Group no. : 07
Lab group: 05

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1. **Query:** Suggest plans based on the user's age, BMI, and Fitness Level
   SQL Script:
   ```
   SELECT
   plan_id,trainer_id,plan_name,duration_weeks,rating,price,fitness_level,age_min,age_max,bmi_min,bmi_max
   FROM "Plans"
   WHERE age_min <= 25 AND age_max >= 25
     AND bmi_min <= 22 AND bmi_max >= 22
     AND fitness_level <= 70
   ORDER BY rating DESC;
   ```

   Output:

	plan_id [PK] integer	trainer_id integer	plan_name character varying (100)	duration_weeks integer	rating double precision	price numeric (10,2)	fitness_level double precision	age_min integer	age_max integer	bmi_min double precision	bmi_max double precision
1	7	7	Zen Yoga Flow	6	4.9	49.99	2	18	60	18	40
2	3	3	Power Lifting Mastery	14	4.8	129.99	5	18	40	20	35
3	15	3	Injury Recovery Program	14	4.8	79.99	2	18	60	15	30
4	2	2	Lean Bulk Builder	10	4.7	89.99	4	18	40	18.5	30
5	14	3	Total Body Conditioning	10	4.7	89.99	5	18	50	19	30
6	8	8	Flexibility Boost	8	4.6	55.99	3	18	60	19	35
7	13	2	Hybrid Fitness Boost	12	4.6	99.99	4	18	50	18.5	32
8	12	12	Youth Strength & Power	8	4.6	59.99	3	18	25	18	30
9	16	6	Post-Pregnancy Fitness	12	4.5	69.99	2	18	40	18	30
10	1	1	Strength Max	12	4.5	99.99	5	18	40	18	35
11	5	5	Metabolic Shred	12	4.4	69.99	4	18	50	18.5	28
12	10	10	HIIT for Endurance	10	4.4	79.99	5	18	50	18.5	30
13	9	9	Endurance Builder	12	4.3	69.99	4	18	50	18	30
14	4	4	Fat Burner Express	8	4.2	59.99	3	18	50	18	29
15	6	6	Weight Loss for Beginners	6	3.8	39.99	2	18	50	19	32

2. **Query:** List active members and their purchased plans
   SQL Script:
   ```
   SELECT u.name, m.member_id, p.plan_name, mp.start_date
   FROM "User" u
   JOIN "Member" m ON u.user_id = m.user_id
   JOIN "Member_Plan" mp ON m.member_id = mp.member_id
   JOIN "Plans" p ON mp.plan_id = p.plan_id
   ORDER BY mp.start_date DESC;
   ```
   Output:

	name character varying (100)	member_id integer	plan_name character varying (100)	start_date date
1	Ella Allen	17	Endurance Builder	2025-08-01
2	Oscar King	14	Youth Strength & Power	2025-04-06
3	Alex Johnson	2	Lean Bulk Builder	2025-04-05
4	Charlotte Turner	10	Fat Burner Express	2025-04-04
5	Luke Robinson	12	Zen Yoga Flow	2025-04-03
6	Olivia Scott	6	Weight Loss for Beginners	2025-04-02
7	Sarah Wilson	4	Fat Burner Express	2025-04-01
8	Chris Walker	7	Endurance Builder	2025-03-30
9	Emily Davis	3	Power Lifting Mastery	2025-03-28
10	Daniel Rodriguez	9	HIIT for Endurance	2025-03-27
11	William Martinez	8	Lean Bulk Builder	2025-03-25
12	Jack Martin	11	Age 50+ Strength	2025-03-22
13	John Doe	1	Strength Max	2025-03-21
14	Rachel Green	5	Metabolic Shred	2025-03-20
15	Sebastian Allen	13	Strength Max	2025-03-19
16	James Wright	15	Power Lifting Mastery	2025-03-18
17	Benjamin White	16	Flexibility Boost	2025-03-15

3. **Query:** Show all payments in the last 30 days
   SQL Script:
   ```
   SELECT pm.payment_id, u.name, pm.total_amount, pm.date, pm.status
   FROM "Payment" pm
   JOIN "Member" m ON pm.member_id = m.member_id
   JOIN "User" u ON m.user_id = u.user_id
   WHERE pm.date >= CURRENT_DATE - INTERVAL '30 days'
   ORDER BY pm.date DESC
   ```
   Output:

	payment_id integer	name character varying (100)	total_amount numeric (10,2)	date date	status character varying (50)
1	16	Benjamin White	89.99	2025-04-10	Success
2	10	Charlotte Turner	59.99	2025-04-01	Success

