



FINAL EXAM

Course: MIS 443 - Business Data Management

Lecturer: Mr. Doan

Student's Name	IRN
Trần Phương Thảo	2132300447

Link Github: <https://github.com/pgthaotran/MIS-443---Q2-2025-2026-.git>

Quarter 2, 2025-2026

Question 1 (10 marks): Create a database named “yourfullname” (e.g: nguyenvana”) using PGAdmin, then create a schema name “cd” that has three tables: members, bookings and facilities using SQL statements. Ensure each table includes appropriate primary and foreign keys, and data types.

Query Query History

```

1  /*
2  Question 1 (10 marks): Create a database named “yourfullname” (e.g: nguyenvana”) use PGAdmin, then create a schema name “cd” that has
3  using SQL statements. Ensure each table includes appropriate primary and foreign keys, and data types.
4  Submit the SQL script as part of your answer.
5
6  */
7  SELECT table_name, column_name, data_type
8  FROM information_schema.columns
9  WHERE table_schema = 'cd'
10 ORDER BY table_name, ordinal_position;
11
12
13  /*

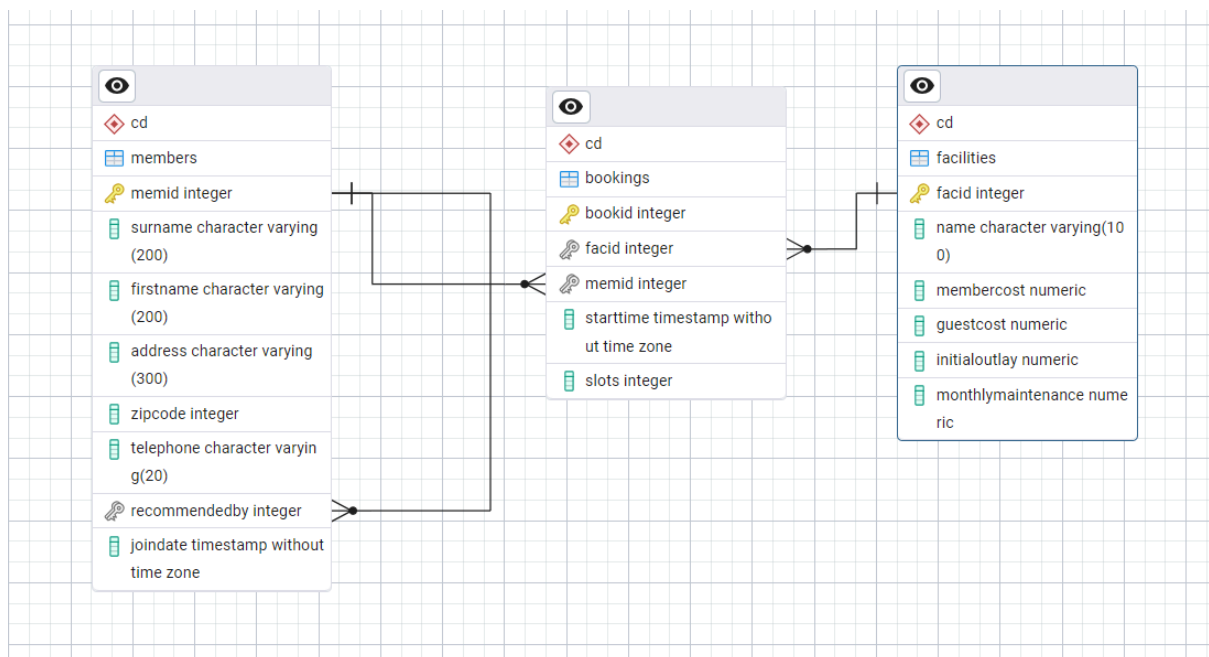
```

Data Output Messages Notifications

Showing rows: 1 to 19 Page No: 1 of 1

	table_name	column_name	data_type
1	bookings	bookid	integer
2	bookings	facid	integer
3	bookings	memid	integer
4	bookings	starttime	timestamp without time zone
5	bookings	slots	integer
6	facilities	facid	integer
7	facilities	name	character varying
8	facilities	membercost	numeric
9	facilities	guestcost	numeric

Total rows: 19 Query complete 00:00:00.145 CRLF Ln 10, Col 39



Question 2 (10 marks): Write an SQL query to count the total number of bookings for each facility, ordered by the highest number of bookings first.

