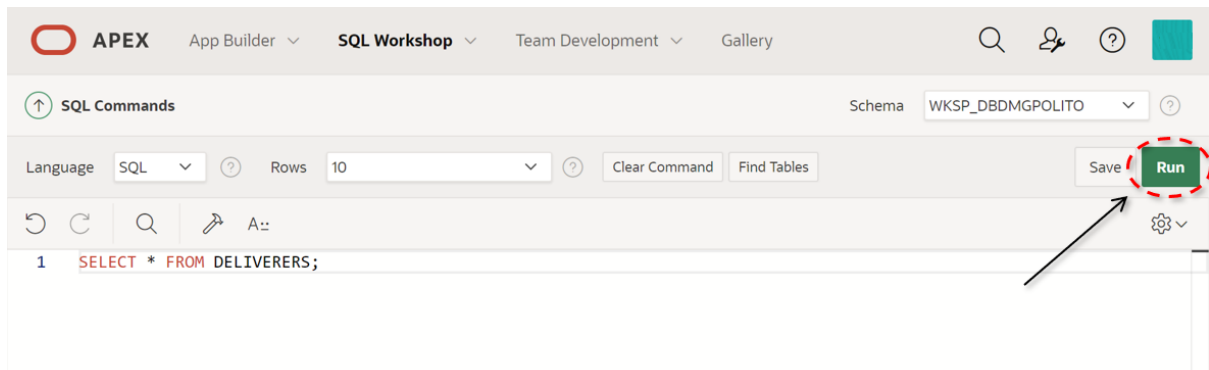# Introduction to Databases
Oracle SQLPLUS - Practice n. 2

The objective of this practice is to write some SQL queries and execute them on an Oracle database.

Write and execute SQL queries

To write the SQL query on Oracle Apex, go to *SQL Workshop* and then *SQL Commands.* Execute it by clicking on the *Run* button (see figure).

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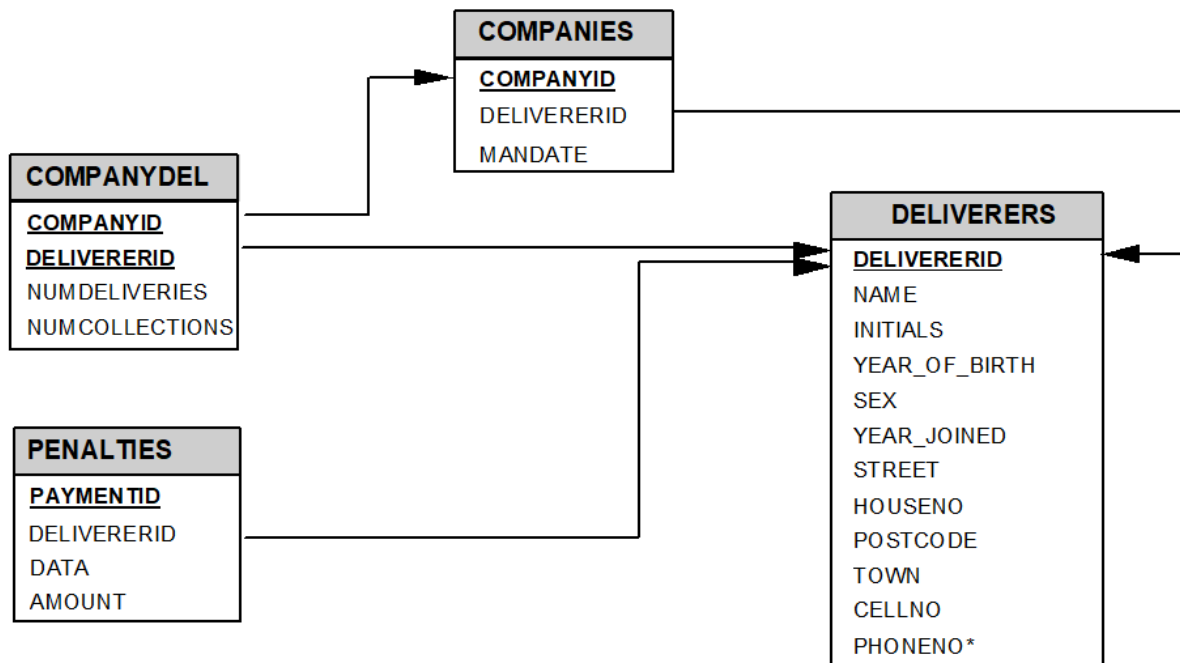
The COMPANIES table reports, for each customer company, the company identification code (COMPANYID) and the identification code of the deliverer who is the company's current reference person. In addition, it reports the number of times (MANDATE) the deliverer held

this position.

The COMPANYDEL table reports the total number of 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. Section 2 reports the details of every table instance.

2   Table instances for the *Delivery* database

Primary key is underlined. Optional attributes are denoted with *.

DELIVERERS table

DELIVERERID	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

COMPANYID	DELIVERERID	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

PENALTIES table

PAYMENTID	DELIVERERID	DATA	AMOUNT
1	6	12/08/80	100
2	44	05/05/81	75
3	27	10/09/83	100
4	104	08/12/84	50
5	44	08/12/80	25
6	8	08/12/80	25
7	44	30/12/82	30
8	27	12/11/84	75

COMPANIES *table*

COMPANYID	DELIVERERID	MANDATE
1	6	first
2	27	second

3 SQL Queries

1. Find the identification codes, the names and the initials (attribute INITIALS) of the deliverers that have never been fined.

