

Oracle Database for HUMAN_RESOURCE_DEPARTMENT

Problem Statement:

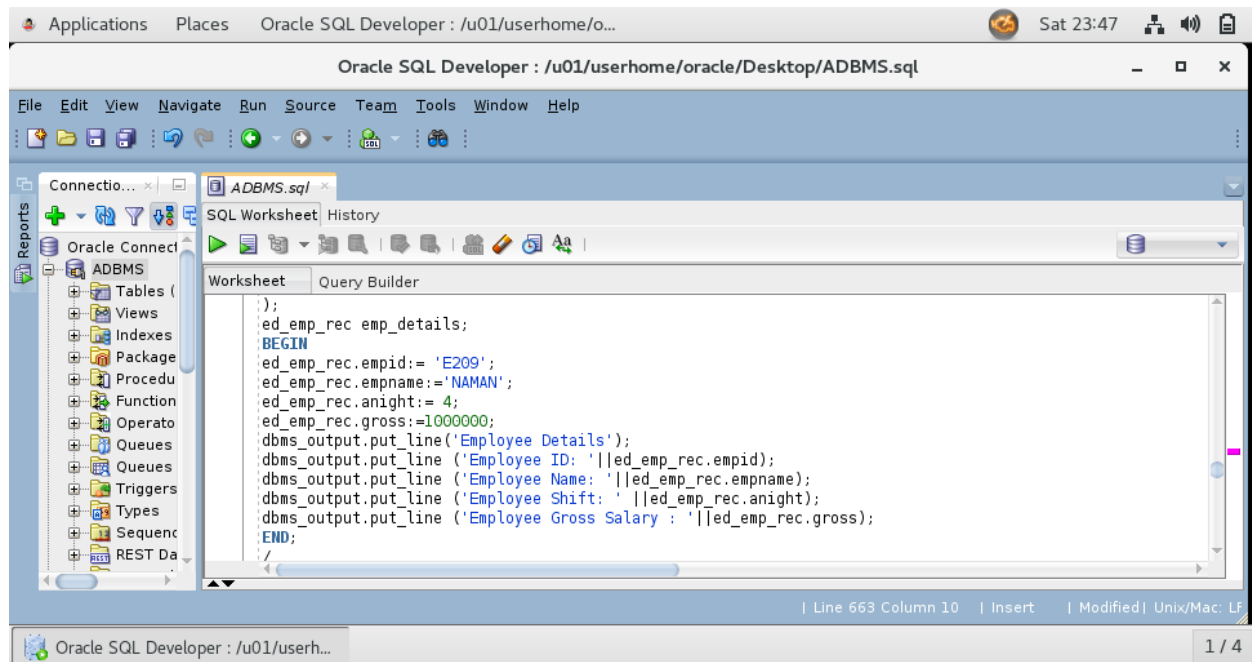
Every organization, large or small, uses a variety of principals to make the company work. Human resources development is the significant component for the success of any organization, and it plays a very crucial role in the execution of strategic management in cooperatives. Human Resource rely on number of specialized factors and in order to facilitate human resource specific processes I will be creating an oracle database to handle all the functions and tasks handled by the HR department.

Summary:

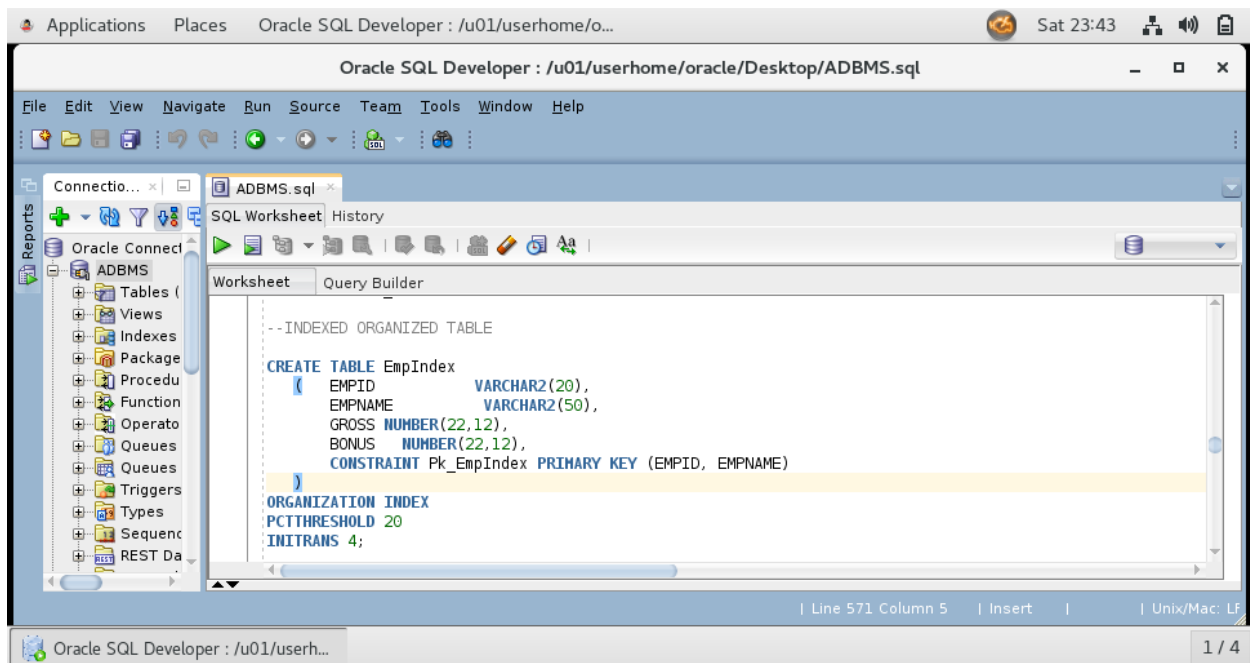
- User is created.
- Privileges were granted/revoked access as per the circumstances and the demands.
- Tables are created using Indexes ,Primary Key, Foreign Key.
- Functions will be created to handle the salary part and others.
- Triggers are created for various events like salary update, bonus received, addition of new employee .
- Views are created to ease the tasks for the HR Department and also to provide the security to the database. Inline , Relational and Object Views are created.
- Cursors and Procedures and Functions are created in Oracle.
- Varrays , Record , PL/SQL tables are created.

