

**José Messias Garcia da Silva Ferreira**  
SPRINT 2 - NIVEL 1

## **Exercici 1**

A partir dels documents adjunts, importa les dues taules. Mostra les característiques principals de l'esquema creat i explica les diferents taules i variables que existeixen. Assegura't d'incloure un diagrama que il·lustri la relació entre les diferents taules i variables.

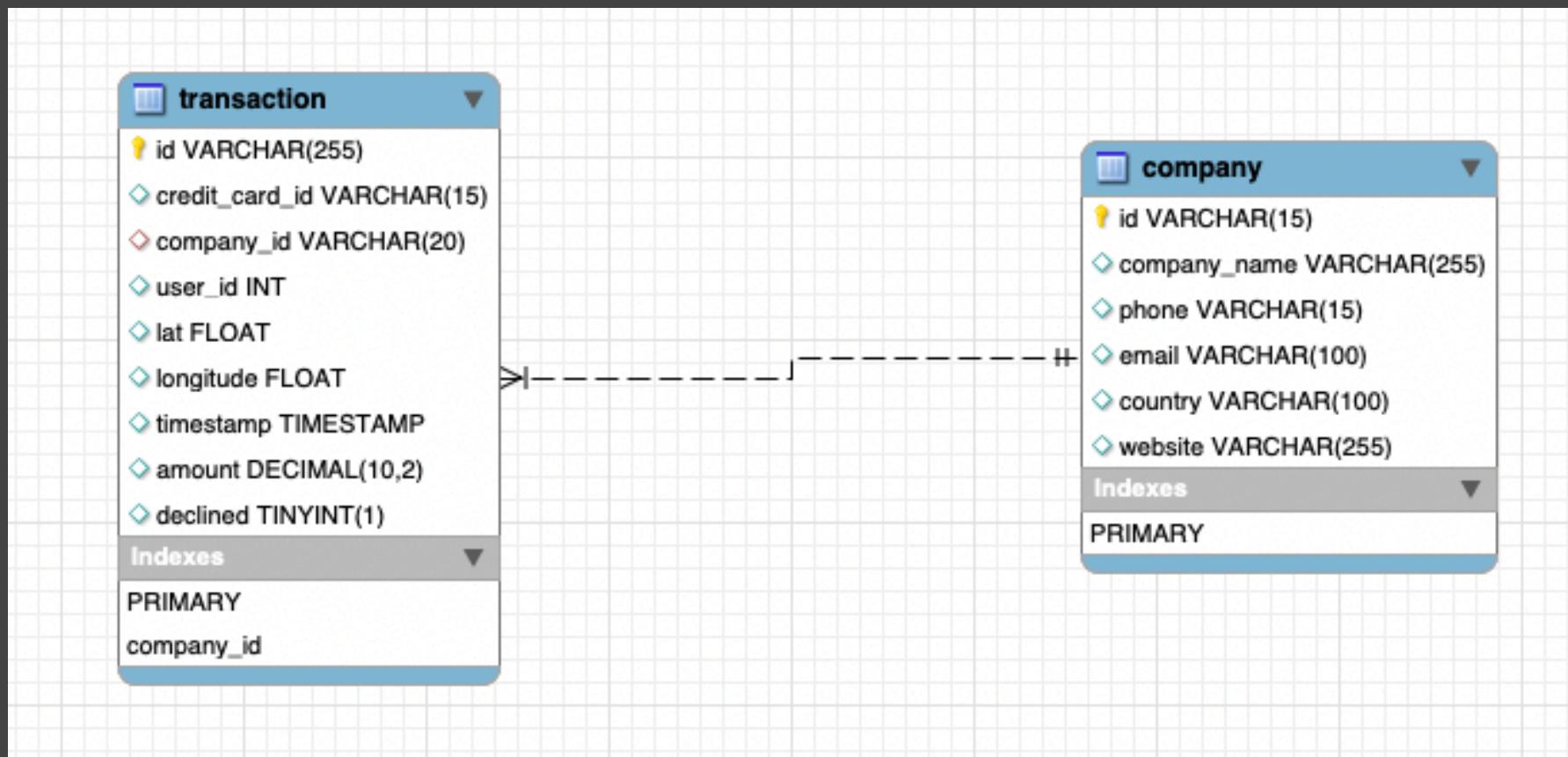
Después de importar las dos tablas y analizarlas, utilizando **DESCRIBE** pude identificar las primary keys de cada una: la primary key de la tabla transaction es **company\_id** y la de la tabla company es **id**.

