

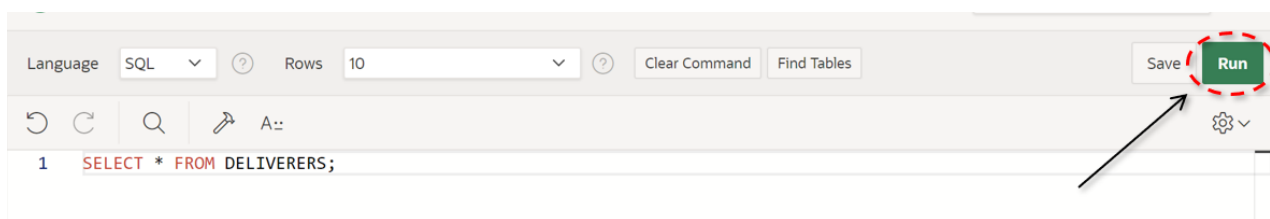
Laboratory 3

Write and execute SQL queries

Goal

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

To write the SQL query on Oracle Apex, go to *SQLWorkshop* 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 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 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.

2 SQL Queries

1. Find the maximum number of fines received by a deliverer on the same date.

```
SELECT MAX(PenaltyNumber)
FROM (SELECT COUNT(*) AS PenaltyNumber
      FROM PENALTIES
      GROUP BY DELIVERERID, DATA);
```

```
with PenaltyNumberTab as (SELECT COUNT(*) AS PenaltyNumber
                          FROM PENALTIES
                          GROUP BY DELIVERERID, DATA)
SELECT MAX(PenaltyNumber)
FROM PenaltyNumberTab;
```

MAX(PENALTYNUMBER)
2

1 rows returned in 0.14 seconds [Download](#)

2. Calculate the total cost of fines received by each deliverer. Then, calculate the average of the total costs of the deliverer.

```
SELECT avg(TSUMPENALTIES.SumPenalties)
FROM DELIVERERS D,
      (SELECT DELIVERERID, SUM(AMOUNT) AS SumPenalties
       FROM PENALTIES
       GROUP BY DELIVERERID) TSUMPENALTIES;
```

```
with SumPenaltiesTab as (SELECT DELIVERERID, SUM(AMOUNT) as SumPenalties
                          FROM PENALTIES
                          GROUP BY DELIVERERID)
SELECT avg(SumPenaltiesTab.SumPenalties)
FROM DELIVERERS D, SumPenaltiesTab;
```

AVG(TSUMPENALTIES.SUMPENALTIES)
96

1 rows returned in 0.02 seconds [Download](#)

3. For each company, find the identifier of the deliverer who has carried out the most deliveries.

```
SELECT CD.COMPANYID, CD.DELIVERERID
FROM COMPANYDEL CD,
      (SELECT CD.COMPANYID, MAX(CD.NUMDELIVERIES) AS MaxDeliveries
```

```

FROM COMPANYDEL CD
GROUP BY CD.COMPANYID) AS MaxDeliveriesPerCompanyTab
WHERE CD.COMPANYID = MaxDeliveriesPerCompanyTab.COMPANYID AND
CD.NUMDELIVERIES = MaxDeliveriesPerCompanyTab.MaxDeliveries;

```

with MaxDeliveriesPerCompanyTab as (SELECT CD.COMPANYID, MAX(CD.NUMDELIVERIES)
AS MaxDeliveries

```

FROM COMPANYDEL CD
GROUP BY CD.COMPANYID)
SELECT CD.COMPANYID, CD.DELIVERERID
FROM COMPANYDEL CD, MaxDeliveriesPerCompanyTab
WHERE CD.COMPANYID = MaxDeliveriesPerCompanyTab.COMPANYID AND
CD.NUMDELIVERIES = MaxDeliveriesPerCompanyTab.MaxDeliveries;

```

COMPANYID	DELIVERERID
1	6
2	27

2 rows returned in 0.12 seconds [Download](#)