Screenshots

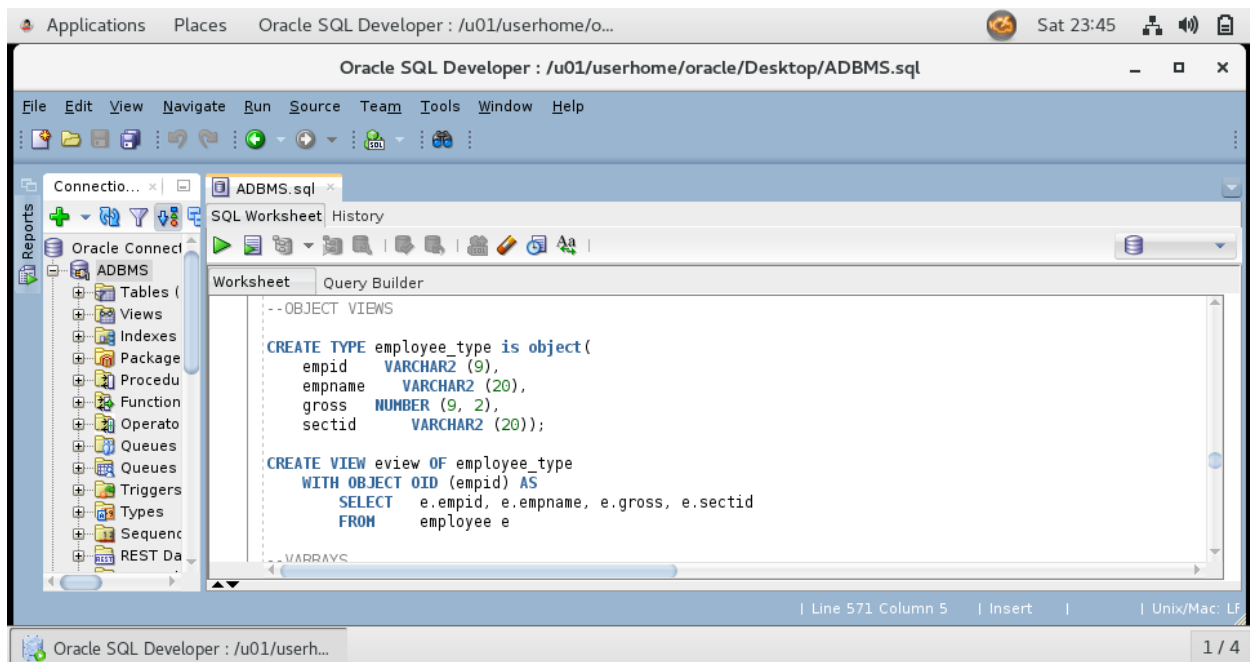
1. Record



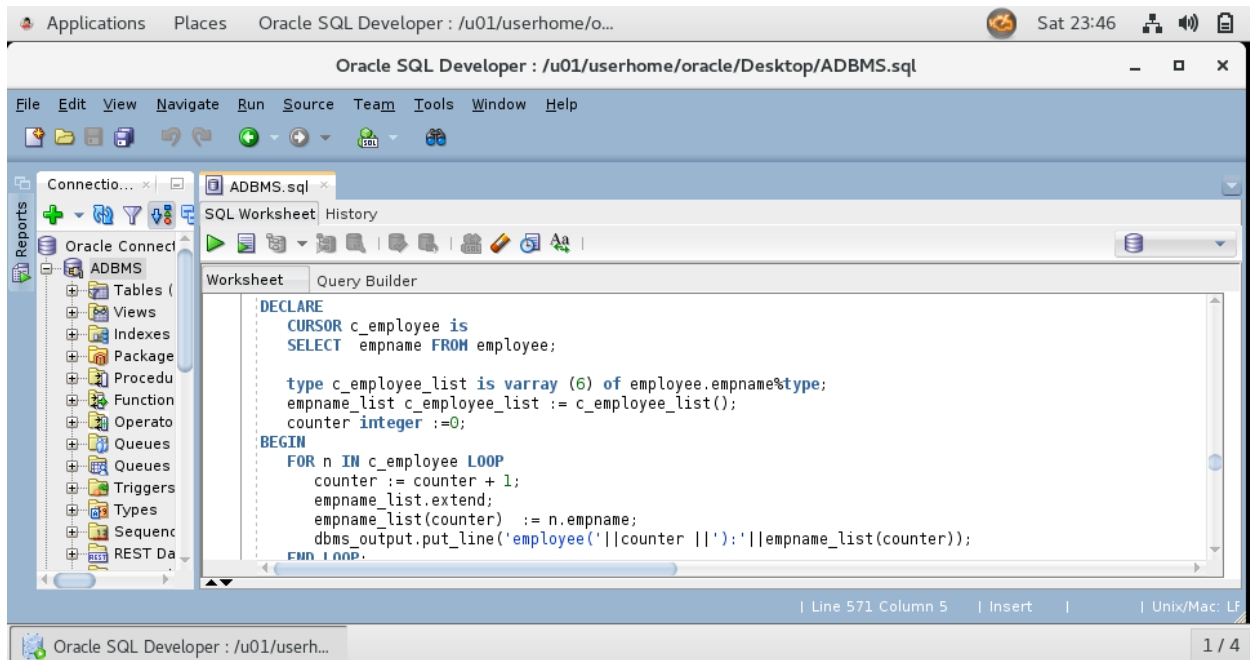
2. INDEXED ORGANISED TABLE



3. Object View



4. VARRAYS



APPENDIX

-- Tables Creation/Heap Tables

```
CREATE TABLE BOARD(
  BOARDID      VARCHAR2(2) NOT NULL,
  BOARDNAME    VARCHAR2(50) NOT NULL,
  USERID       VARCHAR2(50) NOT NULL,
  SDATE        DATE NOT NULL);
```

```
INSERT INTO BOARD
VALUES('B1','ICSE','U1','01-JAN-2009');
INSERT INTO BOARD
VALUES('B2','ICSE','U2','01-JAN-2010');
INSERT INTO BOARD
```

```
VALUES('B3','CBSE','U3','01-JAN-2011');
INSERT INTO BOARD
VALUES('B4','CBSE','U4','01-JAN-2012');
INSERT INTO BOARD
VALUES('B5','ICSE','U5','01-JAN-2013');
```

```
CREATE TABLE COM_INFO(
COMPNAME VARCHAR2(50) NOT NULL,
ADDR  VARCHAR2(150) NOT NULL,
TEL   VARCHAR2(80) NOT NULL,
EMAIL VARCHAR2(80) NOT NULL,
USERID VARCHAR2(50) NOT NULL,
SDATE DATE NOT NULL,
COMPID      VARCHAR2(2) NOT NULL,
COMNAMEB   VARCHAR2(150) NOT NULL);
```

```
INSERT INTO COM_INFO
VALUES('Infosys','Pune','8578914638','abc@gmail.com','U1','01-JAN-2009','01','Limited');
INSERT INTO COM_INFO
VALUES('TechMA','Pune','8578914639','def@gmail.com','U2','01-JAN-2010','02','Limited');
INSERT INTO COM_INFO
VALUES('Accenture','Bangalore','8578914640','ghi@gmail.com','U3','01-JAN-
2011','03','Limited');
INSERT INTO COM_INFO
VALUES('Capegemini','Pune','8578914641','jkl@gmail.com','U4','01-JAN-2012','04','Limited');
INSERT INTO COM_INFO
VALUES('Igate','Pune','8578914642','mno@gmail.com','U5','01-JAN-2013','05','Limited');
```

```
CREATE TABLE COUNTRY(
COUNID      VARCHAR2(2) NOT NULL,
COUNNAME   VARCHAR2(50) NOT NULL,
USERID VARCHAR2(50) NOT NULL);
```

```
INSERT INTO COUNTRY
VALUES('91','INDIA','U1');
INSERT INTO COUNTRY
VALUES('01','USA','U2');
INSERT INTO COUNTRY
VALUES('93','RUSSIA','U3');
INSERT INTO COUNTRY
VALUES('94','CHINA','U4');
```

```
INSERT INTO COUNTRY  
VALUES('95','UKRAINE','U5');
```

```
CREATE TABLE DEGREE(  
DEGID VARCHAR2(2) NOT NULL,  
DEGNAME VARCHAR2(50) NOT NULL,  
USERIDVARCHAR2(50) NOT NULL,  
SDATE DATE NOT NULL);
```

```
INSERT INTO DEGREE  
VALUES('D1','Bachelors','U1','01-JAN-2009');  
INSERT INTO DEGREE  
VALUES('D2','Bachelors','U2','01-JAN-2010');  
INSERT INTO DEGREE  
VALUES('D3','Masters','U3','01-JAN-2011');  
INSERT INTO DEGREE  
VALUES('D4','Masters','U4','01-JAN-2012');  
INSERT INTO DEGREE  
VALUES('D5','Masters','U5','01-JAN-2013');
```

```
CREATE TABLE DEPARTMENT(  
DEPTIDVARCHAR2(2) NOT NULL,  
DEPTNAME VARCHAR2(50) NOT NULL,  
SECTID VARCHAR2(2) NOT NULL,  
USERIDVARCHAR2(50) NOT NULL,  
ENTRYDT DATE NOT NULL,  
COMPID VARCHAR2(2)NOT NULL);
```

```
INSERT INTO DEPARTMENT  
VALUES('10','HR','S1','U1','20-SEP-2001','01');  
INSERT INTO DEPARTMENT  
VALUES('20','CS','S2','U2','20-SEP-2002','02');  
INSERT INTO DEPARTMENT  
VALUES('30','ML','S3','U3','20-SEP-2003','03');  
INSERT INTO DEPARTMENT  
VALUES('40','ECC','S4','U4','20-SEP-2004','04');  
INSERT INTO DEPARTMENT  
VALUES('50','TRAVEL','S5','U5','20-SEP-2005','05');
```

```
CREATE TABLE DESIG(  
DESIGID VARCHAR2(5) NOT NULL,
