Question 1.

```
SET SESSION sql_mode=(SELECT REPLACE(@@sql_mode,'ONLY_FULL_GROUP_BY',''));

DROP TABLE IF EXISTS comprehensive_summary;
CREATE TABLE comprehensive_summary AS
SELECT m.Member_Number,
       m.First_Name,
       m.Last_Name,
       m.Gender,
       m.BirthDate,
       mem.Membership_Type,
       mem.Year_Joined,
       COALESCE(d.Total_Dining_Consumption, 0) AS Total_Dining_Consumption,
       COALESCE(t.Total_Tennis_Expenses, 0) AS Total_Tennis_Expenses,
       COALESCE(p.Total_Pool_Expenses, 0) AS Total_Pool_Expenses,
       COALESCE(g.Total_Golf_Expenses, 0) AS Total_Golf_Expenses,
       COALESCE(o.Total_Other_Expenses, 0) AS Total_Other_Expenses,
       COALESCE(c.Number_Of_Children, 0) AS Number_Of_Children,
       COALESCE(pr1.Promoone_Participation, 0) AS Promoone_Participation,
       COALESCE(pr2.Promotwo_Participation, 0) AS Promotwo_Participation
FROM members m
LEFT JOIN memberships mem ON m.Member_Number = mem.Member_Number
LEFT JOIN (
   SELECT Member_Number, SUM(Total) AS Total_Dining_Consumption
   FROM dining
   GROUP BY Member_Number
) d ON m.Member_Number = d.Member_Number
LEFT JOIN (
   SELECT Member_Number, SUM(Amount) AS Total_Tennis_Expenses
   FROM tennis
   GROUP BY Member_Number
) t ON m.Member_Number = t.Member_Number
LEFT JOIN (
   SELECT Member_Number, SUM(Amount) AS Total_Pool_Expenses
   FROM pool
   GROUP BY Member_Number
) p ON m.Member_Number = p.Member_Number
LEFT JOIN (
   SELECT Member_Number, SUM(Amount) AS Total_Golf_Expenses
   FROM golf
   GROUP BY Member_Number
) g ON m.Member_Number = g.Member_Number
LEFT JOIN (
   SELECT Member_Number, SUM(Amount) AS Total_Other_Expenses
```

```
    FROM other
    GROUP BY Member_Number
) o ON m.Member_Number = o.Member_Number
LEFT JOIN (
    SELECT Member_Number, COUNT(Member_Number) AS Number_Of_Children
    FROM members
    WHERE Relationship_to_Member = 'Child'
    GROUP BY Member_Number
) c ON m.Member_Number = c.Member_Number
LEFT JOIN (
    SELECT Member_Number, COUNT(*) AS Promoone_Participation
    FROM promoone
    GROUP BY Member_Number
) pr1 ON m.Member_Number = pr1.Member_Number
LEFT JOIN (
    SELECT Member_Number, COUNT(*) AS Promotwo_Participation
    FROM promotwo
    GROUP BY Member_Number
) pr2 ON m.Member_Number = pr2.Member_Number;


SELECT * FROM comprehensive_summary LIMIT 25;
```

