

GYM MEMBERSHIP

ANALYZING BEHAVIOR, TREND & INSIGHT WITH SQL

BY SAQUINANUR





PROJECT OVERVIEW

Objective : To analyze customer membership, their behavior, trend and gym service performance (Personal Trainee, Group Lesson)

This Exploratory Data Analysis (EDA) project demonstrates my ability to work with SQL queries. In this project I fully use PostgreSQL to process data and analyze gym membership data to answer Data Exploration - Key Questions. I will analyze to find out the value and things that can be known about the Trend & Behavior of gym members for the development of the gym's business in managing their membership.





DATA EXPLORATION - KEY QUESTIONS

1. Count the age, gender and abonoment type by age of gym member
2. Find the busiest to quietest days of the gym by gym membership
3. List the Favorite group lesson
4. Find the average number of visits a gym member within in a week
5. Find the average check-in time by gym members (devide into 3 Shift)
6. Find the average check-out time by gym members (devide into 3 Shift)
7. Find the average membership time spent at the gym
8. List membership gym's favorite drink flavour
9. Find the gym member who use or not use a personal tainer by gender of gym member
10. List the top 3 of Favorite Personal Traineer
11. Get the total number of gym member who use sauna (from 1000 member)
12. List the top 5 most active Premium membership
13. List the top 5 most active Standard membership



DATASET FROM KAGGLE

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Formula Bar
1	gender	birthday	Age	abonoment	visit_pe	days_per_week	attend_group_lesson	fav_group_lesson	avg_time_check_in	avg_time_check_out	avg_time_in_gym	drink_abo	fav_drink	personal_traini	name_persor	uses_sauna	
2	1 Female	18/04/97	27	Premium	4	Mon, Sat, Tue, Wed	TRUE	Kickboxen, BodyPump, Zumba	19.31.00	21.27.00	116	FALSE			FALSE	TRUE	
3	2 Female	18/09/77	47	Standard	3	Mon, Sat, Wed	FALSE		19.31.00	20.19.00	48	FALSE		TRUE	Chantal	FALSE	
4	3 Male	30/03/83	41	Premium	1	Sat	TRUE	XCore	08.29.00	10.32.00	123	TRUE	berry_boost, lemon	TRUE	Mike	FALSE	
5	4 Male	12/04/80	44	Premium	3	Sat, Tue, Wed	FALSE		09.54.00	11.33.00	99	TRUE	passion_fruit	TRUE	Mike	TRUE	
6	5 Male	10/09/80	44	Standard	2	Thu, Wed	TRUE	Running, Yoga, Zumba	08.29.00	09.19.00	50	FALSE		TRUE	Mike	FALSE	
7	6 Female	29/06/09	15	Standard	1	Mon	FALSE		17.19.00	20.19.00	180	FALSE		FALSE		TRUE	
8	7 Male	07/08/94	30	Premium	3	Sat, Thu, Wed	TRUE	LesMiles, BodyPump	19.46.00	20.48.00	62	FALSE		FALSE		FALSE	
9	8 Male	13/11/03	20	Standard	2	Mon, Wed	TRUE	Yoga, XCore	17.45.00	19.20.00	95	TRUE	coconut_pineapple	FALSE		TRUE	
10	9 Male	28/07/78	46	Premium	3	Sat, Sun, Thu	TRUE	BodyPump	09.45.00	11.17.00	92	TRUE	orange, lemon	TRUE	Mike	FALSE	
11	10 Female	06/05/00	24	Premium	1	Mon	FALSE		13.05.00	15.29.00	144	FALSE		TRUE	Jeffrey	TRUE	
12	11 Male	11/07/83	41	Standard	1	Fri	FALSE		13.50.00	14.26.00	36	FALSE		TRUE	Hanna	FALSE	
13	12 Male	19/09/97	27	Premium	3	Fri, Thu, Wed	TRUE	Pilates, Zumba, XCore	10.12.00	10.45.00	33	TRUE	passion_fruit	TRUE	Mike	TRUE	
14	13 Female	22/04/94	30	Standard	2	Sun, Wed	TRUE	XCore, HIT, Running	17.04.00	19.42.00	158	TRUE	passion_fruit	FALSE		TRUE	
15	14 Female	21/03/89	35	Premium	3	Mon, Tue, Wed	FALSE		19.50.00	20.51.00	61	TRUE	black_currant	FALSE		FALSE	
16	15 Female	01/10/89	35	Premium	1	Sat	FALSE		20.12.00	22.37.00	145	TRUE	orange, black_currant	TRUE	Mike	FALSE	
17	16 Female	20/12/87	36	Standard	4	Mon, Thu, Tue, Wed	TRUE	Spinning, Zumba, XCore	17.28.00	18.29.00	61	FALSE		FALSE		FALSE	
18	17 Male	17/12/86	37	Premium	3	Fri, Sat, Sun	FALSE		09.25.00	12.06.00	161	FALSE		TRUE	Jeffrey	TRUE	
19	18 Female	30/04/11	13	Standard	3	Sat, Thu, Tue	FALSE		16.54.00	18.53.00	119	FALSE		TRUE	Mike	TRUE	
20	19 Female	29/05/86	38	Standard	1	Tue	TRUE	Pilates	10.01.00	12.48.00	167	TRUE	orange	TRUE	Hanna	TRUE	
21	20 Male	13/09/91	33	Premium	2	Sat, Wed	TRUE	BodyPump, Zumba, Pilates	13.55.00	16.24.00	149	FALSE		FALSE		FALSE	
22	21 Female	31/12/97	26	Premium	2	Fri, Mon	FALSE		08.19.00	10.45.00	146	FALSE		TRUE	Hanna	FALSE	
23	22 Male	29/10/97	26	Premium	3	Fri, Mon, Sat	TRUE	Yoga, BodyBalance, LesMiles	15.06.00	17.40.00	154	TRUE	lemon	FALSE		TRUE	
24	23 Female	22/10/10	13	Standard	2	Mon, Tue	TRUE	HIT	20.56.00	23.36.00	160	TRUE	passion_fruit, orange	TRUE	Mike	FALSE	
25	24 Male	24/01/10	14	Premium	3	Sat, Tue, Wed	FALSE		14.34.00	16.33.00	119	TRUE	lemon, coconut_pineapple	TRUE	Jeffrey	TRUE	
26	25 Female	04/10/08	16	Premium	1	Fri	FALSE		08.42.00	10.34.00	112	FALSE		FALSE		FALSE	
27	26 Male	17/06/89	35	Standard	1	Fri	TRUE	BodyBalance, Zumba, Yoga	13.12.00	14.54.00	102	TRUE	coconut_pineapple	TRUE	Chantal	FALSE	
28	27 Male	31/03/05	19	Premium	3	Fri, Sun, Wed	TRUE	Zumba	15.01.00	16.59.00	118	TRUE	berry_boost, passion_fruit	FALSE		FALSE	
29	28 Male	10/04/92	32	Standard	5	Fri, Sat, Sun, Tue, Wed	TRUE	BodyBalance, Pilates, Running	19.41.00	21.35.00	114	TRUE	berry_boost	TRUE	Chantal	FALSE	
30	29 Female	21/01/97	27	Premium	1	Wed	FALSE		11.25.00	12.56.00	91	TRUE	orange	FALSE		TRUE	
31	30 Female	04/11/02	21	Premium	3	Fri, Mon, Thu	TRUE	Spinning, BodyPump, Zumba	20.15.00	21.36.00	81	TRUE	orange, coconut_pineapple	FALSE		TRUE	
32	31 Male	04/03/88	36	Premium	3	Sun, Thu, Wed	FALSE		10.01.00	12.11.00	130	FALSE		TRUE	Jeffrey	TRUE	
33	32 Male	02/03/00	24	Standard	5	Fri, Mon, Sat, Sun, Wed	FALSE		20.53.00	23.33.00	160	TRUE	black_currant, lemon	FALSE		FALSE	
34	33 Female	26/02/82	42	Premium	3	Sat, Sun, Tue	TRUE	LesMiles, HIT	10.23.00	12.01.00	98	FALSE		TRUE	Chantal	TRUE	
35	34 Female	07/12/76	47	Premium	2	Mon, Sat	TRUE	XCore, Running, BodyBalance	14.42.00	16.08.00	86	FALSE		TRUE	Hanna	TRUE	
36	35 Male	06/03/04	20	Premium	5	Mon, Sun, Thu, Tue, Wed	FALSE		18.15.00	20.54.00	159	FALSE		TRUE	Mike	TRUE	
37	36 Male	09/03/90	34	Standard	3	Sat, Sun, Tue	TRUE	XCore	13.39.00	16.20.00	161	TRUE	orange	FALSE		TRUE	
38	37 Female	18/03/81	43	Standard	5	Fri, Sat, Sun, Tue, Wed	FALSE		09.02.00	10.21.00	79	FALSE		FALSE		FALSE	
39	38 Female	01/11/83	40	Premium	2	Sat, Thu	FALSE		08.39.00	10.37.00	118	FALSE		FALSE		FALSE	