```

```
DESIGNAME  VARCHAR2(50) NOT NULL,  
USERIDVARCHAR2(50)NOT NULL,  
SDATE  DATE NOT NULL,  
DGROUPID  VARCHAR(2) NOT NULL);
```

```
INSERT INTO DESIG  
VALUES('DES01','System Engineer','U1','01-JAN-2009','20');  
INSERT INTO DESIG  
VALUES('DES02','System Engineer','U2','01-JAN-2010','21');  
INSERT INTO DESIG  
VALUES('DES03','Senior System Engineer','U3','01-JAN-2011','22');  
INSERT INTO DESIG  
VALUES('DES04','Senior System Engineer','U4','01-JAN-2012','23');  
INSERT INTO DESIG  
VALUES('DES05','Team Leader','U5','01-JAN-2013','24');
```

```
CREATE TABLE DGROUP(  
CL      NUMBER(22,2),  
DGROUPID  VARCHAR2(2),  
USERIDVARCHAR2(50),  
ENTRYDT   VARCHAR2(50),  
EL      NUMBER(22,5),  
ML      NUMBER(22,2));
```

```
INSERT INTO DGROUP  
VALUES(20,'20','U1','20-SEP-2001',0,9);  
INSERT INTO DGROUP  
VALUES(19,'21','U2','20-SEP-2002',8,8);  
INSERT INTO DGROUP  
VALUES(18,'22','U3','20-SEP-2003',8,7);  
INSERT INTO DGROUP  
VALUES(17,'23','U4','20-SEP-2004',7,6);  
INSERT INTO DGROUP  
VALUES(16,'24','U5','20-SEP-2005',8,5);
```

```
CREATE TABLE DISSMISAL(  
MEMNO      VARCHAR2(200) NOT NULL,  
MEMDATE    DATE NOT NULL,  
EMPID VARCHAR2(6) NOT NULL,  
EMPNAME    VARCHAR2(200) NOT NULL,  
DESIGID    VARCHAR2(5) NOT NULL,  
SECTIONID  VARCHAR2(2)NOT NULL,  
SECTID VARCHAR2(2) NOT NULL,
```

```
DEPTID VARCHAR2(2) NOT NULL,  
DOJOIN    DATE NOT NULL,  
RELDATE   DATE,  
RELTYPE   VARCHAR2(200),  
REASON    VARCHAR2(200),  
EL        NUMBER(22,14) NOT NULL,  
NOTICEPAY NUMBER(22,14),  
COMPID    VARCHAR2(2) NOT NULL,  
TPERIOD   VARCHAR2(12) NOT NULL);
```

```
INSERT INTO DISSMISAL  
VALUES('MEM25','01-Feb-2014','E221','NEHA','DES04','G','S4','40','23-NOV-2011','03-NOV-  
2014','Normal','Higher Studies',0,30000,'04','3 years');
```

```
CREATE TABLE DISTRICT(  
DISTID VARCHAR2(2) NOT NULL,  
DISTNAME VARCHAR2(50) NOT NULL,  
USERID VARCHAR2(50) NOT NULL,  
SDATE DATE NOT NULL);
```

```
INSERT INTO DISTRICT  
VALUES('31','Zirakpur','U1','01-JAN-2009');  
INSERT INTO DISTRICT  
VALUES('32','Mohali','U2','01-JAN-2010');  
INSERT INTO DISTRICT  
VALUES('33','Jammu','U3','01-JAN-2011');  
INSERT INTO DISTRICT  
VALUES('34','Lahore','U4','01-JAN-2012');  
INSERT INTO DISTRICT  
VALUES('35','Chandigarh','U5','01-JAN-2013');
```

```
CREATE TABLE EDUCATION(  
EMPID VARCHAR2(6) NOT NULL,  
DEPTID VARCHAR2(2) NOT NULL,  
SECTID VARCHAR2(2) NOT NULL,  
EUID VARCHAR2(2) NOT NULL,  
DEGNAME VARCHAR2(50) NOT NULL,  
BOARDNAME VARCHAR2(50) NOT NULL,  
PASSYEAR VARCHAR2(4) NOT NULL,  
CGPA NUMBER(22,10) NOT NULL,  
COMPID VARCHAR2(2) NOT NULL);
```

```
INSERT INTO EDUCATION
```



```

VALUES('E209','10','S1','22','Bachelors','ICSE','2011',9.0,'01');
INSERT INTO EDUCATION
VALUES('E228','20','S2','33','Bachelors','ICSE','2011',7.0,'02');
INSERT INTO EDUCATION
VALUES('E869','30','S3','44','Masters','CBSE','2009',8.0,'03');
INSERT INTO EDUCATION
VALUES('E221','40','S4','55','Masters','CBSE','2011',6.0,'04');
INSERT INTO EDUCATION
VALUES('E222','50','S5','66','Masters','ICSE','2011',10.0,'05');

