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Problem1:

Use cc;

```
DROP TABLE IF EXISTS membership_long_temp;
CREATE TABLE membership_long_temp AS
(SELECT memberships.Member_Number, Membership_type, Year_Joined, Category, Description,
Date, Revenue
FROM memberships
right join
(
    SELECT  Member_Number,  "dinner"  as  Category,  Service  AS  Description,
str_to_date(date,"%m/%d/%Y") as Date, Total AS Revenue
    FROM dining
    Group By Member_Number,Date,Description
    union
    SELECT Member_Number, "golf" as Category, Description, str_to_date(date,"%m/%d/%Y")
as Date, Amount AS Revenue
    FROM golf
    GROUP BY Member_Number,Date,Description
    union
    SELECT Member_Number, "pool" as Category, Description, str_to_date(date,"%m/%d/%Y")
as Date, Amount AS Revenue
    FROM pool
    GROUP BY Member_Number,Date,Description
    union
    SELECT Member_Number, "tennis" as Category, Description, str_to_date(date,"%m/%d/%Y")
as Date, Amount AS Revenue
    FROM tennis
```

```

GROUP BY Member_Number,Date,Description
union
SELECT Member_Number, "other" as Category, Description, "none" as Date, Amount AS
Revenue
FROM other
GROUP BY Member_Number,Date,Description) AS revenue
on memberships.Member_Number = revenue.Member_Number
left join members on memberships.Member_Number = members.Member_Number
GROUP BY Member_Number,Date,Description
ORDER BY member_number);

```

```

DROP TABLE IF EXISTS membership_long;
CREATE TABLE membership_long as
(SELECT db.Member_Number, Membership_type, Year_Joined, Category, Description, db.Date,
Revenue,
CASE WHEN `Private Function` is null then 0 WHEN `Private Function` = 0 then 0 ELSE 1 END
AS `Private Function`,
CASE WHEN `4th of July` is null then 0 WHEN `4th of July` = 0 then 0 ELSE 1 END AS `4th of
July`,
CASE WHEN Thanksgiving is null then 0 WHEN Thanksgiving = 0 then 0 ELSE 1 END AS
Thanksgiving,
CASE WHEN `Easter Brunch` is null then 0 WHEN `Easter Brunch` = 0 then 0 ELSE 1 END AS
`Easter Brunch`,
Case WHEN one.Member_Number is null then 0 else 1 END AS promoone,
CASE WHEN two.Member_Number is null then 0 else 1 END AS promotwo
FROM membership_long_temp as db
left join special on db.Member_Number = special.Member_Number
left join promoone as one on db.Member_Number = one.Member_Number
left join promotwo as two on db.Member_Number = two.Member_Number
GROUP BY member_number, description,Date
ORDER BY member_number);

```

	Member_Number	Membership_type	Year_Joined	Category	Description	Date	Revenue	Private Function	4th of July	Thanksgiving	Easter Brunch	promoone	promotwo
▶	102365	Family	2006	other	Bridge_Tournament	none	500.00	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-04-28	145.80	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-05-12	218.31	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-05-20	162.89	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-05-21	105.04	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-05-26	153.63	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-06-01	148.64	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-06-12	167.90	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-08-20	127.66	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-08-26	180.86	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-09-12	199.75	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-09-13	122.26	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-09-17	169.42	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekday	2018-11-06	159.98	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekend	2018-02-13	131.36	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekend	2018-05-01	193.72	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekend	2018-08-15	144.03	0	1	1	0	0	1
	102365	Family	2006	dinner	Dinner_Weekend	2018-08-30	174.69	0	1	1	0	0	1
	102365	Family	2006	dinner	Lunch	2018-04-07	92.03	0	1	1	0	0	1
	102365	Family	2006	dinner	Lunch	2018-05-27	129.36	0	1	1	0	0	1
	102365	Family	2006	dinner	Lunch	2018-09-27	96.99	0	1	1	0	0	1
	102365	Family	2006	dinner	Lunch	2018-11-18	135.34	0	1	1	0	0	1
	102365	Family	2006	dinner	Lunch	2018-12-23	86.93	0	1	1	0	0	1
	102365	Family	2006	dinner	Lunch	2018-12-28	65.46	0	1	1	0	0	1
	102365	Family	2006	pool	Membership_Early	2018-01-03	500.00	0	1	1	0	0	1

