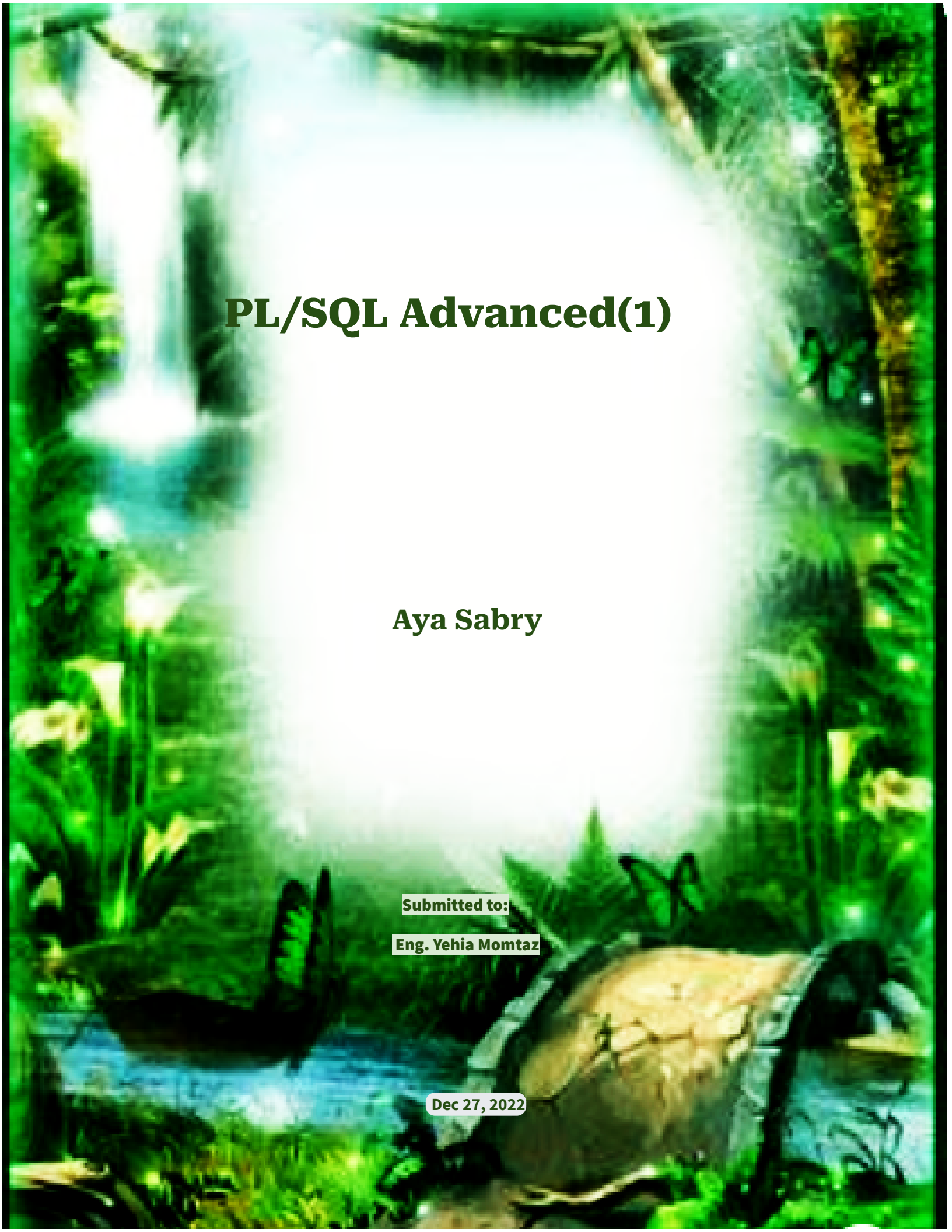

PL/SQL Advanced(1)

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Submitted to:

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Task 1

(Stored Functions / Stored Procedures)

1. Create and invoke the ADD_LOC procedure and consider the results.

   a) Create a procedure called ADD_LOC to insert a new Location into the LOCATIONS Provide the LOCATION_ID , STREET_ADDRESS, POSTAL_CODE , CITY, STATE_PROVINCE, COUNTRY_ID parameters.

   b) Compile the code; invoke the procedure. Query the Locations table to view the results.