Los campos de la tabla transaction son **id**, **credit\_card\_id**, **company\_id**, **user\_id**, **lat** y **longitude** para indicar la localización geográfica de la transacción, **timestamp** que contiene la **fecha** y la **hora** de la transacción, **amount** que indica el **valor** de la transacción y **declined** que indica si la transacción ha sido denegada o no, con valores de **0 para no** y **1 para sí**. Esta tabla contiene 100.000 registros.

En la tabla company, utilizando **SELECT \* FROM company LIMIT 10** podemos observar los campos: **id** que es la primary key, **company\_name**, **phone**, **email**, **country** y **website**. Esta tabla contiene 100 registros.

Los tipos de campos y las relaciones entre ellas se dan a través de una relación de uno a muchos (**1:n**): **una empresa puede tener muchas transacciones**, mientras que cada transacción pertenece únicamente a una única empresa a través de su **id**. La foreign key en este caso está en la tabla company es **id**.

El diagrama ha sido creado en el menú **Database > Reverse Engineer**.



```
1 -- SPRINT_2
2 -- EXERCISE 1
3 • USE transactions;
4 • SELECT * FROM company LIMIT 10;
5 • SELECT * FROM transaction;
6 • DESCRIBE company;
7 • DESCRIBE transaction;
8
9 -- SPRTNT_2
```

100% | 14:7

Result Grid Filter Rows: Search Export:

Field	Type	Null	Key	Default	Extra
id	varchar(255)	NO	PRI	NULL	
credit_card_id	varchar(15)	YES		NULL	
company_id	varchar(20)	YES	MUL	NULL	
user_id	int	YES		NULL	
lat	float	YES		NULL	
longitude	float	YES		NULL	
timestamp	timestamp	YES		NULL	
amount	decimal(10,2)	YES		NULL	
declined	tinyint(1)	YES		NULL	

Result 59

Action Output

	Time	Action	Response
✓ 119	18:10:30	SELECT DISTINCT country FROM company	15 row(s) returned
✓ 120	18:10:32	SELECT DISTINCT country FROM transaction INN...	15 row(s) returned
✓ 121	18:10:57	SELECT DISTINCT country FROM transaction INN...	15 row(s) returned
✓ 122	18:11:23	DESCRIBE transaction	9 row(s) returned
✓ 123	18:11:33	DESCRIBE company	6 row(s) returned
✓ 124	18:12:04	DESCRIBE transaction	9 row(s) returned

```
1 -- SPRINT_2
2 -- EXERCISE 1
3 • USE transactions;
4 • SELECT * FROM company LIMIT 10;
5 • SELECT * FROM transaction;
6 • DESCRIBE company;
7 • DESCRIBE transaction;
8
9 -- SPRTNT_2
```

100%

16:6

Result Grid



Filter Rows:



Search

Export:



Field	Type	Null	Key	Default	Extra
id	varchar(15)	NO	PRI	NULL	
company_name	varchar(255)	YES		NULL	
phone	varchar(15)	YES		NULL	
email	varchar(100)	YES		NULL	
country	varchar(100)	YES		NULL	
website	varchar(255)	YES		NULL	

Result 60

Action Output



	Time	Action	Response
✓	120 18:10:32	SELECT DISTINCT country FROM transaction INN...	15 row(s) returned
✓	121 18:10:57	SELECT DISTINCT country FROM transaction INN...	15 row(s) returned
✓	122 18:11:23	DESCRIBE transaction	9 row(s) returned
✓	123 18:11:33	DESCRIBE company	6 row(s) returned
✓	124 18:12:04	DESCRIBE transaction	9 row(s) returned
✓	125 18:14:54	DESCRIBE company	6 row(s) returned

## Exercici 2

Utilitzant JOIN realitzaràs les següents consultes:

- Llistat dels països que estan generant vendes.

The screenshot shows the MySQL Workbench interface. The top pane displays a SQL query:

```
11  /*  
12   SPRINT_2 - LEVEL_1 - EXERCISE 2  
13   List of countries that are generating sales  
14 */  
15  
16 • SELECT c.country, COUNT(t.id) AS number_of_Transactions, t.declined  
17   FROM transaction t  
18   JOIN company c ON t.company_id = c.id  
19   WHERE declined = 0  
20   GROUP BY c.country  
21   ORDER BY number_of_transactions DESC;  
22  
23  
24  
25  
26  
27  
28  
29
```

The bottom pane shows the results of the query in a grid:

country	number_of_Transactions	declined
Sweden	16484	0
Netherlands	15033	0
United Kingdom	13754	0
Italy	13643	0
Germany	13269	0
France	4695	0
United States	4011	0
Belgium	3515	0

Below the grid, the status bar indicates "Result 217" and "Read Only". At the bottom, the footer shows "Action Output" with tabs for "Time", "Response", and "Duration / Fetch Time", and the message "720 11:41:54 S 15 row(s) returned" and "0.235 sec / 0.000014...".

