SOLUTION CAB

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Monday, May 9, 2011

IGNOU MCSL-045 Lab Manual Solution

Session 1

```
SQL> select * from teacher
  2  /
T_NO F_NAME     L_NAME                    SALARY SUPERVISOR                 JOININGDA
BIRTHDATE TITLE
---------- ------------------------ ------------------------ ---------- ----------------------------- --------- --------- ----------
         1 faraz           ahmad                        22000 Arshad Iqbal              25-JAN-10 25-MAY-86
Primary
         2 Jaideep               Sharma              23000 Asim Zafar                 23-JUN-09 04-APR-86
PRT
         3 zakir                 Ali                 22000 Asim Zafar                 03-DEC-09 24-AUG-87
PGT
         4 Shaista               Khan                23500 Arshad Iqbal               03-MAY-10 23-JUL-86
PRT
Asma                Husain               21300 Aqeel Ahmad                24-MAY-10 20-NOV-84 Primary
```

Display the name of the teacher(s) who is (are) the youngest among all the teachers.

```
SQL> select f_name, l_name
  2  from teacher
  3  where birthdate=(select max(birthdate) from teacher)
  4  ;
F_NAME                   L_NAME
------------------------ ------------------------
zakir                    Ali
```

b) Display details of all the teachers who have the same job title as that of ‘Jaideep’

```
 1  select * from teacher
  2* where title=(select title from teacher where LOWER(f_name)='jaideep')
SQL> /
```

```
  T_NO   F_NAME                    L_NAME      SALARY SUPERVISOR                  JOININGDA
BIRTHDATE TITLE
----------  ------------------------ ------------------------ ---------- ---------------------------- --------- --------- ----------
    2       Jaideep                 Sharma                     23000 Asim Zafar                  23-JUN-09 04-
APR-86 PRT
       4 Shaista                 Khan                      23500 Arshad Iqbal                03-MAY-10 23-JUL-
86 PRT
```

e) Identify all those teachers who are in grade ‘B’.

```
 select distinct *from teacher,payscale
 where grade='B'
 /
T_NO F_NAME      L_NAME           SALARY SUPERVISOR               JOININGDA BIRTHDATE
TITLE      GRADE
------ --------------  ------------------------ ---------- ---------------------------- --------- --------- ---------- -----
    5 Asma               Husain           21300 Aqeel Ahmad                  24-MAY-10 20-NOV-84
Primary    B
    7 naim                   ahmad        29000 Arshad Iqbal                     15-AUG-05 16-MAY-80
PGT       B
    2 Jaideep                Sharma       23000 Asim Zafar                 23-JUN-09 04-APR-86 PRT
B
    1 faraz                  ahmad          22000 Arshad Iqbal                25-JAN-10 25-MAY-86 Primary
B
4 rows selected.
```

g) Display the names of all teachers who are supervisors.

```
  1  select * from teacher
  2* where teacher.supervisor='jaideep'
SQL> /
  T_NO F_NAM    L_NAME     SALARY SUPERVISOR                    JOININGDA BIRTHDATE TITLE
--------- -------------------- ------------------------- ---------- ---------------------------- --------- --------- ----------
    arshi                 khan     14000 jaideep                     12-MAR-09 15-OCT-87 PRT
```

f) Display the names and numbers of all teachers who are class teachers and are in grade ‘C’.

```
 1  select t_no,f_name
 2  from teacher t, payscale p
 3  where p.grade='C' AND t.salary =(select salary from teacher
 4*  where salary BETWEEN '10000'  AND '17999')
QL> /
    T_NO F_NAME
--------- ------------------------
Arshi
```

Display details of all those teachers who are class teachers of classes 1 to 5.

```
SQL> select f_name,l_name, class_no
```

```
  2  from teacher, class
  3  where teacher.t_no=class.t_no(+);

F_NAME                    L_NAME                    CLASS_NO
------------------------- ------------------------- ----------
faraz                     ahmad                      5
Jaideep                   Sharma                     8
zakir                     Ali                        9
Shaista                    Khan                      6
Asma                      Husain                    3
```

Q3)

Design a suitable database system for a bank along with 20 possible queries to the database (the queries should be such that their solution involves subqueries or joins or both). Implement the database and the queries in a commercial DBMS using SQL.