data source : <https://www.kaggle.com/datasets/ka66ledata/gym-membership-dataset>

IMPORT DATA FROM CSV

```
2
3 ✓ CREATE TABLE "Data".gm (
4   id INTEGER PRIMARY KEY,
5   gender VARCHAR(6),
6   birthday DATE,
7   Age VARCHAR(2),
8   abonoment_type VARCHAR(8),
9   visit_per_week INTEGER,
10  days_per_week VARCHAR (50),
11  attend_group_lesson BOOL,
12  fav_group_lesson VARCHAR(50),
13  avg_time_check_in TIME,
14  avg_time_check_out TIME,
15  avg_time_in_gym INTEGER,
16  drink_abo BOOL,
17  fav_drink VARCHAR (50),
18  personal_training BOOL,
19  name_personal_trainer  VARCHAR (10),
20  uses_sauna BOOL
21 );
22
23 SELECT * FROM "Data".gm ;
24
25 copy "Data".gm FROM '/Users/saquinanoor/Downloads/gym_membership.csv' DELIMITER ',' CSV HEADER;
26
```

The screenshot shows a database management interface with a SQL editor at the top containing the code for creating a table and importing data from a CSV file. Below the editor is a data grid displaying the imported records.

Data Output Messages Notifications

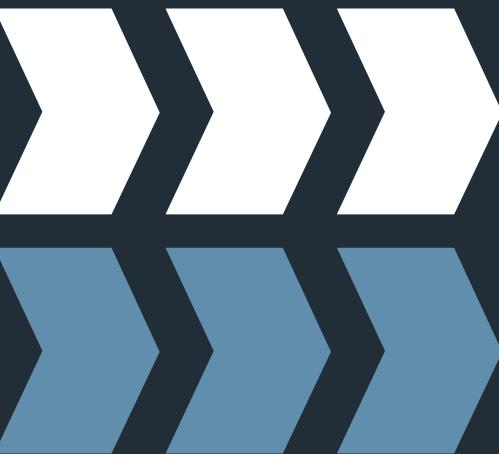
Showing rows: 1 to 1000

	id [PK] integer	gender character varying (6)	birthday date	age character varying (2)	abonoment_type character varying (8)	visit_per_week integer	days_per_week character varying (50)	attend_group_lesson boolean	fav_group_lo character va
1	1	Female	1997-04-18	27	Premium	4	Mon, Sat, Tue, Wed	true	Kickboxen,
2	2	Female	1977-09-18	47	Standard	3	Mon, Sat, Wed	false	[null]
3	3	Male	1983-03-30	41	Premium	1	Sat	true	XCore
4	4	Male	1980-04-12	44	Premium	3	Sat, Tue, Wed	false	[null]
5	5	Male	1980-09-10	44	Standard	2	Thu, Wed	true	Running, Yo
6	6	Female	2009-06-29	15	Standard	1	Mon	false	[null]

