

FITNESS TRAINING MEMBERSHIP DATABASE SOLUTION

Business Narrative

One Fitness (OF) is a fitness training business, which provides training sessions for its members besides the self-sufficient gym facilities. The members would choose the session type based on their fitness target and capacity of the sessions. Then, they register in a training session belong to that session type with a schedule. When participating in the sessions, the members are instructed by a trainer in a group or individually. The member is required to pay the training fee each month.

Storing the business information as a database increases business information management, especially for the kind of business involving multiple lists of large information, such as trainers, members, sessions and payments. A database helps the business to manage and have a clear overview of the business's services and operation. Furthermore, an appropriate database enhances data integrity; therefore, the company can avoid mistakes. Moreover, specific data can be retrieved for helpful insights, significantly contributing to problem solving and improvements for the business.

Database Content

The business wants to keep a list of members, list of registrations, list of training sessions, list of session types, list of schedules, list of trainers, list of payments and list of payment methods.

Each **member** has a *member ID*, *name*, *gender*, *home suburb* and *phone number* recorded. A member may register multiple training sessions. By registering in a training session, a *start date* is recorded in the **registration**. The business would like to record the data of the members not only who currently register in training sessions, but also who have left the session. Therefore, if the member left the session, the *end date* is also recorded.

Every training **session** has a *training fee* which they have to pay monthly. Each training session is associated with one of the session types. A **sessiontype** has a *code*, *description* and *capacity* (e.g. STR1 Strength training to recruit muscles 1, CAR5 Cardiovascular exercise 5). Each training session, which has a schedule, is instructed by a trainer.

The **schedule** list has the *schedule codes*, *weekdays* which describe any sets of days from monday to saturday, *start time* and *end time* (e.g MoWeFr1600-1800 - Monday, Wednesday, Friday – 4:00 pm – 6:00 pm, TuThSa1030-1130 - Tuesday, Thursday, Saturday – 10:30 am – 11:30 am).

In the trainer list, each **trainer** has a *trainer ID*, *name*, *gender* and *phone number*. One trainer may instruct more than one training session.

VF requires to manage the payment made for joining the session. The members need to pay their session fees monthly. For each **payment**, its *date*, *amount* and *payment method* are recorded. Each **method** has a *number* and *description* (e.g. 1 Cash, 2 Card, 3 PayPal, etc.)

Business rules that apply to the data

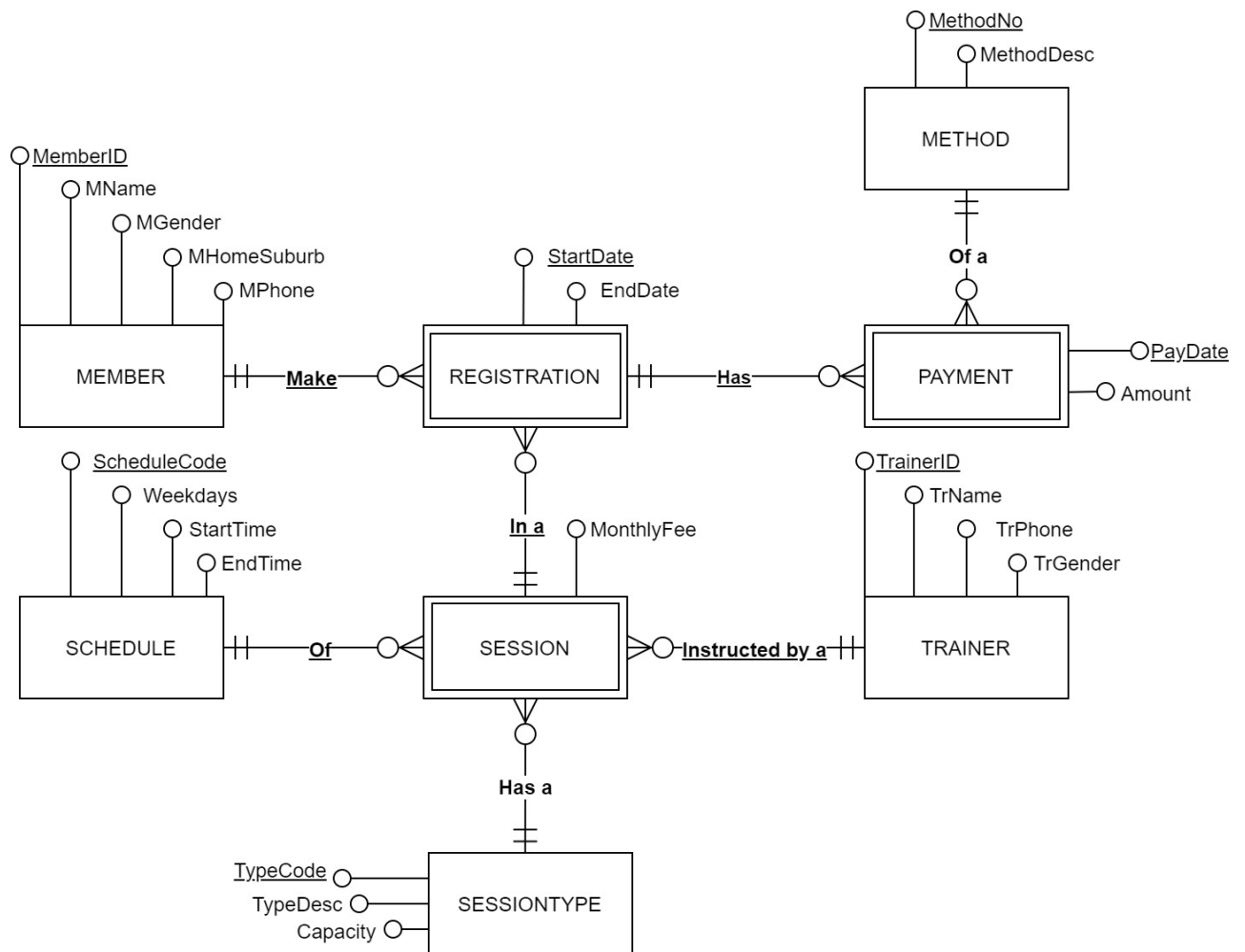
- A member may register multiple training sessions. A training session may have more than one member.
- A session type may have many training sessions.
- Each training session must be assigned to a session type and instructed by one trainer. However, one trainer may instruct more than one session.
- Each training session also associated to a schedule. However, in a schedule, the business can run multiple sessions.
- A trainer may instruct more than one schedule, and a schedule may have multiple sessions which are instructed by multiple trainers.
- A member may leave and rejoin a session, therefore the business would like to keep both of those records.
- Each payment is associated with a registration. Thus, a member's registration has multiple payments. If a member registers for 2 sessions, that member needs to make 2 payments each month.

