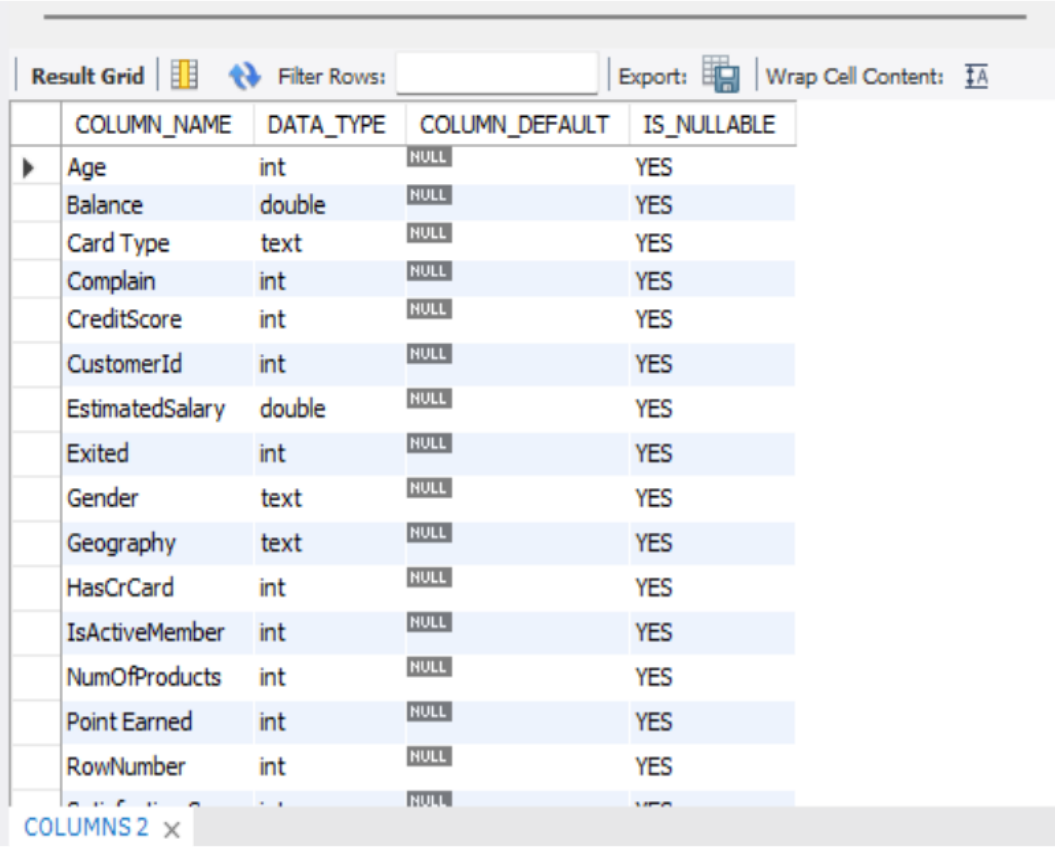
Nikhilkumar Basude Data Analyst

Losing bank customers:

- **Importing the dataset and do usual exploratory analysis steps like checking the structure & characteristics of the dataset.**

```
SELECT
   COLUMN_NAME,DATA_TYPE,COLUMN_DEFAULT,IS_NULLABLE
FROM
   INFORMATION_SCHEMA.COLUMNS
WHERE
   TABLE_NAME = 'bank_records' AND TABLE_SCHEMA = 'bank_customer_churn';
```



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

COLUMN_NAME	DATA_TYPE	COLUMN_DEFAULT	IS_NULLABLE
Age	int	NULL	YES
Balance	double	NULL	YES
Card Type	text	NULL	YES
Complain	int	NULL	YES
CreditScore	int	NULL	YES
CustomerId	int	NULL	YES
EstimatedSalary	double	NULL	YES
Exited	int	NULL	YES
Gender	text	NULL	YES
Geography	text	NULL	YES
HasCrCard	int	NULL	YES
IsActiveMember	int	NULL	YES
NumOfProducts	int	NULL	YES
Point Earned	int	NULL	YES
RowNumber	int	NULL	YES

COLUMNS 2

- **Check the total Count of rows and no of columns we are dealing with**.