Bank database

```
 1  create table acco_master (accno number(10) primary key,name
  2* varchar2(10),balance number(10))
SQL> /
Table created.
SQL>insert into acco_master values(&accno,'&name',&balance)
Enter value for accno:111
Enter value for name:faraz
Enter value for balance:200000
SQL>create table acco_trans(accno number(10),trans_date date,deb_cre
varchar2(10),check(deb_cre IN('debit','credit')),amount number(10),  process varchar2(10)
check(process IN('yes','no')) foreign key  (accno)references acco_master);
                 Table Created
SQL> insert into acco_trans values(&accno,'sysdate,'&deb_cre',&amount,
'&process');
 Enter value for accno:111
Enter value for deb_cre:debit
Enter value for amount:1000
Enter value for process:yes
```

SESSION 2

Display teacher number, their names, age and grade of all PGT teachers.

```
SELECT t_no, name, age, grade
FROM teacher_details
WHERE UPPER (title) = ‘PGT’;
```

b) Create a non-unique index on the foreign key column of the ‘class’ table.

```
SQL> create index class
  2  on class(t_no, room_no);
Index created.
```

g) Create a non-unique index on the names of teachers in the ‘teachers’ table.

```
SQL> create index t_name
  2  on teacher (f_name, l_name)
  3  /
```

```
Index created.
```

h) Drop the index created in (b).

```
SQL> drop index class
  2  /
Index dropped.
```

j) Display details of all the teachers who are more than 40 years old.

```
SELECT t_no, name, salary, title, age
FROM teacher_details
WHERE age > 40;
No row selected.
```

Session 3

(a) Calculate the bonus amount to be given to a teacher depending on the following conditions:

I. if salary > 10000 then bonus is 10% of the salary.

II. if salary is between 10000 and 20000 then bonus is 20% of the salary.

III. if salary is between 20000 and 25000 then bonus is 25% of the salary.

IV. if salary exceeds 25000 then bonus is 30% of the salary.

```
  create or replace procedure bonus_calc integer
  (o_t_no IN INTEGER, bonus OUT INTEGER)
  is
  salary INTEGER
  BEGIN
  select salary, f_name, l_name,bonus
  from teacher
  where t_no= o_t_no
  IF salary> 10000
  then bonus:= salary+ salary* 0.10
  END IF
  IF salary between 10000 and 20000
  then bonus:= salary + salary * 0.20
  END IF
  IF salary between 20000 and 25000
  then bonus:= salary + salary * 0.25
  END IF
  IF salary between 25000 and 30000
  then bonus:= salary + salary * 0.30
  END IF
 END
Procedure successfully Created!
Exec bonus_calc

   SALARY F_NAME                  L_NAME                  BONUS
---------- ------------------------ ------------------------  ------------------------
     22000   faraz                 ahmad                   5500
    23000   Jaideep                 Sharma                 5750
    22000   zakir                  Ali                       5500
    23500   Shaista                 Khan                   5875
    21300   Asma                    Husain                          5325
    14000   arshi                 khan                             2800
    29000   naim                   ahmad                          8700
```

(h) Calculate the tax to be paid by all teachers depending on following conditions:

I. if annual salary > 1,00,000 then no tax.

II. if annual salary is between 1,00,001 and 1,50,000 then tax is 20% of the annual salary.

III. if annual salary is between 1,50,001 and 2,50,000 then tax is 30% of the annual salary.

IV. if salary exceeds 2,50,000 then tax is 40% of the annual salary.

```
   create or replace procedure tax_calc integer
   (o_t_no IN INTEGER, tax OUT INTEGER)
   is
   salary INTEGER
   BEGIN
   select f_name, l_name,tax
   from teacher
   where t_no= o_t_no
   IF salary<100000
   salary=salary*12
   then tax:=0
   END IF
   IF salary between 100001 and 150000
   then tax:= salary * .20
   END IF
   IF salary between 150001 and 250000
   then tax:= salary * .30
   END IF
   IF salary >250001
   then tax:= salary * .40
*   END IF
Procedure created successfully!
Exec tax_calc
     T_NO F_NAME                  L_NAME                    SALARY        TAX
     --------- ------------------------ -------------------------       ----------     ----------
       1 faraz                    ahmad                          22000           105600
      2 Jaideep                      Sharma                    23000          110400
      3 zakir                    Ali                                 22000            105600
      4 Shaista                        Khan                   23500           112800
      5 Asma                           Husain                 21300           102240
      6 arshi                            khan                     14000              50400
      7 naim                         ahmad                  29000           139200
```

