

Databases

Practice #1 - Oracle SQLPLUS

Purpose

Write some SQL queries on an Oracle database.

Connection to the database

The SQL queries are executed through a Web interface. The Web interface may be accessed at the URL <http://cclix4.polito.it:8080/apex>.

Login

To logon through the Web interface, insert the following parameters:

- username: bdati[PC number between 1 and 100]
- password: orac[PC number between 1 and 100]

For example, if you are working on pc number 15, the corresponding username is bdati15 and the password is orac15.

Write and execute SQL queries

From the web interface, the SQL queries can be executed in the section *Home->SQL->SQL commands* as follows:

1. Write the SQL query in the textbox
2. Click on the **Run** button

1. Description of the *Delivery* database

The Delivery database gathers information about the activities of a firm delivering and collecting goods for various customer companies.

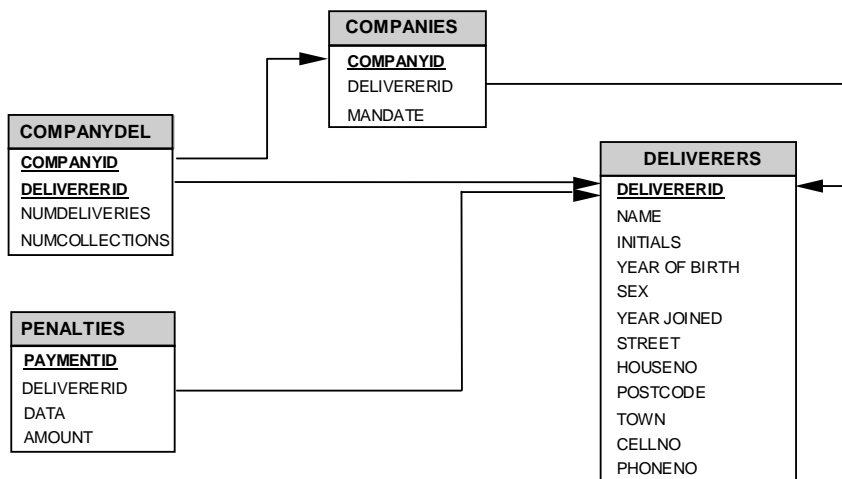
The DELIVERERS table contains the personal data for the deliverers working at the firm. For each deliverer, the following information is available: identification code (DELIVERERID), last name, first name initials, year of birth, sex, year when she/he began working for the firm, street, house number, city, residence postal code, cellular phone number, and office phone number.

The COMPANIES table reports, for each customer company, the company identification code (CompanyID) and the identification code of the deliverer who is the company's current reference person. In addition, it reports the number of times (MANDATE) the deliverer held this position.

The COMPANYDEL table reports the total number of good deliveries (NUMDELIVERIES) and collections (NUMCOLLECTIONS) made by each deliverer for each customer company. Note that the table only reports the deliverer-company pairs such that the deliverer performed at least one delivery or collection for the company.

The PENALTIES table reports the fines received by each deliverer. For each fine, the fine code (PENALTYID), the deliverer code, the fine date, and amount to be paid are stored.

The database schema is shown in the subsequent figure. Next Section 2 reports the table instance.



2. Table instance for the *Delivery* database

The primary key is underlined. Optional attributes are denoted with *.