Member_Number	First_Name	Last_Name	Gender	BirthDate	Membership_Type	Year_Joined	Total_Dining_...	Total_Tenni...	Total_Pool_E...	Total_Golf_Expenses	Total_Other_E...	Number_Of_...	Promoone...	Promotwo...
102365	Edwin	Hancock	M	2/9/1968	Family	2006	3312.05	0	3271	0.00	2152.46	1	0	1
102365	Bethany	Hancock	F	7/11/1969	Family	2006	3312.05	0	3271	0.00	2152.46	1	0	1
102365	Franco	Hancock	M	1/12/1997	Family	2006	3312.05	0	3271	0.00	2152.46	1	0	1
105078	Nikhil	Spears	M	12/21/1973	Family	2002	4728.73	0	3343	0.00	0.00	0	1	0
105078	Lila	Spears	F	5/20/1973	Family	2002	4728.73	0	3343	0.00	0.00	0	1	0
106225	Eric	Foster	M	4/2/1978	Family	1995	1239.06	0	0	0.00	0.00	5	0	0
106225	Fiona	Foster	F	6/30/2005	Family	1995	1239.06	0	0	0.00	0.00	5	0	0
106225	Gabrielle	Foster	F	5/18/2007	Family	1995	1239.06	0	0	0.00	0.00	5	0	0
106225	Bo	Foster	M	6/11/2009	Family	1995	1239.06	0	0	0.00	0.00	5	0	0
106225	Edith	Dudley	F	2/12/2011	Family	1995	1239.06	0	0	0.00	0.00	5	0	0
106225	Caden	Foster	M	2/14/2013	Family	1995	1239.06	0	0	0.00	0.00	5	0	0
109320	Rocco	Williamson	M	4/8/1951	Individual	1992	5424.58	0	0	0.00	0.00	0	1	0
112823	Tyrone	Deleon	M	2/2/1970	Family	2010	1421.67	0	6088	0.00	4661.68	2	0	1
112823	Paula	Deleon	F	6/24/1972	Family	2010	1421.67	0	6088	0.00	4661.68	2	0	1
112823	Ivan	Deleon	M	1/11/2001	Family	2010	1421.67	0	6088	0.00	4661.68	2	0	1
112823	Porter	Deleon	M	2/5/2003	Family	2010	1421.67	0	6088	0.00	4661.68	2	0	1
116919	Maci	Wiggins	F	1/29/1922	Individual	2001	2111.90	1510	1100	5335.76	0.00	0	0	0
120189	Heaven	Anderson	F	7/6/1974	Family	1988	281.45	1585	0	0.00	0.00	0	0	0
120189	Mauricio	Anderson	M	8/20/1978	Family	1988	281.45	1585	0	0.00	0.00	0	0	0
121621	Brody	Spears	M	2/22/1989	Couple	2008	6266.41	1880	1780	6013.09	0.00	0	1	0
121621	Juliet	Spears	F	5/12/1989	Couple	2008	6266.41	1880	1780	6013.09	0.00	0	1	0
124368	Tyson	Golden	M	2/7/1963	Individual	1996	5550.13	0	0	2145.71	587.70	0	1	0
126871	Saniya	Melton	F	5/10/1955	Individual	1991	6076.54	0	0	5020.00	0.00	0	1	0
129169	Connor	Carroll	M	4/4/1957	Couple	2016	4285.46	0	1058	1978.70	0.00	0	0	0
129169	Jordan	Carroll	F	8/25/1955	Couple	2016	4285.46	0	1058	1978.70	0.00	0	0	0

Question 2.

(1)

```
SELECT
    Member_Number,
    First_Name,
    Last_Name,
    (Total_Dining_Consumption + Total_Tennis_Expenses + Total_Pool_Expenses +
Total_Golf_Expenses + Total_Other_Expenses) AS Total_Consumption
FROM comprehensive_summary
```

```
GROUP BY Member_Number
ORDER BY Total_Consumption DESC
LIMIT 10;
```

Member_Number	First_Name	Last_Name	Total_Consumption
580188	Helen	Ortega	25194.79
1610989	Jagger	Benson	21583.57
870172	Jessie	Vega	21319.19
1091117	Anthony	Duarte	18270.64
1709688	Tamia	Reed	18010.92
581895	Corey	Michael	17716.51
1582257	Miracle	Branch	17042.07
1146152	German	Jennings	16802.60
1138784	Jaxson	Whitney	16726.77
2586716	Beckham	Cardenas	16556.39

This table shows the top 10 total consumptions by members for distinct member numbers, because I found out that members with the same number generally have the same consumption. By showing the top 10 consumptions, the club can provide special events, promotions or personalized services to attract them to spend more. Moreover, by doing those special events, we can better retain those top spending members.

