', 'Puth', to_date('2000-07-15', 'YYYY-MM-DD'), 'Senior Software', 105000, 15000, to_date('2024-09-01', 'YYYY-MM-DD')));
```

```
insert into Employee1 values('E05', Person('John', 'charles', to_date('2001-08-15', 'YYYY-MM-DD')),
```

```
EmpObj('John', 'charles', to_date('2001-08-15', 'YYYY-MM-DD'), 'Junior Software', 55000, 11000, to_date('2024-09-01', 'YYYY-MM-DD')) );
```

```
select
```

```
E.emp_id,
```

```
E.personal_details.FullName() as Emp_name,
```

```
E.personal_details.OnDate() as Date_Of_Birth,
```

```
E.job_details.job as job_description,
```

```
E.job_details.OnDate() as Date_of_joining, E.job_details.Earn() as Earning from
```

```
Employee1 E;
```

SQL All Rows Fetched: 5 in 0.086 seconds						
	EMP_ID	EMP_NAME	DATE_OF_BIRTH	JOB_DESCRIPTION	DATE_OF_JOINING	EARNING
1	E01	Sam Smith	10-09-03	Manager	01-09-24	65000
2	E02	Taylor Swift	11-05-95	Manager	01-09-24	65000
3	E03	Selena Gomez	28-03-92	Full-Stack-Developer	01-09-24	95000
4	E04	Charlie Puth	15-07-00	Senior Software	01-09-24	105000
5	E05	John charles	15-08-01	Junior Software	01-09-24	55000

Problem Statement 2 :

Implementing Table Inheritance in SQL Server

```
create type PeopleInfo as object(
```

```
    firstname varchar(20),
```

```
    lastname varchar(20),
```

```
    birthdate date
```

```
) not final;
```

```
create table People(
```

```
    person_ID varchar(10) primary key,
```

```
    personal_info PeopleInfo,
```

```
    phone int,
```

```
    personType varchar(20) check (personType in ('Student', 'Teacher', 'Parent'))
```

```
);
```

```
create table Students(
```

```
    student_ID varchar(10) primary key,
```

```
    person_ID varchar(10) references People(person_ID), grade char, class varchar(50),  
    unique(person_ID)
```

```
);
```

```
create type SubjectSet as varray(4) of varchar(20);
```

```
create table Teachers(
```

```
    teacher_ID varchar(10) primary key,
```

```
    person_ID varchar(10) references People(person_ID),
```

```
    skill varchar(20),
```

```
    subjects_taught SubjectSet,
```

```
    employment_date date,
```

```
    salary number, unique(person_ID)
);
```

```
create table Parents(
    parent_ID varchar(10) primary key,
    person_ID varchar(10) references People(person_ID),
    child_ID varchar(10) references students(student_ID),
    salary number, unique(person_ID)
);
```

```
INSERT INTO People (person_ID, personal_info, phone, personType)
VALUES ('P001', PeopleInfo('John', 'Doe', TO_DATE('2000-01-15', 'YYYY-MM-DD')),9045782198,'Student');
```

```
INSERT INTO People (person_ID, personal_info, phone, personType)
VALUES ('P002', PeopleInfo('Jane', 'Smith', TO_DATE('1985-05-22', 'YYYY-MM-DD')),7745678901,'Teacher');
```

```
INSERT INTO People (person_ID, personal_info, phone, personType)
VALUES ('P003',PeopleInfo('Alice', 'Johnson', TO_DATE('1975-10-05', 'YYYY-MM-DD')),8045678901,'Parent');
```

```
INSERT INTO People (person_ID, personal_info, phone, personType)
VALUES ( 'P004', PeopleInfo('Emily', 'Davis', TO_DATE('1999-03-12', 'YYYY-MM-DD')),9145762198,'Student');
```

```
INSERT INTO People (person_ID, personal_info, phone, personType)
VALUES ( 'P005',PeopleInfo('Michael', 'Brown', TO_DATE('2001-07-24', 'YYYY-MM-DD')),9745671201,'Student');
```

```
INSERT INTO People (person_ID, personal_info, phone, personType)
```

```
VALUES ('P006',PeopleInfo('Linda', 'Wilson', TO_DATE('1978-09-10', 'YYYY-MM-DD')),8995678901,'Teacher');
```

```
select * from People;
```

```
INSERT INTO Students (student_ID, person_ID, grade, class)
VALUES ('S001','P001', 'A','Mathematics 101');
```

```
INSERT INTO Students (student_ID, person_ID, grade, class)
VALUES ('S002','P004','B','History 201');
```

```
INSERT INTO Students (student_ID, person_ID, grade, class)
VALUES ('S003','P005', 'A','Science 301');
```

```
INSERT INTO Students (student_ID, person_ID, grade, class)
VALUES ('S004','P006', 'A','Biology 101');
```

```
INSERT INTO Students (student_ID, person_ID, grade, class)
VALUES ('S005','P002', 'B','English 102');
```

```
select * from Students;
```

```
insert into Teachers values('T01', 'P001', 'PhD', SubjectSet('Maths', 'Physics'), to_date('2005-08-01', 'YYYY-MM-DD'), 60000);
```

```
insert into Teachers values('T02', 'P002', 'MS', SubjectSet('Science', 'Biology'), to_date('2008-03-15', 'YYYY-MM-DD'), 55000);
```