DELIVERERS table

<u>DELIVERERID</u>	NAME	INITIALS	YEAR_OF_BIRTH	SEX	YEAR JOINED	STREET	HOUSENO	POSTCODE	TOWN	CELLNO	PHONENO*
2	Everett	R	1948	M	1975	Stoney Road	43	3575NH	Stratford	070-237893	2411
6	Parmenter	R	1964	M	1977	Haseltine Lane	80	1234KK	Stratford	070-476537	8467
7	Wise	GWS	1963	M	1981	Edgecombe Way	39	9758VB	Stratford	070-347689	NULL
8	Newcastle	B	1962	F	1980	Station Road	4	6584WO	Inglewood	070-476573	2983
27	Collins	DD	1964	F	1983	Long Drive	804	8457DK	Eltham	079-234857	2513
28	Collins	C	1963	F	1983	Old main Road	10	1294QK	Midhurst	010-659599	NULL
39	Bishop	D	1956	M	1980	Eaton Square	78	9629CD	Stratford	070-393435	NULL
44	Baker	E	1963	M	1980	Lewis Street	23	4444LJ	Inglewood	070-368753	1124
57	Brown	M	1971	M	1985	Edgecombe Way	16	4377CB	Stratford	070-473458	6409
83	Hope	PK	1956	M	1982	Magdalene Road	16a	1812UP	Stratford	070-353548	1608
95	Miller	P	1934	M	1972	High Street	33a	5746OP	Douglas	070-867564	NULL
100	Parmenter	P	1963	M	1979	Haseltine Lane	80	1234KK	Stratford	070-476537	6524
104	Moorman	D	1970	F	1984	Stout Street	65	9437AO	Eltham	079-987571	7060
112	Bailey	IP	1963	F	1984	Vixen Road	8	6392LK	Plymouth	010-54874	1319

COMPANYDEL table

<u>COMPANYID</u>	<u>DELIVERERID</u>	NUMDELIVERIES	NUMCOLLECTIONS
1	2	4	8
1	6	9	1
1	8	0	1
1	44	7	5
1	57	5	0
1	83	3	3
2	8	4	4
2	27	11	2
2	104	8	4
2	112	4	8

Tabella **PENALTIES**

<u>PAYMENTID</u>	<u>DELIVERERID</u>	DATA	AMOUNT
1	6	12/08/1980	100
2	44	05/05/1981	75
3	27	10/09/1983	100
4	104	08/12/1984	50
5	44	08/12/1980	25
6	8	08/12/1980	25
7	44	30/12/1982	30
8	27	12/11/1984	75

COMPANIES table

<u>COMPANYID</u>	<u>DELIVERERID</u>	MANDATE
1	6	first
2	27	second

3. SQL Queries

1. Show all information about all deliverers.
2. Show the identification codes of all the companies for which deliverers either delivered or collected goods.
3. For each deliverer whose last name (attribute NAME) starts with the letter 'B', show the deliverer name and the identification code.
4. For each deliverer whose office phone number (attribute PHONENO) is either different from 8467 or not available, show the deliverer name, sex, and identification code.
5. Show the name and city of residence of the deliverers who received at least one fine.
6. For each company reference person who has received at least one fine after 31/12/1980, show the last name and the first name initials. Sort the result in increasing alphabetical order with respect to the last name.
7. For each deliverer living in Stratford, find all companies where the deliverer has made at least two collections and one delivery, showing the results as pairs (deliverer identification code, company identification code).
8. Show the identification codes for the deliverers born after 1962 who have made at least one delivery to a company whose reference person has been appointed for the first time (attribute MANDATE='first'). Sort the result in descending order of identification codes.
9. Show the last name of the deliverers living either in Inglewood or in Stratford who either delivered or collected goods for at least 2 customer companies.
10. For each deliverer living in Inglewood who received at least two fines, show the deliverer identification code and the *total* amount (attribute AMOUNT) of the received fines.
11. For each deliverer who received between 2 and 4 fines (i.e., at least 2 but no more than 4 fines), show the last name and the amount of the smallest fine received.
12. For each deliverer not living in Stratford and whose last name (attribute NAME) begins with the letter 'B', show the total number of deliveries and the total number of collections.