Q3)Implement at least five procedures for the Bank Database system using embedded SQL.

```
SQL>set serveroutput on
SQL>declare
cursor c_bank is select * from acco_trans;
 v_bank c_bank%rowtype;
 balance number(5);
 begin
open c_bank;
```

```
loop
fetch c_bank into v_bank;
exit when c_bank%notfound;
if v_bank.process='no' then
update acco_trans set process='yes' where
accno=v_bank.accno;
if v_bank .deb_cre='credit' then
update acco_master set balance=balance+v_bank.amount
where    v_bank.accno=acco_master.accno;
elsif v_bank.deb_cre='debit' then
update acco_master set balance=balance-v_bank.amount
where    v_bank.accno=acco_master.accno;
elsif balance<=0 then
dbms_output.put_line('Transaction not possible');
end if;
end if;
end loop;
close c_bank;
end;
SQL>select * from acco_trans;
AccNo  Trans_Date       Deb_Cre        Amt  Pro
----------  -------------- ------------    --------- --------------
1012        12-Jan-08    debit           5000    yes
1024       14-Feb-08    credit                100        yes
1987        04-Dec-07   credit         1000      yes
2345         17-Mar-08  credit        20000      yes
```

Cursor for BANK DATABASE

```
SQL >  create table depositor (accno primary key , cname char(10))
Table created.
SQL >  create table borrower  (loanno  number , cname char(10))
Table created.
SQL >  create table loan( loanno number , brname char(10),amt number)
Table created.
SQL >  create table acct-t( acctno number , bal number, brname char(10), foreign key (acctno)
references depositor (acctno)
Table created.
SQL >  insert into   depositor  values (&accno  , &cname );
Enter value for accno        : 101
Enter the value for cname : Alan
SQL >  insert into   acct-t  values( &acctno  , &bal , '&brname ');
Enter value for accno        : 101
Enter the value for bal       : 20000
Enter the value for brname : tvm
SQL > select * from depositor;
ACCNO               CNAME
   101                    Alan
102                    Ann
103                    Ben
SQL > select * from acct-t;
```

```
ACCNO            BAL            BRNAME
-------------    -------------------   ----------------
101              20000            tvm
102              10500             ekm
103              5000              tcr
SQL >   create or replace trigger
declare
   c varchar2 (20)
begin
if (:new.bal < :old.bal) then
 insert into loan values (:new.accno, :new.brname , :old.bal-:new.bal);
select cname into c from depositor where accno = new.accno;
insert into borrower values (:new.accno,c);
endif;
end;
/
Trigger created.
SQL > update acct-t set bal = bal-5000 where acctno=101
1 row updated.
SQL >select * from borrower;
LOANNO            CNAME
--------------      --------------------
101                    Alan
SQL >select * from loan;
LOANNO         BR NAME           AMT
101                  tvm              15000
```

SESION 4

Write a host language block to delete all the rows from the 'teacher' table where the salary is less than Rs.5000.

```
DECLARE
c_t_no teacher.t_no%TYPE;
c_f_name teacher.f_name%TYPE;
c_l_name teacher.l_name%TYPE;
c_salary teacher.salary%TYPE;
CURSOR c1 IS
SELECT t_no,f_name, l_name, salary
FROM teacher;
BEGIN
OPEN c1;
LOOP
FETCH c1 INTO c_t_no, c_f_name, c_l_name, c_salary ;
EXIT WHEN NOT c1%FOUND;
UPDATE teacher SET salary = salary * 1.10 WHERE salary < 5000;
END LOOP;
CLOSE c1;
END;
```

2) Write a host language code to insert the supervisor information from 'teacher' table to another table called 'supervisor'. The new table should have only those records where the job title is 'supervisor'.

```
DECLARE
CURSOR c2 IS
```

```
SELECT t_no,f_name, l_name, salary
FROM teacher ;
teacher_rec c2%ROWTYPE;
BEGIN
OPEN c2;
FOR teacher_rec IN c2
LOOP
IF teacher_rec.salary > 20000
Teacher_rec.title = “SUPERVISOR”;
ENDIF;
END LOOP;
CLOSE c2;
END;
```