```

```

CREATE TABLE EMPLOYEE(
REPORTEDTO VARCHAR2(9),
MEMNO      VARCHAR2(50),
GROSS NUMBER(22,12),
COMPID     VARCHAR2(2),
ELBALANCE  NUMBER(22,5),
ELBALANCEDT DATE,
ANIGHT     NUMBER(22,12),
APRODNUMBER(22,12),
LOAN NUMBER(22,12),
EDAYS NUMBER(22,12),
SECTIONID  VARCHAR2(2),
DGROUPID  VARCHAR2(2),
BONUSNUMBER(22,12),
PHONE NUMBER(22,12),
GENDER     VARCHAR2(10),
DOBIRTH    DATE,
DISTID VARCHAR2(8),
COUNID     VARCHAR2(8),
COUNNAME  VARCHAR2(50),
DISTNAME  VARCHAR2(50),
SECTID VARCHAR2(2),
DEPTID VARCHAR2(4),
DESIGID    VARCHAR2(5),
EMPID VARCHAR2(9),
EMPNAME  VARCHAR2(50),
DOLINCR   DATE,
LINCRRATE NUMBER(22,12),
TDATE DATE,
TFLAG NUMBER(22),
ACTIVEYN  NUMBER(22,1),
EJOIN DATE);

```

```

INSERT INTO EMPLOYEE

```

```

VALUES('E222','MEM22',10000000.00,'01','50','23-APR-
2019',50,1200,0,100,'M','20',1000000.00,8578914222,'Male','20-SEP-
1993','31','91','INDIA','Zirakpur','S1','10','DES01','E209','Naman','01-NOV-2014','10','23-APR-
2012',0,0,'23-NOV-2009');
INSERT INTO EMPLOYEE
VALUES('E222','MEM23',100000.00,'02','10','23-APR-
2019',10,500,0,100,'A','21',1000.00,8578914223,'Female','20-AUG-
1993','32','91','INDIA','Mohali','S2','20','DES02','E228','Nishi','01-NOV-2014','10','23-APR-
2012',0,0,'23-NOV-2009');
INSERT INTO EMPLOYEE
VALUES('E222','MEM24',100000.00,'03','40','23-APR-
2019',20,700,0,100,'N','22',10000.00,8578914224,'Female','18-APR-
1993','33','91','INDIA','Jammu','S3','30','DES03','E229','Bhaghi','01-NOV-2014','10','23-MAR-
2011',0,0,'25-DEC-2009');
INSERT INTO EMPLOYEE
VALUES('E222','MEM25',100000.00,'04','30','23-APR-
2019',20,900,0,80,'G','23',10000.00,8578914225,'Female','18-APR-
1993','34','91','INDIA','Lahore','S4','40','DES04','E221','Neha','01-NOV-2014','10','22-JAN-
2015',0,0,'10-JUN-2012');
INSERT INTO EMPLOYEE
VALUES('E222','MEM26',100000.00,'05','50','23-APR-
2019',20,700,0,100,'O','24',10000.00,8578914226,'Female','01-JAN-
1994','35','91','INDIA','Chandigarh','S5','50','DES05','E222','Newzy ','01-NOV-2014','10','22-FEB-
2013',0,0,'23-NOV-2009');

```

```

CREATE TABLE INCREMENT_D(
EMPID VARCHAR2(8),
DEPTID VARCHAR2(2),
SECTID VARCHAR2(2),
INCRID VARCHAR2(4),
APPRODATE DATE,
ACTIVEDATE DATE,
MEMONUMBER VARCHAR2(50),
INCRRATE NUMBER(22,10),
BSAL NUMBER(22,10),
NEWSAL NUMBER(22,10),
INCRTYPE VARCHAR2(50),
COMPID VARCHAR2(2));

```

```

INSERT INTO INCREMENT_D
VALUES('E209','10','S1','INC1','20-SEP-2014','31-DEC-
2014','M1',100.00,50000,10000000,'Hike','01');
INSERT INTO INCREMENT_D
VALUES('E228','20','S2','INC2','20-SEP-2014','31-DEC-2014','M2',10.00,10000,20000,'Hike','02');

```

```

INSERT INTO INCREMENT_D
VALUES('E229','30','S3','INC3','20-SEP-2014','31-DEC-
2014','M3',80.00,60000,600000,'Hike','03');
INSERT INTO INCREMENT_D
VALUES('E221','40','S4','INC4','20-SEP-2014','31-DEC-2014','M4',00.00,10000,10000,'Hike','04');
INSERT INTO INCREMENT_D
VALUES('E222','50','S5','INC5','20-SEP-2014','31-DEC-
2014','M5',100.00,100000,200000,'Hike','05');

```

```

CREATE TABLE HRJOB(
JOBID  VARCHAR2(6),
JOBNAME  VARCHAR2(100),
STATUS   VARCHAR2(10),
EMPID VARCHAR2(8),
COUNID   VARCHAR2(2),
USERIDVARCHAR2(50),
SDATE DATE);

```

```

INSERT INTO HRJOB
VALUES('J1','Engineer','Available','E209','91','U1','01-JAN-2009');
INSERT INTO HRJOB
VALUES('J2','Engineer','Available','E228','91','U2','01-JAN-2010');
INSERT INTO HRJOB
VALUES('J3','Engineer','Available','E229','91','U3','01-JAN-2011');
INSERT INTO HRJOB
VALUES('J4','Engineer','Available','E221','91','U4','01-JAN-2012');
INSERT INTO HRJOB
VALUES('J5','Engineer','Available','E222','91','U5','01-JAN-2013');