- Des de quants països es generen les vendes.

```

28  ⊖ /*
29   | From how many countries are sales being generated?
30  */
31
32 •   SELECT COUNT(DISTINCT country) AS number_of_countries
33   FROM transaction t
34   JOIN company c ON t.company_id = c.id;
35
36
37
38
39
40
41
42
43
44
45
46
47  ⊖ /*

```

100% 22:32 |

**Result Grid** Filter Rows: Search Export:

number_of_countries
15

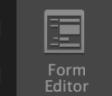
Result 114 Read Only

Action Output

	Time	Action	Response	Duration / Fetch Time
✓ 167	12:05:41	SELECT COUNT(DISTINCT country) AS number_o...	1 row(s) returned	0.058 sec / 0.00000...

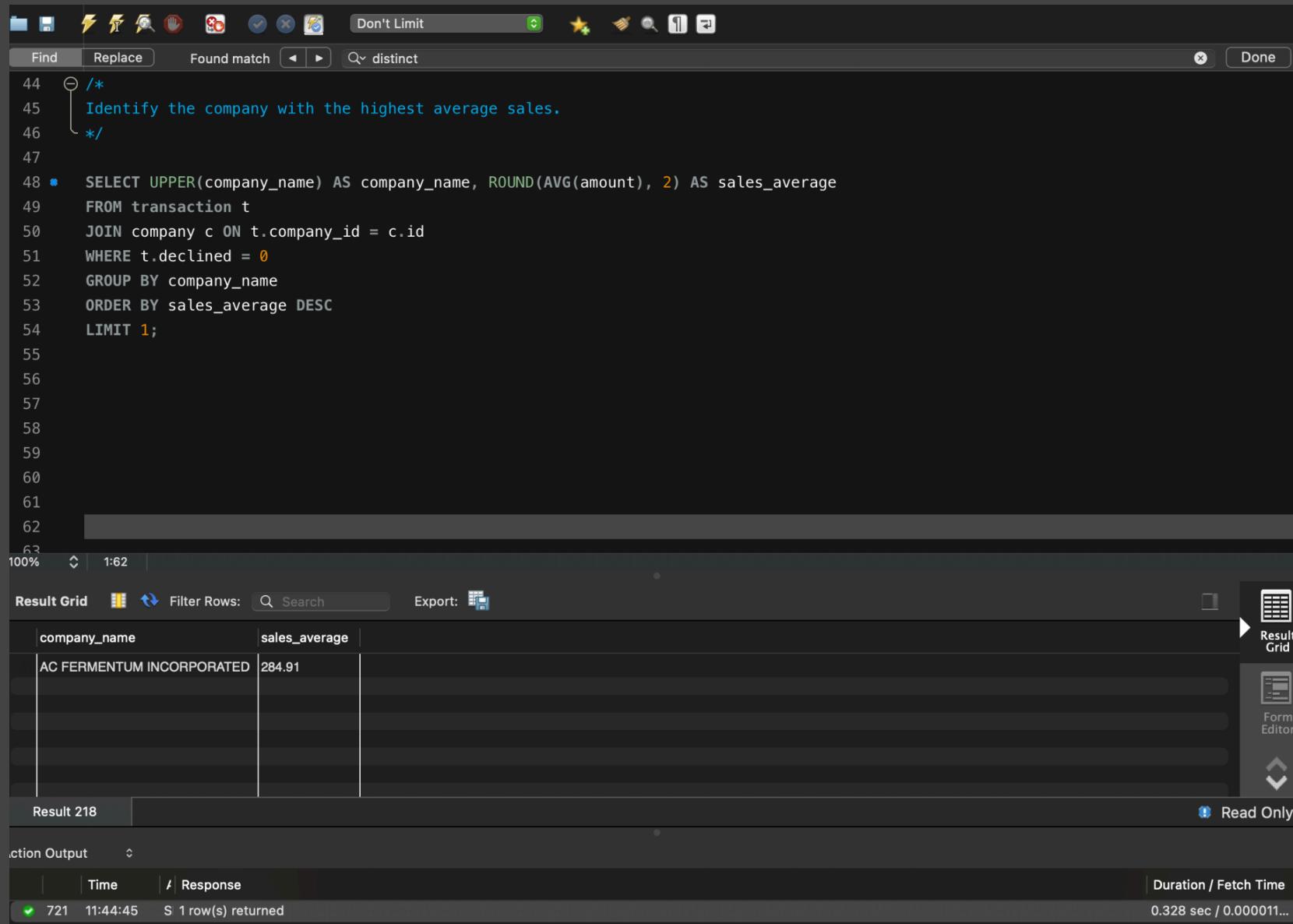


Result Grid



Form Editor

- Identifica la companyia amb la mitjana més gran de vendes.



The screenshot shows the Oracle SQL Developer interface. The top menu bar includes 'File', 'Edit', 'Tools', 'Help', and various icons for file operations and search. A toolbar below has buttons for 'Find', 'Replace', 'Found match', 'Distinct', and 'Done'. The main editor area contains the following SQL code:

```

44  /*
45   Identify the company with the highest average sales.
46  */
47
48 • SELECT UPPER(company_name) AS company_name, ROUND(AVG(amount), 2) AS sales_average
49   FROM transaction t
