

# DBMS Assignment-4

## 1. Order by Clause..

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5
6 select * from customers order by Age Asc;
```

The results pane displays the output of the query. The first four results are the output of the administrative queries. The final result is the output of the SELECT query, which shows the contents of the customers table ordered by age in ascending order.

Customer_id	Firstname	Lastname	Age	Phone	email	Gender
5	Athe	kohlr	1	9918781	ytyt@pg.co	M
4	Rajes	samuel	7	9118991	ytyt@pg.co	M
1	Ajay	Neger	12	98449967	ytyt@pg.co	M
3	Jaya	Nar	16	9818946	y@pg.co	F
2	Jay	Neger	30	98125967	y@pg.co	M

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5
6 select * from customers order by Age Desc;
```

The results pane displays the output of the query. The first four results are the output of the administrative queries. The final result is the output of the SELECT query, which shows the contents of the customers table ordered by age in descending order.

Customer_id	Firstname	Lastname	Age	Phone	email	Gender
2	Jay	Neger	30	98125967	y@pg.co	M
3	Jaya	Nar	16	9818946	y@pg.co	F
1	Ajay	Neger	12	98449967	ytyt@pg.co	M
4	Rajes	samuel	7	9118991	ytyt@pg.co	M
5	Athe	kohlr	1	9918781	ytyt@pg.co	M

## 2. Group by and having:

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select Count(*) from customers group by Gender;
```

The result grid shows the output of the query:

Count(*)
4

The bottom panel shows the Action Output log:

#	Time	Action	Message	Duration / Fetch
235	16:21:39	select * from customers group by Gender LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec
236	16:21:51	show databases	8 row(s) returned	0.000 sec / 0.000 sec
237	16:21:51	use mydb	0 row(s) affected	0.000 sec
238	16:21:51	show tables	7 row(s) returned	0.000 sec / 0.000 sec
239	16:21:51	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
240	16:21:51	select Count(*) from customers group by Gender LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select * from customers having Age < avg(Age);
```

The result grid shows the output of the query:

Customer_id	Firstname	Lastname	Age	Phone	email	Gender
1	Ajay	Neger	12	98449967	ytyt@gg.co	M

The bottom panel shows the Action Output log:

#	Time	Action	Message	Duration / Fetch
225	16:20:45	select * from customers having Age < avg(Age) LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
226	16:20:53	show databases	8 row(s) returned	0.000 sec / 0.000 sec
227	16:20:53	use mydb	0 row(s) affected	0.000 sec
228	16:20:53	show tables	7 row(s) returned	0.000 sec / 0.000 sec
229	16:20:53	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
230	16:20:53	select * from customers having Age < avg(Age) LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

### 3. Aggregate functions:

a) sum

The screenshot shows the MySQL Workbench interface. The SQL editor contains the following queries:

```
1 • show databases;
2 • use mydb;
3 • show tables;
4 • desc customers;
5
6 • select sum(Age) from customers ;
```

The result grid shows the output of the last query:

sum(Age)
66

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

#	Time	Action	Message	Duration / Fetch
150	14:26:27	select * from customers where group by Gender	Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use ne...	0.000 sec
151	14:40:52	show databases	8 row(s) returned	0.000 sec / 0.000 sec
152	14:40:52	use mydb	0 row(s) affected	0.000 sec
153	14:40:52	show tables	7 row(s) returned	0.000 sec / 0.000 sec
154	14:40:52	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
155	14:40:53	select sum(Age) from customers LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

b) min

The screenshot shows the MySQL Workbench interface. The SQL editor contains the following queries:

```
1 • show databases;
2 • use mydb;
3 • show tables;
4 • desc customers;
5
6 • select min(Age) from customers ;
```

The result grid shows the output of the last query:

min(Age)
1

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

#	Time	Action	Message	Duration / Fetch
160	14:42:20	select min(Age) from customers LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
161	14:43:19	show databases	8 row(s) returned	0.000 sec / 0.000 sec
162	14:43:19	use mydb	0 row(s) affected	0.000 sec
163	14:43:19	show tables	7 row(s) returned	0.000 sec / 0.000 sec
164	14:43:19	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
165	14:43:19	select min(Age) from customers LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

