

IT ACADEMY



Sprint 2 - EMC

Descripció

Repasar les nocions bàsiques per a l'ús de base de dades relacionals. En aquest sprint, iniciaràs la teva experiència pràctica amb una base de dades que conté informació d'una empresa dedicada a la venda de productes en línia. En aquesta activitat, t'enfocaràs en dades relacionades amb les transaccions efectuades i la informació corporativa de les empreses que van participar.

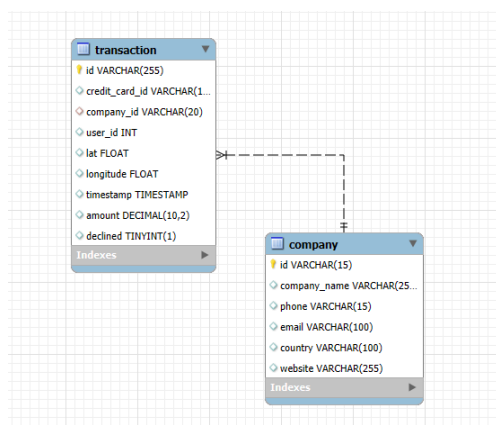
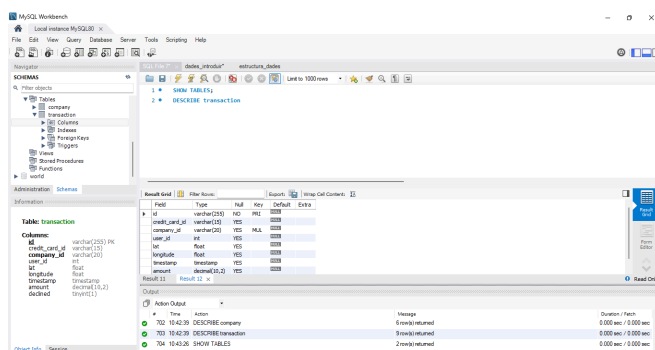
Nivell 1

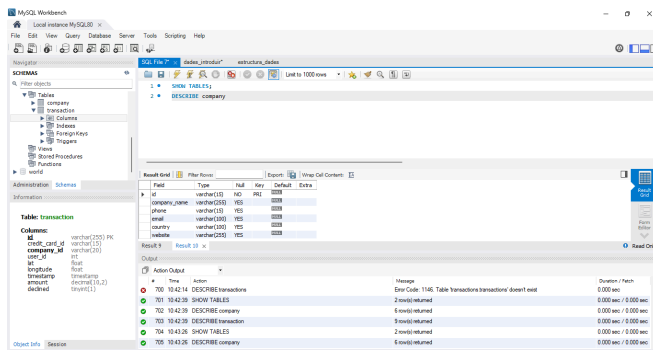
Exercici 1

A partir dels documents adjunts (estructura_dades i dades_introduir), 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.

**/ Diagrama: en Workbench > Database > Reverse Engineer > EER Diagram y captura





En l'esquema hi ha dues taules principals. **Company** desa les dades bàsiques de les empreses (id, nom, telèfon, email, país i web). **Transaction** registra cada operació (id, targeta, empresa, usuari, localització, data, import i si va ser rebutjada). La relació és d'un a molts: una empresa pot tenir diverses transaccions. El diagrama mostra com el camp *company_id* connecta amb dues taules.

Exercici 2

Utilitzant JOIN realitzaràs les següents consultes:

- Llistat dels països que estan fent compres.

```

1 • SELECT DISTINCT c.country
2   FROM company c JOIN transaction t ON t.company_id = c.id
3   ORDER BY c.country ASC;

```

country
Australia
Belgium
Canada
China
France
Germany
Ireland
Italy
Netherlands
New Zealand

- Des de quants països es realitzen les compres.

```

1 • SELECT COUNT(DISTINCT c.country) AS num_countries
2   FROM company c
3   JOIN transaction t ON t.company_id = c.id;

```

num_countries
15

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

•

The screenshot shows a database query editor with a SQL query and its results. The query is:

```
1 SELECT c.company_name,
2     avg(t.amount) AS avg_amount
3 FROM company c
4 JOIN transaction t ON t.company_id = c.id
5 GROUP BY c.id, c.company_name
6 limit 1;
```

The results grid shows one row:

company_name	avg_amount
Ac Fermentum Incorporated	284.867160

The output pane shows the execution log:

#	Time	Action	Message	Duration / Fetch
7	11:45:03	SELECT c.company_name, avg(t.amount) AS avg_amount FROM company c JOIN t...	1 row(s) returned	0.297 sec / 0.000 sec
8	11:45:24	SELECT c.company_name, avg(t.amount) AS avg_amount FROM company c JOIN t...	Error Code: 1140. In aggregated query without GROUP BY, expression #1 of SELECT...	0.016 sec
9	11:45:31	SELECT c.company_name, avg(t.amount) AS avg_amount FROM company c JOIN t...	1 row(s) returned	0.282 sec / 0.000 sec

Exercici 3

Utilitzant només subconsultes (sense utilitzar JOIN):

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

•

The screenshot shows a database query editor with a SQL query and its results. The query is:

```
38 -- Exercici 3.
39 -- Utilitzant només subconsultes (sense utilitzar JOIN):
40 -- Mostra totes les transaccions realitzades per empreses d'Alemanya.
41 SELECT *
42 FROM transaction t
43 WHERE company_id IN (
44     SELECT id
45     FROM company
46     WHERE country = 'Germany');

```

The results grid shows the following data:

id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
00138D3B-206D-4C03-94B7-63A2676EB9B4	CcS-4899	b-2222	318	41.3781	12.447	2020-03-25 10:43:43	426.36	0
0013C1B6-3884-4D6C-8154-E2B3FEBCA8E9	CcS-5070	b-2222	489	41.3814	2.18176	2020-12-17 18:15:37	316.90	0
00201A11-2E62-44C4-941D-198FC8DB77F0	CcU-3512	b-2222	193	55.5704	-3.65129	2021-01-22 23:44:27	453.04	0
00235618-0A5C-4D49-9DCB-83A9405D8923	CcS-8137	b-2222	3556	59.8421	18.729	2020-09-09 15:43:19	263.14	0
005A5A7B-1F1A-4B6C-9B15-1625A78C9C38	CcS-8998	b-2222	4417	41.1591	-8.63905	2024-05-15 09:10:11	442.01	0
00687139-48B2-4FFA-8E73-B20376F04AB4	CcS-4870	b-2222	289	51.1966	10.4669	2019-03-09 19:37:49	524.84	0

The output pane shows the execution log:

#	Time	Action	Message	Duration / Fetch
8	11:45:24	SELECT c.company_name, avg(t.amount) AS avg_amount FROM company c JOIN t...	Error Code: 1140. In aggregated query without GROUP BY, expression #1 of SELECT...	0.016 sec
9	11:45:31	SELECT c.company_name, avg(t.amount) AS avg_amount FROM company c JOIN t...	1 row(s) returned	0.282 sec / 0.000 sec
10	11:46:40	SELECT * FROM transaction t WHERE company_id IN (SELECT id FROM comp...	13291 row(s) returned	0.000 sec / 0.031 sec

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

•

47
48 -- EXERCICI 3.1
49 -- Llista les empreses que han realitzat transaccions per un amount superior a la mitjana de totes les transaccions.
50 • SELECT DISTINCT c.company_name
51 FROM company c
52 JOIN transaction t ON c.id = t.company_id
53 WHERE t.amount > (SELECT AVG(amount) FROM transaction);
54
55 -- Exercici 3.2

Result Grid | Filter Rows: | Export: | Wrap Cell Contents: |

company_name
Eget Tincidunt Dui Institute
Neque Tellus Imperdiet Corp.
Aliquam Iaculis Lacus Corp.
Lorem Ipsum Dolor Corp.
Nulla Integer Vulputate Corp.
Auctor Mauris Corp.

Result 200 x | Read Only

Output

Action Output

#	Time	Action	Message	Duration / Fetch
9	11:45:31	SELECT c.company_name, avg(t.amount) AS avg_amount FROM company c JOIN t...	1 row(s) returned	0.282 sec / 0.000 sec
10	11:46:40	SELECT * FROM transaction t WHERE company_id IN (SELECT id FROM comp...	13291 row(s) returned	0.000 sec / 0.031 sec
11	11:48:10	SELECT DISTINCT c.company_name FROM company c JOIN transaction t ON c.id =...	100 row(s) returned	0.156 sec / 0.000 sec

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

SELECT *
FROM company c
LEFT JOIN transaction t ON c.id = t.company_id
WHERE t.company_id IS NULL;

Result Grid | Filter Rows: | Export: | Wrap Cell Contents: |

id	company_name	phone	email	country	website
----	--------------	-------	-------	---------	---------

Output

Action Output

#	Time	Action	Message	Duration / Fetch
7	11:56:45	SELECT * FROM company WHERE NOT EXISTS (SELECT 1 FROM transaction ...)	0 rows returned	0.000 sec / 0.000 sec
8	11:56:51	SELECT * FROM company WHERE NOT EXISTS (SELECT 2 FROM transaction ...)	0 rows returned	0.000 sec / 0.000 sec
9	11:56:55	SELECT * FROM company WHERE NOT EXISTS (SELECT 3 FROM transaction ...)	0 rows returned	0.000 sec / 0.000 sec
10	12:00:05	SELECT c FROM company c LEFT JOIN transaction t ON c.id = t.company_id WHERE...	0 rows returned	0.016 sec / 0.000 sec
11	12:00:15	SELECT c FROM company c JOIN transaction t ON c.id = t.company_id WHERE...	0 rows returned	0.016 sec / 0.000 sec
12	12:00:03	SELECT c FROM company c LEFT JOIN transaction t ON c.id = t.company_id WHERE...	0 rows returned	0.000 sec / 0.000 sec
13	12:00:06	SELECT c.id, c.company_name, COUNT(t.id) AS num_transacciones FROM ...	100 rows returned	0.016 sec / 0.000 sec
14	12:00:44	SELECT c FROM company c LEFT JOIN transaction t ON c.id = t.company_id WHERE...	0 rows returned	0.000 sec / 0.000 sec

-- "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.
SELECT t.transaction_id,
SUM(t.amount) AS total_day
FROM transaction t
GROUP BY t.transaction_id
ORDER BY total_day DESC
LIMIT 5;

Result Grid | Filter Rows: | Export: | Wrap Cell Contents: |

id	company_name	num_transacciones
b-2362	Loren EU Incorporated	380
b-2386	Frings LLC	299
b-2470	Nac Lucchi LLC	289
b-2578	Dui Qui Institute	402
b-2446	Riase Associates	407
b-2228	Ragna A Neque Industries	410

Output

Action Output

#	Time	Action	Message	Duration / Fetch
11	11:48:10	SELECT DISTINCT c.company_name FROM company c JOIN transaction t ON c.id =...	100 rows returned	0.156 sec / 0.000 sec
12	11:49:30	SELECT * FROM transaction t WHERE company_id IN (SELECT id FROM comp...	0 rows returned	0.000 sec / 0.000 sec
13	11:49:40	SELECT c.id, c.company_name, COUNT(t.id) AS num_transacciones FROM comp...	100 rows returned	0.109 sec / 0.000 sec

Aquí observem que no hi ha empreses sense transaccions registrades, l'empresa que registra menys transaccions es Lorem EU Incorporated amb 380 transaccions.

Nivell 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.

74 -- Identifica els cinc dies que es va generar la quantitat més gran d'ingressos a l'empresa per vendes.
 75 -- Mostra la data de cada transacció juntament amb el total de les vendes.**
 76 • SELECT t.timestamp,
 77 sum(t.amount) AS total_day
 78 FROM transaction t
 79 GROUP BY t.timestamp
 80 ORDER BY total_day DESC
 81 LIMIT 5;

timestamp	total_day
2021-04-06 14:25:26	876.66
2021-12-19 01:52:10	858.60
2021-12-19 02:11:08	858.60
2016-06-07 19:37:51	858.55
2018-06-22 01:15:43	845.91

Result 205 x

#	Time	Action	Message	Duration / Fetch
1	11:54:06	SELECT c.country, avg(t.amount) AS avg_amount FROM company c JOIN transaction...	15 row(s) returned	0.265 sec / 0.000 sec
2	11:56:19	SELECT t.timestamp, sum(t.amount) AS total_day FROM transaction t GROUP BY t.tim...	5 row(s) returned	0.266 sec / 0.000 sec

Exercici 2

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

85 • SELECT c.country,
 86 avg(t.amount) AS avg_amount
 87 FROM company c
 88 JOIN transaction t ON t.company_id = c.id
 89 GROUP BY c.country
 90 ORDER BY avg_amount DESC;

country	avg_amount
Australia	265.190742
United States	264.977877
Belgium	261.153042
Germany	260.841391
Ireland	260.644761
Spain	260.468125
France	259.979185
New Zealand	259.586176
Norway	259.375337
Netherlands	258.436128
Italy	258.272740
Sweden	257.437949
Canada	257.431229

Result 204 x

#	Time	Action	Message	Duration / Fetch
1	11:54:06	SELECT c.country, avg(t.amount) AS avg_amount FROM company c JOIN transaction...	15 row(s) returned	0.265 sec / 0.000 sec

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.

SQL Editor interface showing a query and its results.

```

92  ## **Exercici 3**
93  -- Mostra el llistat aplicant JOIN i subconsultes.
94  • SELECT *
95  FROM transaction t
96  JOIN company c ON c.id = t.company_id
97  WHERE c.country = (
98      SELECT country FROM company WHERE company_name = 'Non Institute' Limit 1
99  );
100

```

Result Grid:

	id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined	id	company_name	phone
▶	008629B4-C9A9-406C-A3D2-71FDA47BC546	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
	00872BA4-54A3-4B8E-B13F-2D57535AA17A	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
	01F075B1-D7AE-4D02-AAD9-5FFD72A43F3C	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
	023FFCE8-E618-4938-8F56-C8DF80540ADD	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
	026838EB-EF91-4564-957B-D6F1662AB7C5	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

Output:

#	Time	Action	Message	Duration / Fetch
1	11:54:06	SELECT c.country, avg(t.amount) AS avg_amount FROM company c JOIN transaction...	15 row(s) returned	0.265 sec / 0.000 sec
2	11:56:19	SELECT timestamp, sum(t.amount) AS total_day FROM transaction t GROUP BY t...	5 row(s) returned	0.266 sec / 0.000 sec
3	11:58:08	SELECT * FROM transaction t JOIN company c ON c.id = t.company_id WHERE c.cou...	13776 row(s) returned	0.000 sec / 0.031 sec

- Mostra el llistat aplicant solament subconsultes.

SQL Editor interface showing a query and its results.

```

101  -- Mostra el llistat aplicant solament subconsultes.
102  • SELECT *
103  FROM transaction t
104  WHERE company_id IN (
105      SELECT id FROM company
106      WHERE country = (SELECT country FROM company WHERE company_name = 'Non Institute' LIMIT 1)
107  );
108
109  -- =====

```

Result Grid:

	id	credit_card_id	company_id	user_id	lat	longitude	timestamp	amount	declined
▶	008629B4-C9A9-406C-A3D2-71FDA47BC546	CcS-7063	b-2246	2482	45.7666	4.83048	2015-07-30 12:12:42	486.44	0
	00872BA4-54A3-4B8E-B13F-2D57535AA17A	CcS-8475	b-2246	3894	55.6212	-3.7546	2017-10-26 22:08:26	414.06	0
	01F075B1-D7AE-4D02-AAD9-5FFD72A43F3C	CcS-8700	b-2246	4119	55.856	-3.15783	2018-01-27 13:44:36	103.73	0
	023FFCE8-E618-4938-8F56-C8DF80540ADD	CcS-7816	b-2246	3235	46.3568	1.82755	2016-12-19 11:53:45	219.28	0
	026838EB-EF91-4564-957B-D6F1662AB7C5	CcS-9471	b-2246	4890	42.1332	12.396	2017-01-10 21:09:29	326.87	0
	02C2F29E-CE72-4C1E-A594-F476E8F279C0	CcS-9082	b-2246	4501	39.4662	-0.373246	2020-05-24 01:17:29	155.72	0

Output:

#	Time	Action	Message	Duration / Fetch
2	11:56:19	SELECT timestamp, sum(t.amount) AS total_day FROM transaction t GROUP BY t...	5 row(s) returned	0.266 sec / 0.000 sec
3	11:58:08	SELECT * FROM transaction t JOIN company c ON c.id = t.company_id WHERE c.c...	13776 row(s) returned	0.000 sec / 0.031 sec
4	11:59:44	SELECT * FROM transaction t WHERE company_id IN (SELECT id FROM company ...	13776 row(s) returned	0.000 sec / 0.047 sec

Nivell 3

Exercici 1

Presenta el nom, telèfon, país, data i amount, d'aquelles empreses que van realitzar transaccions amb un valor comprès entre 100 i 200 euros i en alguna d'aquestes dates: 29 d'abril del 2021, 20 de juliol del 2021 i 13 de març del 2022. Ordena els resultats de major a menor quantitat.

114 -- Presenta el nom, telèfon, país, data i amount, d'aquelles empreses que van realitzar transaccions amb un valor comprès entre 100 i 200 euros
 115 -- Ordena els resultats de major a menor quantitat.
 116
 117 • `SELECT c.company_name, c.phone, c.country, t.timestamp, t.amount`
 118 `FROM company c`
 119 `JOIN transaction t ON c.id = t.company_id`
 120 `WHERE t.amount between 100 AND 200 AND DATE(t.timestamp) IN ('2021-04-29','2021-07-20','2022-03-13')`
 121 `ORDER BY t.amount DESC;`
 122

Result Grid

company_name	phone	country	timestamp	amount
Fringilla Porttitor Incorporated	06 30 30 97 81	Sweden	2022-03-13 23:18:45	192.65
Placerat LLP	05 43 67 24 41	Netherlands	2022-03-13 21:23:50	188.15
Ante Iaculis Nec Foundation	08 23 04 99 53	New Zealand	2022-03-13 11:50:56	188.11
Eget Tindunt Dui Institute	05 35 93 32 44	Netherlands	2021-04-29 16:59:13	181.60
Nunc Interdum Incorporated	05 18 15 48 13	Germany	2022-03-13 06:44:24	179.42
Sed Nunc Ltd	02 62 64 73 48	United Kingdom	2022-03-13 10:35:14	178.85
Amet Famesque LLP Foundation	03 21 67 47 12	United Kingdom	2021-04-29 09:06:37	177.47

Output

#	Time	Action	Message	Duration / Fetch
3	11:58:08	SELECT * FROM transaction t JOIN company c ON c.id = t.company_id WHERE c.c...	13776 row(s) returned	0.000 sec / 0.031 sec
4	11:59:44	SELECT * FROM transaction t WHERE company_id IN (SELECT id FROM company ...	13776 row(s) returned	0.000 sec / 0.047 sec
5	12:00:39	SELECT c.company_name, c.phone, c.country, t.timestamp, t.amount FROM compan...	23 row(s) returned	0.063 sec / 0.000 sec

Exercici 2

Necessitem optimitzar l'assignació dels recursos i dependrà 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 4 transaccions o menys.

128 • `SELECT c.company_name,`
 129 `COUNT(t.id) AS num_transaccions,`
 130 `CASE`
 131 `WHEN count(t.id) > 4 THEN 'Mes de 4'`
 132 `ELSE 'Menys o igual a 4'`
 133 `END AS classificacio`
 134 `FROM company c`
 135 `JOIN transaction t ON c.id = t.company_id`
 136 `GROUP BY c.company_name;`

Result Grid

company_name	num_transaccions	classificacio
Ac Fermentum Incorporated	2401	Mes de 4
Magna A Neque Industries	410	Mes de 4
Fusce Corp.	447	Mes de 4
Convallis In Incorporated	1514	Mes de 4
Ante Iaculis Nec Foundation	472	Mes de 4
Donec Ltd	449	Mes de 4
Sed Nunc Ltd	1541	Mes de 4

Output

#	Time	Action	Message	Duration / Fetch
4	11:59:44	SELECT * FROM transaction t WHERE company_id IN (SELECT id FROM company ...	13776 row(s) returned	0.000 sec / 0.047 sec
5	12:00:39	SELECT c.company_name, c.phone, c.country, t.timestamp, t.amount FROM compan...	23 row(s) returned	0.063 sec / 0.000 sec
6	12:02:06	SELECT c.company_name, COUNT(t.id) AS num_transaccions, CASE WHEN ...	100 row(s) returned	0.125 sec / 0.000 sec