(2)

```
SELECT Year_Joined, COUNT(DISTINCT Member_Number) AS Distinct_Members
FROM comprehensive_summary
GROUP BY Year_Joined
ORDER BY Year_Joined;
```

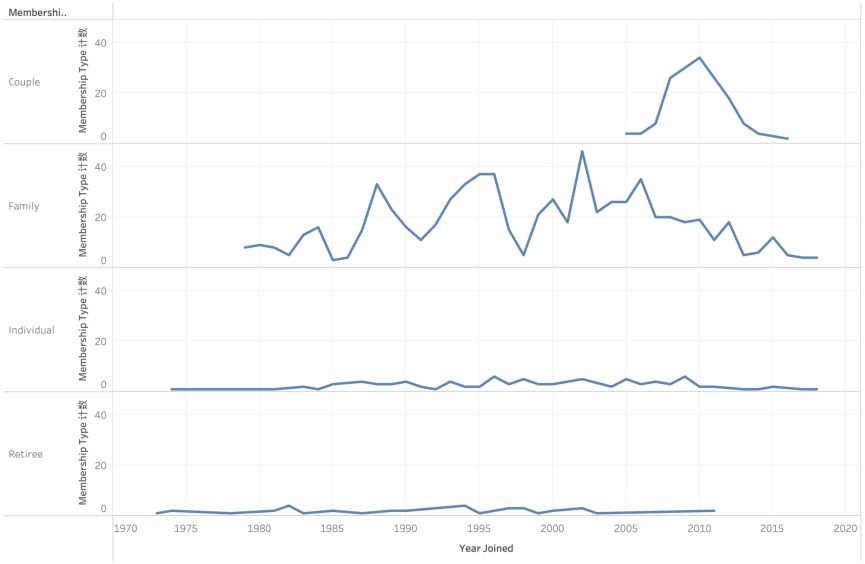
This table shows the distinct member number that joined the club each year. We can see that the number of distinct members that join the club has been declining since 2011, which is not a good sign. The club should do more promotion, do more product and activity design or upgrade their facilities to attract more people to join.

Year_Joined	Distinct_Membe...
1971	1
1972	1
1973	1
1974	2
1976	1
1977	7
1978	5
1979	3
1980	5
1981	12
1982	11
1983	13
1984	14
1985	16
1986	11
1987	19
1988	27
1989	28
1990	30
1991	22
1992	27
1993	31
1994	41
1995	24
1996	49
1997	35
1998	45
1999	34
2000	37
2001	33
2002	38
2003	44
2004	40
2005	34
2006	42
2007	41
2008	60
2009	74
2010	58
2011	66
2012	32
2013	29
2014	19
2015	20
2016	10
2017	8
2018	9