4. **Query:** Find top-earning trainers based on total revenue from their plans
   SQL Script:

   ```
   SELECT t.trainer_id, u.name AS trainer_name, SUM(p.price) AS total_revenue
   FROM "Trainer" t
   JOIN "User" u ON t.user_id = u.user_id
   JOIN "Plans" p ON t.trainer_id = p.trainer_id
   JOIN "Member_Plan" mp ON p.plan_id = mp.plan_id
   GROUP BY t.trainer_id, u.name
   ORDER BY total_revenue DESC
   LIMIT 3;
   ```

   Output:

	trainer_id integer	trainer_name character varying (100)	total_revenue numeric
1	3	David Lee	259.98
2	1	Jane Smith	199.98
3	2	Michael Brown	179.98

5. **Query:** Find members whose BMI falls outside their purchased plan's range
   SQL Script:

   ```
   SELECT u.name, m."BMI", p.plan_name, p.bmi_min, p.bmi_max
   FROM "Member" m
   JOIN "User" u ON m.user_id = u.user_id
   JOIN "Member_Plan" mp ON m.member_id = mp.member_id
   JOIN "Plans" p ON mp.plan_id = p.plan_id
   WHERE m."BMI" < p.bmi_min OR m."BMI" > p.bmi_max;
   ```

   Output:

	name character varying (100)	BMI double precision	plan_name character varying (100)	bmi_min double precision	bmi_max double precision
1	John Doe	0.0022597274203799166	Strength Max	18	35
2	Alex Johnson	0.0020603780345785183	Lean Bulk Builder	18.5	30
3	Emily Davis	0.002265625	Power Lifting Mastery	20	35
4	Sarah Wilson	0.0020703735298910177	Fat Burner Express	18	29
5	Rachel Green	0.0021872422819032592	Metabolic Shred	18.5	28
6	Olivia Scott	0.0021707923392038095	Weight Loss for Beginners	19	32
7	Chris Walker	0.002271314676836427	Endurance Builder	18	30
8	William Martinez	0.0023198315069747565	Lean Bulk Builder	18.5	30
9	Daniel Rodriguez	0.0023183673469387754	HIIT for Endurance	18.5	30
10	Charlotte Turner	0.002394111980847104	Fat Burner Express	18	29
11	Jack Martin	0.002729617139456457	Age 50+ Strength	20	35
12	Luke Robinson	0.0021847008520333323	Zen Yoga Flow	18	40
13	Sebastian Allen	0.002203840115928028	Strength Max	18	35
14	Oscar King	0.002333412098298677	Youth Strength & Power	18	30
15	James Wright	0.0024212293388429754	Power Lifting Mastery	20	35
16	Benjamin White	0.002793103183677228	Flexibility Boost	19	35
17	Ella Allen	0.0023245780098442356	Endurance Builder	18	30

6. **Query:** Top 5 plans that cover the most exercises
   SQL Script:

   ```
   SELECT p.plan_name, COUNT(pe.exercise_id) AS total_exercises
   FROM "Plans" p
   JOIN "Plan_Exercise" pe ON p.plan_id = pe.plan_id
   GROUP BY p.plan_name
   ORDER BY total_exercises DESC
   LIMIT 5;
   ```

   Output:

	plan_name character varying (100)	total_exercises bigint
1	Weight Loss for Beginners	5
2	Post-Pregnancy Fitness	5
3	Total Body Conditioning	5
4	Injury Recovery Program	5
5	Flexibility Boost	5

7. **Query:** Monthly revenue and plan distribution
   SQL Script:

   ```
   SELECT
       TO_CHAR(pm.date, 'YYYY-MM') AS month,
       COUNT(DISTINCT pm.payment_id) AS total_transactions,
       COUNT(mp.plan_id) AS total_plans_bought,
       SUM(pm.total_amount) AS revenue
   FROM "Payment" pm
   JOIN "Member_Plan" mp
     ON pm.member_id = mp.member_id AND pm.plan_id = mp.plan_id
   WHERE pm.status = 'Success'
   GROUP BY month
   ORDER BY month;
   ```

   Output:

	month text	total_transactions bigint	total_plans_bought bigint	revenue numeric
1	2023-01	1	1	129.99
2	2023-05	1	1	79.99
3	2023-07	1	1	99.99
4	2024-01	1	1	39.99
5	2024-03	1	1	69.99
6	2025-04	1	1	59.99