```

```

CREATE TABLE LEAVEAPP(
EMPID VARCHAR2(8),
LTAKENTO  DATE,
LTAKENFROM DATE,
RDAYS NUMBER(22,12),
LTYPENAME  VARCHAR2(50),
LREASON    VARCHAR2(100),
USERIDVARCHAR2(50),
SDATE DATE,
COMPID     VARCHAR2(2),
SECTID VARCHAR2(2));

```

```

INSERT INTO LEAVEAPP
VALUES('E209','01-JUN-2018','01-MAY-2018',10,'EL','Personal','U1','01-JAN-2009','01','S1');
INSERT INTO LEAVEAPP

```

```

VALUES('E228','01-DEC-2018','01-MARCH-2018',10,'ML','Personal','U2','01-JAN-2009','02','S2');
INSERT INTO LEAVEAPP
VALUES('E229','01-JUN-2018','01-MAY-2018',10,'CL','Personal','U3','01-JAN-2009','03','S3');
INSERT INTO LEAVEAPP
VALUES('E221','01-JUN-2018','01-MAY-2018',10,'LWP','Personal','U4','01-JAN-2009','04','S4');
INSERT INTO LEAVEAPP
VALUES('E222','01-FEB-2018','01-JAN-2018',10,'SL','Personal','U5','01-JAN-2009','05','S5');

```

```

CREATE TABLE LEAVE_TYPE(
LTYPEID      VARCHAR2(2),
LTPENAME     VARCHAR2(50),
MDAYSNUMBER(22,12),
USERIDVARCHAR2(50),
SDATE DATE);

```

```

INSERT INTO LEAVE_TYPE
VALUES('L1','EL',10,'U1','01-JAN-2009');
INSERT INTO LEAVE_TYPE
VALUES('L2','ML',20,'U2','01-JAN-2010');
INSERT INTO LEAVE_TYPE
VALUES('L3','CL',10,'U3','01-JAN-2011');
INSERT INTO LEAVE_TYPE
VALUES('L4','LWP',10,'U4','01-JAN-2012');
INSERT INTO LEAVE_TYPE
VALUES('L5','SL',2,'U5','01-JAN-2013');

```

```

CREATE TABLE OFFICE(
OFFICEID     VARCHAR2(2),
OFFICENAME   VARCHAR2(50),
USERIDVARCHAR2(50),
SDATE DATE);

```

```

INSERT INTO OFFICE
VALUES('O1','ODC1','U1','01-JAN-2009');
INSERT INTO OFFICE
VALUES('O2','ODC2','U2','01-JAN-2010');
INSERT INTO OFFICE
VALUES('O3','ODC3','U3','01-JAN-2011');
INSERT INTO OFFICE
VALUES('O4','ODC4','U4','01-JAN-2012');
INSERT INTO OFFICE
VALUES('O5','ODC5','U5','01-JAN-2013');

```

```

CREATE TABLE OFFICETIME(

```

```
ANIGHT      NUMBER(22,12),
EMPID VARCHAR2(6),
DEPTID VARCHAR2(2),
SECTID VARCHAR2(2),
SECTIONID   VARCHAR2(2),
OPERIOD     NUMBER(22,6),
OTHOURS     NUMBER(22,12));
```

```
INSERT INTO OFFICETIME
VALUES(50,'E209','10','S1','M',5,9);
INSERT INTO OFFICETIME
VALUES(10,'E228','20','S2','A',6,9);
INSERT INTO OFFICETIME
VALUES(20,'E229','30','S3','N',7,8);
INSERT INTO OFFICETIME
VALUES(20,'E221','40','S4','G',8,9);
INSERT INTO OFFICETIME
VALUES(20,'E222','50','S5','O',9,10);
```

```
CREATE TABLE SECTION(
SECTIONID   VARCHAR2(2),
SECTIONNAME VARCHAR2(50),
DEPTID VARCHAR2(2),
SECTID VARCHAR2(2),
USERID VARCHAR2(50),
ENTRYDT   VARCHAR2(50),
COMPID    VARCHAR2(2));
```

```
INSERT INTO SECTION
VALUES('M','Engineering','10','S1','U1','20-SEP-2001','01');
INSERT INTO SECTION
VALUES('A','Mechanical','20','S2','U2','20-SEP-2002','02');
INSERT INTO SECTION
VALUES('N','Management','30','S3','U3','20-SEP-2003','03');
INSERT INTO SECTION
VALUES('G','Cleaning','40','S4','U4','20-SEP-2004','04');
INSERT INTO SECTION
VALUES('O','Party','50','S5','U5','20-SEP-2005','05');
```

```
CREATE TABLE SALARY(
GROSS NUMBER(22,14),
COMPID VARCHAR2(2),
DGROUPID VARCHAR2(2),
ANIGHT NUMBER(22,12),
```

```
APRODNUMBER(22,12),
EMPID VARCHAR2(8),
EMPNAME   VARCHAR2(50),
DESIGID   VARCHAR2(5),
DESIGNAME VARCHAR2(30),
SECTID VARCHAR2(2),
DEPTID VARCHAR2(2),
DEPTNAME  VARCHAR2(30),
SECTIONID VARCHAR2(2),
SECTIONNAME VARCHAR2(50),
OPERIOD   VARCHAR2(6),
MDAYSNUMBER(22,12),
ELDAYS    NUMBER(22,12));
```

```
INSERT INTO SALARY
VALUES(10000,'01','20',50,1200,'E209','Naman','DES01','System
Engineer','S1','10','HR','M','Engineering','5',10,270);
```

```
INSERT INTO SALARY
VALUES(20000,'02','21',10,500,'E228','Nishi','DES02','System
Engineer','S2','20','CS','A','Mechanical','6',20,250);
```

```
INSERT INTO SALARY
VALUES(30000,'03','22',20,700,'E229','Bhaghi','DES03','Senior System
Engineer','S3','30','ML','N','Management','7',10,240);
```

```
INSERT INTO SALARY
VALUES(40000,'04','23',20,900,'E221','Neha','DES04','Senior System
Engineer','S4','40','ECC','G','Cleaning','8',10,210);
```

```
INSERT INTO SALARY
VALUES(50000,'05','24',20,700,'E222','Newzy','DES05','Team
Leader','S5','50','Travel','O','Pantry','9',2,209);
```

```
CREATE TABLE TRANSFER(
DEPTID VARCHAR2(2),
SECTIONID   VARCHAR2(2),
TRANSID     VARCHAR2(2),
TRANSDATE   DATE,
TRANSDEP    VARCHAR2(50),
MEMONUMBER  VARCHAR2(30),
USERID      VARCHAR2(50),
ENTRYDT     VARCHAR2(50),
SECTID VARCHAR2(2),
SECTIONTO   VARCHAR2(2),
EMPID VARCHAR2(6));
```

```
INSERT INTO TRANSFER
```

```

VALUES('10','M','T1','06-JAN-2007','CS','M1','U1','20-SEP-2001','S1','A','E209');
INSERT INTO TRANSFER
VALUES('20','A','T2','07-JAN-2008','ML','M2','U2','20-SEP-2002','S2','N','E228');
INSERT INTO TRANSFER
VALUES('30','N','T3','26-SEP-2009','ECC','M3','U3','20-SEP-2003','S3','G','E229');
INSERT INTO TRANSFER
VALUES('40','G','T4','26-DEC-2010','Travel','M4','U4','20-SEP-2004','S4','O','E221');
INSERT INTO TRANSFER
VALUES('50','O','T5','01-JAN-2005','HR','U5','20-SEP-2005','S4','M','E222');