Problem2:

	category	description	first half year revenue
▶	dinner	Dinner_Weekday	960160.67
	dinner	Dinner_Weekend	542460.44
	pool	Swim_Lessons	448800.00
	pool	Membership	352000.00
	golf	Green_Fee	350160.00
	pool	Pool_Shop	238579.00
	dinner	Lunch	230890.22
	golf	Golf_Lessons	218402.89
	pool	Swim_Team	169500.00
	pool	Membership_Early	167000.00
	tennis	Court_Fee	94640.00
	tennis	Tennis_Lessons	94320.00
	dinner	Brunch_Weekend	91597.40
	pool	Snack_Bar	64142.00
	dinner	Special	57340.84
	golf	Golf_Shop	47678.70
	tennis	Tennis_Camp	27000.00
	pool	Private_Function	11200.00

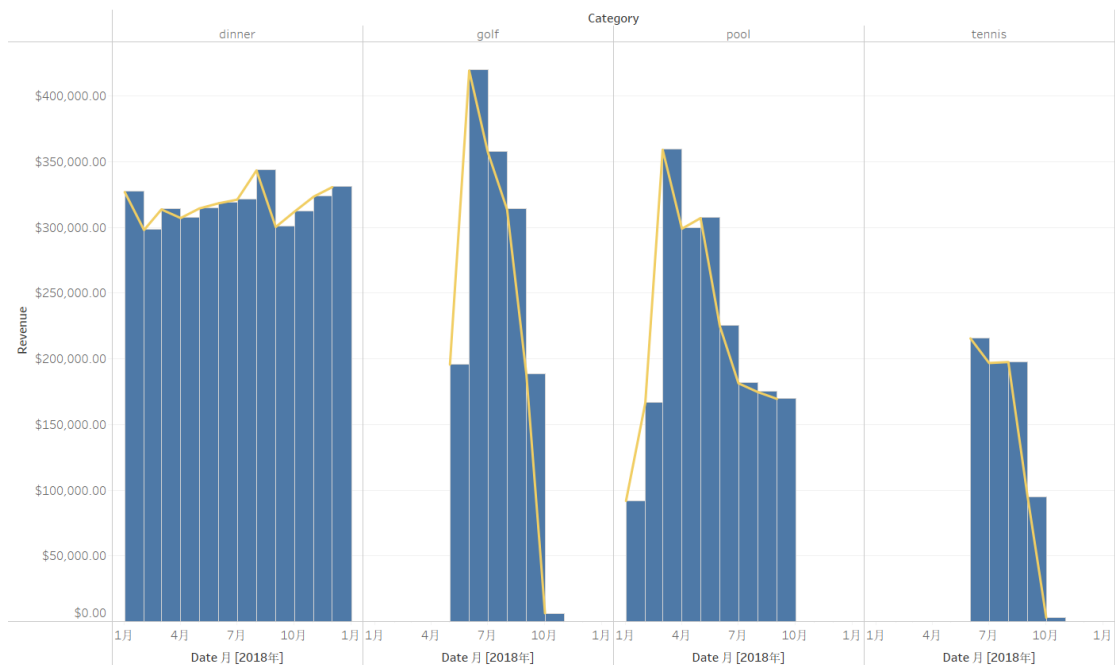
For this result, I want to see the first half year revenue for different services in different activities, which are ordered by the revenue. Thus, we can find which specific services are able to make more profit.

	Member_Number	total_consumption
▶	580188	24170.61
	1935699	21211.23
	870172	19537.67
	1610989	19438.98
	845117	19346.11
	3104085	17578.18
	1709688	17484.87
	1316758	17348.18
	581895	17171.68
	2254281	17141.45

For this result, I want to see who the top 10 members are who spend the most in a year.

