Database Systems

Laboratory Worksheet 5
Year 3 – SE Batch

Use the inheritance features of Oracle object relational system

Task 01:

This task requires you to use the inheritance features of Oracle object relational system.

Consider a type named student_type that has attributes, (sid: char(8), sname: varchar(15), phone: char(10)).

Let ug_type be a subtype of student_type with attributes, (gpa: real, deptid: char(6), course: varchar(10)).

(a) Write Oracle object SQL statements to create these two types.

(b) Assuming that a table named students of student_type has been created, insert a ug_type tuple into it with attribute values of sid: 12354326, sname: Janet Paeres, phone: null, gpa: 3.2, deptid: CS01, and course: InfoTech.

(c) Assuming there may be data of ug_type and others in the table students of student_type, write an Oracle object SQL statement to retrieve the sid and sname of only students with deptid of CS01.

Task 02:

Consider the following object relational database schema for a database of insurance policies for cars:

Object types:
Customer_t (cid: char(6), name: varchar(15), birthdate: date, phone: char(10), address: varchar(50))
Car_t (regno: char(9), make: varchar(12), model: varchar(10), mdate: date, owner: ref customer_t, value: number(8,2))
Claim_t (claimno: char(12), cdate: date, amount: number(8,2), claimant: ref customer)
Claim_ntab table of claim_t
Policy_t (pid: char(7), sdate: date, edate: date, inscar: ref car_t, premium: number(6,2), claims: claim_ntab)

Tables:
Customers of Customer _t (cid primary key)
Cars of car_t (regno primary key, owner references Customers)
Policies of policy_t (pid primary key, inscar references Cars)
Nested table claims store as claims_ntable

The tables named Customers, Cars, and Policies contain tuples for all customers, cars and policies respectively. Their attributes are indicated by the corresponding types.

Attributes of Customers are customer id (cid), name, date of birth, phone and address. Attributes of Cars are registration number (regno), make, model, date of manufacture, owner of the car, and insured value of the car.

Attributes of Policies policy id (pid), starting date, ending date, insured car, annual premium and the claims made.

Attributes of the nested table of claims are claim number (claimno), claim date (cdate), the amount of claim and the claimant.

The attribute types are specified in the type descriptions above, as also are the primary keys and referential constraints in the table schema.

(a) Write Oracle OBJECT SQL statements to answer the following queries (use columns of REF type instead of joins to link tables):

(i) Find the average insurance premium on cars owned by customers aged between 20 and 25 years. Sysdate contains current date and the function month_between(d1,d2) gives the number of months in decimals between the dates d1 and d2 where d1>d2.

(ii) For each make and model of car, find the total claim amount on policies that expire between 1 Jan 2004 and 31 Dec 2004.

(b) Write Oracle object SQL to insert a claim against an existing policy that has a pid of SL12354, given the following claim details: claim number: 001, claim date: 12 July 2004, claim amount: 2000, and customer id of claimant: S25431. Assume that the claimant is already present as a customer in the database.

(c) Write Oracle object SQL to calculate the renewal premium for a given policy in the database using the following logic:

If the policy had no claims or the total claim is less than 1000, then the new premium is the same as the current premium. If the total claim on a policy is greater than or equal to 1000, then the new premium is to be 20% more than the current.

(d) Using the method defined above in (c), get the renewal premium for the policy of a car with registration number SLA984.