```

```

CREATE TABLE SKILLS(
EMPID VARCHAR2(6),
SECTID VARCHAR2(2),
SKILLSID NUMBER(2),
SKILLS VARCHAR2(500));

```

```

INSERT INTO SKILLS
VALUES('E209','S1',50,'Data Science');
INSERT INTO SKILLS
VALUES('E228','S2',60,'Testing');
INSERT INTO SKILLS
VALUES('E229','S1',70,'Testing');
INSERT INTO SKILLS
VALUES('E221','S3',80,'Documentation');
INSERT INTO SKILLS
VALUES('E222','S4',90,'Data Science');

```

```

CREATE TABLE WORKHISTORY(
EMPID VARCHAR2(6),
SECTID VARCHAR2(2),
PERIOD VARCHAR2(100),
ID VARCHAR2(2),
COMPANY VARCHAR2(100),
COMPANYADDR VARCHAR2(300),
TITLE VARCHAR2(100),
ROLE VARCHAR2(1500));

```

```

INSERT INTO WORKHISTORY
VALUES('E209','S1','7','70','INFOSYS','PUNE','Engineer','Work');
INSERT INTO WORKHISTORY
VALUES('E228','S2','6','71','TechMA','PUNE','Engineer','Work');
INSERT INTO WORKHISTORY
VALUES('E229','S3','5','72','ACCENTURE','BANAGALORE','Engineer','Work');
INSERT INTO WORKHISTORY

```

```
VALUES('E221','S4','4','73','ACCENTURE','PUNE','Engineer', 'Work');
INSERT INTO WORKHISTORY
VALUES('E222','S5','3','74','lgate','PUNE','Engineer', 'Work');
```

--CREATING INDEXES

```
CREATE INDEX empid_idx
ON employee(empname);
```

```
CREATE INDEX dist_idx
ON district(distname);
```

```
CREATE INDEX dept_idx
ON department(depname);
```

```
CREATE INDEX desig_idx
ON designation(designame);
```

```
CREATE INDEX country_idx
ON country(counname);
```

```
CREATE INDEX compinfo_idx
ON com_info(compname);
```

```
CREATE INDEX dgroup_idx
ON dgroup(dgroupid);
```

```
CREATE INDEX empinc_idx
ON increment_d(empid);
```

```
CREATE INDEX office_idx
ON office(officename);
```

```
CREATE INDEX section_idx
ON section(sectionname);
```

--ADDING THE CONSTRAINTS

```
ALTER TABLE COM_INFO ADD
CONSTRAINT PK_COM_INFO PRIMARY KEY(COMPID);
```

```
ALTER TABLE COUNTRY ADD
CONSTRAINT PK_COUNTRY PRIMARY KEY(COUNID);
ALTER TABLE COUNTRY ADD
```


CONSTRAINT UK_COUNTRY UNIQUE(COUNNAME);

ALTER TABLE DEGREE ADD
CONSTRAINT PK_DEGREE PRIMARY KEY(DEGID);

ALTER TABLE DEPARTMENT ADD
CONSTRAINT PK_DEPARTMENT PRIMARY KEY(SECTID,DEPTID);

ALTER TABLE DGROUP ADD
CONSTRAINT PK_DGROUP PRIMARY KEY(DGROUPID);

ALTER TABLE DISTRICT ADD(
CONSTRAINT PK_DISTRICT PRIMARY KEY(DISTID),
CONSTRAINT UK_DISTRICT UNIQUE(DISTNAME));

ALTER TABLE EDUCATION ADD
CONSTRAINT PK_EDUCATION_D PRIMARY KEY(EMPID,SECTID,EDUID);

ALTER TABLE EMPLOYEE ADD
CONSTRAINT PK_EMPLOYEE PRIMARY KEY(SECTID,EMPID);

ALTER TABLE INCREMENT_D ADD
CONSTRAINT PK_INCREMENT_D PRIMARY KEY(EMPID,SECTID,INCRID);

ALTER TABLE HRJOB ADD
CONSTRAINT PK_JOB PRIMARY KEY(JOBID);

ALTER TABLE LEAVEAPP ADD
CONSTRAINT PK_LEAVEAPP PRIMARY KEY(SECTID,EMPID,LTYPENAME,LTAKENTO);

ALTER TABLE LEAVE_TYPE ADD
CONSTRAINT PK_LEAVE_TYPE PRIMARY KEY(LTYPENAME);

ALTER TABLE OFFICETIME ADD
CONSTRAINT PK_OTIME PRIMARY KEY (SECTID,EMPID);

ALTER TABLE SALARY ADD
CONSTRAINT PK_SALARY PRIMARY KEY(EMPID,SECTID);

ALTER TABLE SECTION ADD
CONSTRAINT PK_SECTION PRIMARY KEY(SECTID,DEPTID,SECTIONID);

ALTER TABLE TRANSFER ADD
CONSTRAINT PK_TRANSFER PRIMARY KEY(EMPID,SECTID,TRANSDATE);

--INDEXED ORGANIZED TABLE

```
CREATE TABLE EmplIndex
( EMPID      VARCHAR2(20),
  EMPNAME    VARCHAR2(50),
  GROSS NUMBER(22,12),
  BONUS  NUMBER(22,12),
  CONSTRAINT Pk_EmplIndex PRIMARY KEY (EMPID, EMPNAME)
)
ORGANIZATION INDEX
PCTTHRESHOLD 20
INITRANS 4;
```