### c) max

The screenshot shows the MySQL Workbench interface. The 'Query' tab is active, displaying the following SQL query:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5
6 select max(Age) from customers ;
```

The 'Result Grid' shows the output of the query:

max(Age)
30

The 'Action Output' pane at the bottom shows the execution log:

#	Time	Action	Message	Duration / Fetch
165	14:43:19	select min(Age) from customers LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
166	14:44:18	show databases	8 row(s) returned	0.000 sec / 0.000 sec
167	14:44:18	use mydb	0 row(s) affected	0.000 sec
168	14:44:18	show tables	7 row(s) returned	0.000 sec / 0.000 sec
169	14:44:18	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
170	14:44:18	select max(Age) from customers LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

### d) Count

The screenshot shows the MySQL Workbench interface. The 'Query' tab is active, displaying the following SQL query:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5
6 select count(*) from customers where Age >= 2 ;
7
```

The 'Result Grid' shows the output of the query:

count(*)
5

The 'Action Output' pane at the bottom shows the execution log:

#	Time	Action	Message	Duration / Fetch
190	14:51:13	select count(*) from customers where Age >= 2 LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
191	14:55:40	show databases	8 row(s) returned	0.000 sec / 0.000 sec
192	14:55:40	use mydb	0 row(s) affected	0.000 sec
193	14:55:41	show tables	7 row(s) returned	0.000 sec / 0.000 sec
194	14:55:41	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
195	14:55:41	select count(*) from customers where Age >= 2 LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

## e) Average

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select avg(age) from customers;
6
7
```

The result grid shows the output of the query:

Result Grid
avg(age)
13.2000

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

#	Time	Action	Message	Duration / Fetch
9	05:26:53	select * from customers LIMIT 0, 1000	5 row(s) returned	0.031 sec / 0.000 sec
10	05:27:13	show databases	8 row(s) returned	0.015 sec / 0.000 sec
11	05:27:13	use mydb	0 row(s) affected	0.000 sec
12	05:27:13	show tables	7 row(s) returned	0.000 sec / 0.000 sec
13	05:27:13	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
14	05:27:13	select avg(age) from customers LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

## 4. Logical operators especially with LIKE

### a)

The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select * from customers where Firstname like 'J%';
6
7
```

The result grid shows the output of the query:

Result Grid						
Customer_id	Firstname	Lastname	Age	Phone	email	Gender
2	Jay	Neger	30	98155967	ytd@co	M
3	Jaya	Nar	16	9818946	ytd@co	F

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

#	Time	Action	Message	Duration / Fetch
44	05:32:48	select * from customers where Firstname like 'J%' LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
45	05:32:58	show databases	8 row(s) returned	0.000 sec / 0.000 sec
46	05:32:58	use mydb	0 row(s) affected	0.000 sec
47	05:32:58	show tables	7 row(s) returned	0.000 sec / 0.000 sec
48	05:32:58	desc customers	7 row(s) returned	0.016 sec / 0.000 sec
49	05:32:58	select * from customers where Firstname like 'J%' LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

b)

MySQL Workbench interface showing a query in the SQL editor:

```
1 • show databases;
2 • use mydb;
3 • show tables;
4 • desc customers;
5 • select * from customers where FirstName like 'J%' or LastName like 'M%';
6
7
```

The Result Grid displays the following data:

Customer_id	FirstName	LastName	Age	Phone	email	Gender
1	Ajay	Neger	12	98449967	yrt@gg.co	M
2	Jay	Neger	30	98155967	yrt@gg.co	M
3	Jaya	Nair	16	9818946	yrt@gg.co	F

The Action Output pane shows the execution of the query:

#	Time	Action	Message	Duration / Fetch
49	06:32:58	select * from customers where FirstName like 'J%' or LastName like 'M%' LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec
50	06:30:31	show databases	8 row(s) returned	0.000 sec / 0.000 sec
51	06:30:31	use mydb	0 row(s) affected	0.000 sec
52	06:30:31	show tables	7 row(s) returned	0.000 sec / 0.000 sec
53	06:30:31	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
54	06:30:31	select * from customers where FirstName like 'J%' or LastName like 'M%' LIMIT 0, 1000	3 row(s) returned	0.000 sec / 0.000 sec

c)

MySQL Workbench interface showing a query in the SQL editor:

```
1 • show databases;
2 • use mydb;
3 • show tables;
4 • desc customers;
5 • select * from customers where FirstName like 'J%' and LastName like 'M%';
6
7
```

The Result Grid displays the following data:

Customer_id	FirstName	LastName	Age	Phone	email	Gender
2	Jay	Neger	30	98155967	yrt@gg.co	M
3	Jaya	Nair	16	9818946	yrt@gg.co	F

The Action Output pane shows the execution of the query:

#	Time	Action	Message	Duration / Fetch
54	06:30:31	select * from customers where FirstName like 'J%' or LastName like 'M%' LIMIT 0, 1000	3 row(s) returned	0.000 sec / 0.000 sec
55	06:31:33	show databases	8 row(s) returned	0.016 sec / 0.000 sec
56	06:31:33	use mydb	0 row(s) affected	0.000 sec
57	06:31:33	show tables	7 row(s) returned	0.000 sec / 0.000 sec
58	06:31:33	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
59	06:31:34	select * from customers where FirstName like 'J%' and LastName like 'M%' LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

academics

mydb

Tables

Views

Stored Procedures

Functions

sakila

sys

world

Query

1 show databases;

2 use mydb;

3 show tables;

4 desc customers;

5 select \* from customers where Firstname like 'J%' or Lastname not like 'M%';

6

7

Result Grid

Customer_id	Firstname	LastName	Age	Phone	email	Gender
2	Jay	Neger	30	98155967	ytd@q.co	M
3	Jaya	Nar	16	9818946	ytd@q.co	F
4	Rajes	samuel	7	9118991	ytd@q.co	M
5	Athe	kohl	1	9918781	ytd@q.co	M

Output

Action Output

#	Time	Action	Message	Duration / Fetch
59	06:31:34	select * from customers where Firstname like 'J%' and Lastname like 'N%' LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec
60	06:32:20	show databases	8 row(s) returned	0.000 sec / 0.000 sec
61	06:32:20	use mydb	0 row(s) affected	0.000 sec
62	06:32:20	show tables	7 row(s) returned	0.000 sec / 0.000 sec
63	06:32:21	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
64	06:32:21	select * from customers where Firstname like 'J%' or Lastname not like 'N%' LIMIT 0, 1000	4 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

d)

5. At least 4 Nested queries specific to your Database, out of which at least 2 should have multiple subqueries.

a)

MySQL Workbench

Local instance MySQL80 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

academics

mydb

Tables

Views

Stored Procedures

Functions

sakila

sys

world

Query

1 show databases;

2 use mydb;

3 show tables;

4 desc customers;

5 select \* from customers where age in (select age from customers where Firstname like 'J\_%');

6

Result Grid

Customer_id	Firstname	LastName	Age	Phone	email	Gender
2	Jay	Neger	30	98155967	ytd@q.co	M
3	Jaya	Nar	16	9818946	ytd@q.co	F