Examples of queries, reports and/or visualisations that would be used on the data:

- Calculate the number of registration in a training session.
- Calculate the total members registering in each session type.
- List all the training sessions of a session type.
- List all the members that are/are not currently in at least one session.
- List all the female/male members for a particular session type.
- List all the trainers who are not instructing any sessions.
- Count the number of the members for each session's schedule.
- Calculate the total payment in a particular month.
- Determine the most popular payment's method.

ERDs and Relational Schema

ERD



Relational Schema

MEMBER(MemberID, MName, MGender, MHomeSuburb, MPhone)

SESSIONTYPE(TypeCode, TypeDesc, Capacity)

SCHEDULE(ScheduleCode, Weekdays, StartTime, EndTime)

TRAINER(TrainerID, TrName, TrPhone, TrGender)

SESSION(ScheduleCode, TrainerID, MonthlyFee, TypeCode)

FK1(ScheduleCode) references SCHEDULE

FK2(TrainerID) references TRAINER

FK3(TypeCode) references SESSIONTYPE

REGISTRATION(MemberID, ScheduleCode, TrainerID, StartDate, EndDate)

FK1(MemberID) references MEMBER

FK2(ScheduleCode, TrainerID) references SESSION

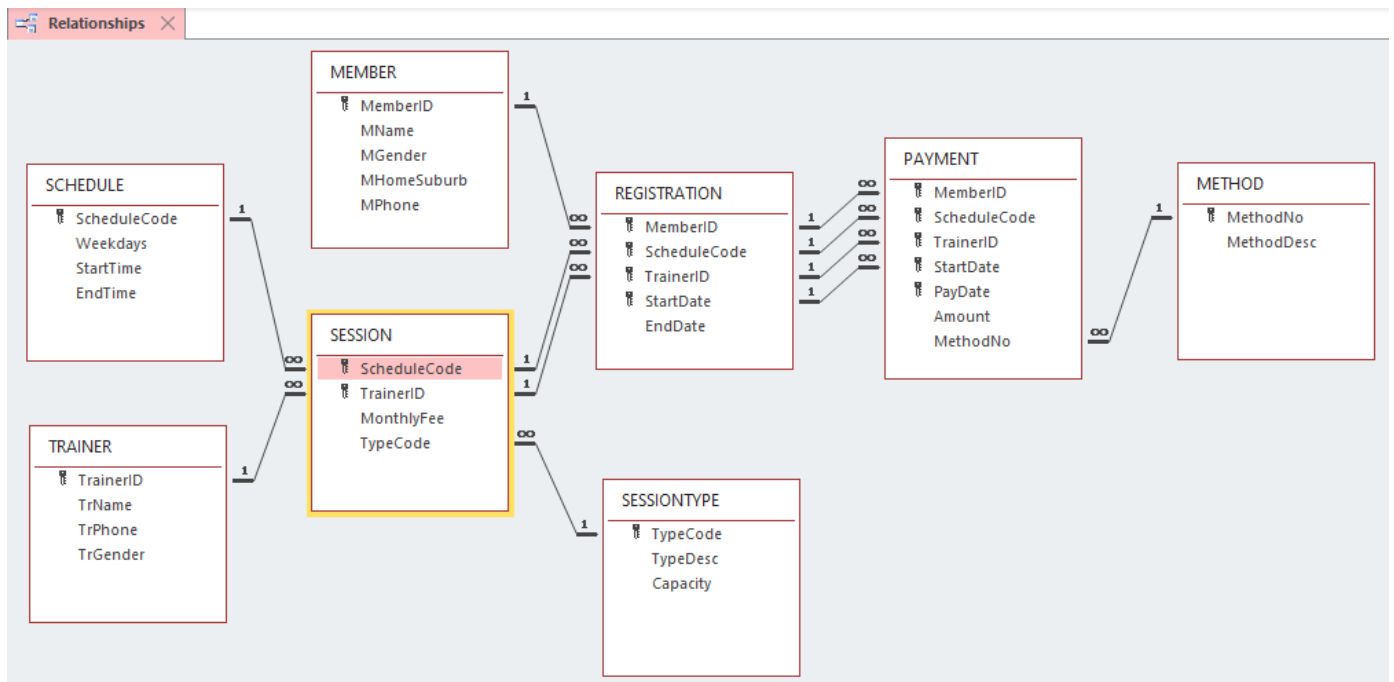
PAYMENT(MemberID, ScheduleCode, TrainerID, StartDate, PayDate, Amount, MethodNo)

FK(MemberID, ScheduleCode, TrainerID, StartDate) references REGISTRATION

METHOD(MethodNo, MethodDesc)

Database Solution (through Access)

The screenshot below shows the relationships of the tables in the database.



Testing Data

MEMBER table:

MEMBERquery X					
MemberID	MName	MGender	MHomeSuburb	MPhone	
102030405	Julia Gillard	Female	Dockland	0401020304	
102895606	Vicky Vu	Female	Footscray	0412345678	
111222333	James Ymer	Male	Hawthorn	0411122233	
223344556	Daniel Kinghar	Male	Footscray	0422334455	
333333333	Jan Owen	Female	Hawthorn	0433333333	
444555666	Dr Ariel Lui	Female	Hawthorn	92148973	
777888999	Donald Trump	Male	Footscray	0477788899	
999999999	Olivia Johnson	Female	Hawthorn	0499999999	
*	0				

SESSIONTYPE table:

SESSIONTYPEquery X		
TypeCode	TypeDesc	Capacity
AER10	Group aerobic endurance exercise	10
CAR1	Individual cardiovascular exercise	1
CAR5	Group cardiovascular exercise	5
STR1	Individual strength training to recruit muscles	1
STR5	Group strength training to recruit muscles	5
YOG10	Flexibility Yoga	10
*		0

SCHEDULE table:

SCHEDULEquery X			
ScheduleCode	Weekdays	StartTime	EndTime
FrSa1830-2030	Friday, Saturday	6:00 PM	8:00 PM
MoWeFr0900-1200	Monday, Wednesday, Friday	9:00 AM	11:00 AM
MoWeFr1300-1500	Monday, Wednesday, Friday	1:00 PM	3:00 PM
MoWeFr1600-1800	Monday, Wednesday, Friday	4:00 PM	6:00 PM
TuThSa1030-1230	Tuesday, Thursday, Saturday	10:30 AM	12:30 PM
TuThSa1300-1500	Tuesday, Thursday, Saturday	1:00 PM	3:00 PM
TuThSa1600-1800	Tuesday, Thursday, Saturday	4:00 PM	6:00 PM
*			