Total_rows:

```
select count(*) as total_rows from bank_records
```

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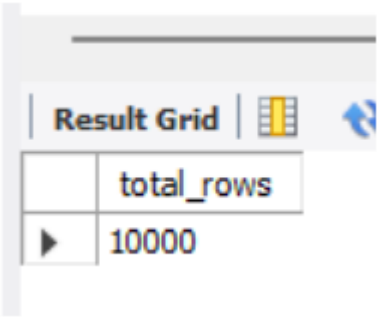
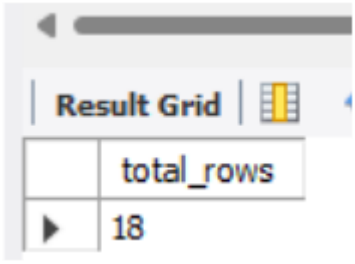


Total_columns:

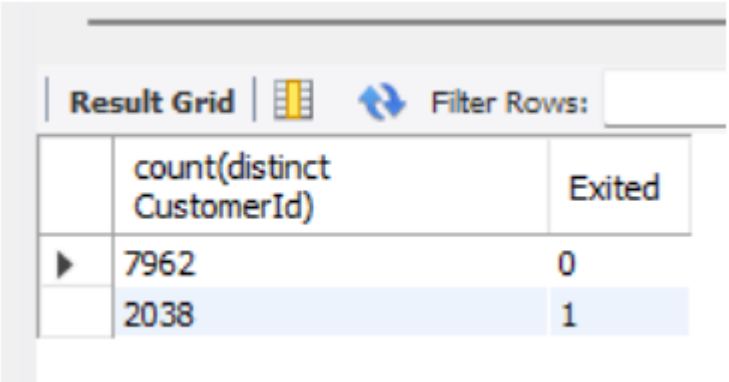
```
select count(*) as total_columns
from INFORMATION_SCHEMA.COLUMNS
WHERE TABLE_NAME = 'bank_records'
and table_schema = 'bank_customer_churn'
```



Performing Basic Exploring data analysis:

- **Lets check the Customer with exited.**

```
select count(distinct CustomerId),Exited
from bank_records
group by Exited
```



- **Now it will make more sense when we add the Complaint with Exited.**

```
select count(distinct CustomerId),Exited,Complain
from bank_records
```

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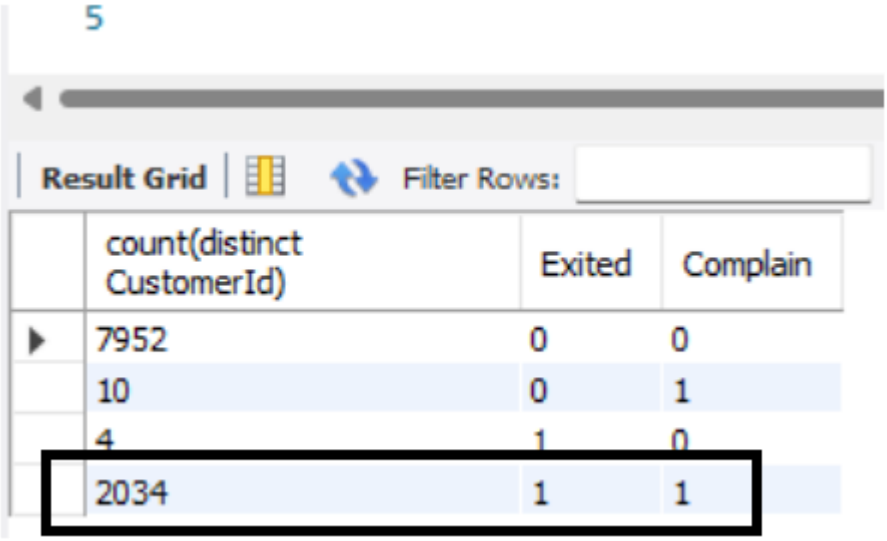
group by Exited,Complain