50   JOIN company c ON t.company_id = c.id
51   WHERE t.declined = 0
52   GROUP BY company_name
53   ORDER BY sales_average DESC
54   LIMIT 1;
55
56
57
58
59
60
61
62
63

```

The code is annotated with a comment block starting at line 44. Line 48 is marked with a bullet point. The result grid below shows one row of data:

company_name	sales_average
AC FERMENTUM INCORPORATED	284.91

The status bar at the bottom indicates 'Result 218' and '1 row(s) returned'. The bottom right corner shows 'Read Only' status. On the right side, there's a panel with icons for 'Result Grid' (selected), 'Form Editor', and 'Table Browser'.

### Exercici 3

Utilitzant només subconsultes (sense utilitzar JOIN):

- Mostra totes les transaccions realitzades per empreses d'Alemanya.

```
60
61  /*
62   * SPRINT_2 - LEVEL_1 - EXERCISE 3
63   * Using only subqueries (without using JOIN):
64   * Show all transactions made by companies from Germany.
65  */
66
67 • SELECT *
68   FROM transaction t
69  WHERE company_id IN (
70    SELECT id
71      FROM company c
72     WHERE c.country = 'Germany'
73    GROUP BY c.id);
74
75
76
77
78
79
80
81
82
83
84
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88
89
90
91
92
93
94
95
96
97
98
99
100% 5:78 |
```