   c) Handle Error for the Invalid Country IDs

```
set serveroutput on
---AYA LAB-1-27-DEC-2022
CREATE OR REPLACE PROCEDURE ADD_LOC (p_location_id LOCATIONS.LOCATION_ID%type,p_STREET_ADDRESS LOCATIONS.STREET_ADDRESS%type,
p_POSTAL_CODE LOCATIONS.POSTAL_CODE%type,
 p_city  LOCATIONS.city%type,P_STATE_PROVINCE LOCATIONS.STATE_PROVINCE%type,P_COUNTRY_ID LOCATIONS.COUNTRY_ID%type)
IS
 FK_VALUE EXCEPTION;
 PRAGMA EXCEPTION_INIT(FK_VALUE,-02291);
 BEGIN
 INSERT INTO LOCATIONS(LOCATION_ID, STREET_ADDRESS, POSTAL_CODE, CITY, STATE_PROVINCE, COUNTRY_ID) VALUES
(p_location_id, p_STREET_ADDRESS, p_POSTAL_CODE, p_city, p_STATE_PROVINCE, p_COUNTRY_ID);
EXCEPTION
WHEN FK_VALUE THEN
    DBMS_OUTPUT.PUT_LINE('HANDLING INVALID COUNTRY ID  .');
    DBMS_OUTPUT.PUT_LINE(SQLERRM);
end;
BEGIN
   ADD_LOC(420,'Rua Frei Caneca 1390 ','01307-002','Sao Paulo','Sao Paulo','RK');
   commit;

END;
```

```
BEGIN
  ADD_LOC (p_location_id =>420,p_STREET_ADDRESS =>'Rua Frei Caneca 1390 ',
p_POSTAL_CODE =>'01307-002',
 p_city =>'Sao Paulo',P_STATE_PROVINCE=> 'Sao Paulo',P_COUNTRY_ID =>'IT') ;


  commit;

END;
SELECT * FROM LOCATIONS;
```

a Grid

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Script Output

Cancel

LOCATI...	STREET_ADDRESS	POSTAL_CODE	CITY	STATE_PROVINCE	COUNTRY_ID
420	Rua Frei Caneca 1390	01307-002	Sao Paulo	Sao Paulo	IT
1000	1297 Via Cola di Rie	00989	Roma		IT
1100	93091 Calle della Testa	10934	Venice		IT
1200	2017 Shinjuku-ku	1689	Tokyo	Tokyo Prefecture	JP
1300	9450 Kamiya-cho	6823	Hiroshima		JP
1400	2014 Jabberwocky Rd	26192	Southlake	Texas	US
1500	2011 Interiors Blvd	99236	South San Francisco	California	US
1600	2007 Zagora St	50090	South Brunswick	New Jersey	US

```
15      DBMS_OUTPUT.PUT_LINE('HANDLING INVALID COUNTRY ID .');
16      DBMS_OUTPUT.PUT_LINE(SQLERRM);
17  end;
18  BEGIN
19    ADD_LOC(420,'Rua Frei Caneca 1390 ','01307-002','Sao Paulo','Sao Paulo','RK');
20    commit;
21
22  END;
23
24
25
26
```

Script Output

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Script Output

Output | Environment

```
Procedure created.
HANDLING INVALID COUNTRY ID  BY ROLLING BACK.
ORA-02291: integrity constraint (HR.LOC_C_ID_FK) violated - parent key not found
PL/SQL procedure successfully completed.
```

2. Create and Invoke the Query_loc Function to display the data for a certain region from Locations, Countries, regions tables in the following format " Region Name , Country Name , LOCATION_ID , STREET_ADDRESS , POSTAL_CODE , CITY " Pass Location ID as an input parameter

Hint : concat them in a single character variable and return it

```
set severoutput on
--AYA SABRY MOHAMED---
create or replace function Query_func(F_LOCATION_I in  number)
return  VARCHAR2
is
    F_REGION_NAME REGIONS.REGION_NAME%TYPE;
    F_COUNTRY_NAME COUNTRIES.COUNTRY_NAME%TYPE;
    F_LOCATION_ID LOCATIONS.LOCATION_ID%TYPE;
    F_STREET_ADDRESS LOCATIONS.STREET_ADDRESS%TYPE;
    F_POSTAL_CODE  LOCATIONS.POSTAL_CODE%TYPE;
    F_CITY LOCATIONS.CITY%TYPE;
    F_REGION_ID  REGIONS.REGION_ID%TYPE;
    F_COUNTRY_ID LOCATIONS.COUNTRY_ID%TYPE;
    OUTPUT VARCHAR2(1000);
begin
   select L.STREET_ADDRESS  ,L.POSTAL_CODE,  L.CITY ,C.COUNTRY_NAME,  R.REGION_NAME,C.REGION_ID, L.COUNTRY_ID,
    L.LOCATION_ID  INTO  F_STREET_ADDRESS,  F_POSTAL_CODE,
  F_CITY,  F_COUNTRY_NAME,F_REGION_NAME,F_REGION_ID,F_COUNTRY_ID,F_LOCATION_ID FROM LOCATIONS L join  countries C on L.country_id = C.country_id
JOIN regions R on R.REGION_ID= C.REGION_ID where   L.LOCATION_ID = F_LOCATION_I;
   OUTPUT := 'REGION_NAME: '|| F_REGION_NAME||CHR(10)||'COUNTRY_NAME:  ||F_COUNTRY_NAME||CHR(10)||'LOCATION ID:  '
      ||F_LOCATION_ID||CHR(10)||'STREET ADDRESS: '||
      F_STREET_ADDRESS||CHR(10)||'POSTAL CODE: '||F_POSTAL_CODE||CHR(10)||'CITY: '|| F_CITY;
   return OUTPUT;
end;
```

```
SET SERVEROUTPUT ON
--AYA SABRY LAB 1 --
begin

--my_func:=Query_func(1700);
dbms_output.put_line(Query_func(1700));

end;
```