```
insert into Teachers values('T03', 'P003', 'MA', SubjectSet('English', 'Literature'), to_date('2010-
```

```
06-20', 'YYYY-MM-DD'), 52000);
```

```
insert into Teachers values('T04', 'P004', 'MSc', SubjectSet('Physics', 'Chemistry'),  
to_date('2011-  
09-25', 'YYYY-MM-DD'), 56000);
```

```
insert into Teachers values('T05', 'P005', 'MEd', SubjectSet('History', 'Sociology'),  
to_date('2013-  
11-30', 'YYYY-MM-DD'), 53000);
```

```
select * from Teachers;
```

```
insert into Parents values('P01', 'P001', 'S001', 75000);
```

```
insert into Parents values('P02', 'P004', 'S002', 64000);
```

```
insert into Parents values('P03', 'P005', 'S003', 57000);
```

```
insert into Parents values('P04', 'P006', 'S004', 95000);
```

```
insert into Parents values('P05', 'P002', 'S005', 80000);
```

```
select * from Parents;
```

```
SELECT  
    S.student_ID,  
    P.personal_info.firstname || ' ' || P.personal_info.lastname AS student_name,  
    P.personal_info.birthdate AS DOB,  
    S.grade,  
    S.class  
FROM
```

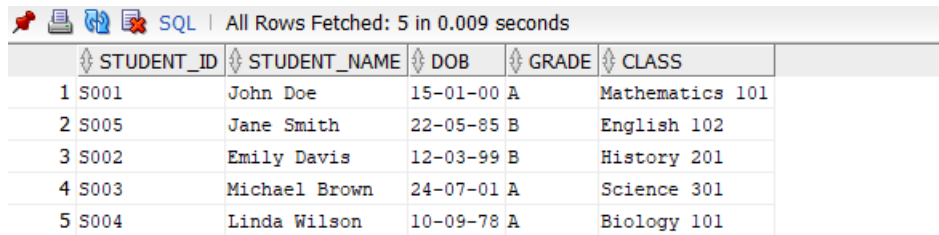
Students S

INNER JOIN

People P

ON

S.person_ID = P.person_ID;



The screenshot shows a SQL query result with 5 rows. The columns are STUDENT_ID, STUDENT_NAME, DOB, GRADE, and CLASS. The data is as follows:

STUDENT_ID	STUDENT_NAME	DOB	GRADE	CLASS
1 S001	John Doe	15-01-00	A	Mathematics 101
2 S005	Jane Smith	22-05-85	B	English 102
3 S002	Emily Davis	12-03-99	B	History 201
4 S003	Michael Brown	24-07-01	A	Science 301
5 S004	Linda Wilson	10-09-78	A	Biology 101

SELECT

T.teacher_ID,

P.personal_info.firstname || ' ' || P.personal_info.lastname AS teacher_name,

P.personal_info.birthdate AS DOB,

T.salary,

T.skill,

SB.column_value AS subjects_taught

FROM

Teachers T

INNER JOIN

People P ON T.person_ID = P.person_ID

LEFT JOIN

TABLE(T.subjects_taught) SB ON 1 = 1;

SQL All Rows Fetched: 10 in 0 seconds						
	TEACHER_ID	TEACHER_NAME	DOB	SALARY	SKILL	SUBJECTS_TAUGHT
1	T01	John Doe	15-01-00	60000	PhD	Maths
2	T01	John Doe	15-01-00	60000	PhD	Physics
3	T02	Jane Smith	22-05-85	55000	MS	Science
4	T02	Jane Smith	22-05-85	55000	MS	Biology
5	T03	Alice Johnson	05-10-75	52000	MA	English
6	T03	Alice Johnson	05-10-75	52000	MA	Literature
7	T04	Emily Davis	12-03-99	56000	MSc	Physics
8	T04	Emily Davis	12-03-99	56000	MSc	Chemistry
9	T05	Michael Brown	24-07-01	53000	MEd	History
10	T05	Michael Brown	24-07-01	53000	MEd	Sociology

SELECT

PR.parent_ID,

P.personal_info.firstname || ' ' || P.personal_info.lastname AS parent_name,

C.personal_info.firstname || ' ' || C.personal_info.lastname AS child_name,

P.personal_info.birthdate AS parent_DOB,

P.phone AS parent_phone,

PR.salary AS parent_salary

FROM

Parents PR

INNER JOIN

People P ON PR.person_ID = P.person_ID

INNER JOIN

Students S ON PR.child_ID = S.student_ID

INNER JOIN

People C ON S.person_ID = C.person_ID

ORDER BY

PR.parent_ID;

Query...						
SQL All Rows Fetched: 5 in 0.001 seconds						
	PARENT_ID	PARENT_NAME	CHILD_NAME	PARENT_DOB	PARENT_PHONE	PARENT_SALARY
1	P01	John Doe	John Doe	15-01-00	9045782198	75000
2	P02	Emily Davis	Emily Davis	12-03-99	9145762198	64000
3	P03	Michael Brown	Michael Brown	24-07-01	9745671201	57000
4	P04	Linda Wilson	Linda Wilson	10-09-78	8995678901	95000
5	P05	Jane Smith	Jane Smith	22-05-85	7745678901	80000