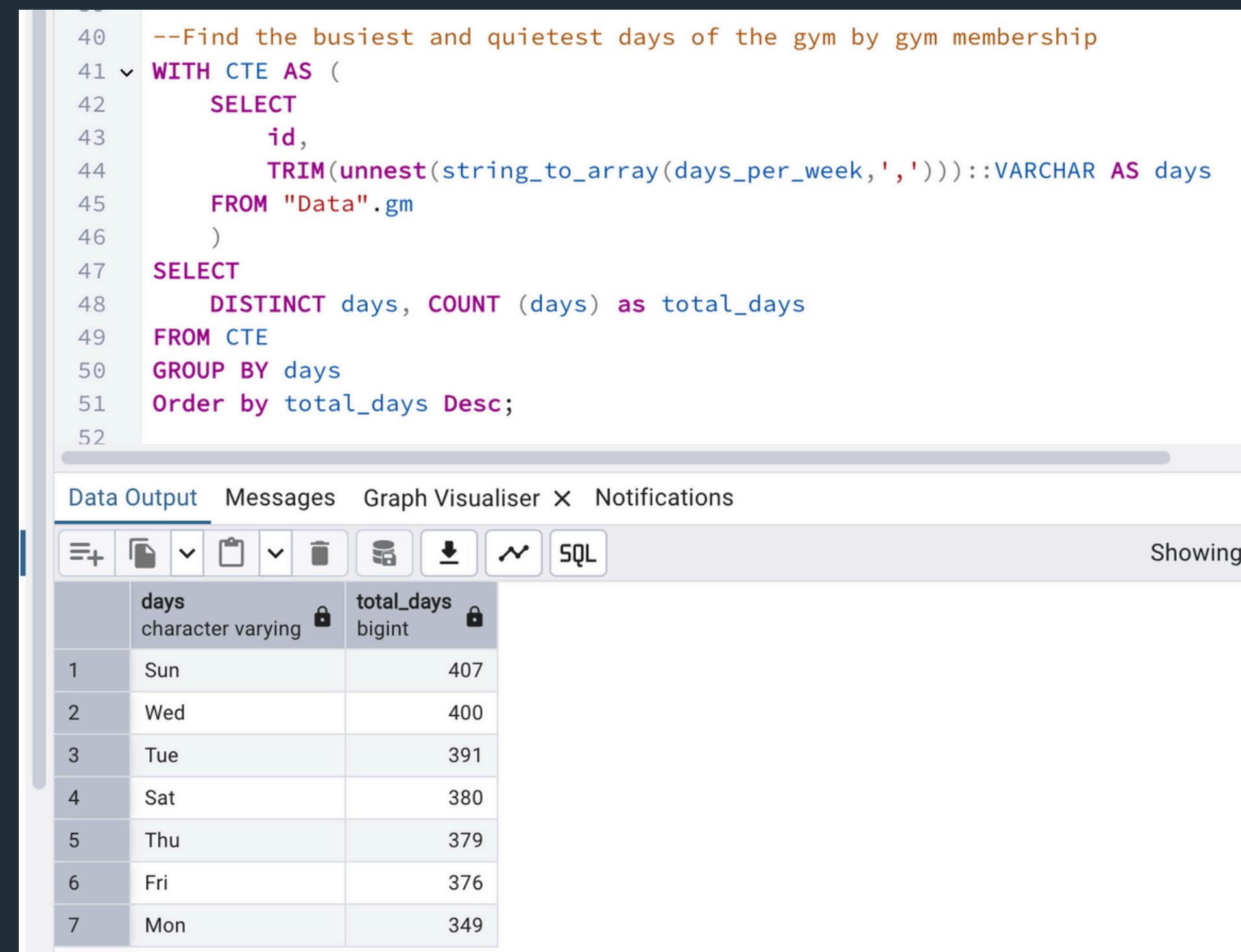
1. Count the age, gender and abonoment type by age of gym member

```
-- Count the age, gender and abonoment type by age of gym member  
SELECT DISTINCT Age, gender, abonoment_type, COUNT (*) as Total_by_ages FROM "Data".gm  
GROUP BY Age, gender, abonoment_type  
ORDER BY total_by_ages DESC;
```

	age character varying (2)	gender character varying (6)	abonoment_type character varying (8)	total_by_ages bigint
1	39	Female	Standard	15
2	26	Female	Standard	14
3	36	Male	Premium	14
4	27	Male	Premium	13
5	24	Male	Standard	12
6	49	Male	Premium	12
7	14	Male	Standard	11
8	16	Female	Premium	11
9	29	Female	Standard	11
10	41	Female	Standard	11
11	43	Female	Standard	11



2. Find the busiest to quietest days of the gym by gym membership



```
39
40 --Find the busiest and quietest days of the gym by gym membership
41 WITH CTE AS (
42     SELECT
43         id,
44         TRIM(unnest(string_to_array(days_per_week, ',')))::VARCHAR AS days
45     FROM "Data".gm
46 )
47 SELECT
48     DISTINCT days, COUNT (days) as total_days
49 FROM CTE
50 GROUP BY days
51 Order by total_days Desc;
52
```