4. Solutions

1. Show all information about all deliverers.

```
SELECT * FROM DELIVERERS;
```

2. Show the identification codes of all the companies for which deliverers either delivered or collected goods.

```
SELECT DISTINCT COMPANYID FROM COMPANYDEL;
```

3. For each deliverer whose last name (attribute NAME) starts with the letter 'B', show the deliverer name and the identification code.

```
SELECT NAME, DELIVERERID  
FROM DELIVERERS  
WHERE NAME LIKE 'B%';
```

4. For each deliverer whose office phone number (attribute PHONENO) is either different from 8467 or not available, show the deliverer name, sex, and identification code.

```
SELECT NAME, SEX, DELIVERERID  
FROM DELIVERERS  
WHERE PHONENO <> 8467 OR PHONENO IS NULL;
```

5. Show the name and city of residence of the deliverers who received at least one fine.

```
SELECT DISTINCT NAME, TOWN  
FROM DELIVERERS D, PENALTIES P  
WHERE D.DELIVERERID = P.DELIVERERID;
```

6. For each company reference person who has received at least one fine after 31/12/1980, show the last name and the first name initials. Sort the result in increasing alphabetical order with respect to the last name.

```
SELECT DISTINCT NAME, INITIALS  
FROM DELIVERERS D, PENALTIES P, COMPANIES C  
WHERE D.DELIVERERID = P.DELIVERERID AND C.DELIVERERID = P.  
DELIVERERID  
AND DATA > TO_DATE('31/12/1980', 'DD/MM/YYYY')  
ORDER BY NAME;
```

7. For each deliverer living in Stratford, find all companies where the deliverer has made at least two collections and one delivery, showing the results as pairs (deliverer identification code, company identification code).

```
SELECT COMPANYID, D.DELIVERERID  
FROM DELIVERERS D, COMPANYDEL C  
WHERE D.DELIVERERID = C.DELIVERERID
```

```
AND TOWN = 'Stratford'  
AND NUMCOLLECTIONS >= 2 AND NUMDELIVERIES >= 1;
```

8. Show the identification codes for the deliverers born after 1962 who have made at least one delivery to a company whose reference person has been appointed for the first time (attribute MANDATE='first'). Sort the result in descending order of identification codes.

```
SELECT DISTINCT D.DELIVERERID  
FROM DELIVERERS D, COMPANYDEL C, COMPANIES CO  
WHERE D.DELIVERERID = C.DELIVERERID AND CO.COMPANYID =  
C.COMPANYID  
AND YEAR_OF_BIRTH > 1962 AND MANDATE = 'first'  
ORDER BY D.DELIVERERID DESC;
```

9. Show the last name of the deliverers living either in Inglewood or in Stratford who either delivered or collected goods for at least 2 customer companies.

```
SELECT DISTINCT NAME  
FROM DELIVERERS D, COMPANYDEL C  
WHERE D.DELIVERERID=C.DELIVERERID  
AND (TOWN='Stratford' OR TOWN='Inglewood')  
GROUP BY D.DELIVERERID, NAME  
HAVING COUNT(*)>1;
```

10. For each deliverer living in Inglewood who received at least two fines, show the deliverer identification code and the *total* amount (attribute AMOUNT) of the received fines.

```
SELECT D.DELIVERERID, SUM (AMOUNT)  
FROM DELIVERERS D, PENALTIES P  
WHERE D.DELIVERERID = P.DELIVERERID  
AND TOWN = 'Inglewood'  
GROUP BY D.DELIVERERID  
HAVING COUNT(*)>1;
```

11. For each deliverer who received between 2 and 4 fines (i.e., at least 2 but no more than 4 fines), show the last name and the amount of the smallest fine received.

```
SELECT D.NAME, MIN(P.AMOUNT)  
FROM DELIVERERS D, PENALTIES P  
WHERE D.DELIVERERID =P.DELIVERERID  
GROUP BY D.DELIVERERID, D.NAME  
HAVING COUNT(*)>=2 AND COUNT(*)<=4;
```

12. For each deliverer not living in Stratford and whose last name (attribute NAME) begins with the letter 'B', show the total number of deliveries and the total number of collections.

```
SELECT SUM(NUMDELIVERIES), SUM(NUMCOLLECTIONS)  
FROM COMPANYDEL C, DELIVERERS D  
WHERE C.DELIVERERID = D.DELIVERERID
```

AND TOWN <> 'Stratford'
AND NAME LIKE 'B%';