TRAINER table:

TRAINERquery X				
TrainerID	TrName	TrPhone	TrGender	
111	Emma Watson	0400012343	Female	
222	Steve Jobs	0421314151	Male	
333	William Miller	0455555555	Male	
444	Hannah Dang	0478567821	Female	
555	Vin Diesel	0488881722	Male	
* 0				

SESSION table:

SESSIONquery X				
ScheduleCode	TrainerID	MonthlyFee	TypeCode	
FrSa1830-2030	111	\$50.00	YOG10	
FrSa1830-2030	222	\$79.95	STR1	
MoWeFr1300-1500	111	\$50.00	YOG10	
MoWeFr1300-1500	444	\$60.00	CAR5	
TuThSa1300-1500	333	\$60.00	STR5	
TuThSa1600-1800	444	\$75.95	CAR1	
*	0	\$0.00		

REGISTRATION table:

REGISTRATIONquery X					
MemberID	ScheduleCode	TrainerID	StartDate	EndDate	
102895606	FrSa1830-2030	111	5/04/2020	10/07/1020	
444555666	TuThSa1300-1500	333	1/08/2020		
777888999	MoWeFr1300-1500	444	9/09/2020		
102030405	FrSa1830-2030	222	23/09/2020		
111222333	TuThSa1600-1800	444	29/09/2020		
102895606	MoWeFr1300-1500	444	1/11/2020		
* 0		0			

PAYMENT table:

PAYMENTquery X							
MemberID	ScheduleCode	TrainerID	StartDate	PayDate	Amount	MethodNo	
102030405	FrSa1830-2030	222	23/09/2020	23/09/2020	\$79.95	1	
102030405	FrSa1830-2030	222	23/09/2020	23/10/2020	\$79.95	4	
102895606	FrSa1830-2030	111	5/04/2020	5/04/2020	\$50.00	5	
102895606	FrSa1830-2030	111	5/04/2020	5/05/2020	\$50.00	5	
102895606	FrSa1830-2030	111	5/04/2020	5/06/2020	\$50.00	5	
102895606	FrSa1830-2030	111	5/04/2020	10/07/2020	\$50.00	5	
102895606	MoWeFr1300-1500	444	1/11/2020	2/11/2020	\$60.00	3	
111222333	TuThSa1600-1800	444	29/09/2020	29/09/2020	\$75.95	2	
111222333	TuThSa1600-1800	444	29/09/2020	29/10/2020	\$75.95	3	
444555666	TuThSa1300-1500	333	1/08/2020	1/08/2020	\$60.00	1	
444555666	TuThSa1300-1500	333	1/08/2020	1/09/2020	\$60.00	3	
444555666	TuThSa1300-1500	333	1/08/2020	1/10/2020	\$60.00	3	
444555666	TuThSa1300-1500	333	1/08/2020	1/11/2020	\$60.00	3	
777888999	MoWeFr1300-1500	444	9/09/2020	9/09/2020	\$60.00	2	
777888999	MoWeFr1300-1500	444	9/09/2020	9/10/2020	\$60.00	2	
* 0		0			\$0.00	0	

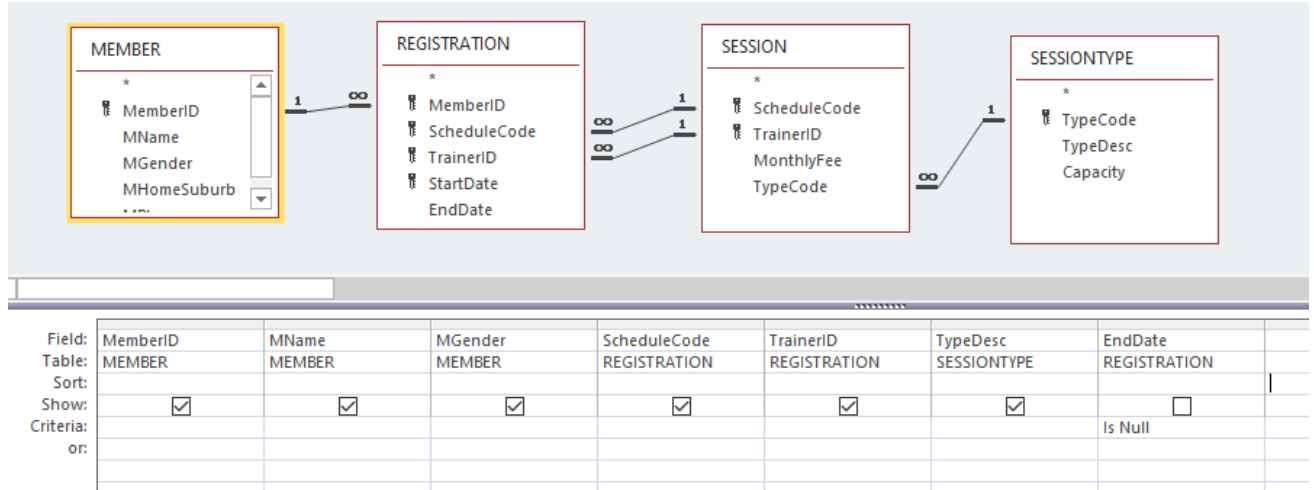
METHOD of payment table:

METHODquery X	
MethodNo	MethodDes
1	Cash
2	Card
3	Bpay
4	Bank Account
5	Paypal
* (New)	

Sample Queries and Visualisations using Access and Power BI

1. Information of members, who currently join at least one sessions, with their sessions and sessiontype description

Setting:

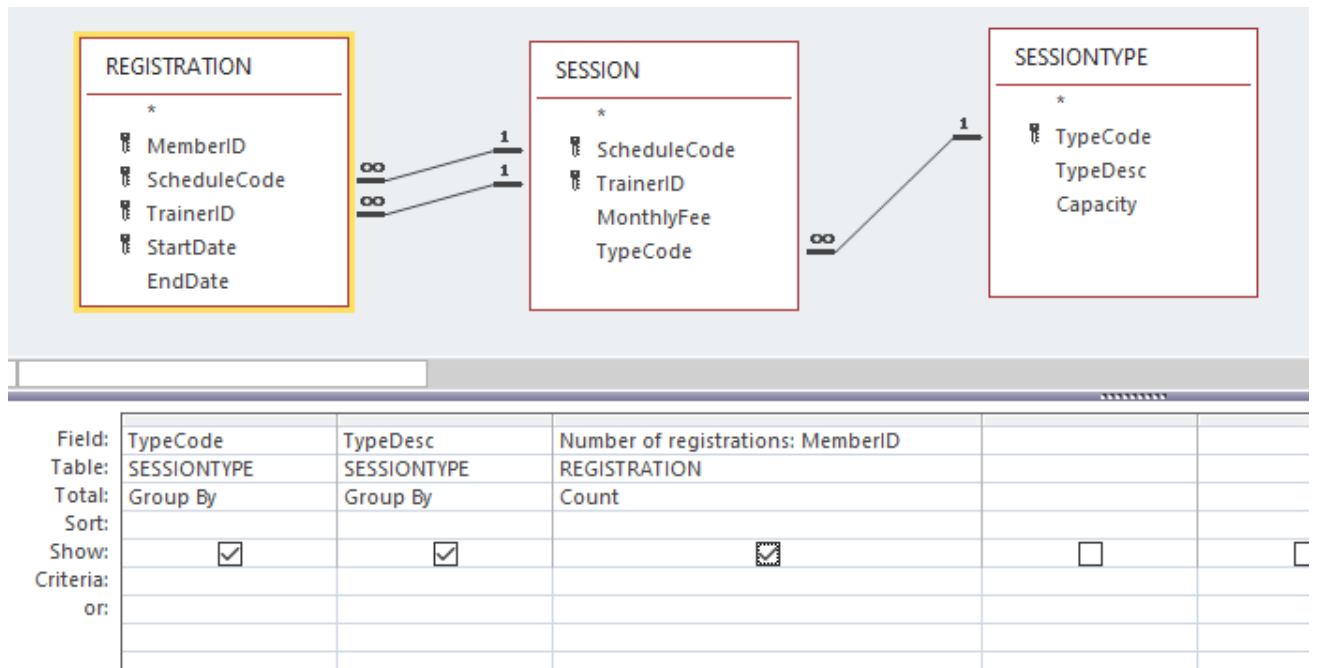


Result:

Query1						
MemberID	MName	MGender	ScheduleCode	TrainerID	TypeDesc	
102895606	Vicky Vu	Female	MoWeFr1300-1500	444	Group cardiovascular exercise	
111222333	James Ymer	Male	TuThSa1600-1800	444	Individual cardiovascular exercise	
444555666	Dr Ariel Lui	Female	TuThSa1300-1500	333	Group strength training to recruit muscles	
777888999	Donald Trump	Male	MoWeFr1300-1500	444	Group cardiovascular exercise	
102030405	Julia Gillard	Female	FrSa1830-2030	222	Individual strength training to recruit muscles	
*						

2. Number of registrations by session type.

Setting:



Results:

TypeCode	TypeDesc	Number of registrations
CAR1	Individual cardiovascular exercise	1
CAR5	Group cardiovascular exercise	2
STR1	Individual strength training to recruit muscles	1
STR5	Group strength training to recruit muscles	1
YOG10	Flexibility Yoga	1

3. Total payment amount in October 2020 according to the trainers.

Setting:

<div> <div> TRAINER * TrainerID TrName TrPhone TrGender </div> <div> SESSION * ScheduleCode TrainerID MonthlyFee TypeCode </div> <div> REGISTRATION * MemberID ScheduleCode TrainerID StartDate EndDate </div> <div> PAYMENT * MemberID ScheduleCode TrainerID StartDate PayDate Amount MethodNo </div> </div>				
Field:	TrainerID	TrName	Total Payment Amount: Amount	PayDate
Table:	TRAINER	TRAINER	PAYMENT	PAYMENT
Total:	Group By	Group By	Sum	Where
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:				>=#1/10/2020# And <#1/11/2020#
or:				


Results:

Query3		
TrainerID	TrName	Total Payment Amount
222	Steve Jobs	\$79.95
333	William Miller	\$60.00
444	Hannah Dang	\$135.95

4. Members who do not currently register in any sessions, including who has not registered, and who registered but left and has not returned in any sessions.

Setting:

```
Query4 X
SELECT MEMBER.MemberID, MEMBER.MName, MEMBER.MGender
FROM MEMBER
WHERE (((MEMBER.MemberID) Not In (SELECT MemberID
                                FROM REGISTRATION
                                WHERE REGISTRATION.EndDate IS NULL)));
```

MEMBER	
*	
	MemberID
	MName
	MGender
	MHomeSuburb
	MPhone

Field:	MemberID	MName	MGender
Table:	MEMBER	MEMBER	MEMBER
Sort:			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	Not In (SELECT MemberID FROM REGISTRATION WHERE REGISTRATION.EndDate IS NULL)		
or:			

Result:

Query4 X			
	MemberID	MName	MGender
	223344556	Daniel Kinghar	Male
	333333333	Jan Owen	Female
	999999999	Olivia Johnson	Female
*	0		

