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Batch: Data Engineering

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Topic: SQL(groupby,joins,orderby,union,intersect)

Solution:

1. SQL

Orderby:

The screenshot shows a SQL query editor with the following code:

```
125 /*Used Pet_adoption as database*/
126 * USE pet_adoption;
127
128 /*used of order by*/
129 * select * from animals order by id desc;
130
```

The results pane displays a table with 12 rows and 8 columns: id, name, breed, color, gender, status, species, and shelter. The rows are ordered by id in descending order.

#	id	name	breed	color	gender	status	species	shelter
1	12	Salt	Turkish Angora	White	Female	0	Cat	2
2	11	Shooga	Bengal	Brown	Male	0	Dog	2
3	10	Tygr	Bengal	Brown	Male	0	Cat	1
4	9	Aali	Persian	Grey	Female	0	Cat	1
5	8	Messum	Hungarian	Yellow	Female	0	Cat	1
6	7	Spud	Dalmatian	Black and White	Male	1	Dog	1
7	6	Princess	Poodle	Brown	Female	0	Dog	1
8	5	Orlando	Chihuahua	Brown	Male	1	Dog	1
9	4	Princess	Pomeranian	Brown	Female	0	Dog	1
10	3	Stacey	Healy	White	Female	0	Dog	1

The Action Output pane shows the execution of the query: 1 17:11:25 select * from animals order by id desc (1817 0, 1000) 12 rows returned. Duration / Peak: 0.000 sec / 0.000 sec.

Group by:

The screenshot shows a SQL query editor with the following code:

```
130
131 /*use of group by*/
132 * select gender,count(gender) from animals group by gender;
133
134
135
```

The results pane displays a table with 2 rows and 2 columns: gender and count(gender). The rows are grouped by gender.

#	gender	count(gender)
1	Male	6
2	Female	6

The Action Output pane shows the execution of the query: 1 17:11:25 select * from animals order by id desc (1817 0, 1000) 12 rows returned. Duration / Peak: 0.000 sec / 0.000 sec. 2 17:12:30 select gender,count(gender) from animals group by gender (1817 0, 1000) 2 rows returned. Duration / Peak: 0.015 sec / 0.000 sec.

Union:

The screenshot shows a database IDE with a SQL query editor at the top and a results pane below. The query is:

```
134
135
136 /*use of union */
137 * SELECT * FROM animals UNION SELECT * FROM animals2;
138
139
```

The results pane displays a table with 10 columns: id, name, breed, color, gender, status, species, and shelter. The data is as follows:

id	name	breed	color	gender	status	species	shelter
1	Bella	Beagle	Brown	Male	0	Dog	1
2	Bella	Beagle	Brown	Male	0	Dog	1
3	Benny	Husky	White	Female	0	Dog	1
4	Procces	Pomeranian	Brown	Female	0	Dog	1
5	Orbit	Chihuahua	Brown	Male	1	Dog	2
6	Procces	Poodle	Brown	Female	0	Dog	1
7	Spot	Labrador	Black and white	Male	1	Dog	1
8	Havoc	Munchkin	Yellow	Female	0	Cat	1
9	Ash	Persian	Grey	Female	0	Cat	1
10	Tiger	Bengal	Brown	Male	0	Cat	1

The Action Output pane at the bottom shows the execution of the query:

Time	Action	Message	Duration / Next
17:11:25	select * from animals order by id desc LIMIT 5, 1000	10 records returned	0.000 sec / 0.000 sec
17:12:30	select gender count gender from animals group by gender LIMIT 5, 1000	2 records returned	0.015 sec / 0.000 sec
17:13:44	SELECT * FROM animals UNION SELECT * FROM animals2	17 records returned	0.000 sec / 0.000 sec

Intersect:

The screenshot shows a database IDE with a SQL query editor at the top and a results pane below. The query is:

```
141 /*Intersect is not allowed in mysql so use of subqueries to do intersection*/
142 * SELECT DISTINCT * FROM animals
143 INNER JOIN animals2 USING (id);
144
145 * SELECT DISTINCT * FROM animals
146 WHERE id IN (SELECT id FROM animals2);
```

The results pane displays a table with 10 columns: id, name, breed, color, gender, status, species, and shelter. The data is as follows:

id	name	breed	color	gender	status	species	shelter
1	Bella	Beagle	Brown	Male	0	Dog	1
2	Bella	Beagle	Brown	Male	0	Dog	1
3	Benny	Husky	White	Female	0	Dog	1
4	Procces	Pomeranian	Brown	Female	0	Dog	1
5	Orbit	Chihuahua	Brown	Male	1	Dog	1