Script Output

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Script Output

Output | Environment

```
LOCATION ID:  1200
STREET ADDRESS: 2017 Shinjuku-ku
CITY: Tokyo
PL/SQL procedure successfully completed.
```

3. **Create and invoke the GET_LOC function to return the street address, city for a specified LOCATION_ID.**
Hint : use out parameters for the city

```
---AYA SABRY LAB1 ADV---
CREATE OR REPLACE FUNCTION  GET_LOC(F_CITY OUT LOCATIONS.CITY%TYPE,  F_STREET_ADDRESS OUT LOCATIONS.STREET_ADDRESS%TYPE,F_LOCATION_I in  number)

return  VARCHAR2
is
    OUTPUT VARCHAR2(1000);

BEGIN
SELECT STREET_ADDRESS, CITY INTO F_STREET_ADDRESS, F_CITY
FROM LOCATIONS
WHERE  LOCATION_ID= F_LOCATION_I;

OUTPUT := 'LOCATION ID:  '||F_LOCATION_I||CHR(10)||'STREET ADDRESS: '||
      F_STREET_ADDRESS||CHR(10)||'CITY: '|| F_CITY;
      RETURN OUTPUT;
END ;
```

```
1  SET SERVEROUTPUT ON
2
3  DECLARE
4  F_CITY  LOCATIONS.CITY%TYPE;
5   F_STREET_ADDRESS  LOCATIONS.STREET_ADDRESS%TYPE;
6
7  BEGIN
8    dbms_output.put_line( GET_LOC(F_CITY  , F_STREET_ADDRESS,1200) );
9  END;
```

Script Output

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Script Output

Output | Environment

```
LOCATION ID:  1200
STREET ADDRESS: 2017 Shinjuku-ku
CITY: Tokyo
PL/SQL procedure successfully completed.
```

4. **Create a function called GET_ANNUAL_COMP to return the annual salary computed from an employee's monthly salary and commission passed as parameters. Use the following basic formula to calculate the annual salary: (Salary*12) + (commission_pct*salary*12)**

   Use the function in a SELECT statement
   Hint: Function call prototype **GET_ANNUAL_COMP(7000, 0.15)**

```
SET SERVEROUTPUT ON

--AYA SABRY LAB 1 PROBLEM 4--

CREATE OR REPLACE FUNCTION GET_ANNUAL_COMP(F_SALARY IN EMPLOYEES.SALARY%TYPE,F_COMMISSION_PCT IN  EMPLOYEES.COMMISSION_PCT%TYPE)
RETURN NUMBER IS

BEGIN

RETURN (F_SALARY *12*(1+F_COMMISSION_PCT));
END GET_ANNUAL_COMP;
```

```
SELECT EMPLOYEE_ID,LAST_NAME,SALARY , COMMISSION_PCT,GET_ANNUAL_COMP(SALARY , COMMISSION_PCT) AS "ANNUAL COMMISION" FROM EMPLOYEES;
```

Data Grid

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Script Output

Cancel

EMPLOYEE_ID	LAST_NAME	SALARY	COMMISSION_PCT	ANNUAL COMMISION
106	Pataballa	5808	0.1	76665.6
108	Greenberg	13208.8	0.2	190206.72
109	Faviet	11583	0.15	159845.4
111	Sciarra	8470	0.15	116886
113	Popp	7590	0.1	100188
114	Raphaely	12100	0.2	174240
116	Baida	3190	0.1	42108
117	Tobias	3080	0.1	40656
119	Colmenares	2750	0.1	36300
121	Fripp	9020	0.15	124476

