Tutorial 3 – Object Relational Model

Consider the following object relational database schema:

Object types:
Depend_t (depname: varchar2(12), gender: char(1), bdate: date, relationship:varchar2(10))
Dependtb_t table of Depend_t

Emp_t (eno: number(4), ename: varchar2(15), edept: ref dept_t, salary: number(8,2),
dependents: dependtb_t)
Dept_t (dno: number(2), dname: varchar2(12), mgr ref emp_t)
Proj_t (pno: number(4), pname: varchar2(15), pdept ref dept_t, budget: number(10,2))
Work_t (wemp: ref emp_t, wproj: ref proj_t, since: date, hours: number(4,2))

Tables:
Emp of Emp_t (eno primary key, edept references dept, nested table dependents store as dependent_tb)
Dept of Dept_t (dno primary key, mgr references emp)
Proj of Proj_t (pno primary key, pdept references dept)
Works of Works_t (wemp references emp, wproj references proj)

The Emp, Dept, and Proj tables contain tuples for all employees, departments and projects respectively. The attributes of Emp are employee number (eno), name (ename), employee's department (edept), salary and the set of dependents stored as a nested table. The relationship attribute may have only 'SPOUSE' or 'CHILD' as values, gender may be 'M' or 'F', and bdate records the birth date of the dependant. Attributes of Dept are department number (dno), department name (dname), manager (mgr). Attributes of Proj are project number (pno), project name (pname), department in charge (pdept) and budget. Works table contains tuples to indicate the assignment of employees to projects, the date on which the employee was assigned, and hours per week.

(a) Add a member method to compute the child allowance payable to employees with dependent children. The allowance is calculated at the rate of 5% of salary for each dependent child. Write Oracle SQL statements to modify the object type emp_t.

(b) Using the method defined above, write an Oracle SQL statement to display the employee name, salary and the child allowance payable for all eligible employees.

(c) Write an SQL statement to insert a dependent child for the employee whose eno is 2143. The name of the child is Jeremy, gender 'M', and the date of birth 12 March 2001.

(d) Assuming the same object relational schema as above, write a method to compute the bonus amount of employees, assuming that it is to be calculated by multiplying the salary with a rate percentage given as a parameter.

(e) All employees in the department named 'Data Mining' are to be given a bonus at the rate of 12%. Write an SQL statement to display the name of each eligible employee and the bonus, using the method for computing bonus that was declared above.