Data Output Messages Graph Visualiser X Notifications

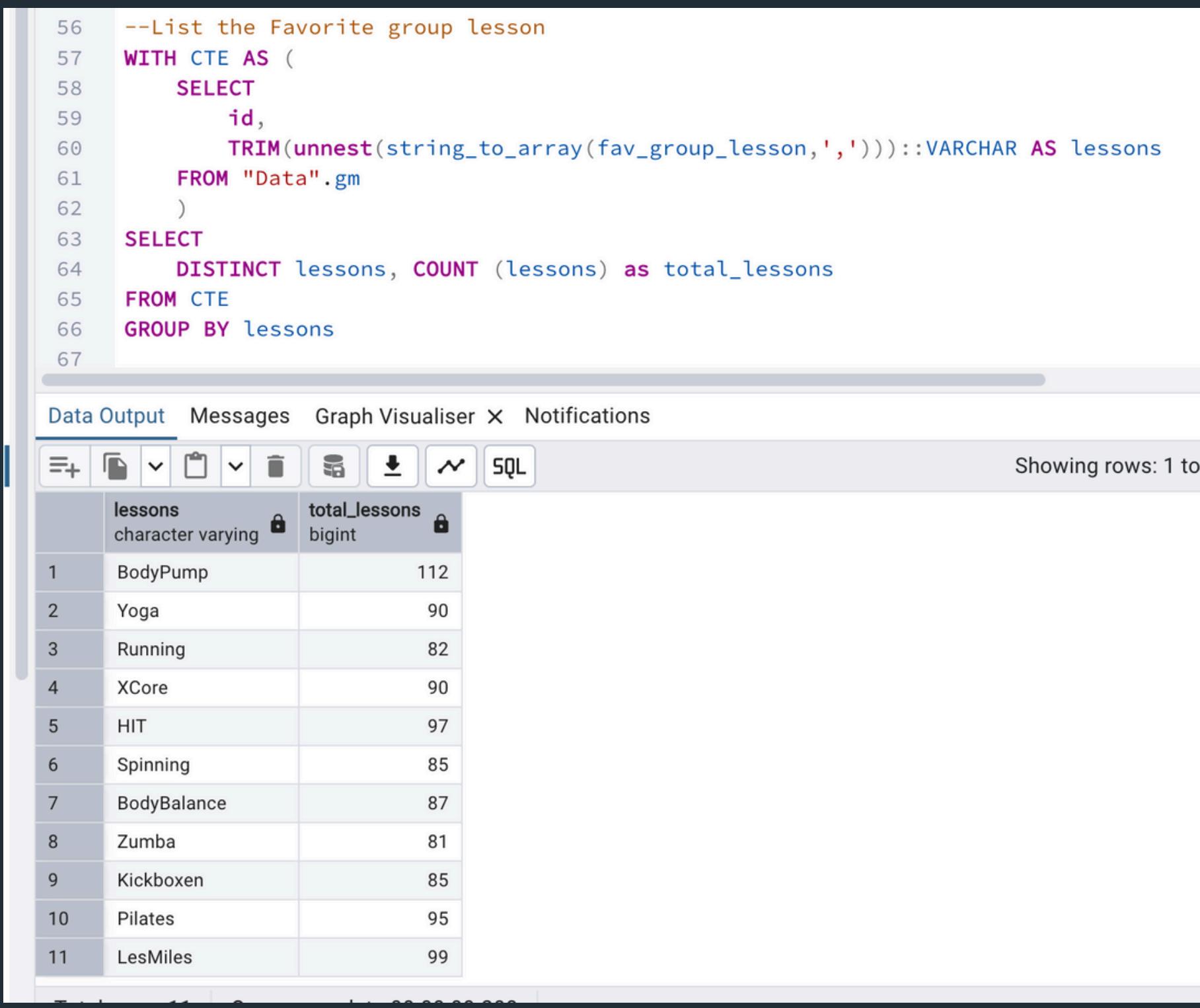
Showing 1 result

	days	total_days
1	Sun	407
2	Wed	400
3	Tue	391
4	Sat	380
5	Thu	379
6	Fri	376
7	Mon	349





3. List the Favorite group lesson



```
56 --List the Favorite group lesson
57 WITH CTE AS (
58     SELECT
59         id,
60         TRIM(unnest(string_to_array(fav_group_lesson, ',')))::VARCHAR AS lessons
61     FROM "Data".gm
62 )
63 SELECT
64     DISTINCT lessons, COUNT (lessons) as total_lessons
65 FROM CTE
66 GROUP BY lessons
67
```

The screenshot shows a PostgreSQL SQL editor interface. The top part displays the SQL code for listing favorite group lessons using a Common Table Expression (CTE). The bottom part shows the results of the query execution.