Expected Output Columns:

facid (Facility ID)

total_bookings (Total number of times the facility has been booked)

The screenshot shows a SQL query editor with a query history tab. The query is as follows:

```
16  facid (Facility ID)
17  total_bookings (Total number of times the facility has been booked)
18  */
19  select cf.facid, count(cf.facid) as total_bookings
20  from cd.bookings cb
21  join cd.facilities cf
22  on cb.facid = cf.facid
23  group by cf.facid
24  order by total_bookings desc;
```

Below the query editor, the 'Data Output' tab is active, showing the results of the query. The results are displayed in a table with 9 rows and 2 columns: 'facid' (integer, primary key) and 'total_bookings' (bigint). The data is ordered by 'total_bookings' in descending order.

	facid [PK] integer	total_bookings bigint
1	8	837
2	4	629
3	7	444
4	6	440
5	0	408
6	3	403
7	1	389
8	2	383
9	5	111

At the bottom of the results, it says 'Total rows: 9' and 'Query complete 00:00:00.136'.

Question 3 (20 marks): Write an SQL query to display all bookings with the member ID and facility name, ordered by the booking start time.

Expected Output Columns:

bookid (Booking ID)

memid (Member ID)

facility_name (Facility Name)

starttime (Booking Start Time)

slots (Number of Slots)

Query Query History

```
36  starttime (Booking Start Time)
37  slots (Number of Slots)
38
39  */
40
41  select bookid, memid, name, starttime, slots
42  from cd.bookings cb
43  join cd.facilities cf
44  on cb.facid = cf.facid
45  order by starttime;
```

Data Output Messages Notifications

Showing rows: 1 to 1000 Page 1

	bookid integer	memid integer	name character varying (100)	starttime timestamp without time zone	slots integer
1	1	1	Massage Room 1	2012-07-03 08:00:00	2
2	4	1	Pool Table	2012-07-03 10:00:00	1
3	0	1	Table Tennis	2012-07-03 11:00:00	2
4	5	1	Pool Table	2012-07-03 15:00:00	1
5	2	0	Squash Court	2012-07-03 18:00:00	2
6	3	1	Snooker Table	2012-07-03 19:00:00	2
7	6	2	Tennis Court 1	2012-07-04 09:00:00	3
8	15	2	Pool Table	2012-07-04 12:00:00	1
9	11	0	Squash Court	2012-07-04 12:30:00	2

Total rows: 4044 Query complete 00:00:00.135

✓ Successfully run. Total query run

Question 4 (20 marks): Write an SQL query to display each member and their total number of bookings, ensuring that members who have never made a booking are also included.

Expected Output Columns:

memid (Member ID)

member_name (Member Name)

total_bookings (Total number of bookings)

Notes: Using a Common Table Expression (CTE) will get 100% (normal 90%)

Query

Query History

```

57 Notes: Using a Common Table Expression (CTE) will get 100% (normal 90%)
58 */
59
60 with MemberBookingCount as (
61 select cm.memid, concat(cm.firstname, ' ', cm.surname) member_name, count(distinct cb.bookid) total_bookings
62 from cd.members cm
63 left join cd.bookings cb on cm.memid = cb.memid
64 group by cm.memid, concat(cm.firstname, ' ', cm.surname)
65 )
66 select memid, member_name, total_bookings
67 from MemberBookingCount
68 order by total_bookings desc;
69

