# Step1: Create different Types and Tables

Create or replace type AddrType1 as object(

Pincode number(5),

Street char(20),

City varchar2(50),

state varchar2(40),

no number(4) );

/

create or replace type BranchType as object(

address AddrType1,

phone1 integer,

phone2 integer );

/

create or replace type BranchTableType as table of BranchType;

/

create or replace type AuthorType as object(

name varchar2(50),

addr AddrType1 );

/

create table authors of AuthorType;

create or replace type AuthorListType as varray(10) of ref

AuthorType;

/

create or replace type PublisherType as object(

name varchar2(50),

addr AddrType1, branches BranchTableType);

/

create table Publishers of PublisherType NESTED TABLE branches

STORE as branchtable;

create table books(

title varchar2(50),

year date,

published\_by ref PublisherType,

authors AuthorListType);

# Step 2: Insertion of different values in the tables

**Table Name:** **Authors**

**Format :** Authors(name, addr:<pincode,street,city,state,no>)

/\*Here addr is the name of an object-valued attribute, which has 5 components.\*/

insert into Authors values('stallings',

AddrType1(5002,'sstreet','pune','mha',04));

insert into Authors values('stallings',

AddrType1(7007,'sstreet','mumbai','mha',1007));

insert into Authors values('Navathe',

AddrType1(7008,'nstreet','nasik','mha',08));

insert into Authors values('Dhumdhare',

AddrType1(7003,'dstreet','mumbai','mha',1003));

insert into Authors values('Dhumdhare',

AddrType1(7008,'sstreet','mumbai','mha',1007));

insert into Authors values('Aho',

AddrType1(7006,'nstreet','mumbai','mha',1006));

insert into Authors values('rabiner',

AddrType1(8002,'dstreet','pune','mha',1003));

insert into Authors values('Dhanovan',

AddrType1(8003,'dstreet','pune','mha',1003));

**Table name : Publishers**

**Format :** Publishers(name, addr:<pincode,street,city,state,no>, branches:set of<address:<pincode,street,city,state,no>,phone1,phone2>)

/\*where addr is an object-valued attribute. Branches is a complex-valued attribute, in this case a nested table where each element in the table has 3 parts: an address and two phones\*/

insert into Publishers values('tata',AddrType1(4002,'rstreet','mumbai','mha',03),

BranchTableType(BranchType(AddrType1(5002,'fstreet','mumbai','mha',03),23406,69896)));

insert into Publishers values('seth',

AddrType1(7007,'sstreet','mumbai','mha',1007),

BranchTableType(BranchType( AddrType1(7007,'sstreet','mumbai','mha',1007),4543545,8676775)));

insert into Publishers values('joshi',

AddrType1(7008,'sstreet','mumbai','mha',1007),

BranchTableType(BranchType(

AddrType1(1002,'sstreet','nasik','mha',1007),456767,7675757)));

insert into Publishers values('seth',

AddrType1(7002,'sstreet','pune','mha',1007),

BranchTableType(BranchType(

AddrType1(1002,'sstreet','pune','mha',1007),4543545,8676775)));

insert into Publishers values('chetana',

AddrType1(6002,'sstreet','nasik','mha',1007),

BranchTableType(BranchType(

AddrType1(6002,'sstreet','nasik','mha',1007),4543545,8676775)));

**Table Name3: books**

**Format :**  books(title,year,published\_by: ref<Publishers>, authors:list of ref Author)

/\*Where published\_by is a reference to elements of the table Publishers; authors is a complex-valued attribute, in this case a list of references to objects of the type author(managed by table ‘Author’.\*/

insert into books

select 'java','28-may-1983',ref(pub),AuthorListType(ref(aut)) from

Publishers pub,Authors aut where pub.name='joshi' and aut.name='Aho';

insert into books

select 'java','28-may-1983',ref(pub),AuthorListType(ref(aut)) from

Publishers pub,Authors aut where pub.name='chetana' and aut.name='stallings';

insert into books

select 'compiler','09-jan-1890',ref(pub),AuthorListType(ref(aut)) from

Publishers pub,Authors aut where pub.name='chetana' and aut.name='Dhanovan';

insert into books

select 'c','25-may-1983',ref(pub),AuthorListType(ref(aut)) from

Publishers pub,Authors aut where pub.name='tata' and aut.name='stallings';