4. For each company, find the identifier of the male deliverer and the ID of the female deliverer who have made the most deliveries (if present).

```

SELECT CD.COMPANYID, CD.DELIVERERID,
FROM COMPANYDEL CD, DELIVERERS D,
(SELECT CD.COMPANYID, D.SEX, MAX(CD.NUMDELIVERIES) AS MaxDeliveries
FROM COMPANYDEL CD, DELIVERERS D
WHERE CD.DELIVERERID = D.DELIVERERID
GROUP BY CD.COMPANYID, D.SEX) MaxDeliveriesPerCompanyTab
WHERE CD.DELIVERERID = D.DELIVERERID AND CD.COMPANYID =
MaxDeliveriesPerCompanyTab.COMPANYID
AND CD.NUMDELIVERIES = MaxDeliveriesPerCompanyTab.MaxDeliveries
AND D.SEX = MaxDeliveriesPerCompanyTab.SEX;

```

```

with MaxDeliveriesPerCompanyTab as (SELECT CD.COMPANYID, D.SEX,
MAX(CD.NUMDELIVERIES) AS MaxDeliveries
FROM COMPANYDEL CD, DELIVERERS D
WHERE CD.DELIVERERID = D.DELIVERERID
GROUP BY CD.COMPANYID, D.SEX)
SELECT CD.COMPANYID, D.DELIVERERID, D.SEX
FROM COMPANYDEL CD, DELIVERERS D, MaxDeliveriesPerCompanyTab
WHERE CD.DELIVERERID = D.DELIVERERID AND CD.COMPANYID =
MaxDeliveriesPerCompanyTab.COMPANYID
AND CD.NUMDELIVERIES = MaxDeliveriesPerCompanyTab.MaxDeliveries
AND D.SEX = MaxDeliveriesPerCompanyTab.SEX;

```

COMPANYID	DELIVERERID	SEX
1	6	M
2	27	F
1	8	F

3 rows returned in 0.07 seconds [Download](#)

5. Select the identifier and name of the deliverer and the total amount of fines received by all deliverers for which the total amount of fines received is greater than the average of the fine

```
SELECT D.DELIVERERID, D.NAME, DelivererTotAmountTab.TotalAmount
FROM DELIVERERS D,
  (SELECT AVG(AMOUNT) AS AvgAmount
   FROM PENALTIES) AvgAmountTab,
  (SELECT DELIVERERID, SUM(AMOUNT) AS TotalAmount
   FROM PENALTIES
   GROUP BY DELIVERERID) DelivererTotAmountTab
WHERE D.DELIVERERID = DelivererTotAmountTab.DELIVERERID AND
      DelivererTotAmountTab.TotalAmount > AvgAmountTab.AvgAmount;
```

with AvgAmountT AS

```
(SELECT AVG(AMOUNT) AS AvgAmount
 FROM PENALTIES),
```

DelivererTotAmountT AS

```
(SELECT DELIVERERID, SUM(AMOUNT) AS TotalAmount
 FROM PENALTIES
 GROUP BY DELIVERERID)
```

```
SELECT D.DELIVERERID, D.NAME, DelivererTotAmountT.TotalAmount
FROM DELIVERERS D, AvgAmountT, DelivererTotAmountT
WHERE D.DELIVERERID = DelivererTotAmountT.DELIVERERID AND
      DelivererTotAmountT.TotalAmount > AvgAmountT.AvgAmount;
```

DELIVERERID	NAME	TOTALAMOUNT
6	Parmenter	100
27	Collins	175
44	Baker	130

3 rows returned in 0.02 seconds [Download](#)

