Student Name: - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Div:- \_\_\_\_\_ Roll No: - \_\_\_\_\_

1. Using object-oriented databases create the following types:

a) AddrType (Pincode:number, Street:char, City:char, State:char)

b) BranchType (address: AddrType, phone1: integer, phone2: integer)

c) AuthorType (name:char, address: AddrType)

d) PublisherType (name:char, address:AddrType, branches:BranchType)

e) AuthorListType as varray, which is a reference to AuthorType

Next create the following tables:

a) Branch of BranchType

b) Authors of AuthorType

c) Books (title:varchar,year:date,published\_by ref Publishertype, auhtors AuthorListType)

d) Publishers of PublisherType

Insert records into the above tables and fire the following queries:

a) List all of the authors that have the same pin code as their publisher:

b) List all books that have 2 or more authors:

c) List the name of the publisher that has the most branches

d) Name of authors who have not published a book

e) List all authors who have published more than one book

f) Name of authors who have published books with at least two different publishers

2. Create Book\_type by grouping the information Bookno, Title, and Author. Create table

Purchase with Pid, book\_details, date, amount. Insert five records in Purchase Table.

create or replace type Book\_Type as object(

Bookno number(10),

Title varchar (50),

Author varchar(50)

) ;

create table Purchese(

Pid number(10),

book\_detail Book\_Type,

PDate date,

amount number(10,2)

);

insert into Purchese values(01,

Book\_Type(101,'A Place Called Home','Preeti Shenoy'),

'20-jan-2022',360.50);

insert into Purchese values(02,

Book\_Type(150,'Anand Math','Bankimchandra Chattopadhyay'),

'23-feb-2022',400.00);

insert into Purchese values(03,

Book\_Type(130,'Arthashastra','Kautilya'),

'23-feb-2022',200.00);

insert into Purchese values(04,

Book\_Type(190,'Mein Kampf','Adolf Hitler'),

'28-feb-2022',600.00);

insert into Purchese values(05,

Book\_Type(145,'The Vicar of Wakefield',' Oliver Goldsmith'),

'13-mar-2022',150.00);

select \* from Purchese;

|  |  |  |  |
| --- | --- | --- | --- |
| PID | BOOK\_DETAIL | PDATE | AMOUNT |
| 1 | 101 A Place Called Home Preeti Shenoy | 20-Jan-22 | 360.5 |
| 2 | 150 Anand Math Bankimchandra Chattopadhyay | 23-Feb-22 | 400 |
| 3 | 130 Arthashastra Kautilya | 23-Feb-22 | 200 |
| 4 | 190 Mein Kampf Adolf Hitler | 28-Feb-22 | 600 |
| 5 | 145 The Vicar of Wakefield Oliver Goldsmith | 13-Mar-22 | 150 |

3. Create a table customer with the attributes cust\_no, cust\_name, product and price. Create an

ADT name\_type with the attribute fname, mname and lname to store the name details. Display

the first name of the customer who purchased&Monitor.

create or replace type name\_type as object(

fname varchar(20),

mname varchar(20),

lname varchar(20)

);

create table customer(

cust\_no number(20),

cust\_name name\_type,

product varchar(20),

price number(20)

);

insert into customer values(101,name\_type

('Mithilesh','Digambar','Pakhare'),'mouse',650);

insert into customer values(102,name\_type

('Niranjan','Sushant','Sawant'),'Monitor',9000);

insert into customer values(103,name\_type

('Vaishnavi','Vilas','Shinde'),'key board',1050);

insert into customer values(104,name\_type

('Harshal','Jayprakash','Patil'),'Monitor',9050);

insert into customer values(105,name\_type

('Gayatri','Manohar','More'),'CPU',6050);

select c.cust\_name.fname,c.product from customer c where product='Monitor';

|  |  |
| --- | --- |
| CUST\_NAME.FNAME | PRODUCT |
| Niranjan | Monitor |
| Harshal | Monitor |

4. Create person type with attributes person\_id, person\_name and person\_addr. Create a

person\_obj table of person type. Insert and display the details of the table.

create or replace type person as object(

person\_id number(10),

person\_name varchar(20),

person\_addr varchar(50)

);

create table person\_obj of person;

insert into person\_obj values(1,'Kavita','Ratnagiri');

insert into person\_obj values(2,'Kamal','Rajapur');

insert into person\_obj values(3,'Kiran','Lanja');

insert into person\_obj values(4,'Madhuri','Mumbai');

insert into person\_obj values(5,'Manali','Thane');

select \* from person\_obj;

|  |  |  |
| --- | --- | --- |
| PERSON\_ID | PERSON\_NAME | PERSON\_ADDR |
| 1 | Kavita | Ratnagiri |
| 2 | Kamal | Rajapur |
| 3 | Kiran | Lanja |
| 4 | Madhuri | Mumbai |
| 5 | Manali | Thane |

5. Create type rectangle with attributes length, breadth and member function rect\_area that

returns area of the rectangle. Create table shape of rectangle type &amp; insert record into it. Display

the length, breadth and area of rectangles.

create or replace type rectangle as object

(

length number(20),

breadth number(20),

member function rect\_area return number

)not final;

CREATE TYPE BODY rectangle AS

MEMBER FUNCTION rect\_area RETURN NUMBER IS

BEGIN

RETURN length \* breadth;

END;

END;

create table rect of rectangle;

INSERT INTO rect

values(rectangle(20,30));

SELECT \* FROM rect;

|  |  |
| --- | --- |
| LENGTH | BREADTH |
| 20 | 30 |

select r.rect\_area() from rect r;

|  |
| --- |
| R.RECT\_AREA() |
| 600 |

6. Create type solid\_type with attributes length, width, height and 2 member functions surface

and volume that returns the surface area and volume of the shape respectively. Create table

solid of solid\_type, insert records into it and display surface and volume of the solid.

7. Create supertype person\_typ with attributes id, name, phone\_no and member function show

that returns id and name of the person. Create table person of person\_typ and insert records

into it and display id and name of person using show function. Create subtype student\_type of

spertype person\_typ with attributes dept\_id and major. It has member function show that

overrides member function of person\_typ and returns the major of student. Create table

student of student\_type and insert record into it and display major of the student using show

function.