Problem3:

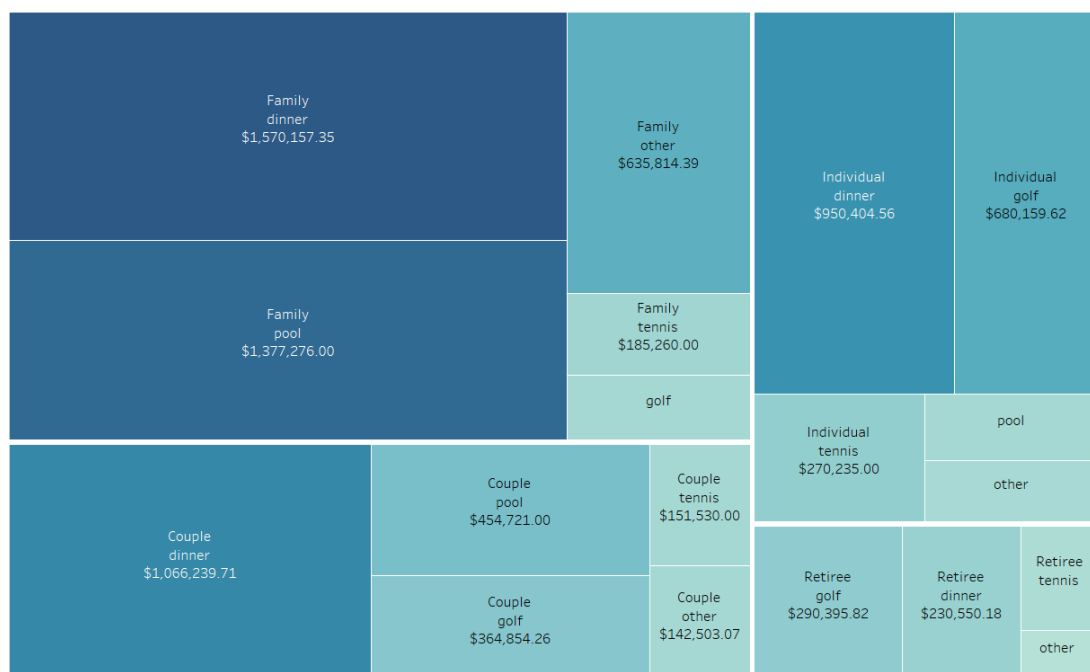
Sheet 2



The trends of sum of Revenue and sum of Revenue for Date Month broken down by Category. The view is filtered on Category, which keeps dinner, golf, pool and tennis.

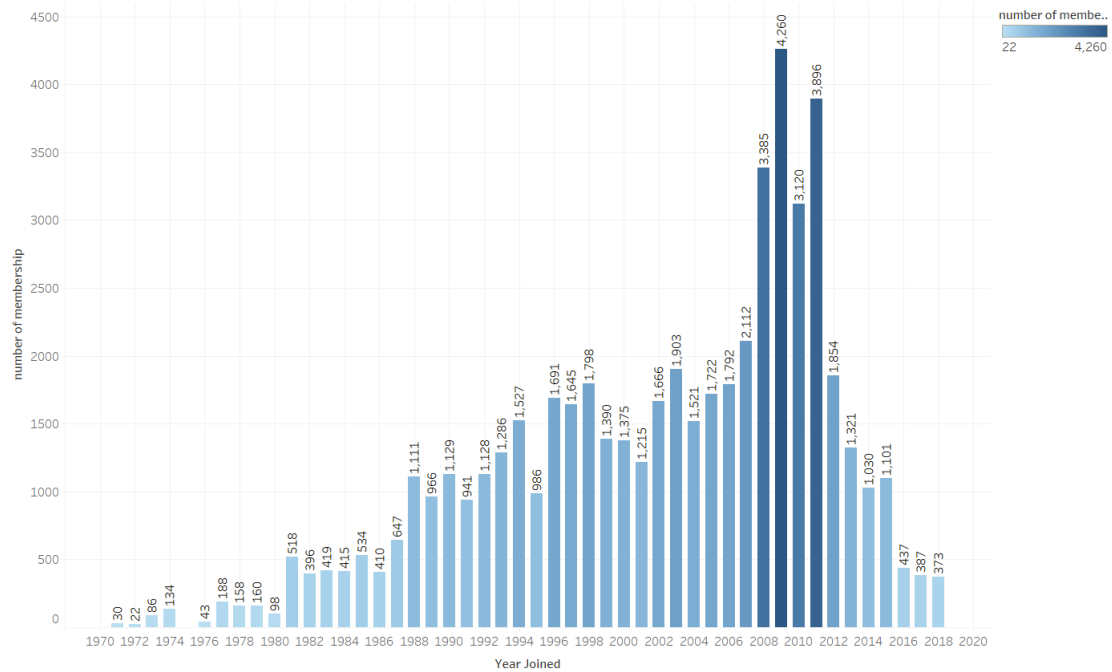
This image shows the revenue for each category during each month and the line to directly reflect increasing or decreasing trend. From this graph, we can see that

revenue from dinning makes up the largest portion of overall revenue and is very stable and does not change over time. Moreover, the other three types of revenue all show a peak between April and July, and all decline significantly thereafter. This can help us allocate resources wisely and find ways to increase revenue in the second half of the year.



This image shows, for different membership types, how much they spend on each category. From this graph, we can see that dinner and pool are the top 2 categories for family membership and couple membership. However, for individual membership, even dinner is still the top 1 category, golf is the top 2 category. And, for retiree membership, golf is the top 1 category. Learning those information enables us to offer different discounts and different activities for different membership types.

Sheet 3



The plot of number of membership for Year Joined. Color shows number of membership. The marks are labeled by number of membership.

This graph shows number of annual membership registration. From this graph, we can see that the number of registrations per year peaked from 2008 to 2011. However, in 2012, the number of registrations dropped significantly. It is necessary and important to find the reason which cause this significant decline to improve the number of registrations.

Problem 4:

```

16 • select category, count(*) from
17 (select membership_long.Member_Number, category, sum(revenue) as consumption
18 from membership_long right join
19 (select Member_Number, sum(revenue) as dinner_consumption
20 from membership_long
21 WHERE Category = "tennis"
22 group by Member_Number
23 Order by dinner_consumption DESC
24 limit 100) as dinner on membership_long.Member_Number = dinner.Member_Number
25 where Category != "tennis"
26 group by Member_Number, category
27 Order by consumption desc
28 limit 100) as detail
29 group by category;

```

Result Grid		
	category	count(*)
▶	golf	65
	dinner	32
	pool	2
	other	1

For the top 100 spenders in tennis, 65 chose to spend lots of money at golf. Therefore, we can assume that people who spend money on tennis will also be more willing to spend on golf.

```

15 • select category, sum(revenue) as consumption
16 from membership_long right join
17 (select Member_Number from membership_long where Thanksgiving = 1) as thanksgiving
18 on membership_long.Member_Number = thanksgiving.Member_Number
19 group by category
20 order by consumption desc
21 limit 100;

```

Result Grid		
	category	consumption
▶	dinner	74218527.64
	golf	40644577.16
	pool	37500860.00
	other	17538435.98
	tennis	17273390.00

For the participants of thanksgiving special functions, they spend most money on dinner. But most people spend a lot of money on dinner, but not many people spend a lot of money on golf. Therefore, I think participants of thanksgiving special

functions are willing to spend money on golf.

Problem5:

	category	count(category)	sum(revenue)	promoone
▶	dinner	13324	1962750.11	1
	golf	4056	702212.40	1
	pool	2682	497937.00	1
	tennis	3600	294885.00	1
	other	579	266714.30	1

	category	count(category)	sum(revenue)	promotwo
▶	dinner	6173	912891.40	1
	other	971	752596.94	1
	pool	2678	630948.00	1
	golf	1292	192711.51	1
	tennis	1566	133650.00	1

From these two graphs, we can find that the main target of promone is dinning and golf. For the total spending on dinning, members who participated in promone spent 1,962,750.11, which is nearly 1 million more than members who participated in promotwo spent on dinning. In addition, promoone members also spent more on golf than promowo members. However, on other and pool, members participating in promowo spent significantly more than those participating in promoone.

	membership_type	count(membership_type)	sum(revenue)	promoone
▶	Individual	8796	1271817.07	1
	Couple	6994	1029404.60	1
	Family	5105	920376.93	1
	Retiree	3346	502900.21	1

	membership_type	count(membership_type)	sum(revenue)	promotwo
▶	Family	7740	1785007.69	1
	Couple	2672	450176.75	1
	Individual	1688	292641.34	1
	Retiree	580	94972.07	1

From these two graphs, we can find that, from the perspective of membership type, main target of promone is individual and couple membership. Both of those membership type member spend more than 1 million. And the target of promotwo clearly is Family type membership.