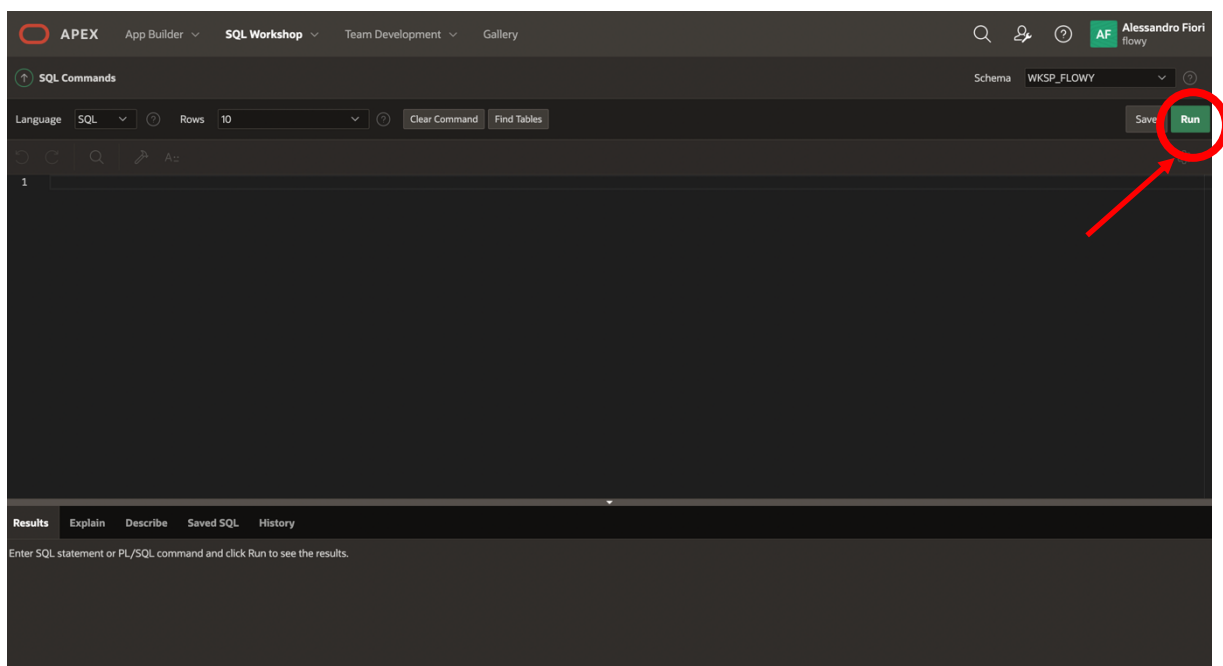# Introduction to Databases
# Oracle SQLPLUS - Practice n. 1

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

**Write and execute SQL queries: Write the SQL query in the SQL Command interface under SQL Workshop tab and 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.
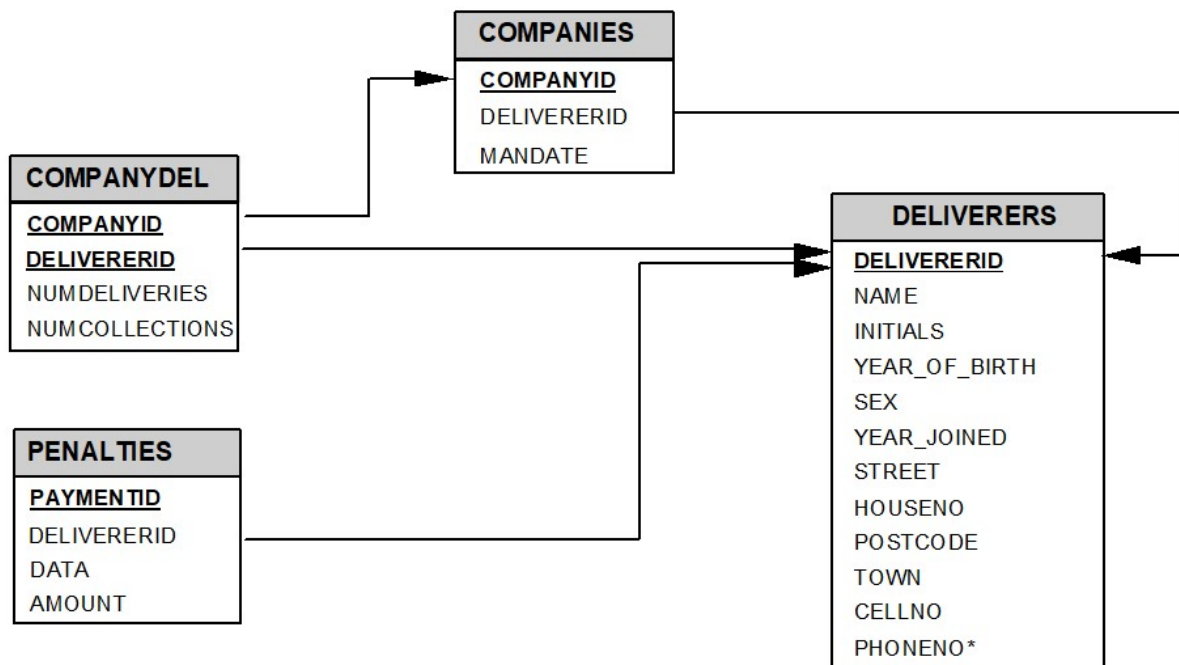
The COMPANIES table reports, for each customer company, the company identification code

(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

**Select: basis, distinct, join, where, order by**

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[1], show the last name and the first name initials (attribute 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).

**Select: basis, distinct, join, where, order by, aggregate functions, group by, having**

8. Show the identification codes for the deliverers born after 1962 who have made at least one delivery or collection 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. Considering the deliverers 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.

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

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[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 8th, 1980 the comparison DATA = TO_DATE('08/12/1980', 'DD/MM/YYYY') would be needed. For MySQL, the function STR_TO_DATE may be used instead: the previous example may then be approached using DATA = STR_TO_DATE('08/12/1980', '%d/%m/%Y').