8. **Query:** Plans with highest average review rating
   SQL Script:
   ```
   SELECT
    p.plan_name,
    ROUND(AVG(r.rating)::NUMERIC, 2) AS avg_rating,
    COUNT(r.review_id) AS total_reviews
   FROM "Plans" p
   JOIN "Review" r ON p.plan_id = r.plan_id
   GROUP BY p.plan_name
   ORDER BY avg_rating DESC
   LIMIT 5;
   ```
   Output:

	plan_name character varying (100)	avg_rating numeric	total_reviews bigint
1	Zen Yoga Flow	5.00	1
2	Power Lifting Mastery	5.00	1
3	Metabolic Shred	4.80	1
4	Endurance Builder	4.70	1
5	HIIT for Endurance	4.60	1

9. **Query:** Get the members who are underweight, normal, overweight and obese based on their BMI
   SQL Script:
   ```
   SELECT
    M."user_id",
    U."name",
    M."BMI",
    CASE
      WHEN M."BMI" < 18.5 THEN 'Underweight'
      WHEN M."BMI" >= 18.5 AND M."BMI" < 24.9 THEN 'Normal'
      WHEN M."BMI" >= 25 AND M."BMI" < 29.9 THEN 'Overweight'
      ELSE 'Obese'
    END AS "BMI_category"
   FROM "Member" M
   JOIN "User" U ON M."user_id" = U."user_id"
   ORDER BY M."BMI" DESC;
   ```
   Output:

	user_id integer	name character varying (100)	BMI double precision	BMI_category text
1	29	Benjamin White	28	Overweight
2	19	Jack Martin	27.3	Overweight
3	27	James Wright	24.2	Normal
4	16	Charlotte Turner	24	Normal
5	30	Ella Allen	23.3	Normal
6	25	Oscar King	23.3	Normal
7	15	Daniel Rodriguez	23.2	Normal
8	13	William Martinez	23.2	Normal
9	1	John Doe	22.7	Normal
10	11	Chris Walker	22.7	Normal
11	4	Emily Davis	22.7	Normal
12	23	Sebastian Allen	22	Normal
13	21	Luke Robinson	21.9	Normal
14	8	Rachel Green	21.9	Normal
15	10	Olivia Scott	21.7	Normal
16	6	Sarah Wilson	20.8	Normal
17	3	Alex Johnson	20.6	Normal

10. **Query:** Get the number of members assigned to each plan
    SQL Script:

```
SELECT
    PL."plan_name",
    COUNT(MP."member_id") AS "members_count"
FROM
    "Plans" PL
JOIN
    "Member_Plan" MP ON PL."plan_id" = MP."plan_id"
GROUP BY
    PL."plan_name"
ORDER BY
    "members_count" DESC;
```

Output:

	plan_name character varying (100)	members_count bigint
1	Power Lifting Mastery	2
2	Strength Max	2
3	Fat Burner Express	2
4	Lean Bulk Builder	2
5	Endurance Builder	2
6	Youth Strength & Power	1
7	Flexibility Boost	1
8	Weight Loss for Beginners	1
9	Age 50+ Strength	1
10	Metabolic Shred	1
11	HIIT for Endurance	1
12	Zen Yoga Flow	1

11. **Query:** Get the most expensive plan for each trainer
    SQL Script:
    SELECT
      "Trainer"."specialization",
      "Plans"."plan_name",
      MAX("Plans"."price") AS "max_price"
    FROM "Trainer"
    JOIN "Plans" ON "Trainer"."trainer_id" = "Plans"."trainer_id"
    GROUP BY "Trainer"."trainer_id", "Plans"."plan_name"
    ORDER BY "max_price" DESC;
    Output:

	specialization character varying (100)	plan_name character varying (100)	max_price numeric
1	Cardio Fitness	Power Lifting Mastery	129.99
2	Yoga	Strength Max	99.99
3	Strength Training	Hybrid Fitness Boost	99.99
4	Weight Training	Age 50+ Strength	89.99
5	Strength Training	Lean Bulk Builder	89.99
6	Cardio Fitness	Total Body Conditioning	89.99
7	Cardio Fitness	Injury Recovery Program	79.99
8	Functional Fitness	HIIT for Endurance	79.99
9	CrossFit	Post-Pregnancy Fitness	69.99
10	Pilates	Metabolic Shred	69.99
11	HIIT	Endurance Builder	69.99
12	Weight Loss	Fat Burner Express	59.99
13	Zumba	Youth Strength & Power	59.99
14	Bodybuilding	Flexibility Boost	55.99
15	Nutrition and Fitness	Zen Yoga Flow	49.99
16	CrossFit	Weight Loss for Beginners	39.99