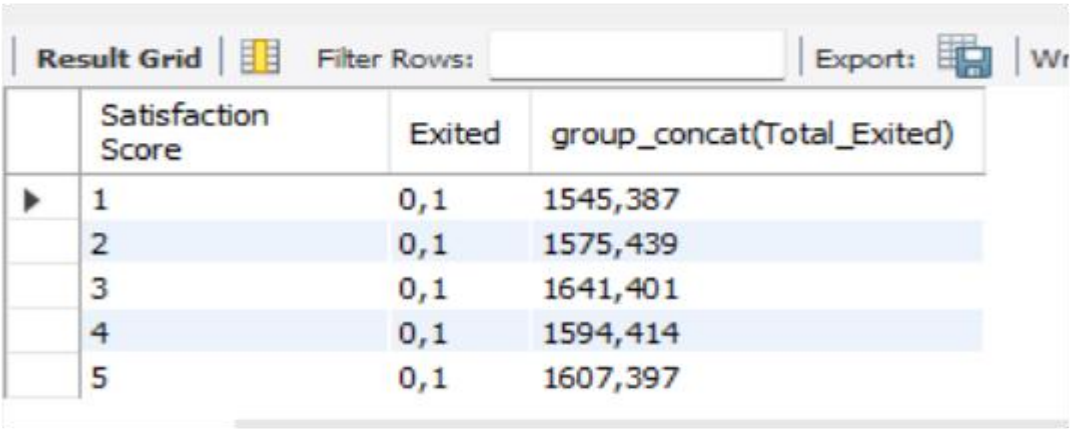


count(distinct CustomerId)	Exited	Complain
7952	0	0
10	0	1
4	1	0
2034	1	1

Observation: Out of 2038 customer churned there were 2034 customer who complained

- **Now Let's check the satisfaction score with exited.**

```
with cte as (select `Satisfaction Score`,Exited,count(Exited) as Total_Exited
from bank_records
group by `Satisfaction Score`,Exited
order by 1)
select
        `Satisfaction Score`,group_concat(Exited) as Exited,group_concat(Total_Exited)
from cte
group by `Satisfaction Score` order by 1
```



Satisfaction Score	Exited	group_concat(Total_Exited)
1	0,1	1545,387
2	0,1	1575,439
3	0,1	1641,401
4	0,1	1594,414
5	0,1	1607,397

- **Let's check the Credit card holder status with Exited.**

```
select  Exited, HasCrCard, count(HasCrCard) as has_credit_card
```

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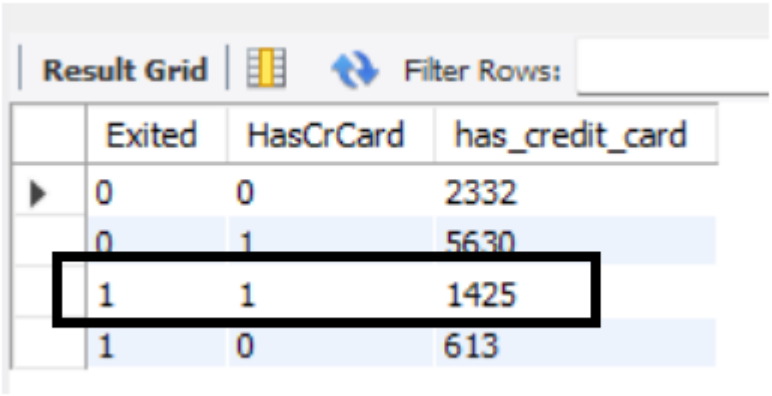
from bank_records

group by HasCrCard,Exited

order by 1



Result Grid | Filter Rows:

Exited	HasCrCard	has_credit_card
0	0	2332
0	1	5630
1	1	1425
1	0	613

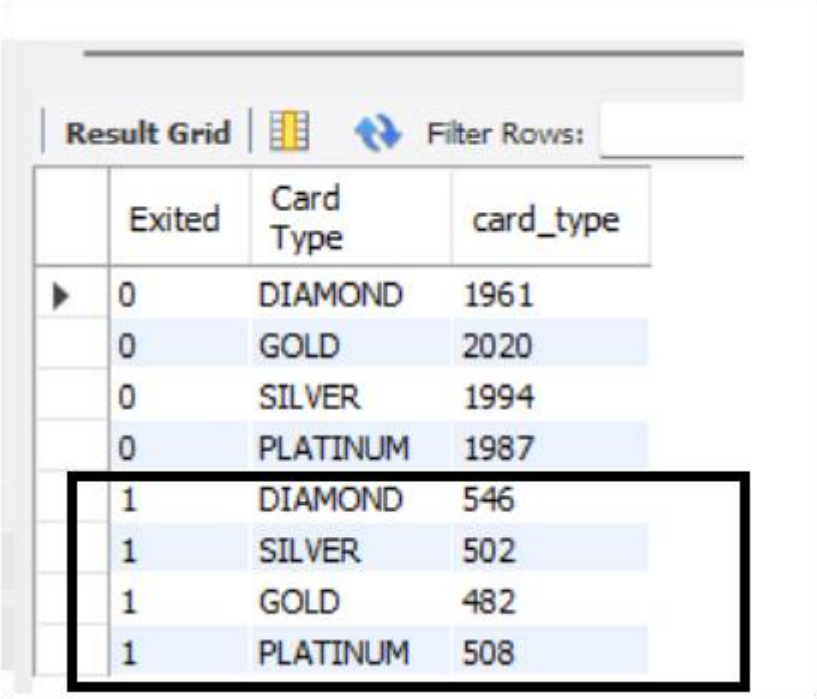
Observation: from above observation it is cleared that people who have no card and exited were 613 and people with card and exited were 1425 which shows people having card exited more than who have no cards.

- **Let's check the card type and Exited.**

select Exited, `Card Type`, count(`Card Type`) as card_type

from bank_records

group by `Card Type`,Exited order by 1



Result Grid | Filter Rows:

Exited	Card Type	card_type
0	DIAMOND	1961
0	GOLD	2020
0	SILVER	1994
0	PLATINUM	1987
1	DIAMOND	546
1	SILVER	502
1	GOLD	482
1	PLATINUM	508

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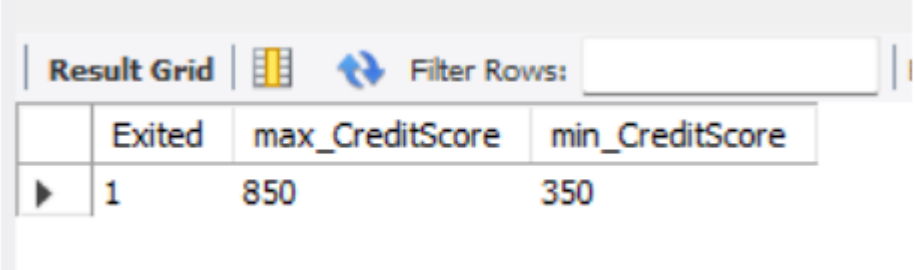
Observation: from above observation we can see almost all different type of Card Type holders have Equally churned out

- **Let's check the credit score with Exited.**

```
select  Exited,max(CreditScore) as max_CreditScore, min(CreditScore) as min_CreditScore
from bank_records
where Exited = 1
group by Exited
```



Result Grid | Filter Rows:

	Exited	max_CreditScore	min_CreditScore
▶	1	850	350

```
with cte as (select CreditScore,
        case
                when CreditScore between 300 and 400 then 4
    when CreditScore between 401 and 500 then 5
    when CreditScore between 501 and 600 then 6
    when CreditScore between 601 and 700 then 7
    when CreditScore between 701 and 800 then 8
    when CreditScore between 801 and 900 then 9
  end as bin
from bank_records
where Exited = 1)
select  bin, count(CreditScore) as `count` from cte group by bin order by 1
```