6. Select the identifier, date, and cost of the fines, and the average cost of fines in the year extracted from the date, for all fines where the average cost is greater than the average cost of the year in which the fine was received. To extract the year from a date in Apex, you can use the following function: `EXTRACT(YEAR FROM PENALTIES.DATA)`

```
SELECT P.PAYMENTID, P.DATA, P.AMOUNT, AvgAmountPerYearTab.AvgAmount
FROM PENALTIES P,
  (SELECT EXTRACT(YEAR FROM PENALTIES.DATA) AS year,
    AVG(PENALTIES.AMOUNT) AS AvgAmount
  FROM PENALTIES
  GROUP BY EXTRACT(YEAR FROM PENALTIES.DATA)) AvgAmountPerYearTab
WHERE EXTRACT(YEAR FROM P.DATA) = AvgAmountPerYearTab.year and
  P.AMOUNT > AvgAmountPerYearTab.AvgAmount;
```

```
with AvgAmountPerYearT AS
  (SELECT EXTRACT(YEAR FROM PENALTIES.DATA) AS year,
    AVG(PENALTIES.AMOUNT) AS AvgAmount
  FROM PENALTIES
  GROUP BY EXTRACT(YEAR FROM PENALTIES.DATA))
SELECT P.PAYMENTID, P.DATA, P.AMOUNT, AvgAmountPerYearT.AvgAmount
FROM PENALTIES P, AvgAmountPerYearT
WHERE EXTRACT(YEAR FROM P.DATA) = AvgAmountPerYearT.year and
  P.AMOUNT > AvgAmountPerYearT.AvgAmount;
```

PAYMENTID	DATA	AMOUNT	AVGAMOUNT
1	08/12/2020	100	50
8	11/12/2021	75	56
2	05/05/2021	75	56

3 rows returned in 0.03 seconds [Download](#)

7. Find the total number of deliveries made by each deliverer. Then, calculate the average total number of deliveries for all deliverers and the average number of deliveries made by deliverers for each city. Finally, select the cities for which the average deliveries made by deliverers in that city is lower than the average total number of deliveries for all deliverers.

```
SELECT DISTINCT D.TOWN, AvgDeliveriesPerTownTab.AvgDeliveriesPerTown,
AvgDeliveriesTab.AvgDeliveries
FROM DELIVERERS D,
  (SELECT D.TOWN, AVG(TotDeliveriesTab.TotDeliveries) as AvgDeliveriesPerTown
  FROM DELIVERERS D,
  (SELECT CD.DELIVERERID, SUM(CD.NUMDELIVERIES) AS TotDeliveries
  FROM COMPANYDEL CD
  GROUP BY C.FID) TotDeliveriesTab
  WHERE D.DELIVERERID = TotDeliveriesTab.DELIVERERID
  GROUP BY D.TOWN) AvgDeliveriesPerTownTab,
  (SELECT AVG(TotDeliveriesTab.TotDeliveries) as AvgDeliveries
  FROM (SELECT D.DELIVERERID, SUM(CD.NUMDELIVERIES) AS TotDeliveries
  FROM COMPANYDEL CD
  GROUP BY CD.DELIVERERID) TotDeliveriesTab) AvgDeliveriesTab
```



```

TotCollections      (SELECT  CD.DELIVERERID,  SUM(CD.NUMCOLLECTIONS)  AS
                    FROM COMPANYDEL CD
                    GROUP BY CD.DELIVERERID) TotCollectionsTab
WHERE D.DELIVERERID = TotCollectionsTab.DELIVERERID
GROUP BY D.YEAR_OF_BIRTH) AvgCollectionsPerYearOfBirthTab)

```

with TotCollectionsTab AS

```

(SELECT CD.DELIVERERID, SUM(CD.NUMCOLLECTIONS) AS TotCollections
FROM COMPANYDEL CD
GROUP BY CD.DELIVERERID),

```

AvgCollectionsPerYearOfBirthTab AS

```

(SELECT D.YEAR_OF_BIRTH, AVG(TotCollectionsTab.TotCollections) as
AvgCollectionsYearOfBirth
FROM DELIVERERS D, TotCollectionsTab
WHERE D.DELIVERERID = TotCollectionsTab.DELIVERERID
GROUP BY D.YEAR_OF_BIRTH)

```

```

SELECT AvgCollectionsPerYearOfBirthTab.YEAR_OF_BIRTH

```

```

FROM AvgCollectionsPerYearOfBirthTab

```

```

WHERE AvgCollectionsPerYearOfBirthTab.AvgCollectionsYearOfBirth =

```

```

(SELECT MAX(AvgCollectionsYearOfBirth)
FROM AvgCollectionsPerYearOfBirthTab);