SESSION 5

1) Write a function that gets the teacher id as parameter and returns the class number associated with that teacher. If the teacher is not a class teacher then give suitable message.

```
DECLARE
C_id teacher.t_no%TYPE;
C_f_name teacher.f_name%TYPE;
want_id NUMBER := 110;
BEGIN
SELECT t_no, f_name INTO c_t_no, c_f_name from teacher
WHERE t_no = want_id;
DBMS_OUTPUT.PUTLINE ( “teacher : “|| c_t_no ||’ ‘||c_f_name)
EXCEPTION
WHEN INVALID_NUMBER THEN
DBMS_OUTPUT.PUTLINE(want_id || ‘ not a valid teacher id’);
END;
CREATE OR REPLACE TRIGGER new_teacher _id
AFTER INSERT ON teacher
FOR EACH ROW
DECLARE
o_t_no teacher.t_no%TYPE;
o_joiningdate teacher.joiningdate%TYPE;
BEGIN
SELECT t_no_sequence.nextval
INTO o_t_no
FROM dual;
:NEW.t_no := o_t_no;
:NEW.joiningdate := SYSDATE;
END;
```

Session 6

Find the grade of teachers.

```
CREATE OR REPLACE FUNCTION get_grade (o_t_no IN NUMBER)
IS o_grade VARCHAR2(20);
BEGIN
SELECT grade INTO o_grade FROM Payscale, teacher
```

```
WHERE t_no = o_t_no AND salary between min_limit AND max_limit;
RETURN (o_grade);
END get_grade;
```

Exercise 8

1) Add a nested table in the teacher relation. Do some queries using nested tables?

Ans.)

```
CREATE TABLE student_credits
(rollno  NUMBER(5),
s_name VARCHAR2(25),
subject_credits  NEW_TYPE)
NESTED TABLE subject_credits STORE AS new_type_table;
INSERT INTO student_credits
VALUES (100, ‘suman’ , new_table ( new_type (‘english’ , 30),
                                new_table ( new_type(‘hindi’, 35)));
SELECT  s.credit_hours FROM
   THE (SELECT subjects_credit FROM student_credits
            WHERE s_name = ‘suman’)  s
WHERE s.subject_name = ‘english’;
```

Q2) Create at least two nested tables for both the University and Bank database systems. Use these tables and enter some data into these relations. Query these databases.

```
CREATE TYPE address_t AS OBJECT (
street VARCHAR2(30),
city VARCHAR2(20),
state CHAR(2),
zip CHAR(5) );
/
CREATE TYPE address_tab IS TABLE OF address_t;
/
CREATE TABLE customers (
custid NUMBER,
address address_tab )
NESTED TABLE address STORE AS customer_addresses;

INSERT INTO customers VALUES (1,
address_tab(
address_t('101 First', 'Redwood Shores', 'CA', '94065'),
address_t('123 Maple', 'Mill Valley', 'CA', '90952')
) );
```

Exercise 9

Q1) Identify the use of large object types in the teacher’s table. Do some queries using these objects.

Ans

```
CREATE TABLE message (
   msg_id  NUMBER(8) NOT NULL PRIMARY KEY,
      email_add      VARCHAR(200),
      name          VARCHAR (200),
      message        CLOB,
    posting_time    DATE,
    sort_key        VARCHAR (600));
DECLARE
Image10         BLOB;
 image_number     INTEGER := 101;
BEGIN
 SELECT item_blob INTO image10 FROM lob_table10
    WHERE key_value = image_number;
 DBMS_OUTPUT.PUT_LINE('Image size
is:'||DBMS_LOB.GETLENGTH(image10));
 ------
 ------
  ------
END;
```

Exercise 10

Q1) Create a user account "class" and give privileges related to table/view creation, deletion, updating and dropping.

Ans

```
CREATE USER class
IDENTIFIED BY pass;
GRANT  CREATE TABLE, DROP TABLE, CREATE VIEW, DROP VIEW
TO  class;
```

Q. 2) Create a student account and give permission to this account for only viewing the information on the relation Class (class_no, t_no, room_no.

Ans

```
DENY UPDATE, DELETE, INSERT ON employee TO student
GO
CREATE USER student
 @Eclass_no int,
 @St_no money,
 @room_no int
GRANT EXECUTE ON student TO Class
GO
```

For solution of Unix Part You may click

FARAZ AHMAD at 5:01 AM

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