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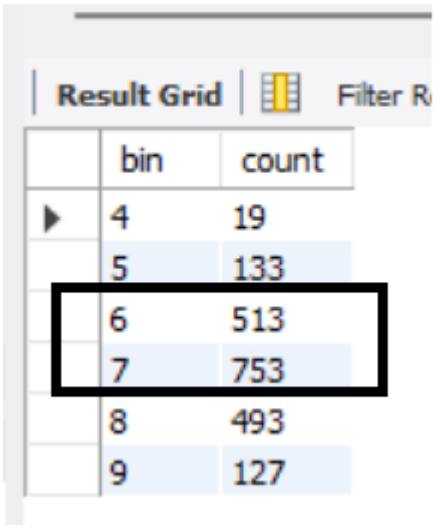


Result Grid | Filter R

	bin	count
▶	4	19
	5	133
	6	513
	7	753
	8	493
	9	127

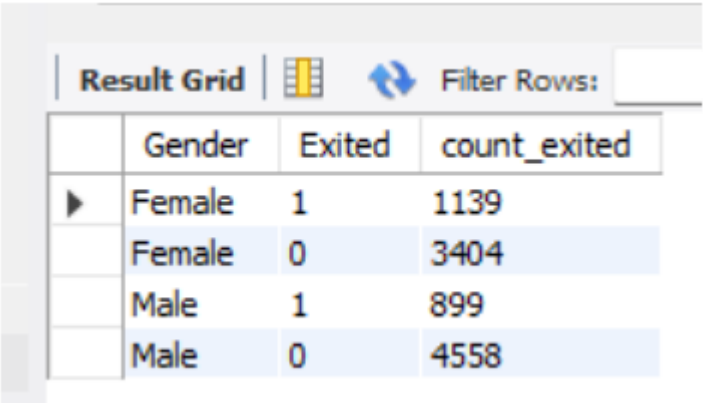
Observation: people with credit score in between 500 - 600 and 600-700 left the banking service the most

- **Gender Vs Exited**

```
select Gender, Exited,count(Exited) count_exited

from bank_records

group by 1,2;
```



Result Grid | Filter Rows:

	Gender	Exited	count_exited
▶	Female	1	1139
	Female	0	3404
	Male	1	899
	Male	0	4558

- **Geography Vs Exited.**

```
select Geography, Exited,count(Exited) count_exited

from bank_records

group by 1,2 order by 1,2;
```

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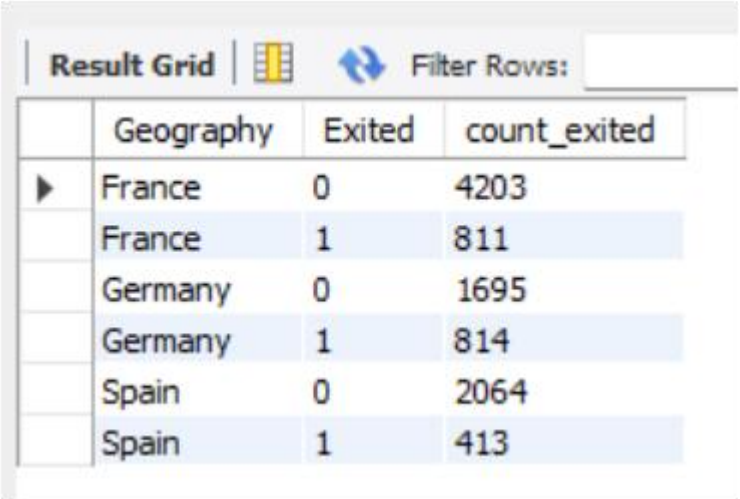
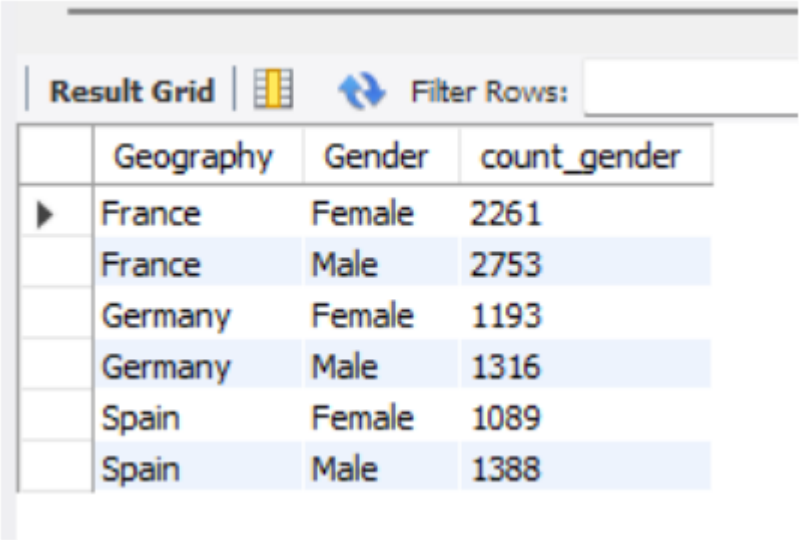