--RELATIONAL VIEWS

```
CREATE VIEW EMP_DEPT
AS
SELECT EMPID,EMPNAME,DEPTNAME,OTHOOURS
FROM EMPLOYEE e
INNER JOIN DEPARTMENT d
ON e.deptid= d.deptid
INNER JOIN OFFICETIME ot
ON ot.deptid = d.deptid
```

```
CREATE VIEW vu_EL AS
SELECT empid,SECTID,sum(NVL(rdays,0)) ELdays,to_char(ltakenfrom,'yyyymm') Period
FROM leaveapp
WHERE ltypename='EL'
GROUP BY SECTID,empid, to_char(ltakenfrom,'yyyymm');
/
```

```
CREATE VIEW vu_ML AS
SELECT empid,SECTID,sum(NVL(rdays,0)) MLdays,to_char(ltakenfrom,'yyyymm') Period
FROM leaveapp
WHERE ltypename='ML'
GROUP BY SECTID,empid, to_char(ltakenfrom,'yyyymm');
/
```

```
CREATE VIEW vu_CL AS
SELECT empid,SECTID,sum(NVL(rdays,0)) CLdays,to_char(ltakenfrom,'yyyymm') Period
FROM leaveapp
```

```
WHERE ltypename='CL'
GROUP BY SECTID,empid, to_char(ltakenfrom,'yyyymm');
/
```

```
CREATE VIEW vu_LWP AS
SELECT empid,SECTID,sum(NVL(rdays,0)) LWPdays,to_char(ltakenfrom,'yyyymm') Period
FROM leaveapp
WHERE ltypename='LWP'
GROUP BY SECTID,empid, to_char(ltakenfrom,'yyyymm');
/
```

```
CREATE VIEW vu_SL AS
SELECT empid,SECTID,sum(NVL(rdays,0)) LWPdays,to_char(ltakenfrom,'yyyymm') Period
FROM leaveapp
WHERE ltypename='SL'
GROUP BY SECTID,empid, to_char(ltakenfrom,'yyyymm');
```

--INLINE VIEWS

```
SELECT ROWNUM as RANK,empname, gross
FROM (SELECT empname, gross
      FROM employee
      ORDER BY gross DESC)
WHERE ROWNUM <= 3;
```

--OBJECT VIEWS

```
CREATE TYPE employee_type is object(
  empid  VARCHAR2 (9),
  empname VARCHAR2 (20),
  gross  NUMBER (9, 2),
  sectid VARCHAR2 (20));

CREATE VIEW eview OF employee_type
WITH OBJECT OID (empid) AS
  SELECT e.empid, e.empname, e.gross, e.sectid
  FROM   employee e
```

--VARRAYS

```
DECLARE
  CURSOR c_employee is
  SELECT empname FROM employee;
```

```

type c_employee_list is varray (6) of employee.empname%type;
empname_list c_employee_list := c_employee_list();
counter integer :=0;
BEGIN
  FOR n IN c_employee LOOP
    counter := counter + 1;
    empname_list.extend;
    empname_list(counter) := n.empname;
    dbms_output.put_line('employee(' || counter || '):' || empname_list(counter));
  END LOOP;
END;
/

```

--RECORDS

```

DECLARE
TYPE emp_details IS RECORD
(
EMPID VARCHAR2(45),
EMPNAME VARCHAR2(150),
ANIGHT NUMBER,
GROSS NUMBER
);

```

```

ed_emp_rec emp_details;

```

```

BEGIN
ed_emp_rec.empid:= 'E209';
ed_emp_rec.empname:='NAMAN';
ed_emp_rec.anight:= 4;
ed_emp_rec.gross:=1000000;
dbms_output.put_line('Employee Details');
dbms_output.put_line ('Employee ID: ' || ed_emp_rec.empid);
dbms_output.put_line ('Employee Name: ' || ed_emp_rec.empname);
dbms_output.put_line ('Employee Shift: ' || ed_emp_rec.anight);
dbms_output.put_line ('Employee Gross Salary : ' || ed_emp_rec.gross);
END;
/

```

--TRIGGERS

--Trigger Salary Update

```

CREATE TRIGGER Salary_Update
AFTER UPDATE OF ACTIVE DATE
ON INCREMENT_D

```

```

REFERENCING NEW AS new OLD as old
FOR EACH ROW
BEGIN
  IF :new.activatedate is not null THEN
    UPDATE employee
    SET
      employee.gross=employee.gross+:old.newsals,
      employee.LINCRRATE=NVL(:OLD.NEWSALS,0)-NVL(:OLD.BSALS,0),
      employee.DOLINCR=:new.ACTIVATEDATE
    WHERE
      employee.empid=:old.empid AND
      employee.Sectid=:old.sectid AND
      employee.deptid=:old.deptid;
  END IF;
END;
/

```

--Trigger Transfer Update

```

CREATE TRIGGER Transfer_Update
AFTER UPDATE OF TRANSDATE
ON TRANSFER
REFERENCING NEW AS new OLD as old
FOR EACH ROW
DECLARE
  dg varchar2(3);
BEGIN
  dg:=SUBSTR(:OLD.DESIGID,1,2);
  IF substr(dg,2,2)='/' THEN
    dg:=rtrim(dg,'/');
  END IF;
  IF :new.transdate is not null THEN
    UPDATE employee
    SET
      EMPLOYEE.SECTIONID=:OLD.SECTIONTO,
      EMPLOYEE.DGROUPID=dg,
    WHERE
      EMPLOYEE.SECTIONID=:OLD.SECTIONID;
  END IF;
END;
/

```

--Trigger Dismissal Update

```

CREATE TRIGGER Dismissal_Update
AFTER UPDATE OF RELEDATE

```

```

ON DISSMISAL
REFERENCING NEW AS NEW OLD AS OLD
FOR EACH ROW
BEGIN
  IF :new.RELDATE is not null THEN
    UPDATE employee
    SET
      Employee.TDATE=:new.RELDATE ,
      Employee.TFLAG=1,
      ACTIVEYN=1
  WHERE
    Employee.Empid=:old.Empid AND
    Employee.Sectid=:old.Sectid AND
    Employee.Deptid=:old.Deptid;
    END IF;
  END;
/

```

--Trigger Dismissal Insert

```

CREATE TRIGGER Dismissal_Insert
AFTER INSERT
ON DISSMISAL
REFERENCING NEW AS NEW OLD AS OLD
FOR EACH ROW
BEGIN
  IF :new.RELDATE is not null THEN
    UPDATE employee
    SET
      Employee.TDATE=:new.RELDATE ,
      Employee.TFLAG=1,
      ACTIVEYN=1
  WHERE
    Employee.Empid=:old.Empid AND
    Employee.Sectid=:old.Sectid AND
    Employee.Deptid=:old.Deptid;
    END IF;
  END;
/