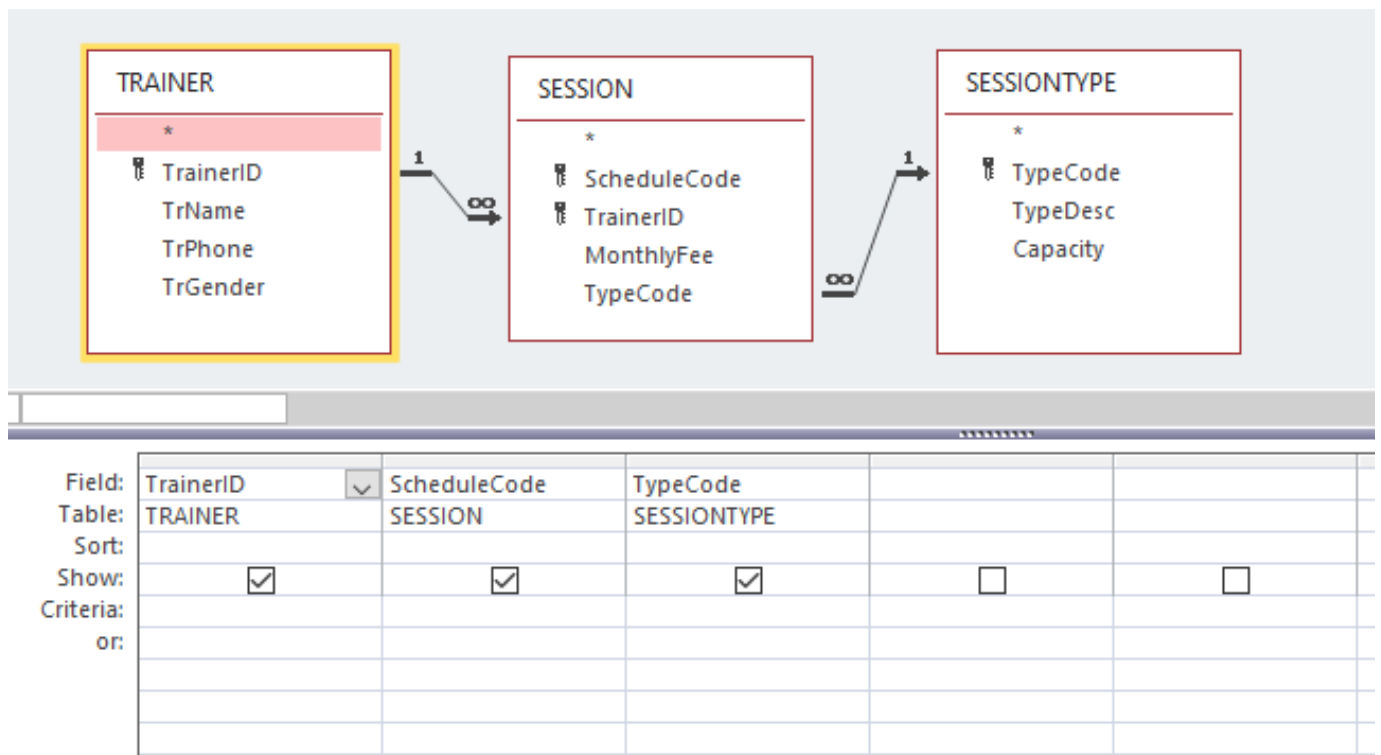
- List all the trainers in the business, including those who are and are not instructing any sessions, with their associate schedule code and session type code.

Setting:

```

Query5
SELECT TRAINER.TrainerID, SESSION.ScheduleCode, SESSIONTYPE.TypeCode
FROM TRAINER
LEFT OUTER JOIN (SESSIONTYPE
                RIGHT OUTER JOIN SESSION
                ON SESSIONTYPE.TypeCode = SESSION.TypeCode)
ON TRAINER.TrainerID = SESSION.TrainerID;

```

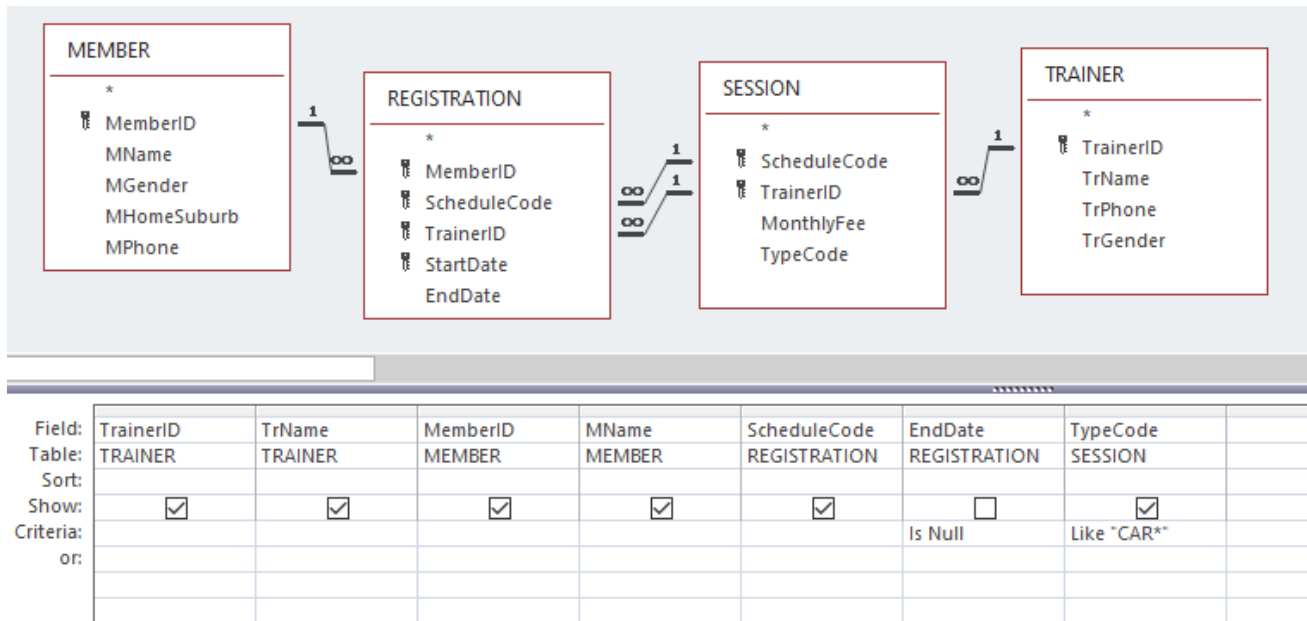


Result:

TrainerID	ScheduleCode	TypeCode
111	MoWeFr1300-1500	YOG10
111	FrSa1830-2030	YOG10
222	FrSa1830-2030	STR1
333	TuThSa1300-1500	STR5
444	MoWeFr1300-1500	CAR5
444	TuThSa1600-1800	CAR1
555		
*		

- List all trainers, session schedules and current members in the Cardiovascular exercise sessions

Setting:



Result:

Query6						
TrainerID	TrName	MemberID	MName	ScheduleCode	TypeCode	
444	Hannah Dang	102895606	Vicky Vu	MoWeFr1300-1500	CAR5	
444	Hannah Dang	111222333	James Ymer	TuThSa1600-1800	CAR1	
444	Hannah Dang	777888999	Donald Trump	MoWeFr1300-1500	CAR5	
*						

7. Number of members in the businesss distributed by their Home Suburbs and gender.

Setting:

1 Location = [MHomeSuburb] & ", VIC, Australia"					
MemberID	MName	MGender	MHomeSuburb	MPhone	Location
102030405	Julia Gillard	Female	Dockland	0401020304	Dockland, VIC, Australia
102895606	Vicky Vu	Female	Footscray	0412345678	Footscray, VIC, Australia
111222333	James Ymer	Male	Hawthorn	0411122233	Hawthorn, VIC, Australia

Filters

Search

Filters on this visual

Count of MemberID is (All)

Location is (All)

MGender is (All)