Result Grid | Filter Rows:

Geography	Exited	count_exited
France	0	4203
France	1	811
Germany	0	1695
Germany	1	814
Spain	0	2064
Spain	1	413

- **Gender Vs Geography**

```
select Geography, Gender,count(Gender) count_gender
from bank_records
group by 1,2 order by 1,2;
```



Result Grid | Filter Rows:

Geography	Gender	count_gender
France	Female	2261
France	Male	2753
Germany	Female	1193
Germany	Male	1316
Spain	Female	1089
Spain	Male	1388

- **Gender Vs Geography Vs Exited.**

```
select Geography, Gender,Exited, count(Gender) count
from bank_records
group by 1,2,3 order by 1,3;
```

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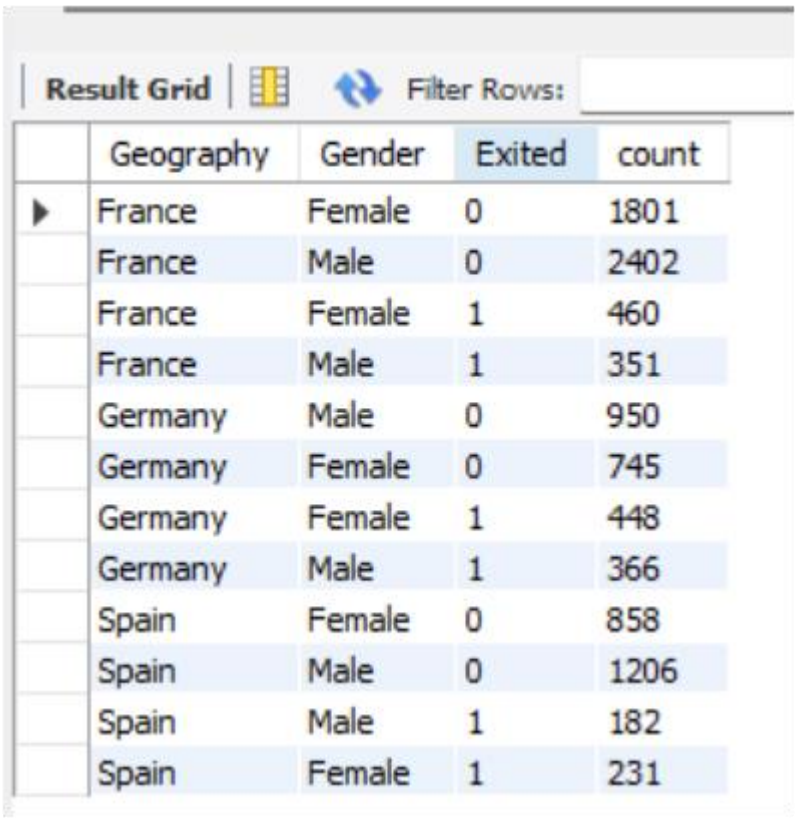
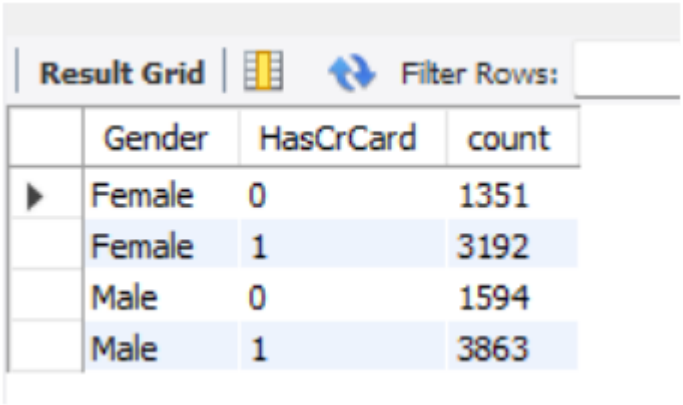