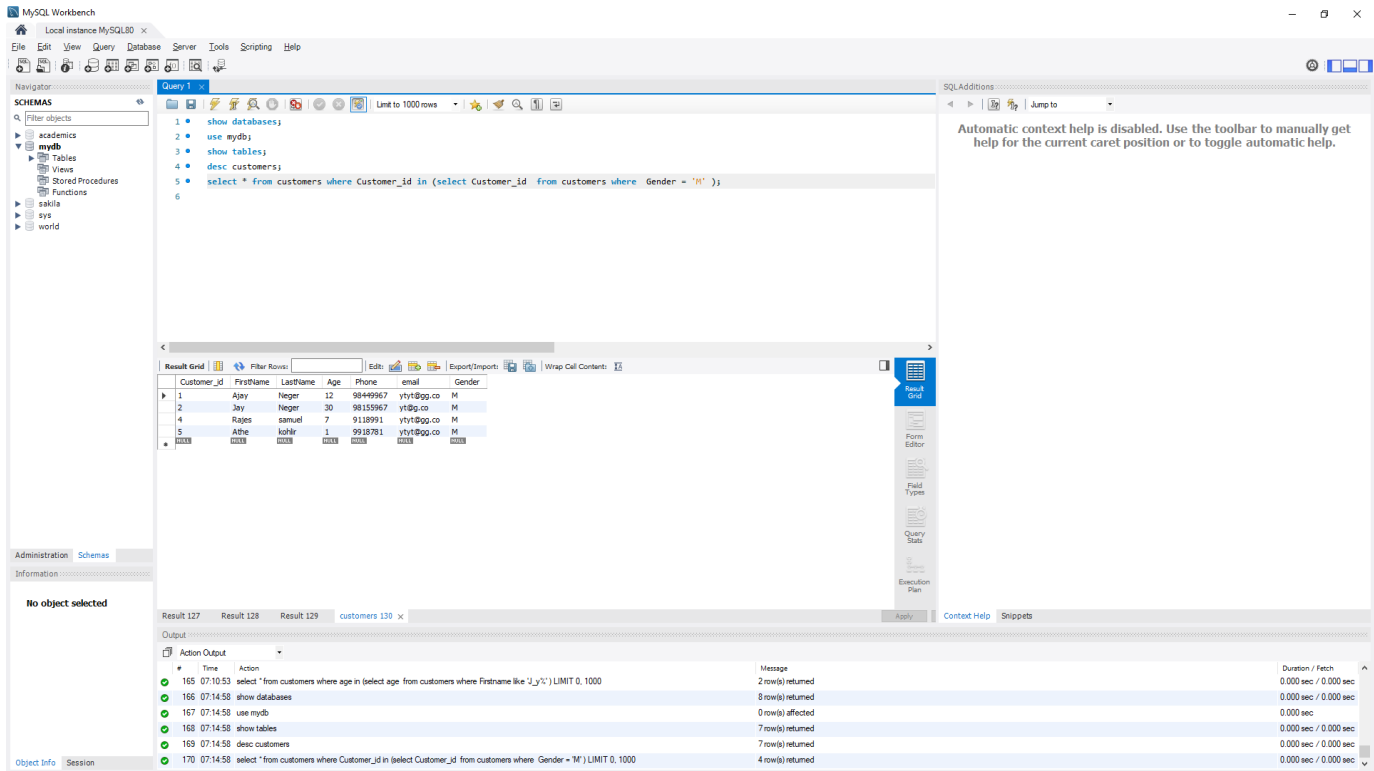
Output

Action Output

#	Time	Action	Message	Duration / Fetch
160	07:08:13	select * from customers where age > any(select age from customers where Firstname like 'J%' or Firstname like 'A%') LIMIT 0, 1000	4 row(s) returned	0.000 sec / 0.000 sec
161	07:10:53	show databases	8 row(s) returned	0.000 sec / 0.000 sec
162	07:10:53	use mydb	0 row(s) affected	0.000 sec
163	07:10:53	show tables	7 row(s) returned	0.000 sec / 0.000 sec
164	07:10:53	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
165	07:10:53	select * from customers where age in (select age from customers where Firstname like 'J_%') LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

b)



MySQL Workbench interface showing a query execution. The query is:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select * from customers where Customer_id in (select Customer_id from customers where Gender = 'M');
6
```

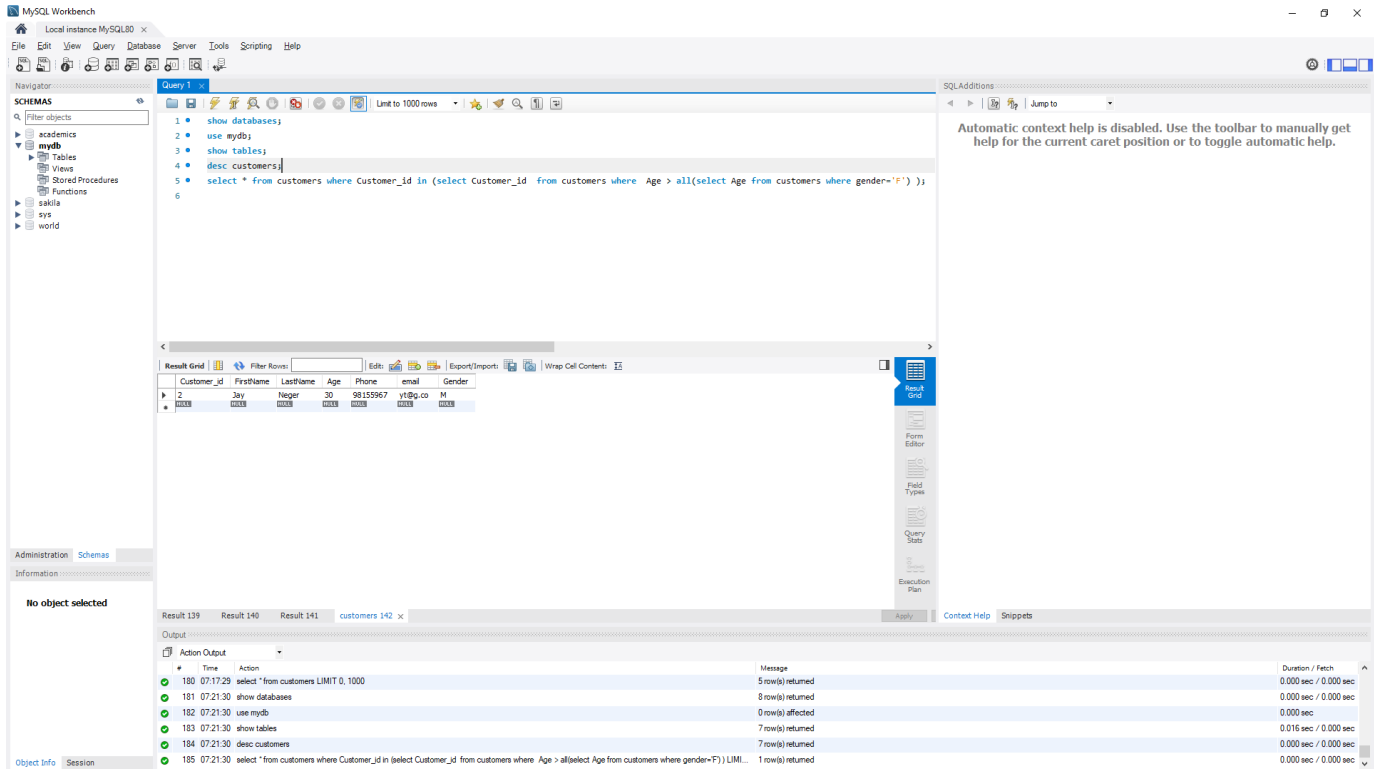
The result grid shows the following data:

Customer_id	Firstname	Lastname	Age	Phone	email	Gender
1	Amy	Neger	12	98449667	yttd@pg.co	M
2	Jay	Neger	30	98155967	yttd@pg.co	M
4	Rajes	samuel	7	9118991	yttd@pg.co	M
5	Athe	kohlr	1	9918781	yttd@pg.co	M

The output pane shows the following actions:

Action	Time	Message	Duration / Fetch
select * from customers where age in (select age from customers where Firstname like 'J_y%') LIMIT 0, 1000	165 07:10:53	2 row(s) returned	0.000 sec / 0.000 sec
show databases	166 07:14:58	8 row(s) returned	0.000 sec / 0.000 sec
use mydb	167 07:14:58	0 row(s) affected	0.000 sec
show tables	168 07:14:58	7 row(s) returned	0.000 sec / 0.000 sec
desc customers	169 07:14:58	7 row(s) returned	0.000 sec / 0.000 sec
select * from customers where Customer_id in (select Customer_id from customers where Gender = 'M') LIMIT 0, 1000	170 07:14:58	4 row(s) returned	0.000 sec / 0.000 sec

c)



MySQL Workbench interface showing a query execution. The query is:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select * from customers where Customer_id in (select Customer_id from customers where Age > all(select Age from customers where gender='F'));
6
```