5-
a- add RETIRED NUMBER(1) column to employees table using alter

b- Create and call
CHECK_RETIRED FUNCTION(V_EMP_ID NUMBER,
V_MAX_HIRE_YEAR NUMBER) RETURN Number;
that will return 1 if employee has passed no of years >=
V_MAX_HIRE_YEAR, return 0 for otherwise

c- create anonymous block to update the emp with set retired = 1 if this employee will retired

A)

```
ALTER TABLE EMPLOYEES
ADD RETIRED NUMBER(1);
```

B)

```
SET SERVEROUTPUT ON
---AYA  SABRY LAB1---
CREATE OR REPLACE FUNCTION CHECK_RETIRED (V_EMP_ID NUMBER, V_MAX_HIRE_YEAR NUMBER)
RETURN Number
IS
V_HIRE NUMBER;
BEGIN
SELECT TRUNC(MONTHS_BETWEEN(SYSDATE,HIRE_DATE)/12) INTO V_HIRE  FROM EMPLOYEES WHERE EMPLOYEE_ID=V_EMP_ID;
IF
V_HIRE >=V_MAX_HIRE_YEAR THEN
RETURN 1;
ELSE
RETURN 0;
END IF;
END;
```

C) example when max_year=18

```
SET SERVEROUTPUT ON
---AYA  SABRY LAB1---
DECLARE
V_MAX NUMBER:=18;
CURSOR CMP IS SELECT * FROM EMPLOYEES;
BEGIN
---SELECT MAX(TRUNC(MONTHS_BETWEEN(SYSDATE,HIRE_DATE)/12)) INTO V_MAX  FROM EMPLOYEES;
FOR F_EMP IN CMP LOOP
F_EMP.RETIRED:= CHECK_RETIRED(F_EMP.EMPLOYEE_ID,V_MAX);
UPDATE EMPLOYEES
SET RETIRED=F_EMP.RETIRED
WHERE EMPLOYEE_ID =F_EMP.EMPLOYEE_ID;
COMMIT;
END LOOP;
END;
SELECT EMPLOYEE_ID, LAST_NAME,HIRE_DATE,RETIRED FROM EMPLOYEES;
```

Data Grid | Auto Trace | DBMS Output (disabled) | Query Viewer | CodeXpert | Script Output

Cancel

EMPLOYEE_ID	LAST_NAME	HIRE_DATE	RETIRED
106	Pataballa	2/5/2006	0
108	Greenberg	8/17/2002	1
109	Faviet	8/16/2002	1
111	Sciarra	9/30/2005	0
113	Popp	12/7/2007	0

- example when max_year=maximum year for hire date in employees table

```
/*
c- create anonymous block to update the emp with set retired = 1  if this employee will retired */


DECLARE
V_MAX NUMBER;
CURSOR CMP IS SELECT * FROM EMPLOYEES;

BEGIN
SELECT MAX(TRUNC(MONTHS_BETWEEN(SYSDATE,HIRE_DATE)/12)) INTO V_MAX  FROM EMPLOYEES;
FOR F_EMP IN CMP LOOP

F_EMP.RETIRED:= CHECK_RETIRED(F_EMP.EMPLOYEE_ID,V_MAX);

UPDATE EMPLOYEES
SET RETIRED=F_EMP.RETIRED
WHERE EMPLOYEE_ID =F_EMP.EMPLOYEE_ID;
COMMIT;

END LOOP;

END;

SELECT * FROM EMPLOYEES;
```

Cancel

ISSION_PCT	MANAGER_ID	DEPARTMENT_ID	GENDER	EMPLOYEE_NOTES	RETIRED_BONUS	RE...
0.25	100	90	M	Employee no. 102 Named Lex De Haan Takes Salary = 17000 and works as AD_VP in Department NO. 90	445400	1
0.1	103	60	M	Employee no. 106 Named Valli Pataballa Takes Salary = 4800 and works as IT_PROG in Department NO. 60		0
0.2	101	100	M	Employee no. 108 Named Nancy Greenberg Takes Salary = 12008 and works as FI_MGR in Department NO. 100	291794.4	0
0.15	108	100	M	Employee no. 109 Named Daniel Faviet Takes Salary = 9000 and works as FI_ACCOUNT in Department NO. 100	218700	0
0.15	108	100	F	Employee no. 111 Named Ismael Sciarra Takes Salary = 7700 and works as FI_ACCOUNT in Department NO. 100		0
0.1	108	100	F	Employee no. 113 Named Luis Popp Takes Salary = 6900 and works as FI_ACCOUNT in Department NO. 100		0