```

YEAR_OF_BIRTH
1988

1 rows returned in 0.05 seconds [Download](#)

9. Identify the gender and number of fines for the category of deliverers with the highest number of fines in the database.

```

SELECT NumPenaltiesPerGenderTab.SEX, NumPenaltiesPerGenderTab.PenaltyNum

```

```

FROM (SELECT D.SEX, COUNT(*) AS PenaltyNum

```

```

FROM PENALTIES P, DELIVERERS D

```

```

WHERE P.DELIVERERID = D.DELIVERERID

```

```

GROUP BY D.SEX) NumPenaltiesPerGenderTab,

```

```

(SELECT MAX(PenaltyNum) as MaxPenaltyNum

```

```

FROM (SELECT D.SEX, COUNT(*) AS PenaltyNum

```

```

FROM PENALTIES P, DELIVERERS D

```

```

WHERE P.DELIVERERID = D.DELIVERERID

```

```

GROUP BY D.SEX)) MaxPenaltyNumTab

```

```

WHERE MaxPenaltyNumTab.MaxPenaltyNum = NumPenaltiesPerGenderTab.PenaltyNum

```

with NumPenaltiesPerGenderTab AS

```

(SELECT D.SEX, COUNT(*) AS PenaltyNum

```

```

FROM PENALTIES P, DELIVERERS D

```

```

WHERE P.DELIVERERID = D.DELIVERERID

```

```

GROUP BY D.SEX),
MaxPenaltyNumTab AS
  (SELECT MAX(PenaltyNum) as MaxPenaltyNum
   FROM NumPenaltiesPerGenderTab)
SELECT NumPenaltiesPerGenderTab.SEX, NumPenaltiesPerGenderTab.PenaltyNum
FROM NumPenaltiesPerGenderTab, MaxPenaltyNumTab
WHERE MaxPenaltyNumTab.MaxPenaltyNum = NumPenaltiesPerGenderTab. PenaltyNum

```

SEX	PENALTYNUM
F	5

1 rows returned in 0.04 seconds [Download](#)

10. Find the gender and number of deliveries of the gender that has made the highest number of deliveries.

```

SELECT NumDeliveriesPerGenderTab.SEX, NumDeliveriesPerGenderTab.NumDeliveries
FROM (SELECT D.SEX, SUM(CD.NUMDELIVERIES) AS NumDeliveries
      FROM COMPANYDEL CD, DELIVERERS D
      WHERE CD.DELIVERERID = D.DELIVERERID
      GROUP BY D.SEX) NumDeliveriesPerGenderTab,
(SELECT MAX(NumDeliveries) as MaxNumDeliveries
 FROM (SELECT D.SEX, SUM(CD.NUMDELIVERIES) AS NumDeliveries
       FROM COMPANYDEL CD, DELIVERERS D
       WHERE CD.DELIVERERID = D.DELIVERERID
       GROUP BY D.SEX)) MaxNumDeliveriesTab
WHERE MaxNumDeliveriesTab.MaxNumDeliveries = NumDeliveriesPerGenderTab.NumDeliveries

```

```

with NumDeliveriesPerGenderTab AS
  (SELECT D.SEX, SUM(CD.NUMDELIVERIES) AS NumDeliveries
   FROM COMPANYDEL CD, DELIVERERS D
   WHERE CD.DELIVERERID = D.DELIVERERID
   GROUP BY D.SEX),
MaxNumDeliveriesTab AS
  (SELECT MAX(NumDeliveries) as MaxNumDeliveries
   FROM NumDeliveriesPerGenderTab)
SELECT NumDeliveriesPerGenderTab.SEX, NumDeliveriesPerGenderTab.NumDeliveries
FROM NumDeliveriesPerGenderTab, MaxNumDeliveriesTab
WHERE MaxNumDeliveriesTab.MaxNumDeliveries = NumDeliveriesPerGenderTab.NumDeliveries

```

SEX	NUMDELIVERIES
M	28

1 rows returned in 0.02 seconds [Download](#)