The result grid shows the following data:

Customer_id	Firstname	Lastname	Age	Phone	email	Gender
2	Jay	Neger	30	98155967	yttd@pg.co	M

The output pane shows the following actions:

Action	Time	Message	Duration / Fetch
select * from customers LIMIT 0, 1000	180 07:17:29	5 row(s) returned	0.000 sec / 0.000 sec
show databases	181 07:21:30	8 row(s) returned	0.000 sec / 0.000 sec
use mydb	182 07:21:30	0 row(s) affected	0.000 sec
show tables	183 07:21:30	7 row(s) returned	0.016 sec / 0.000 sec
desc customers	184 07:21:30	7 row(s) returned	0.000 sec / 0.000 sec
select * from customers where Customer_id in (select Customer_id from customers where Age > all(select Age from customers where gender='F')) LIMIT 0, 1000	185 07:21:30	1 row(s) returned	0.000 sec / 0.000 sec



d)

The screenshot displays the MySQL Workbench interface for a local instance of MySQL 8.0. The main window shows a SQL query in the 'Query' tab, which is a complex SELECT statement involving subqueries and a JOIN. The query is as follows:

```
1 show databases;
2 use mydb;
3 show tables;
4 desc customers;
5 select * from customers where Customer_id in (select Customer_id from customers where Age < all(select Age from customers where gender in
6 | (select gender from customers where LastName like 'A%')) );
7
```

The 'Result Grid' shows the output of the query, displaying a table with columns: Customer\_id, FirstName, LastName, Age, Phone, email, and Gender. The table contains one row of data:

Customer_id	FirstName	LastName	Age	Phone	email	Gender
2	Jay	Heeger	30	98155967	y1@p.co	M

The 'Output' tab at the bottom shows the execution log, detailing the actions performed and their results. The log includes the following entries:

#	Time	Action	Message	Duration / Fetch
180	07:17:23	select * from customers LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
181	07:21:30	show databases	8 row(s) returned	0.000 sec / 0.000 sec
182	07:21:30	use mydb	0 row(s) affected	0.000 sec
183	07:21:30	show tables	7 row(s) returned	0.016 sec / 0.000 sec
184	07:21:30	desc customers	7 row(s) returned	0.000 sec / 0.000 sec
185	07:21:30	select * from customers where Customer_id in (select Customer_id from customers where Age > all(select Age from customers where gender in (select gender from customers where LastName like 'A%')) )	1 row(s) returned	0.000 sec / 0.000 sec