Add data fields here

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Visualizations

Location

Location

Legend

MGender

Latitude

Add data fields here

Longitude

Add data fields here

Size

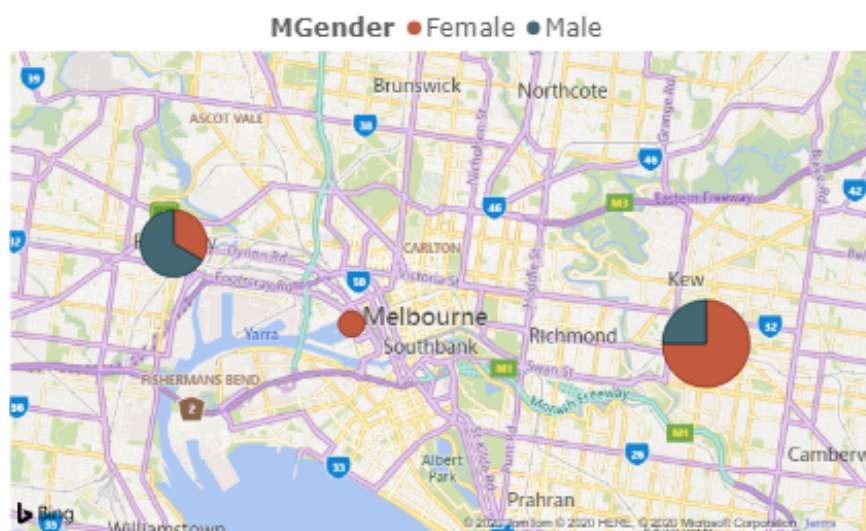
Count of MemberID

Tooltips

Add data fields here

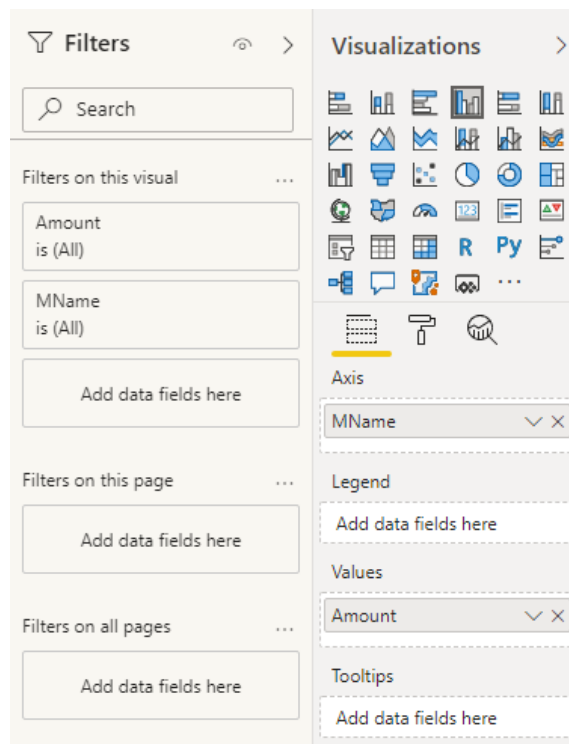
Visualisation:

102895606 - Number of Members by their Gender and Home Location

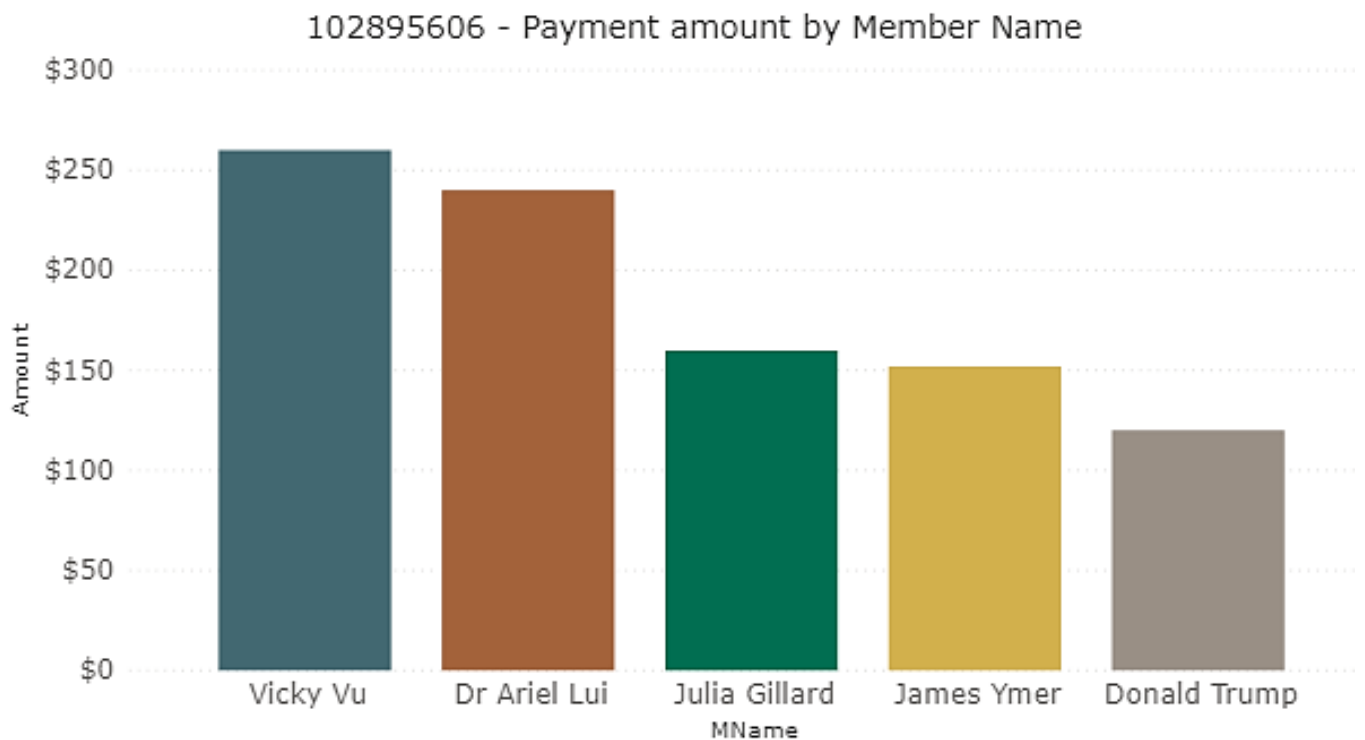


8. Total payments made by the members registering in the business sessions (This visualisation shows my name, tutor's name and convenor's name).