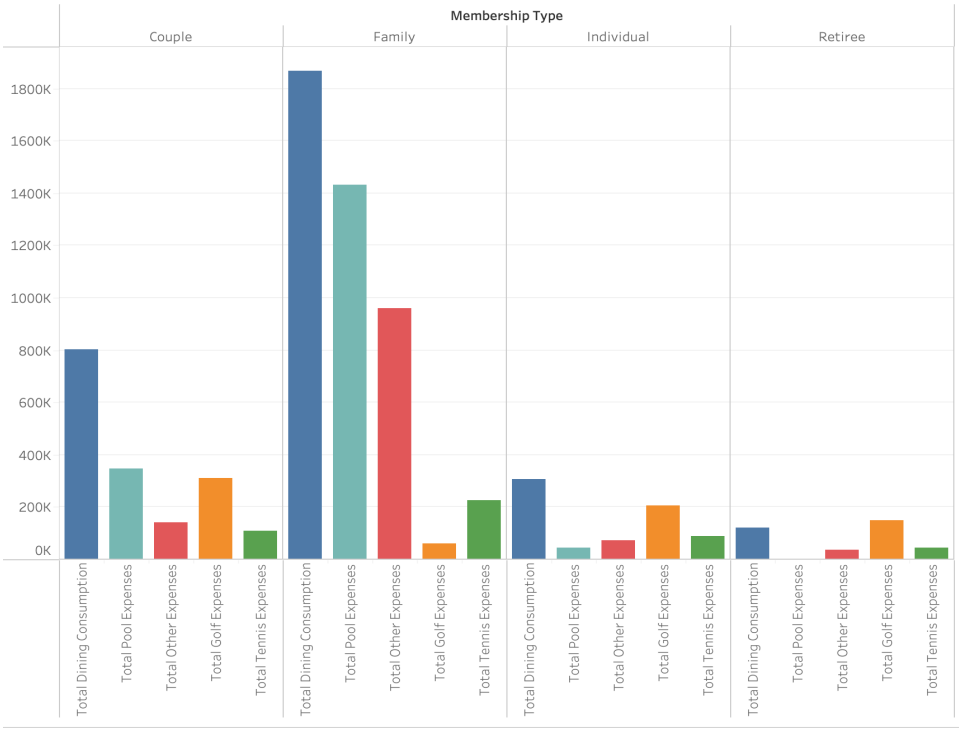
Question 3 next page

Question 3.

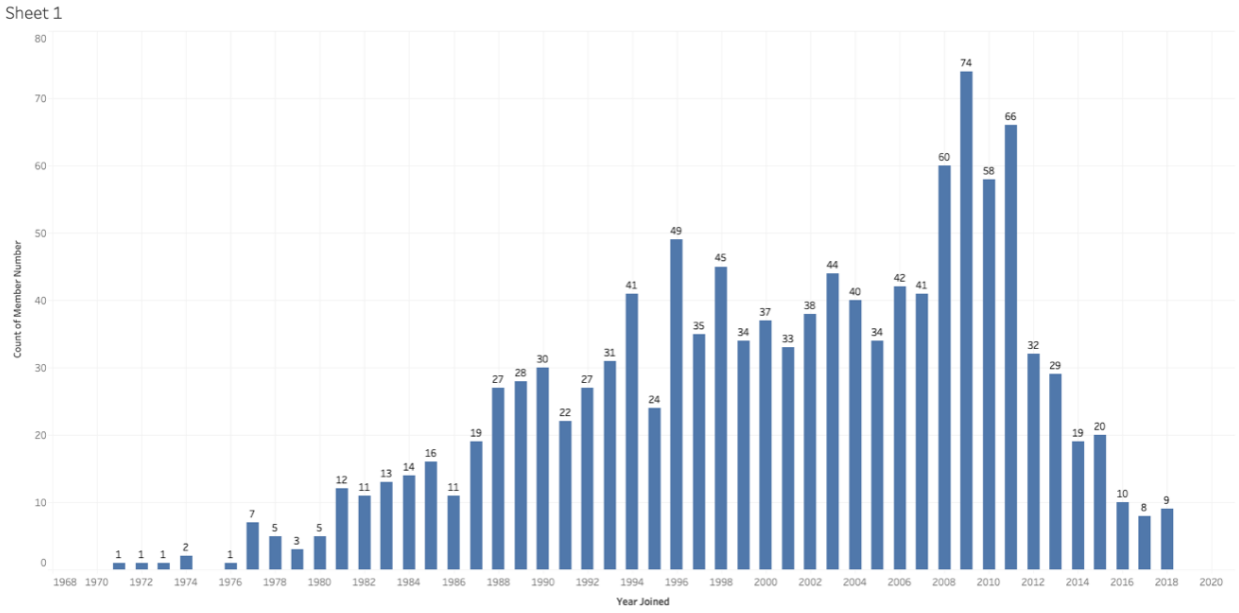
(1) This visualization provides the time series analysis of each membership type and the year of they joined the club. We can see that both Retiree and Individual have a very steady line, and a very low number of members joined each year. The family membership type is always the highest contribution of number of members joined each year, while couples only join the club between 2005 and 2016, with a very stark peak in 2010. From this graph, we can conclude that family type of membership is the most important and contributes to the number of members, thus we should set up family bundle promotion, design family friendly products to attract more family membership type.



(2) This graph shows the total expense of each activity by each membership type. From the graph, we can see that the total expense for family membership type significantly exceeds other membership types. Moreover, except for the Retiree, all other membership types have the highest dinner consumption. As a result, the club should focus on their dinner service, courses design, and dinner promotions for couples, individual and family; and focus on golf experiences with Retirees.



(3) This graph shows the number of members who join each year. We can see that the distribution is left skewed, with a peak in 2009, and a smaller number of members joining in early years. However, the number who joined the club significantly declined after 2021, meaning that the club is experiencing a hard time. I would suggest that the club should upgrade their activities, services and add more promotions to attract new members, as well as retain the old members in order to recover from the stark number of decline after 2011.



Question 4.

(1)
```
SELECT
   DISTINCT Member_Number,
   Total_Golf_Expenses,
   Total_Tennis_Expenses,
   Total_Pool_Expenses,
   Total_Other_Expenses
FROM comprehensive_summary
ORDER BY Total_Golf_Expenses DESC
LIMIT 10;
```

Member_Number	Total_Golf_Expenses	Total_Tenni...	Total_Pool_E...	Total_Other_E...
845117	14961.66	2685	0	197.91
1138784	12601.06	2945	0	0.00
1701634	11991.68	3400	0	1280.10
1935699	10909.88	3360	4560	0.00
3397512	10850.11	2815	0	0.00
3169890	10295.07	3280	0	0.00
245301	10026.57	3355	0	0.00
1610989	9796.44	3000	3606	950.68
581895	9601.20	1980	0	365.81
1316758	9436.34	2555	1302	0.00

In this table, we show the top 10 distinct member numbers who spend the most on golf, and also display their spending on tennis, pool and other. I chose these because these spendings are all related to sports activities. We can see that people who spend on golf also all spend on

tennis, but not all spend on pool and other. As a result, members who spend a lot of money on golf are most likely to also spend money on tennis.

(2)

```
SELECT
    Number_Of_Children,
    SUM(Total_Dining_Consumption) AS Total_Dining_Spending,
    SUM(Total_Tennis_Expenses) AS Total_Tennis_Spending,
    SUM(Total_Pool_Expenses) AS Total_Pool_Spending,
    SUM(Total_Golf_Expenses) AS Total_Golf_Spending,
    SUM(Total_Other_Expenses) AS Total_Other_Spending
FROM comprehensive_summary
GROUP BY Number_Of_Children
ORDER BY Number_Of_Children;
```

Number_Of_...	Total_Dining_Spending	Total_Tennis_Spending	Total_Pool_Spending	Total_Golf_Spending	Total_Other_Spending
0	3848289.73	842485	1360328	1996988.26	859733.15
1	1133948.32	106205	1072659	160393.06	568355.93
2	1605292.96	157975	1492285	144313.50	977141.18
3	1779051.20	291305	1600408	55896.31	1069535.16
4	1046612.50	85645	672982	0.00	592799.04
5	222014.24	10570	110249	0.00	107459.08
6	30369.01	12810	59213	0.00	33928.09

This table shows the total spending of each activity by the number of children. From the table, we can see that across each group of children, they all spend on dining, tennis, pool and other. However, for the number of children of 4,5, and 6, the total spending for golf is 0. As a result, people with more children tend to not spend on golf, so the golf experience, service and promotion should focus on members with no children or children <=3.

Question 5.