```

Data Output

Messages

Notifications

+

📄

▼

📋

▼

🗑️

🔄

📥

📶

SQL

Showing rows: 1 to 31

✎

 Page No: 1

	memid [PK] Integer <div>✎</div>	member_name text <div>🔒</div>	total_bookings bigint <div>🔒</div>
1	0	GUEST GUEST	883
2	3	Tim Rownam	408
3	1	Darren Smith	261
4	2	Tracy Smith	210
5	8	Tim Boothe	188
6	6	Burton Tracy	176
7	16	Timothy Baker	166
8	5	Gerald Butters	164
9	4	Janice Joplette	159

Total rows: 31

Query complete 00:00:00.133

Question 5 (20 marks): Write an SQL query to display all bookings made by guests (non-members), along with the facility name, ordered by the number of slots used in descending order.

Expected Output Columns:

bookid (Booking ID)

facility name (Facility Name)

starttime (Booking Start Time)

slots (Number of Slots)

Query

Query History

Expected output columns:

77

78

79

80

81

82

83

84

85

86

87

88

89

```

bookid (Booking ID)
facility_name (Facility Name)
starttime (Booking Start Time)
slots (Number of Slots)
*/
select bookid, name facility_name, starttime, slots
from cd.bookings cb
join cd.facilities cf
on cb.facid = cf.facid
where cb.memid = 0
order by slots desc;

```

Data Output

Messages

Notifications

+

📄

▼

📋

🗑️

📁

📥

📈

SQL

Showing rows: 1 to 883 ✎ Pe

	bookid integer	facility_name character varying (100)	starttime timestamp without time zone	slots integer
1	2888	Squash Court	2012-09-13 10:30:00	14
2	2978	Tennis Court 1	2012-09-15 08:00:00	12
3	3041	Tennis Court 1	2012-09-16 08:00:00	9
4	1757	Tennis Court 2	2012-08-25 13:30:00	9
5	3768	Tennis Court 2	2012-09-27 08:00:00	9
6	3563	Tennis Court 1	2012-09-24 08:00:00	9
7	3836	Tennis Court 2	2012-09-28 09:30:00	9
8	2557	Massage Room 1	2012-09-08 09:30:00	8
9	3459	Massage Room 1	2012-09-22 15:00:00	8

✓ Successfully run. Total que

Total rows: 883

Query complete 00:00:00.157

Question 6 (20 marks): Write an SQL query to rank members based on their largest single booking (most slots in one booking), displaying their rank alongside their largest booking. If multiple members have the same largest booking, they should have the same rank (use Window fuction)

Expected Output Columns:

memid (Member ID)

member_name (Member Name)

max_slots (Largest Single Booking by Slots)

rank (Rank Based on Max Slots)

QueryQuery History

```
98  member_name (Member Name)
99  max_slots (Largest Single Booking by Slots)
100 rank (Rank Based on Max Slots)
101 */
102 select cm.memid, concat (cm.firstname, ' ', cm.surname) member_name, max(cb.slots) max_slots,
103        dense_rank() over (order by max(cb.slots) desc) rank
104 from cd.members cm
105 join cd.bookings cb on cm.memid = cb.memid
106 group by cm.memid, member_name
107 order by rank;
108
109
110
```

Data OutputMessagesNotifications

SQL

Showing rows: 1 to 30

	memid [PK] integer	member_name text	max_slots integer	rank bigint
1	0	GUEST GUEST	14	1
2	1	Darren Smith	9	2
3	7	Nancy Dare	9	2
4	8	Tim Boothe	9	2
5	10	Charles Owen	6	3
6	24	Ramnaresh Sarwin	6	3
7	29	Henry Worthington-Smyth	6	3
8	16	Timothy Baker	6	3
9	11	David Jones	6	3

✓ Successfully run. Total qu

Total rows: 30Query complete 00:00:00.154