Setting:

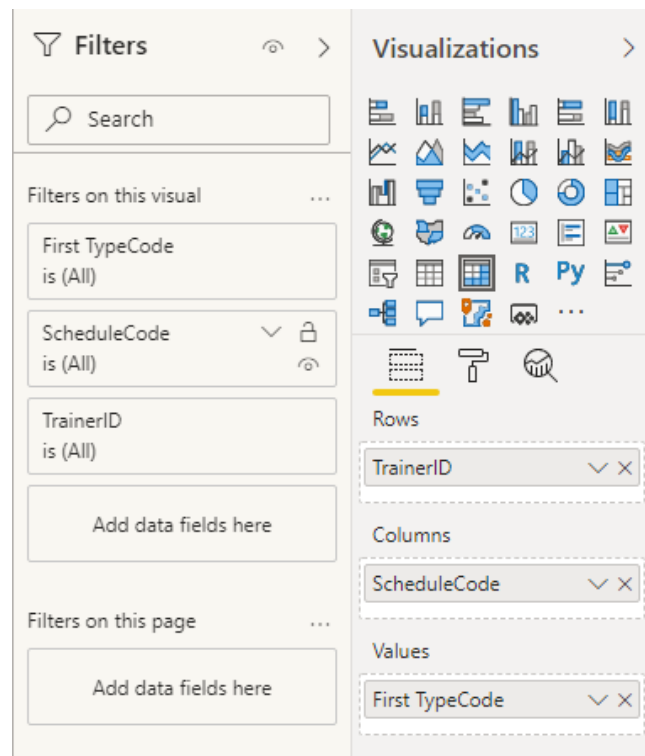


Visualisation:



9. Business's sessions operation – The session types arranged according to session schedules and trainers.

Setting:



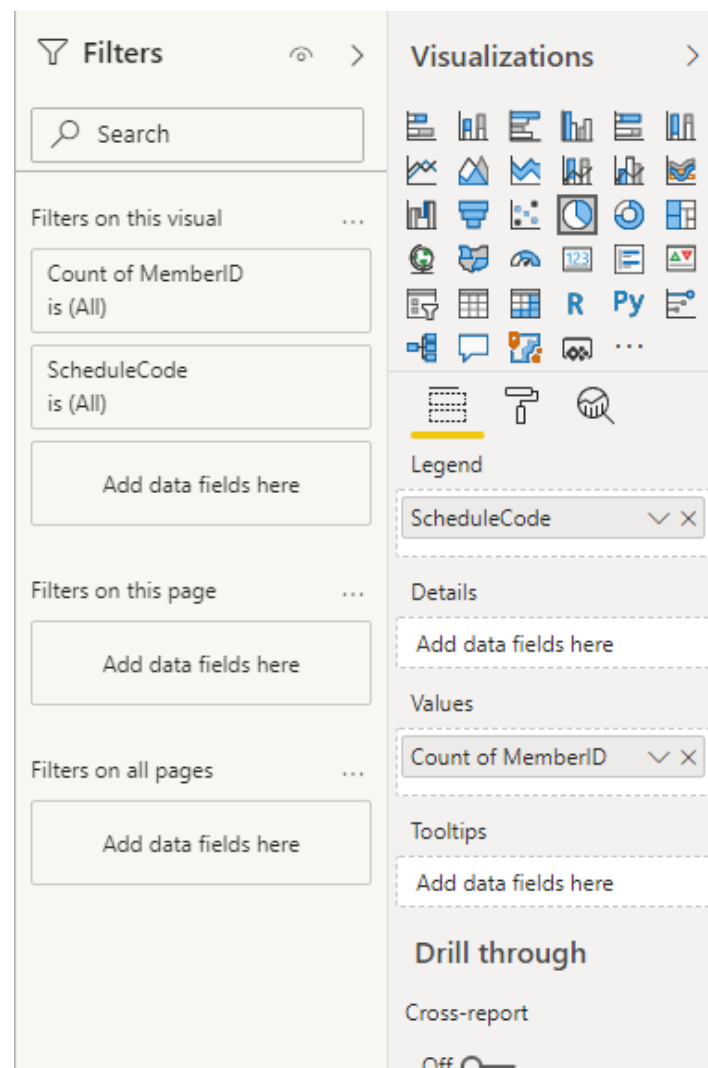
Visualisation:

102895606 - Session Type by TrainerID and Schedule Code

TrainerID	FrSa1830-2030	MoWeFr1300-1500	TuThSa1300-1500	TuThSa1600-1800
111	YOG10	YOG10		
222	STR1			
333			STR5	
444		CAR5		CAR1

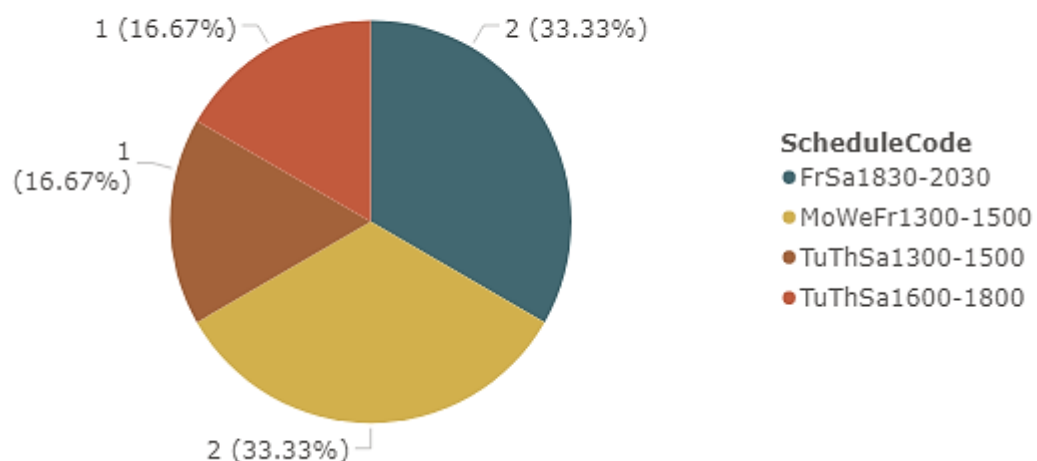
10. The popular schedules - Count of Members by Session Schedule Code.