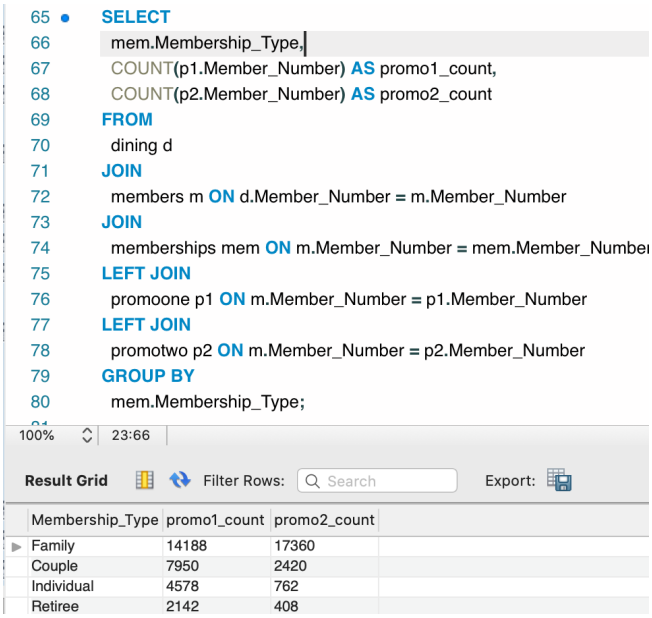
(1) From this table, we can see the total revenue and the number of uses of each promotion for each activity. We can see that the number used in dining, golf, pool and tennis in promotion one has a larger number than promotion two; and vice versa for other. We can see that the total revenue from used in pool and other has a larger revenue in promotion two than promotion one; and vice versa for the tennis, golf and dining. Moreover, we can see that the overall number use of promotion one is significantly higher than promotion two. We can conclude that promotion one is much more prevalent than promotion two, and promotion two seems to have a focus on other activities, while promotion one has the most popular and central activities provided by the club like dining, tennis, golf and pool.

```
select a.category, a.promote1_total, a.promote1_count,  b.promote2_total, b.promote2_count from
(SELECT SUM(Total) as promote1_total, count(*) as 'promote1_count', ('dining') as category
FROM dining
WHERE Member_Number IN (
  SELECT Member_Number
  FROM promoone
)) a
left join
(SELECT SUM(Total) as promote2_total, count(*) as 'promote2_count', ('dining') as category
FROM dining
WHERE Member_Number IN (
  SELECT Member_Number
  FROM promotwo
)) b on a.category = b.category
union
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

category	promote1_total	promote1_count	promote2_total	promote2_count
dining	1993060.79	13522	923951.89	6240
golf	730286.06	4290	200218.71	1355
pool	503304.00	2759	634573.00	2735
other	387153.35	1835	958182.91	2835
tennis	313980.00	3854	139620.00	1646

(2) From this table, we can see the total revenue and the number of uses of each promotion for each membership type. We can see that the number used in couples, individuals and retirees in promotion one has a larger number than promotion two; and vice versa for families. As a result, we can conclude that promotion one is more for the smaller number group of people, like individual, retiree and couple, while promotion two is more effective and prevalent in a larger number of group of family, which typically contains more than 2 people.



```
65  SELECT
66    mem.Membership_Type,
67    COUNT(p1.Member_Number) AS promo1_count,
68    COUNT(p2.Member_Number) AS promo2_count
69  FROM
70    dining d
71  JOIN
72    members m ON d.Member_Number = m.Member_Number
73  JOIN
74    memberships mem ON m.Member_Number = mem.Member_Numbe
75  LEFT JOIN
76    promoone p1 ON m.Member_Number = p1.Member_Number
77  LEFT JOIN
78    promotwo p2 ON m.Member_Number = p2.Member_Number
79  GROUP BY
80    mem.Membership_Type;
```

100% 23:66

Result Grid Filter Rows: Search Export:

Membership_Type	promo1_count	promo2_count
Family	14188	17360
Couple	7950	2420
Individual	4578	762
Retiree	2142	408