Data Output Messages Graph Visualiser X Notifications

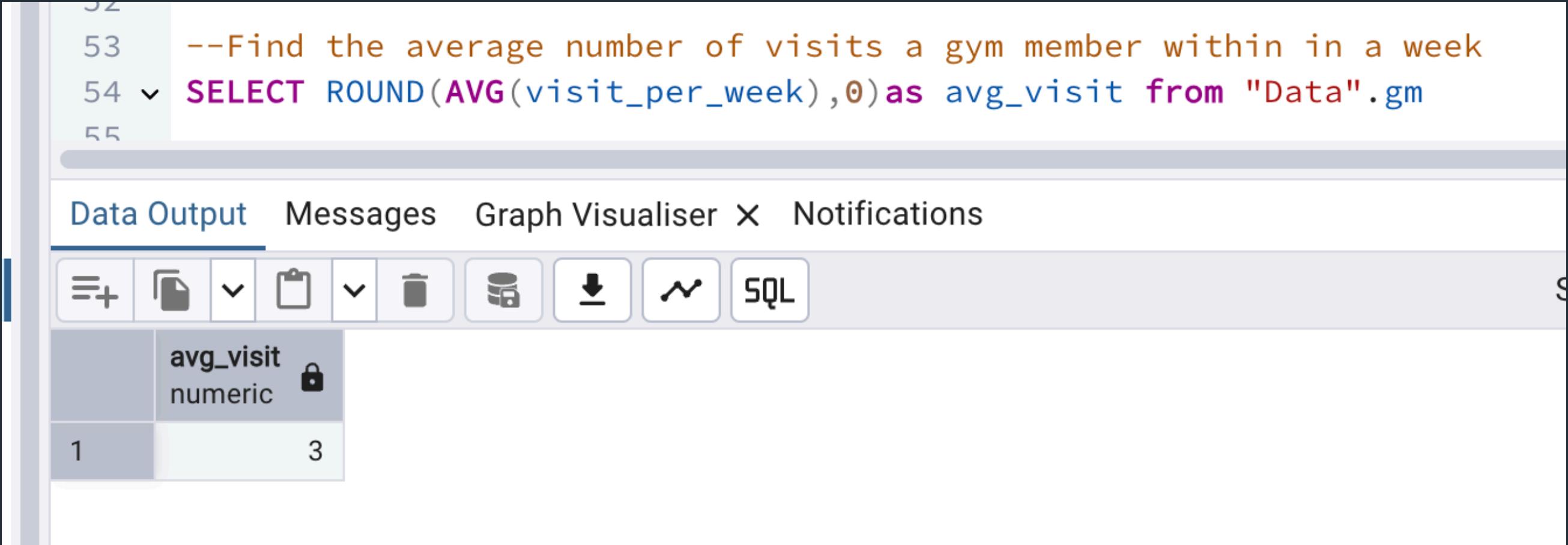
Showing rows: 1 to 11 of 11

	lessons	total_lessons
	character varying	bigint
1	BodyPump	112
2	Yoga	90
3	Running	82
4	XCore	90
5	HIT	97
6	Spinning	85
7	BodyBalance	87
8	Zumba	81
9	Kickboxen	85
10	Pilates	95
11	LesMiles	99





4. Find the average number of visits a gym member within in a week



The screenshot shows a data visualization tool interface. At the top, there is a code editor window containing the following SQL query:

```
52  
53 --Find the average number of visits a gym member within in a week  
54 SELECT ROUND(AVG(visit_per_week),0)as avg_visit from "Data".gm  
55
```

Below the code editor is a toolbar with several icons: Data Output (selected), Messages, Graph Visualiser, Notifications, and a search bar. The Data Output tab is active.

The main area displays a table with one row of data:

	avg_visit
1	3

The column is labeled "avg_visit" and is described as "numeric". There is a lock icon next to the column header.





5. Find the average check-in time by gym members (devide into 3 Shift)

```
80
81 -- Find the highest average check-in time by gym members (devide into 3 Shift)
82 ▼ SELECT
83 COUNT(CASE
84 WHEN avg_time_check_in >= '08:00:00' AND avg_time_check_in <= '12:00:00'
85 THEN 'Shift1'
86 END) As shift_8_12,
87 COUNT(CASE
88 WHEN avg_time_check_in >= '12:00:00' AND avg_time_check_in <= '16:00:00'
89 THEN 'Shift2'
90 END) As shift_12_16,
91 COUNT(CASE
92 WHEN avg_time_check_in >= '16:00:00' AND avg_time_check_in <= '21:00:00'
93 THEN 'Shift3'
94 END) As shift_16_21
95 FROM "Data".gm;
```

Data Output Messages Graph Visualiser X Notifications

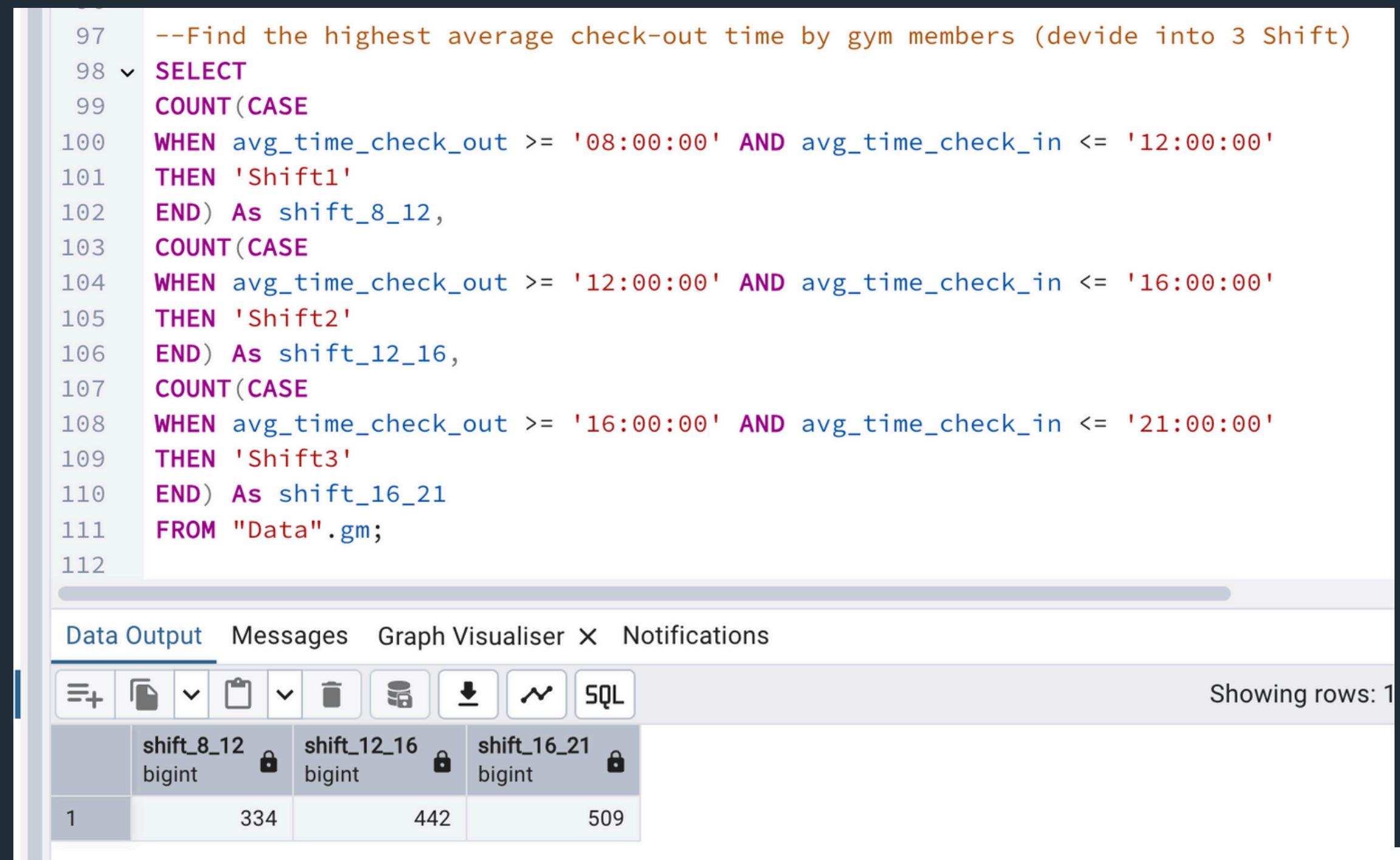
Showing rows: 1

	shift_8_12 bigint	shift_12_16 bigint	shift_16_21 bigint
1	334	286	381





6. Find the average check-out time by gym members (devide into 3 Shift)

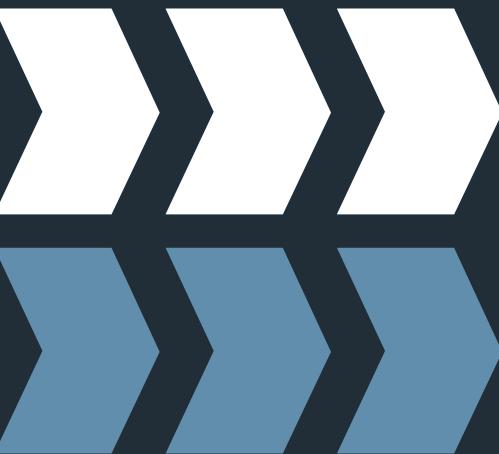


```
97 --Find the highest average check-out time by gym members (devide into 3 Shift)
98 SELECT
99 COUNT(CASE
100 WHEN avg_time_check_out >= '08:00:00' AND avg_time_check_in <= '12:00:00'
101 THEN 'Shift1'
102 END) As shift_8_12,
103 COUNT(CASE
104 WHEN avg_time_check_out >= '12:00:00' AND avg_time_check_in <= '16:00:00'
105 THEN 'Shift2'
106 END) As shift_12_16,
107 COUNT(CASE
108 WHEN avg_time_check_out >= '16:00:00' AND avg_time_check_in <= '21:00:00'
109 THEN 'Shift3'
110 END) As shift_16_21
111 FROM "Data".gm;
112
```

Data Output Messages Graph Visualiser X Notifications

Showing rows: 1

	shift_8_12 bigint	shift_12_16 bigint	shift_16_21 bigint
1	334	442	509



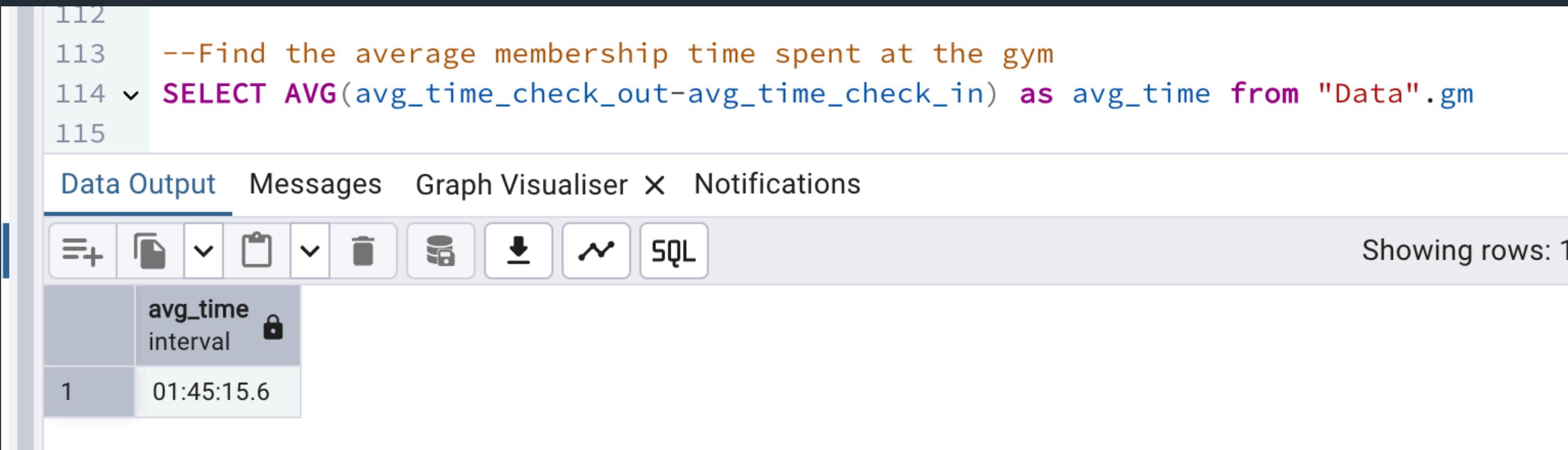
7. Find the average membership time spent at the gym

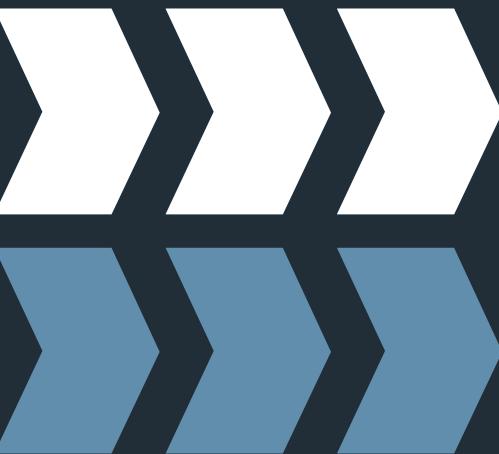
```
112  
113 --Find the average membership time spent at the gym  
114 ✓ SELECT AVG(avg_time_check_out-avg_time_check_in) as avg_time from "Data".gm  
115
```

Data Output Messages Graph Visualiser Notifications

Showing rows: 1

	avg_time	interval
1	01:45:15.6	🔒





8. List membership gym's favorite drink flavour

```
123 --List membership gym's favorite drink flavour
124 WITH ud AS (
125     SELECT
126         id,
127         TRIM(unnest(string_to_array(fav_drink,',',)::VARCHAR))::VARCHAR AS flavour_drink
128     FROM "Data".gm
129 )
130 SELECT
131     DISTINCT flavour_drink, COUNT (flavour_drink) as total_drink
132 FROM ud
133 GROUP BY flavour_drink
134 Order by total_drink Desc;
```

Data Output Messages Graph Visualiser X Notifications

Showing rows: 1

	flavour_drink character varying	total_drink bigint
1	coconut_pineapple	134
2	orange	126
3	passion_fruit	119
4	lemon	115
5	berry_boost	114
6	black_current	111



9. Find the gym member who use or not use a personal tariner by gender of gym member

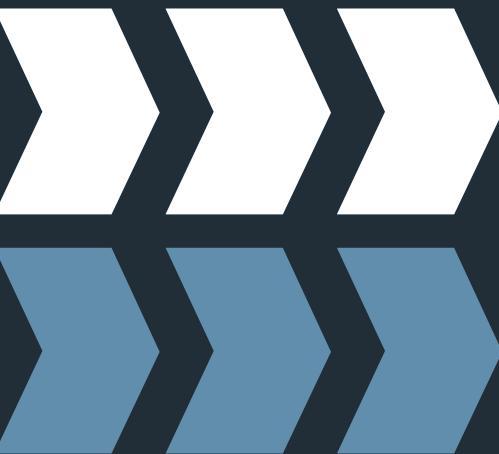
```
16  
17 --Find the gym member who use or not use a personal tariner by gender of gym member  
18 SELECT gender, personal_training,COUNT (*) FROM "Data".gm Group BY gender,personal_training  
19
```

Data Output Messages Graph Visualiser Notifications

Showing rows: 1 to 4 Page No:

	gender character varying (6) 	personal_training boolean 	count bigint 
1	Female	true	248
2	Male	false	227
3	Male	true	270
4	Female	false	255





10. List the top 3 of Favorite Personal Trainer

```
34 --List the top 3 of Favorite Personal Trainer
35 ▾ SELECT name_personal_trainer, COUNT (*) FROM "Data".gm
36 WHERE name_personal_trainer IS NOT NULL
37 GROUP BY name_personal_trainer
38 ORDER BY count DESC LIMIT 3;
39
```

Data Output Messages Graph Visualiser × Notifications



	name_personal_trainer character varying (10)	count bigint
1	Chantal	153
2	Mike	140
3	Hanna	114



11. Get the total number of gym member who use sauna (from 1000 member)

```
103
104 --Get the total number of gym member who use sauna (from 1000 member)
105 SELECT uses_sauna, COUNT (*) FROM "Data".gm GROUP BY uses_sauna;
106
```

Data Output Messages Graph Visualiser Notifications

SQL

	uses_sauna	count
	boolean	bigint
1	false	507
2	true	493



12. List the top 5 most active Premium membership

```
123  
124 --List the top 5 most active Premium membership by gender and age  
125 ▾ SELECT id,gender,age, visit_per_week FROM "Data".gm  
126 Where abonoment_type = 'Premium'  
127 AND visit_per_week >=3 --ikutin avg visit  
128 AND attend_group_lesson = 'TRUE'  
129 AND avg_time_in_gym >=105 --ikutin avg waktuk d gym  
130 AND drink_abo = 'TRUE'  
131 AND personal_training = 'TRUE'  
132 GROUP BY id, gender, age, visit_per_week  
133 ORDER BY visit_per_week DESC LIMIT 5;  
134
```

Data Output Messages Graph Visualiser Notifications

SQL

	id [PK] integer	gender character varying (6)	age character varying (2)	visit_per_week integer
1	710	Female	19	5
2	830	Male	42	5
3	372	Female	46	5
4	644	Female	14	5
5	983	Male	36	4

13. List the top 5 most active Standard membership

```
134  
135 --List the top 5 most active Standard membership  
136 ▼ SELECT id,gender,age, visit_per_week FROM "Data".gm  
137 WHERE abonoment_type = 'Standard'  
138 AND visit_per_week >=3 --ikutin avg visit  
139 AND attend_group_lesson = 'TRUE'  
140 AND avg_time_in_gym >=105 --ikutin avg waktuk d gym  
141 AND drink_abo = 'TRUE'  
142 AND personal_training = 'TRUE'  
143 GROUP BY id, gender, age, visit_per_week  
144 ORDER BY visit_per_week DESC LIMIT 5;
```

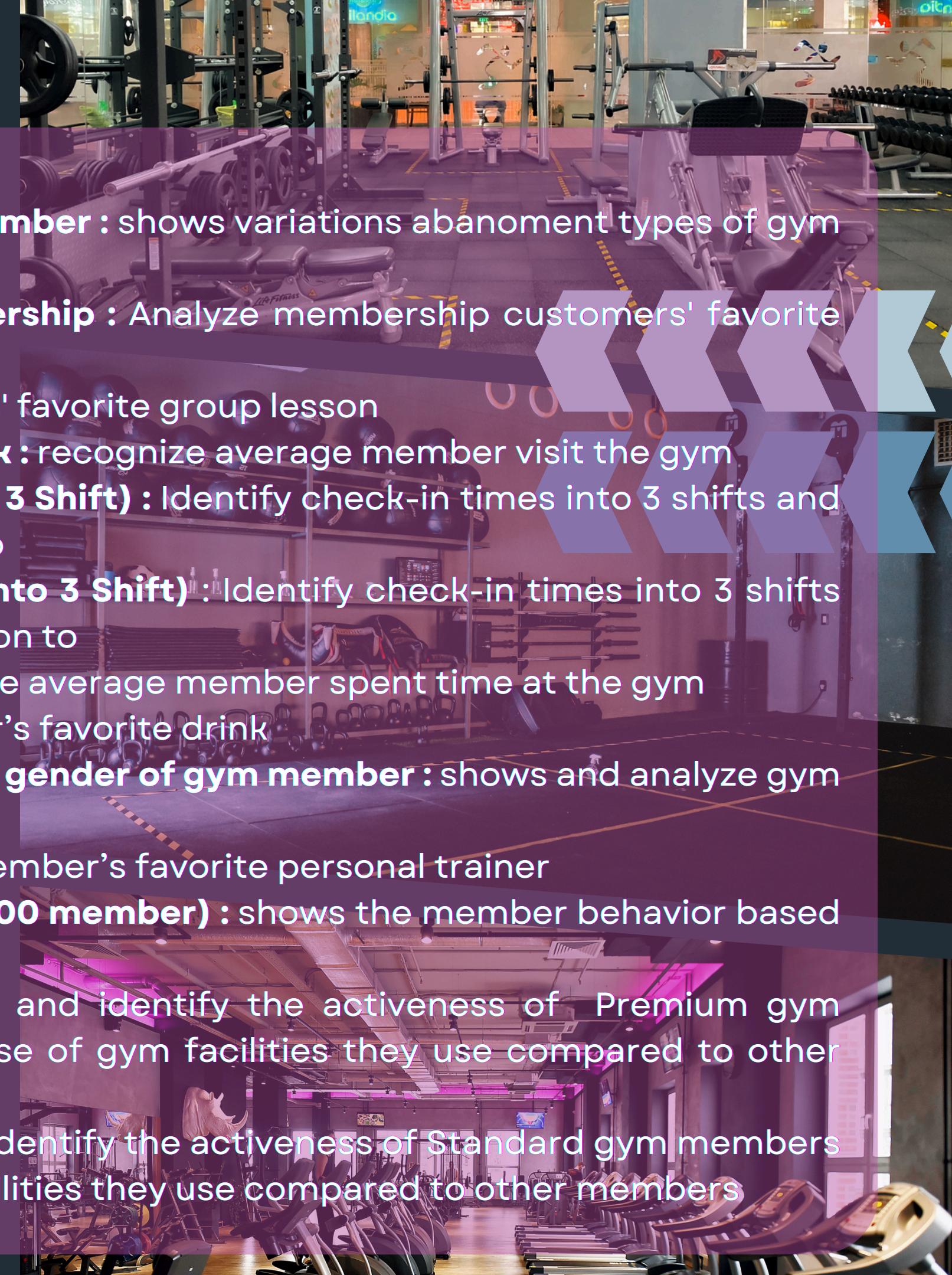
Data Output Messages Graph Visualiser X Notifications

SQL

	id [PK] integer	gender character varying (6)	age character varying (2)	visit_per_week integer
1	320	Female	12	5
2	187	Male	12	5
3	28	Male	32	5
4	232	Male	39	5
5	738	Female	48	5

INSIGHTS

1. **Count the age, gender and abonoment type by age of gym member :** shows variations abanoment types of gym members based on age and gender
2. **Find the busiest to quietest days of the gym by gym membership :** Analyze membership customers' favorite days
3. **List the Favorite group lesson :** Analyze membership customers' favorite group lesson
4. **Find the average number of visits a gym member within a week :** recognize average member visit the gym
5. **Find the average check-in time by gym members (devide into 3 Shift) :** Identify check-in times into 3 shifts and see which times are the busiest and need to be paid attention to
6. **Find the average check-out time by gym members (devide into 3 Shift) :** Identify check-in times into 3 shifts and see which times are the busiest and need to be paid attention to
7. **Find the average membership spent time at the gym :** recognize average member spent time at the gym
8. **List membership gym's favorite drink flavour :** analyze member's favorite drink
9. **Find the gym member who use or not use a personal tariner by gender of gym member :** shows and analyze gym member based on use or not use personal trainer
10. **List the top 3 of Favorite Personal Traineer :** analyze top 3 of member's favorite personal trainer
11. **Get the total number of gym member who use sauna (from 1000 member) :** shows the member behavior based on use or not use sauna
12. **List the top 5 most active Premium membership :** analyze and identify the activeness of Premium gym members in terms of the number of visits, and the average use of gym facilities they use compared to other members
13. **List the top 5 most active Standard membership :** analyze and identify the activeness of Standard gym members in terms of the number of visits, and the average use of gym facilities they use compared to other members





THANK YOU !

for attention about this presenting on this Gym Membership Trends & Behavior Data Analysis project. With the existing data, I tried to uncover things that could provide insight and value for the development of the gym business. Your interest and engagement is greatly appreciated as we continue to uncover valuable insights from the data.

by : saquinanur