2. Find the identification codes of all deliverers that have received at least one 25 Euro fine and at least one 30 Euro fine.

3. Find the identification codes and the names of the deliverers who have received more than one fine on the same date.

4. Find the identification codes of the deliverers that have serviced requests from *all* of the firms in table COMPANIES (N.B. A deliverer has serviced a request from a firm if he/she has delivered/collected parcels to/from the firm at least once).

5. Find the identification codes of the deliverers who have delivered (or collected) parcels to (from) at least one firm where deliverer no. 57 has delivered or collected parcels.

6. Find the identification codes and the names of the deliverers whose number of fines received in 1980[1] is greater than the number of fines received in 1981 (by the same deliverer).

7. Find the identification codes of the deliverers who have delivered (or collected) parcels to (from) *all* of the firms in which deliverer no. 57 has delivered or collected parcels.

---

[1]In Oracle, dates can be represented using the TO_DATE function, requiring as arguments both the date to be represented, and the format used. For example, to require that the date (i.e., the attribute DATA) equals December 8$^{\text{th}}$, 1980 the comparison DATA = TO_DATE('08/12/1980', 'DD/MM/YYYY') would be needed.

4 Solutions

1. Find the identification codes, the names and the initials (attribute INITIALS) of the deliverers that have never been fined.

```
SELECT DELIVERERID, NAME, INITIALS
FROM DELIVERERS
WHERE DELIVERERID NOT IN
    (SELECT DELIVERERID
    FROM PENALTIES);
```

or

```
SELECT DELIVERERID, NAME, INITIALS
FROM DELIVERERS D
WHERE NOT EXISTS
    (SELECT * FROM PENALTIES P
    WHERE P.DELIVERERID = D.DELIVERERID);
```

DELIVERERID	NAME	INITIALS
57	Brown	M
7	Wise	GWS
2	Everett	R
112	Bailey	IP
28	Collins	C
83	Hope	PK
95	Miller	P
39	Bishop	D
100	Parmenter	P

2. Find the identification codes of all deliverers that have received at least one 25-Euro fine and at least one 30-Euro fine.

```
SELECT DISTINCT DELIVERERID
FROM PENALTIES
WHERE AMOUNT = 25
AND DELIVERERID IN
    (SELECT DELIVERERID FROM PENALTIES
    WHERE AMOUNT=30);
```

or

```
SELECT DELIVERERID
FROM DELIVERERS
WHERE DELIVERERID IN
    (SELECT DELIVERERID
    FROM PENALTIES
    WHERE AMOUNT = 25)
AND DELIVERERID IN
    (SELECT DELIVERERID
    FROM PENALTIES
    WHERE AMOUNT = 30);
```

DELIVERERID
44

3. Find the identification codes and the names of the deliverers who have received more than one fine on the same date.

```
SELECT DISTINCT DELIVERERS.DELIVERERID, NAME
FROM DELIVERERS, PENALTIES
WHERE DELIVERERS.DELIVERERID = PENALTIES.DELIVERERID
GROUP BY DELIVERERS.DELIVERERID, DATA, NAME
HAVING COUNT(*) > 1;
```

No data found.

4. Find the identification codes of the deliverers that have serviced requests from *all* of the firms in table COMPANIES (N.B. A deliverer has serviced a request from a firm if he/she has delivered/collected parcels to/from the firm at least once).

```
SELECT DELIVERERID
FROM COMPANYDEL
GROUP BY DELIVERERID
HAVING COUNT(*) = (SELECT COUNT(*) FROM COMPANIES);
```

DELIVERERID
8

5. Find the identification codes of the deliverers who have delivered (or collected) parcels to (from) at least one firm where deliverer no. 57 has delivered or collected parcels.

```
SELECT DISTINCT DELIVERERID
FROM COMPANYDEL
WHERE DELIVERERID <> 57
AND COMPANYID IN
    (SELECT COMPANYID
    FROM COMPANYDEL
    WHERE DELIVERERID=57);
```

DELIVERERID
6
44
2
8
83

6. Find the identification codes and the names of the deliverers whose number of fines received in 1980 is greater than the number of fines received in 1981 (by the same deliverer).

```
SELECT D.DELIVERERID, D.NAME
FROM DELIVERERS D, PENALTIES PE1
WHERE D.DELIVERERID = PE1.DELIVERERID
AND DATA >= TO_DATE('01/01/1980', 'DD/MM/YYYY')
AND DATA <= TO_DATE('31/12/1980', 'DD/MM/YYYY')
GROUP BY D.DELIVERERID, D.NAME
HAVING COUNT(*) > (SELECT COUNT(*)
                   FROM PENALTIES PE2
                   WHERE PE2.DELIVERERID = D.DELIVERERID
                   AND DATA >= TO_DATE('01/01/1981', 'DD/MM/YYYY')
                   AND DATA <= TO_DATE('31/12/1981', 'DD/MM/YYYY'));
```

DELIVERERID	NAME
8	Newcastle
6	Parmenter

7. Find the identification codes of the deliverers who have delivered (or collected) parcels to (from) *all* of the firms in which deliverer no. 57 has delivered or collected parcels.

```
SELECT DELIVERERID
FROM COMPANYDEL
WHERE DELIVERERID <> 57
AND COMPANYID IN (SELECT COMPANYID
                  FROM COMPANYDEL
                  WHERE DELIVERERID = 57)
GROUP BY DELIVERERID
HAVING COUNT(*) = (SELECT COUNT(*)
                   FROM COMPANYDEL
                   WHERE DELIVERERID = 57);
```

DELIVERERID
6
44
2
8
83