The Action Output pane at the bottom shows the execution of the query:

Time	Action	Message	Duration / Next
17:14:38	SELECT DISTINCT * FROM animals INNER JOIN animals2 USING (id) LIMIT 5, 1000	5 records returned	0.000 sec / 0.000 sec
17:14:40	SELECT DISTINCT * FROM animals WHERE id IN (SELECT id FROM animals2) LIMIT 5, 1000	5 records returned	0.000 sec / 0.000 sec

Joins:

INNER JOIN:

The screenshot shows a SQL IDE with a query window containing the following SQL code:

```
148
149 /*joins*/
150 /*inner join*/
151 * SELECT DISTINCT * FROM animals a
152 INNER JOIN adoptions ad ON ad.animal_id = a.id;
153
```

The results pane displays a table with the following data:

id	name	breed	color	gender	status	species	shelter	animal_id	name	contact	date
3	Orbit	Chihuahua	Brown	Male	1	Dog	1	5	Pescoshe	realboy@codranchlabs.com	2024-01-05 22:07:22
7	Spot	Dalmatian	Black and White	Male	1	Dog	1	7	Elle	ellessen@codranchlabs.com	2024-01-05 22:07:26

The bottom pane shows the execution log with the following entry:

#	Time	Action	Message	Duration / Return
1	17:15:58	SELECT DISTINCT * FROM animals a INNER JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 rows returned	0.000 sec / 0.000 sec

LEFT JOIN:

The screenshot shows a SQL IDE with a query window containing the following SQL code:

```
153
154 /* left join*/
155 * SELECT DISTINCT * FROM animals a
156 LEFT JOIN adoptions ad ON ad.animal_id = a.id;
157
158 /*right join*/

```

The results pane displays a table with the following data:

id	name	breed	color	gender	status	species	shelter	animal_id	name	contact	date
1	Becky	Bugle	Brown	Male	0	Dog	1	0000	0000	0000	0000
2	Becky	Bugle	Brown	Male	0	Dog	1	0000	0000	0000	0000
3	Orbit	Chihuahua	Brown	Male	1	Dog	1	5	Pescoshe	realboy@codranchlabs.com	2024-01-05 22:07:22
4	Orbit	Chihuahua	Brown	Male	1	Dog	1	5	Pescoshe	realboy@codranchlabs.com	2024-01-05 22:07:22
5	Orbit	Chihuahua	Brown	Male	1	Dog	1	5	Pescoshe	realboy@codranchlabs.com	2024-01-05 22:07:22
6	Orbit	Chihuahua	Brown	Male	1	Dog	1	5	Pescoshe	realboy@codranchlabs.com	2024-01-05 22:07:22
7	Spot	Dalmatian	Black and White	Male	1	Dog	1	7	Elle	ellessen@codranchlabs.com	2024-01-05 22:07:26
8	Heavenly	Munchkin	Yellow	Female	0	Cat	2	0000	0000	0000	0000
9	Heavenly	Munchkin	Yellow	Female	0	Cat	2	0000	0000	0000	0000
10	Heavenly	Munchkin	Yellow	Female	0	Cat	2	0000	0000	0000	0000
11	Heavenly	Munchkin	Yellow	Female	0	Cat	2	0000	0000	0000	0000
12	Tiger	Bengal	Brown	Male	0	Cat	1	0000	0000	0000	0000

The bottom pane shows the execution log with the following entries:

#	Time	Action	Message	Duration / Return
1	17:15:58	SELECT DISTINCT * FROM animals a INNER JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 rows returned	0.000 sec / 0.000 sec
2	17:16:29	SELECT DISTINCT * FROM animals a LEFT JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	12 rows returned	0.000 sec / 0.000 sec

RIGHT JOIN:

The screenshot shows a database interface with a SQL editor at the top containing a query for a RIGHT JOIN. Below the editor, a table displays the results of the query, showing two rows of animal and adoption data. At the bottom, an 'Action Output' section provides a log of the query execution, including the time taken and the number of rows returned.

```
157
158 /*right join*/
159 * SELECT DISTINCT * FROM animals a
160 RIGHT JOIN adoptions ad ON ad.animal_id = a.id;
161
162 /*full join*/
```

id	name	breed	color	gender	status	species	shelter	animal_id	name	contact	date
3	Cristat	Chihuahua	Brown	Male	1	Dog	1	3	Proches	realen@codrosachiba.com	2024-01-19 22:07:22
7	Spot	Dalmatian	Black and White	Male	1	Dog	1	7	Elle	elallen@codrosachiba.com	2024-01-19 22:07:26