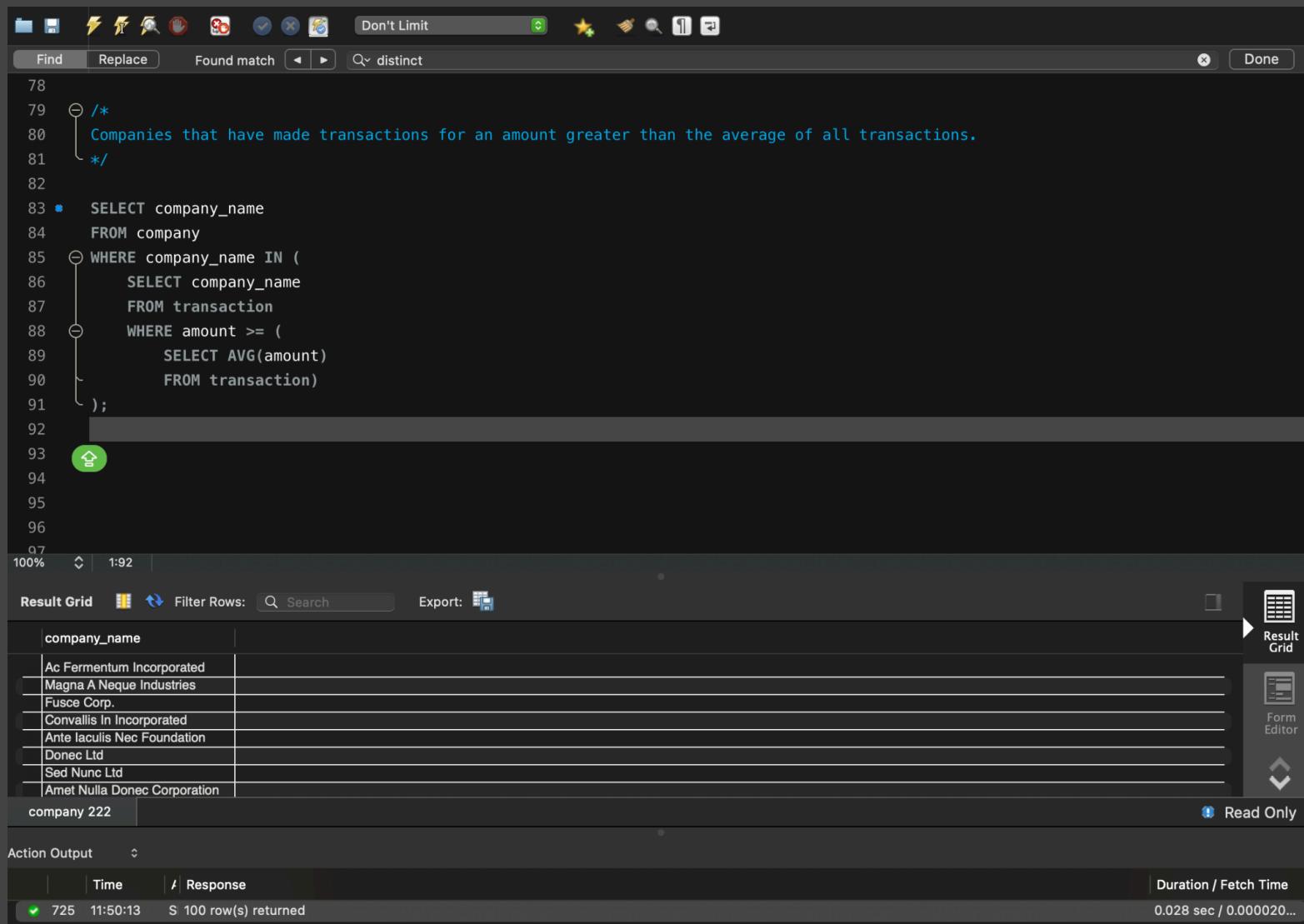
Result Grid    Filter Rows:    Search    Edit:    Export/Import:    Fetch rows:   

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
00100100-1000-1000-1000-100000000000	CcS-8970	b-2222	193	55.5704	-3.65129	2021-01-22 23:44:27	453.04	0
00201A11-2E62-44C4-9...	CcU-3512	b-2222	3556	59.8421	18.729	2020-09-09 15:43:19	263.14	0
00235618-0A5C-4D49-...	CcS-8137	b-2222	4417	41.1591	-8.63905	2024-05-15 09:10:11	442.01	0
0055A7B-1F1A-4B6C-...	CcS-8998	b-2222	289	51.1966	10.4669	2019-03-09 19:37:49	524.84	0
00687139-4FB2-4FFA-...	CcS-4870	b-2222	3500	39.7016	-8.50325	2016-12-26 23:06:57	491.90	0
0074F4DD-32F1-4827-...	CcS-8081	b-2222	2216	55.7652	-3.76245	2021-04-25 03:06:59	167.15	0
00AAB9CD-39D6-4DC...	CcS-6797	b-2222	402	38.708	-9.12993	2019-02-27 15:25:16	141.66	0
00DA0383-E048-4577-...	CcS-9223	b-2222	4642	51.1742	10.2027	2019-03-21 11:47:34	325.62	0

Action Output   

Time	Response	Duration / Fetch Time
723 11:46:18	S 13291 row(s) returned	0.0014 sec / 0.051 sec

- Llista les empreses que han realitzat transaccions per un amount superior a la mitjana de totes les transaccions.



The screenshot shows the Oracle SQL Developer interface with a query editor and a results grid.

**Query Editor:**

```

78
79  /*
80   Companies that have made transactions for an amount greater than the average of all transactions.
81 */
82
83 •  SELECT company_name
84   FROM company
85  WHERE company_name IN (
86    SELECT company_name
87      FROM transaction
88     WHERE amount >= (
89       SELECT AVG(amount)
90         FROM transaction)
91 );
92
93
94
95
96
97
  
```

**Results Grid:**

company_name
Ac Fermentum Incorporated
Magna A Neque Industries
Fusce Corp.
Convallis In Incorporated
Ante Iaculis Nec Foundation
Donec Ltd
Sed Nunc Ltd
Armet Nulla Donec Corporation

**Action Output:**

	Time	Response	Duration / Fetch Time
✓	725 11:50:13	S 100 row(s) returned	0.028 sec / 0.000020...

- Eliminaran del sistema les empreses que no tenen transaccions registrades, entrega el llistat d'aquestes empreses.

```

99  /*
100  They will eliminate from the system companies that do not have registered transactions, provide a list of these companies.
101 */
102
103 • SELECT
104     c.id,
105     c.company_name
106    FROM company c
107   WHERE c.id NOT IN (
108       SELECT DISTINCT c.id
109      FROM transaction t)
110    GROUP BY c.id, c.company_name;
111
112
113
114
115
116
117
118
100%  | 17:108 |
Result Grid  Filter Rows: Search  Edit:  Export/Import:  Result Grid
Result Grid
Form Editor
company 223
Action Output
Time Response Duration / Fetch Time
726 11:51:50  0 row(s) returned  0.00079 sec / 0.0000...

```

**SPRINT 2 - NIVEL 2**

## Exercici 1

Identifica els cinc dies que es va generar la quantitat més gran d'ingressos a l'empresa per vendes. Mostra la data de cada transacció juntament amb el total de les vendes.

```
/*
120  SPRINT_2 - LEVEL_2 - EXERCISE 1
121  Identify the five days on which the company generated the highest amount of revenue from sales.
122  Show the date of each transaction together with the total sales.
123 */
124
125 • SELECT
126      DATE_FORMAT(timestamp, '%m-%d-%Y') AS date,
127      FORMAT(SUM(amount), 2) AS total_sales
128  FROM transaction
129  WHERE declined = 0
130  GROUP BY date
131  ORDER BY SUM(amount) DESC
132  LIMIT 5;
133
134
135
136
137
138
```

100% 1:138

Result Grid Filter Rows: Search Export:

date	total_sales
12-13-2022	14,337.44
11-18-2019	13,591.32
02-20-2023	13,332.59
12-20-2017	13,318.43
03-18-2019	12,680.95

Result 224 Read Only

Action Output

Time	Response	Duration / Fetch Time
727 11:52:56	S 5 row(s) returned	0.205 sec / 0.000012...

## Exercici 2

Quina és la mitjana de vendes per país? Presenta els resultats ordenats de major a menor mitjà.

```
138
139  /*
140   * SPRINT_2 - LEVEL_2 - EXERCISE 2
141   * What is the average sales per country? Display the results ordered from the highest to the lowest average.
142   */
143
144 • SELECT country, ROUND(AVG(amount),2) AS avg_sales
145   FROM transaction t
146   JOIN company c ON t.company_id = c.id
147   WHERE declined = 0
148   GROUP BY country
149   ORDER BY avg_sales DESC;
150
151
152
153
154
155
156
157 100% 1:155
```

The screenshot shows a database query editor interface. At the top, there is a code editor window displaying a SQL query. The code is annotated with comments explaining the purpose of the exercise: calculating average sales per country and ordering them from highest to lowest. The SQL query itself uses a self-join between 'transaction' and 'company' tables to calculate the average amount for each country where 'declined' is 0. The results are then grouped by country and ordered by the average sales in descending order. Below the code editor is a 'Result Grid' pane showing the query results. The results table has two columns: 'country' and 'avg\_sales'. The data is as follows:

country	avg_sales
Australia	265.54
United States	264.42
Belgium	260.97
Germany	260.83
Ireland	260.39
Spain	260.28
France	259.91
New Zealand	259.59

Below the results, there is a 'Result 226' message and a 'Read Only' status indicator. At the bottom, there is an 'Action Output' section showing the execution time (729 ms), response time (11:53:38), number of rows returned (15), and duration/fetch time (0.249 sec / 0.000011...).

### Exercici 3

En la teva empresa, es planteja un nou projecte per a llançar algunes campanyes publicitàries per a fer competència a la companyia "Non Institute". Per a això, et demanen la llista de totes les transaccions realitzades per empreses que estan situades en el mateix país que aquesta companyia.

- Mostra el llistat aplicant JOIN i subconsultes.

```
158 | SPRINT_2 - LEVEL_2 - EXERCISE 3
159 | In your company, a new project is being considered to launch some advertising campaigns to compete with the company 'Non Institute'.
160 | For this purpose, you are asked for the list of all transactions carried out by companies located in the same country as this company
161 | Display the list applying JOIN and subqueries.
162 |
163
164 • SELECT *
165   FROM transaction t
166   JOIN company c ON t.company_id = c.id
167   ⊕ WHERE c.country IN (
168     SELECT c.country
169     FROM company c
170     WHERE c.company_name = 'Non Institute'
171     AND c.company_name != 'Non Institute'
172     AND t.declined = 0;
173
174
175
176 ⊕ /*
177   Display the list applying only subqueries
100% 1:174
```

Result Grid    Filter Rows:    Search    Export:    Fetch rows:   

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined	id	company_name	phone	email	col
008629B4-C9A9-406C...	Ccs-7063	b-2246	2482	45.7666	4.83048	2015-07-30 12:12:42	486.44	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Result Grid
00B72BA4-5A3-4B8E...	Ccs-8475	b-2246	3894	55.6212	-3.7546	2017-10-26 22:08:26	414.06	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Form Editor
01F075B1-D7AE-4D02...	Ccs-8700	b-2246	4119	55.856	-3.15783	2018-01-27 13:44:36	103.73	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Up
023FFCE8-E618-4938...	Ccs-7816	b-2246	3235	46.3568	1.82755	2016-12-19 11:53:45	219.28	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Down
02683BEB-EF91-4564...	Ccs-9471	b-2246	4890	42.1332	12.396	2017-01-10 21:09:29	326.87	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Left
02C2F29E-CF2-4C1E...	Ccs-9082	b-2246	4501	39.4662	-0.373246	2020-05-24 01:17:29	155.72	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Right
02F468DC-426C-47C2...	Ccs-6913	b-2246	2332	52.175	19.3508	2023-03-17 16:36:27	305.35	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Up Left
0306BE3B-817B-4A49...	Ccs-5302	b-2246	721	51.9233	18.926	2021-12-02 23:06:02	339.58	0	b-2246	Sed Nunc Ltd	02 62 64 73 48	nibh@yah...@Uni	Up Right

Result 227    Read Only

Action Output   

Time	Response	Duration / Fetch Time
730 11:54:23	S 12213 row(s) returned	0.0014 sec / 0.053 sec

- Mostra el llistat aplicant solament subconsultes.

Screenshot of a MySQL Workbench interface showing a query editor and results grid.

**Query Editor:**

```

176  /*
177   * Display the list applying only subqueries.
178  */
179
180 • SELECT *
181   FROM transaction t
182  WHERE t.company_id IN (
183    SELECT c.id
184     FROM company c
185    WHERE c.country = (
186      SELECT c.country
187        FROM company C
188       WHERE c.company_name = 'Non Institute'
189      AND c.company_name != 'Non Institute')
190      AND t.declined = 0;
191
192
193 /*
194  SPRINT_2 - LEVEL_3 - EXERCISE 1
195 Show the name, phone number, country, date and amount of those companies that carried out transactions with a value between 350
100% 19:184

```

**Result Grid:**

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
00D7EDB1-C9A0-4BCE-9...	Ccs-8700	b-2246	4119	55.856	-3.15783	2018-01-27 13:44:36	103.73	0
023FFC8-E618-4938-...	Ccs-7816	b-2246	3235	46.3568	1.82755	2016-12-19 11:53:45	219.28	0
02683BEB-EF91-4564-...	Ccs-9471	b-2246	4890	42.1332	12.396	2017-01-10 21:09:29	326.87	0
02C2F29E-CEF2-4C1E...	Ccs-9082	b-2246	4501	39.4662	-0.373246	2020-05-24 01:17:29	155.72	0
02F468DC-426C-47C2...	Ccs-6913	b-2246	2332	52.175	19.3508	2023-03-17 16:36:27	305.35	0
0306BE3B-817B-4A49-...	Ccs-5302	b-2246	721	51.9233	18.926	2021-12-02 23:06:02	339.58	0
0347BFE6-8EB5-4387-...	Ccs-7674	b-2246	3093	45.768	4.84271	2021-12-30 08:40:24	172.93	0
03AEBD0E-DC97-4BD...	Ccs-6121	b-2246	1540	50.8113	10.3145	2018-11-11 11:28:49	114.77	0

**Action Output:**

Time	Response	Duration / Fetch Time
731 11:54:47	S 12213 row(s) returned	0.0015 sec / 0.047 sec

**SPRINT 2 - NIVEL 3**

### Exercici 1

Presenta el nom, telèfon, país, data i amount, d'aquelles empreses que van realitzar transaccions amb un valor comprès entre 350 i 400 euros i en alguna d'aquestes dates: 29 d'abril del 2015, 20 de juliol del 2018 i 13 de març del 2024. Ordена els resultats de major a menor quantitat.

```
167
168  SPRINT_2 - LEVEL_3 - EXERCISE 1
169  Show the name, phone number, country, date, and amount of those companies that carried out transactions with a value between 350
170  and 400 euros and on any of these dates: April 29, 2015, July 20, 2018, and March 13, 2024. Order the results from the highest
171  to the lowest amount.
172  */
173
174 • SELECT
175     c.company_name,
176     c.phone,
177     c.country,
178     DATE_FORMAT(t.timestamp, '%d-%m-%Y') AS date,
179     t.amount
180
181     FROM transaction t
182     JOIN company c ON t.company_id = c.id
183
184     WHERE
185         DATE(t.timestamp) IN ('2015-04-29', '2018-07-20', '2024-03-13')
186         AND t.amount BETWEEN 350 AND 400
187
188     ORDER BY amount DESC;
```

Result Grid   Filter Rows: Search   Export:

company_name	phone	country	date	amount
Aliquam PC	01 45 73 52 16	Germany	13-03-2024	399.84
Auctor Mauris Vel LLP	08 09 28 74 14	United States	20-07-2018	399.51
At Pede Corp.	06 14 48 33 15	Italy	29-04-2015	390.69
Aliquam PC	01 45 73 52 16	Germany	13-03-2024	388.29
Orci Adipiscing Limited	03 18 00 77 81	United Kingdom	20-07-2018	373.71
Fringilla LLC	08 29 15 93 57	New Zealand	29-04-2015	367.62
Pede Cum Ltd	07 62 26 48 38	Norway	20-07-2018	356.87
Auctor Mauris Vel LLP	08 09 28 74 14	United States	13-03-2024	353.75

Vertical Output   Result 59   Read Only

Action Output

Time	Action	Response	Duration / Fetch Time
94 11:34:20	SELECT c.company_name, c.phone, c.count...	8 row(s) returned	0.066 sec / 0.000013...

## Exercici 2

Necessitem optimitzar l'assignació dels recursos i depèndrà de la capacitat operativa que es requereixi, per la qual cosa et demanen la informació sobre la quantitat de transaccions que realitzen les empreses, però el departament de recursos humans és exigent i vol un llistat de les empreses on especifiquis si tenen més de 400 transaccions o menys.

```
195  /*
196   SPRINT_2 - LEVEL_3 - EXERCISE 2
197
198   We need to optimize the allocation of resources, and it will depend on the required operational capacity. Therefore, they are asking
199   for information about the number of transactions carried out by the companies. However, the human resources department is demanding
200   and wants a list of the companies specifying whether they have more than 400 transactions or fewer.
201 */
202
203
204 •  SELECT DISTINCT COUNT(t.id) AS number_of_transactions, c.company_name,
205   CASE
206     WHEN COUNT(t.id) < 400 THEN 'less than 400'
207     WHEN COUNT(t.id) > 400 THEN 'more than 400'
208   END AS hr_requirement
209   FROM company c
210   JOIN transaction t ON t.company_id = c.id
211   GROUP BY c.company_name
212   ORDER BY number_of_transactions ASC;
213
214
```

100% | 15:209 |

Result Grid | Filter Rows: | Search | Export: |

company_name	phone	country	date	amount
Aliquam PC	01 45 73 52 16	Germany	13-03-2024	399.84
Auctor Mauris Vel LLP	08 09 28 74 14	United States	20-07-2018	399.51
At Pede Corp.	06 14 48 33 15	Italy	29-04-2015	390.69
Aliquam PC	01 45 73 52 16	Germany	13-03-2024	388.29
Orci Adipiscing Limited	03 18 00 77 81	United Kingdom	20-07-2018	373.71
Fringilla LLC	08 29 15 93 57	New Zealand	29-04-2015	367.62
Pede Cum Ltd	07 62 26 48 38	Norway	20-07-2018	356.87
Auctor Mauris Vel LLP	08 09 28 74 14	United States	13-03-2024	353.75

Result Grid | Form Editor | Vertical Output | Result 58 | Read Only

Action Output |

Time	Action	Response	Duration / Fetch Time
92 11:20:30	SELECT FROM transaction t WHERE id IN ( ... )	0 row(s) returned	0.00001 sec / 0.0000...
93 11:28:14	SELECT c.company_name, c.phone, c.count...	8 row(s) returned	0.126 sec / 0.000011...