```

--Procedures,Functions,Cursors

--Function Spell Out

```

Create function spel_out(a_number number)
return char

```

```
is
type numtab is table of varchar2(30)
index by binary_integer;
number_chart numtab;
crore number;
lakh number;
thou number;
hund number;
doubl number;
sing number;
deci number;
text varchar2(500);
```

```
begin
```

```
--The Table
```

```
number_chart(1):='One';
number_chart(2):='Two';
number_chart(3):='Three';
number_chart(4):='Four';
number_chart(5):='Five';
number_chart(6):='Six';
number_chart(7):='Seven';
number_chart(8):='Eight';
number_chart(9):='Nine';
number_chart(10):='Ten';
number_chart(11):='Eleven';
number_chart(12):='Twelve';
number_chart(13):='Thirteen';
number_chart(14):='Fourteen';
number_chart(15):='Fifteen';
number_chart(16):='Sixteen';
number_chart(17):='Seventeen';
number_chart(18):='Eighteen';
number_chart(19):='Nineteen';
number_chart(20):='Twenty';
number_chart(30):='Thirty';
number_chart(40):='Forty';
number_chart(50):='Fifty';
number_chart(60):='Sixty';
number_chart(70):='Seventy';
number_chart(80):='Eighty';
number_chart(90):='Ninety';
```

```

crore:=floor(a_number/100000000);
lakh:=floor((a_number-trunc(a_number,-7))/100000);
thou:=floor((a_number-trunc(a_number,-5))/1000);
hund:=floor((a_number-trunc(a_number,-3))/100);
doubl:=trunc(a_number-trunc(a_number,-2),0);
sing:=trunc(a_number-trunc(a_number,-1),0);
deci:=(a_number-trunc(a_number,0))*100;

if crore<>0 then
    text:=spel_out(crore)||' '||'Crore ';
end if;

if lakh <>0 then
    if (lakh<=20) or (lakh mod 10=0) then
        text:=text||number_chart(lakh)||' Lakh ';
    else
        text:=text||number_chart(trunc(lakh,-1))||' '||number_chart(trunc(lakh,0)-
trunc(lakh,-1))||' Lakh ';

        end if;
end if;

if thou <>0 then
    if (thou<=20) or (thou mod 10=0) then
        text:=text||number_chart(thou)||' Thousand ';
    else
        text:=text||number_chart(trunc(thou,-1))||' '||number_chart(trunc(thou,0)-
trunc(thou,-1))||' Thousand ';

        end if;
end if;

if hund <>0 then
    if (hund<=20) or (hund mod 10=0) then
        text:=text||number_chart(hund)||' Hundred ';
    else
        text:=text||number_chart(trunc(hund,-1))||' '||number_chart(trunc(hund,0)-
trunc(hund,-1))||' Hundred ';
        end if;
end if;

if doubl <>0 then
    if (doubl<=20) or (doubl mod 10=0) then

```



```

        text:=text||number_chart(doubl)||' ';
    else
        text:=text||number_chart(trunc(doubl,-1))||' '||number_chart(trunc(doubl,0)-
trunc(doubl,-1))||' ';
    end if;
end if;

if deci <>0 then
    if (deci<=20) or (deci mod 10=0) then
        text:=text||' With '||number_chart(deci)||' Poisa';
    else
        text:=text||' With '||number_chart(trunc(deci,-1))||'
'||number_chart(trunc(deci,0)-trunc(deci,-1))||' Poisa';
    end if;
end if;

return text;

end spel_out;
/

```

--Function Calculate tax

```

CREATE FUNCTION calculate_tax
(Eid NUMBER)
RETURN NUMBER
IS
tax NUMBER(10,2);
BEGIN
    tax := 0;
    SELECT (sum(GROSS)*30)/100
    INTO tax
    FROM SALARY
    WHERE empid = Eid;
    RETURN tax;
END calculate_tax;

```

--Function Find Employee

```

CREATE Function FindEmployee
( ename IN varchar2 )
RETURN number
IS
eid number;
cursor c1
is

```

```

SELECT empid
FROM employee
WHERE empname = ename;
BEGIN
open c1;
fetch c1 into eid;
if c1%notfound then
eid := 0000;
end if;
close c1;
RETURN eid;
EXCEPTION
WHEN OTHERS THEN
    raise_application_error(-20001,'An error was encountered - '||SQLCODE||' -ERROR-
'||SQLERRM);
END;

```

--PROCEDURES

--Update Employee using Table collections and using PLS_INTEGER

```

DECLARE
    TYPE DateTabTyp IS TABLE OF DATE INDEX BY PLS_INTEGER;
    TYPE NumTabTyp IS TABLE OF NUMBER INDEX BY PLS_INTEGER;
    EJOIN DateTabTyp;
    GROSS NumTabTyp;

    PROCEDURE initialize (tab OUT DateTabTyp, n INTEGER) IS
    BEGIN
        FOR i IN 1..n LOOP
            tab(i) := SYSDATE;
        END LOOP;
    END initialize;

    PROCEDURE initialize (tab OUT NumTabTyp, n INTEGER) IS
    BEGIN
        FOR i IN 1..n LOOP
            tab(i) := 0.0;
        END LOOP;
    END initialize;

BEGIN
    initialize(EJOIN, 50); -- calls first (DateTabTyp) version
    initialize(GROSS, 100); -- calls second (NumTabTyp) version

```

```
END;  
/
```

--Fetching the salary and bonus of the employee using OUT parameter

```
DECLARE  
  emp_id VARCHAR2(10) ;  
  bonus  NUMBER(6);  
  PROCEDURE raise_salary (emp_id varchar2, bonus NUMBER) IS  
  BEGIN  
    UPDATE employee  
    SET gross = gross + bonus  
    WHERE emp_id = emp_id;  
  END raise_salary;  
BEGIN  
  raise_salary(emp_id, bonus); -- positional procedure call for actual parameters  
  raise_salary(bonus => bonus, emp_id => emp_id); -- named parameters  
  raise_salary(emp_id, bonus => bonus); -- mixed parameters  
END;  
/
```

--Fetching Employee table row through Ref Cursor using IN OUT parameter

```
DECLARE  
  TYPE EmpCurTyp IS REF CURSOR;  
  c1 EmpCurTyp;  
  c2 EmpCurTyp;  
  PROCEDURE get_emp_data (emp_cv1 IN OUT EmpCurTyp, emp_cv2 IN OUT EmpCurTyp) IS  
    emp_rec employee%ROWTYPE;  
  BEGIN  
    OPEN emp_cv1 FOR  
    SELECT * FROM employee;  
    emp_cv2 := emp_cv1;  
    FETCH emp_cv1 INTO emp_rec; -- fetches first row  
    FETCH emp_cv1 INTO emp_rec; -- fetches second row  
    FETCH emp_cv2 INTO emp_rec; -- fetches third row  
    CLOSE emp_cv1;  
    DBMS_OUTPUT.put_line('The following raises an invalid cursor');  
    -- FETCH emp_cv2 INTO emp_rec; raises invalid cursor when get_emp_data is called  
  END;  
BEGIN  
  get_emp_data(c1, c2);  
END;/
```