Setting:



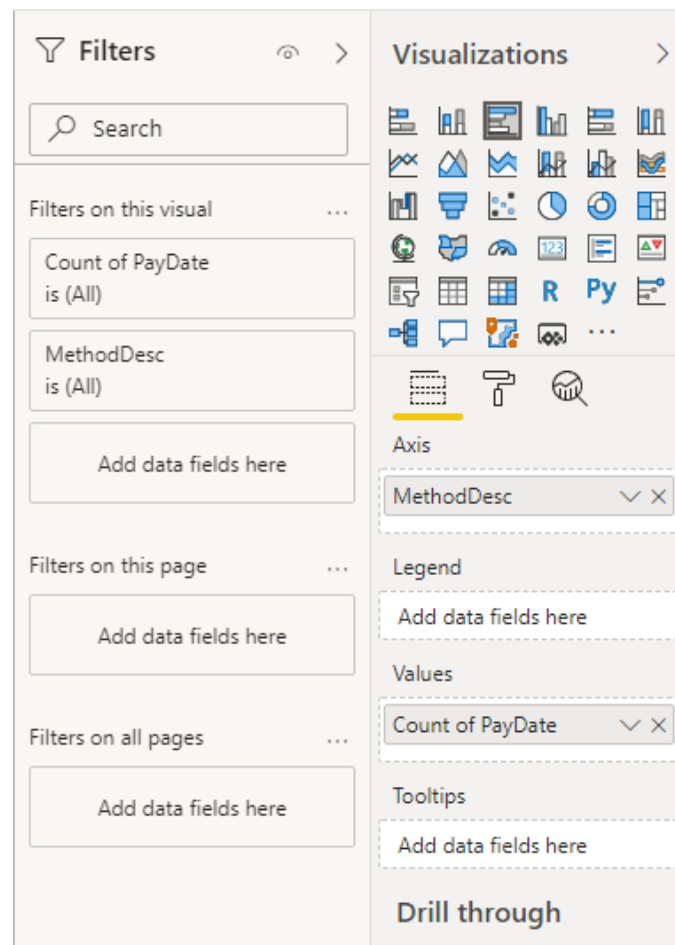
Visualisation:

102895606 - Count of Members by ScheduleCode

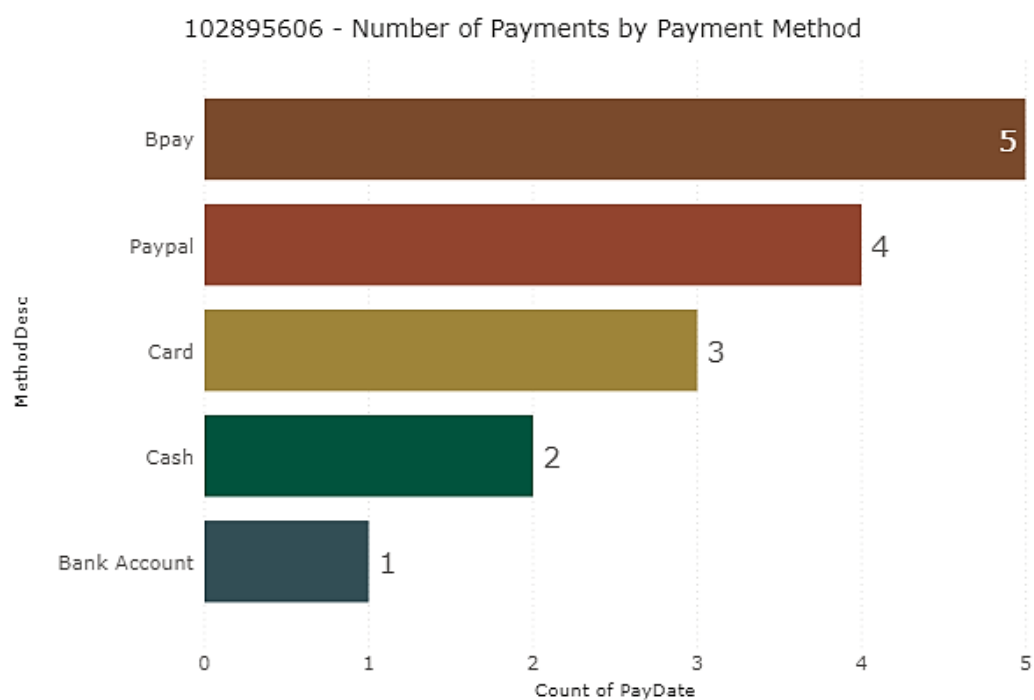


11. Payment's methods popularity – Counting number of payments for each method of payment.

Setting:

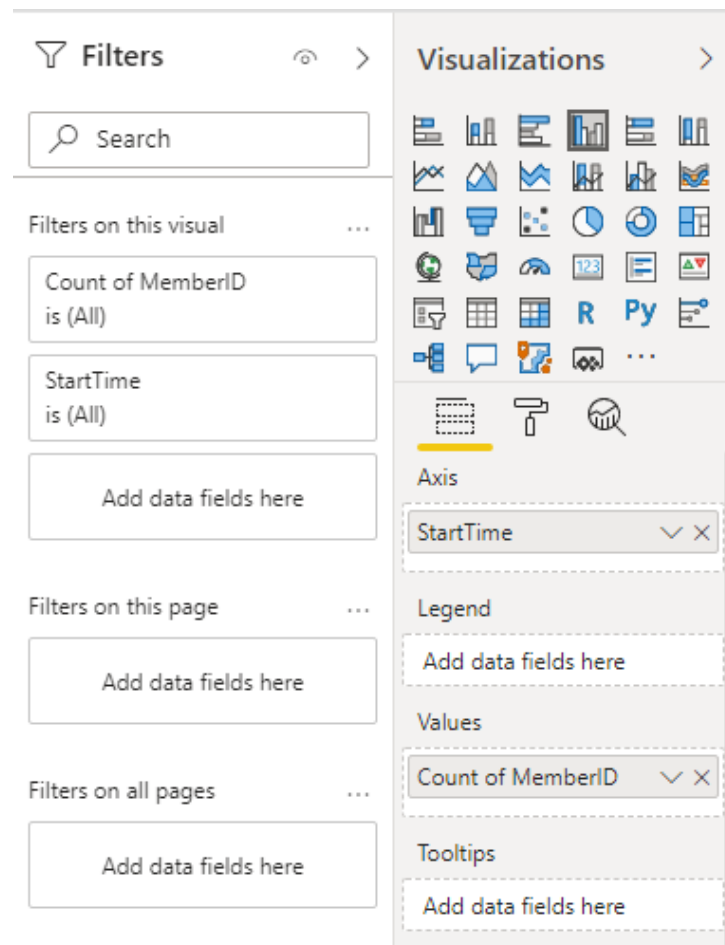


Visualisation:



12. Session's starting times popularity – Counting number of members joining in for each session's starting time.

Setting:



Visualisation:

