

PRACTICAL NO 4

CRUD Operations on Types

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ADVANCED DATABASE

Practical No : 4

Aim: Create different types that include attributes and methods. Define tables for these types by adding sufficient number of tuples. Demonstrate insert, update and delete operations on these tables. Execute queries on them.

Software Requirement:

Oracle 11g

Steps:


1. AddrType1 (PinQuery: number, Street :char, City : char, state :char) .
2. BranchType (address: AddrType1, phone1: integer,phone2: integer).
3. AuthorType (name:char,,addr AddrType1).
4. PublisherType (name: char, addr: AddrType1, branches: BranchTableType.
5. books(title: varchar, year : date, published_by ref
PublisherType,authorsAuthorListType).
6. Insert some records into the above tables and fire the following queries.

Query:

1. List all of the authors that have the same pin Query as their publisher.
2. List all books that have 2 or more authors.
3. List the name of the publisher that has the most branches.
4. List all authors who have published more than one Book.
5. List all books (title) where the same author appears more than once on the list of authors(assuming that an integrity constraint requiring that the name of an author is unique in a list of authors has not been specified).

Practical Implementation Steps :

- ✓ **Step 1:-** AddrType1 (PinQuery: number, Street :char, City : char, state :char)



```
SQL Plus
SQL> conn system/aayushman@db2
Connected.
SQL> Create or replace type AddrType1 as object (
  2 PinQuery number (5),
  3 Street char(20),
  4 City varchar2(50),
  5 State varchar2(40),
  6 No number(4)
  7 );
  8 /

Type created.
SQL> _
```

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- ✓ **Step 2:-** BranchType (address: AddrType1, phone1: integer, phone2: integer)

```
SQL Plus
SQL> create or replace type BranchType as object (
2 Address AddrType1,
3 Phone1 integer,
4 Phone2 integer
5 );
6 /

Type created.
SQL>
```

```
SQL Plus
SQL> create or replace type BranchType as object (
2 Address AddrType1,
3 Phone1 integer,
4 Phone2 integer
5 );
6 /

Type created.

SQL> create or replace type BranchTableType as table of BranchType;
2 /

Type created.
SQL>
```

- ✓ **Step 3:-** AuthorType (name:char,,addr AddrType1)

```
SQL Plus
SQL> create or replace type AuthorType as object (
2 Name varchar2(50),
3 Address AddrType1
4 );
5 /

Type created.
SQL>
```

```
SQL Plus
SQL> create table Authors of AuthorType;

Table created.

SQL> create or replace type AuthorListType as varray(10) of ref AuthorType;
2 /

Type created.
SQL>
```

- ✓ **Step 4:-** PublisherType (name: char, addr: AddrType1, branches: BranchTableType)

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```
SQL Plus
SQL> create or replace type PublisherType as object (
2 Name varchar2(50),
3 Address AddrType1,
4 Branches BranchTableType
5 );
6 /

Type created.
SQL>
```

```
SQL Plus
SQL> create table Publishers of PublisherType NESTED TABLE Branches STORE as branchtable;

Table created.
SQL>
```

- ✓ **Steps 5:-** books(title: varchar, year : date, published_by ref PublisherType,authorsAuthorListType)

```
SQL Plus
SQL> create table books (
2 Title varchar2(50),
3 Year date,
4 Published_by ref PublisherType,
5 Authors AuthorListType
6 );

Table created.
SQL>
```

- ✓ **Step 6:-** Insert some records into the above tables and fire the following queries:

```
SQL Plus
SQL> insert into Authors values ('Aayushman', AddrType1(1234, 'Colaba', 'Mumbai', 'Maharashtra', 4000));
1 row created.

SQL> insert into Authors values ('Abhishek', AddrType1(4567, 'Marol', 'Mumbai', 'Maharashtra', 3000));
1 row created.

SQL> insert into Authors values ('Abhishek', AddrType1(8911, 'Borivali', 'Mumbai', 'Maharashtra', 2000));
1 row created.

SQL> insert into Authors values ('Aashi', AddrType1(8726, 'Kandivali', 'Mumbai', 'Maharashtra', 1000));
1 row created.

SQL> insert into Authors values ('Ed Sheeran', AddrType1(5834, 'Paris', 'London', 'United Kingdom', 9000));
1 row created.

SQL> insert into Authors values ('Travis Scott', AddrType1(4568, 'Houston', 'Texas', 'United States', 7000));
1 row created.

SQL> insert into Authors values ('Zack Knight', AddrType1(7825, 'Orlando', 'Florida', 'United States', 1100));
1 row created.

SQL> insert into Authors values ('Enrique Iglesias', AddrType1(2565, 'Miami', 'Madrid', 'Spain', 1120));
1 row created.

SQL>
```

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Step 7: - Insert Some records into the above tables and fire the following queries:

```
SQL Plus
SQL> insert into Publishers
  2 values('McGraw',AddrType1(7007,'LJstreet','mumbai','maharashtra',07), BranchTableType (BranchType ( AddrType1 (70
07,'K street','mumbai','maharashtra',1007), 4543545,8676775)));
1 row created.

SQL> > insert into Publishers values ('Tata',AddrType1(7008,'JW street','mumbai','maharashtra',27), BranchTableType (B
ranchType (AddrType1(1002,'DM street','nasik','maharashtra',1007), 456767,7675757)));
SP2-0734: unknown command beginning "> insert i..." - rest of line ignored.
SQL> insert into Publishers values ('Tata',AddrType1(7008,'JW street','mumbai','maharashtra',27), BranchTableType (Bra
nchType (AddrType1(1002,'DM street','nasik','maharashtra',1007), 456767,7675757)));
1 row created.

SQL> insert into Publishers values ('Nurali', AddrType1(7002,'ST street','pune','maharashtra',1007), BranchTableType (B
ranchType (AddrType1(1002,'SG street','pune','maharashtra',1007), 4543545,8676775)));
1 row created.

SQL> insert into Publishers values('Tata', AddrType1(6002,'Gold street','nasik','maharashtra',1007),BranchTableType (B
ranchType(AddrType1(6002,'South street','nasik','mha',1007), 4543545,8676775)));
1 row created.

SQL> _
```

Step 8:- Insert some records into the above tables and fire the following queries:

```
SQL Plus
SQL> insert into books select 'IP','28-may-1983', ref (pub), AuthorListType(ref(aut)) from Publishers pub,Authors aut
where pub.name='Tata' and aut.name='Enrique Iglesias';
2 rows created.

SQL> insert into books select 'ADBMS','09-jan-1890',ref(pub), AuthorListType(ref(aut)) from Publishers pub,Authors aut
where pub.name='McGraw' and aut.name='Aayushman';
1 row created.

SQL> insert into books select 'c prog','25-may-1983', ref (pub),AuthorListType(ref(aut)) from Publishers pub,Authors a
ut where pub.name='Vipul' and aut.name='Travis Scott';
0 rows created.

SQL> insert into books select 'c prog','25-may-1983', ref (pub),AuthorListType(ref(aut)) from Publishers pub,Authors a
ut where pub.name='Nurali' and aut.name='Travis Scott';
1 row created.

SQL> _
```

Query : List all of the authors that have the same pin Query as their publisher.

*select a.name from Authors a, Publishers p
where a.Address.pinQuery = p.Address.pinQuery;*

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```
SQL Plus
SQL> select a.name from Authors a, Publishers p where a.Address.pinQuery = p.Address.pinQuery;
NAME
-----
Vikas
Ashish
Richard
SQL> _
```

Query: List all books that have 2 or more authors

Select title from books b where 1 <= (select count() from table(b.authors));*

```
SQL Plus
SQL> Select title from books b where 1 <= (select count(*) from table(b.authors));
TITLE
-----
IP
IP
IP
IP
ADBMS
c prog
6 rows selected.
```