Result 10: 2 rows

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Output

#	Time	Action	Message	Duration / Wait
1	17:15:58	SELECT DISTINCT * FROM animals a INNER JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 row(s) returned	0.000 sec / 0.000 sec
2	17:16:29	SELECT DISTINCT * FROM animals a LEFT JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	12 row(s) returned	0.000 sec / 0.000 sec
3	17:17:07	SELECT DISTINCT * FROM animals a RIGHT JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 row(s) returned	0.000 sec / 0.000 sec

FULL JOIN:

The screenshot shows a database interface with a SQL editor at the top containing a query for a FULL JOIN. Below the editor, a table displays the results of the query, showing two rows of animal and adoption data. At the bottom, an 'Action Output' section provides a log of the query execution, including the time taken and the number of rows returned.

```
161
162 /*full join*/
163 * SELECT DISTINCT * FROM animals a
164 JOIN adoptions ad ON ad.animal_id = a.id;
165
166
```

id	name	breed	color	gender	status	species	shelter	animal_id	name	contact	date
3	Cristat	Chihuahua	Brown	Male	1	Dog	1	3	Proches	realen@codrosachiba.com	2024-01-19 22:07:22
7	Spot	Dalmatian	Black and White	Male	1	Dog	1	7	Elle	elallen@codrosachiba.com	2024-01-19 22:07:26

Result 17: 2 rows

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Output

#	Time	Action	Message	Duration / Wait
1	17:15:58	SELECT DISTINCT * FROM animals a INNER JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 row(s) returned	0.000 sec / 0.000 sec
2	17:16:29	SELECT DISTINCT * FROM animals a LEFT JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	12 row(s) returned	0.000 sec / 0.000 sec
3	17:17:07	SELECT DISTINCT * FROM animals a RIGHT JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 row(s) returned	0.000 sec / 0.000 sec
4	17:17:38	SELECT DISTINCT * FROM animals a JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000	2 row(s) returned	0.000 sec / 0.000 sec

NON EQUI JOINS:

The screenshot shows a SQL IDE window with a query editor and a results pane. The query is a non-equijoin:

```
166
167 /*non equi join*/
168 * SELECT *
169 FROM adoptions, animals
170 WHERE adoptions.animal_id = animals.id; /*, ETC can be used.
171
```

The results pane displays a table with 12 columns: animal_id, name, contact, date, id, name, breed, color, gender, status, species, shelter. It shows two rows of data:

animal_id	name	contact	date	id	name	breed	color	gender	status	species	shelter
3	Presche	realdev@cockroachlabs.com	2024-01-19 22:07:22	1	Orkney	Chihuahua	Brown	Male	1	Dog	1
7	Ella	elleanew@cockroachlabs.com	2024-01-19 22:07:26	7	Spot	Dalmatian	Black and White	Male	1	Dog	1

The output pane shows the execution of the query:

```
1 17:18:33 SELECT * FROM adoptions, animals WHERE adoptions.animal_id = animals.id LIMIT 5, 1000
2 rows returned
0.000 sec / 0.000 sec
```

EQUI JOINS:

The screenshot shows a SQL IDE window with a query editor and a results pane. The query is an equijoin:

```
172
173 /*equi join*/
174 * SELECT DISTINCT * FROM animals a
175 JOIN adoptions ad ON ad.animal_id = a.id;
176
```

The results pane displays a table with 12 columns: id, name, breed, color, gender, status, species, shelter, animal_id, name, contact, date. It shows two rows of data:

id	name	breed	color	gender	status	species	shelter	animal_id	name	contact	date
3	Orkney	Chihuahua	Brown	Male	1	Dog	1	3	Presche	realdev@cockroachlabs.com	2024-01-19 22:07:22
7	Spot	Dalmatian	Black and White	Male	1	Dog	1	7	Ella	elleanew@cockroachlabs.com	2024-01-19 22:07:26

The output pane shows the execution of the query:

```
1 17:18:33 SELECT * FROM adoptions, animals WHERE adoptions.animal_id = animals.id LIMIT 5, 1000
2 rows returned
0.000 sec / 0.000 sec
2 17:19:26 SELECT DISTINCT * FROM animals a JOIN adoptions ad ON ad.animal_id = a.id LIMIT 5, 1000
2 rows returned
0.000 sec / 0.000 sec
```