Query: List the name of the publisher that has the most branches

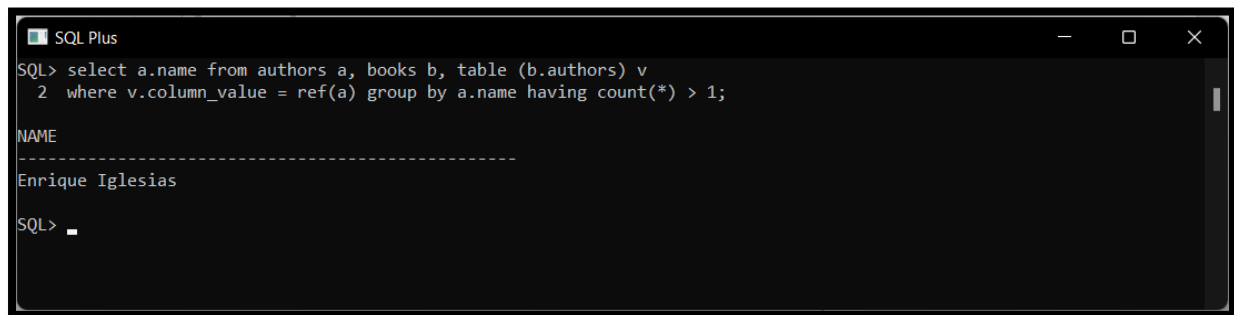
Select p.name from publishers p, table (p.branches) group by p.name having count() >= all (select count(*) from publishers p, table(p.branches) group by name);*

```
SQL Plus
6 rows selected.
SQL> Select p.name from publishers p, table (p.branches) group by p.name having count(*) >= all (select count(*) from publishers p, table(p.branches) group by name);
NAME
-----
Tata
SQL>
```

Query: List all authors who have published more than one Book

select a.name from authors a, books b, table (b.authors) v where v.column_value = ref(a) group by a.name having count() > 1;*

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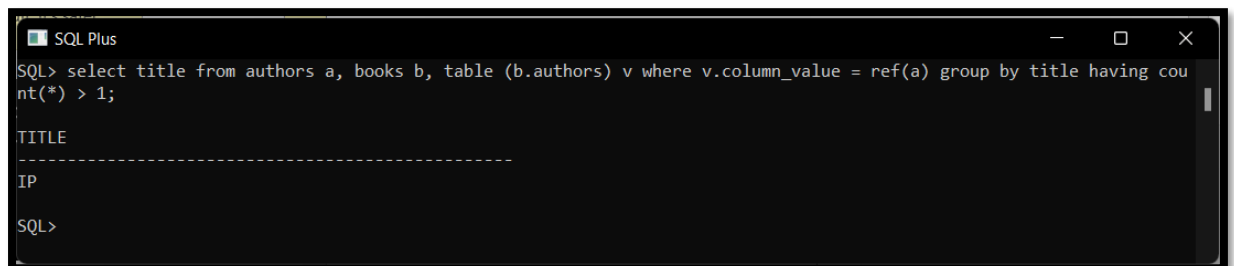
```
SQL Plus
SQL> select a.name from authors a, books b, table (b.authors) v
2  where v.column_value = ref(a) group by a.name having count(*) > 1;

NAME
-----
Enrique Iglesias

SQL> _
```

Query: List all books (title) where the same author appears more than once on the list of authors (assuming that an integrity constraint requiring that the name of an author is unique in a list of authors has not been specified).

*select title from authors a, books b, table (b.authors) v
where v.column_value = ref(a) group by title having count(*) >
1;*



```
SQL Plus
SQL> select title from authors a, books b, table (b.authors) v where v.column_value = ref(a) group by title having count(*) > 1;

TITLE
-----
IP

SQL> _
```

Conclusion : Successfully Demonstrated insert, update and delete operations on Type