Result Grid | Filter Rows:

Geography	Gender	Exited	count
France	Female	0	1801
France	Male	0	2402
France	Female	1	460
France	Male	1	351
Germany	Male	0	950
Germany	Female	0	745
Germany	Female	1	448
Germany	Male	1	366
Spain	Female	0	858
Spain	Male	0	1206
Spain	Male	1	182
Spain	Female	1	231

- **Gender Vs Credit card holder.**

```
select Gender,HasCrCard,count(HasCrCard) as count
from bank_records
group by Gender,HasCrCard order by 1,2;
```



Result Grid | Filter Rows:

Gender	HasCrCard	count
Female	0	1351
Female	1	3192
Male	0	1594
Male	1	3863

- **Customer Chunk has credit card.**

```
select HasCrCard,Gender,count(Exited) as count
from bank_records
where Exited = 1
group by HasCrCard,Gender order by 1,2;
```

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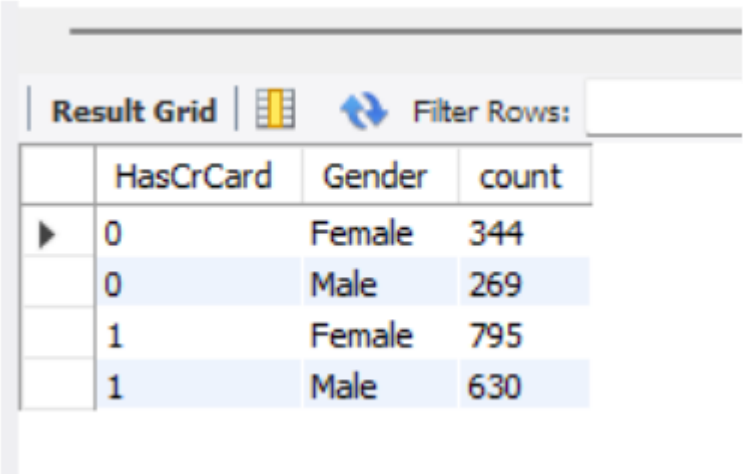


Result Grid | Filter Rows:

	HasCrCard	Gender	count
▶	0	Female	344
	0	Male	269
	1	Female	795
	1	Male	630

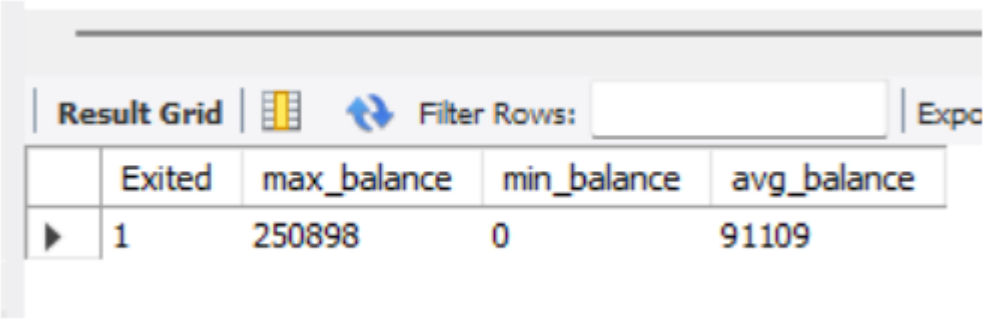
- **Customer Chunk Vs Balance:**

```
select Exited, round(max(Balance)) as max_balance, min(Balance) as min_balance,
round(avg(Balance)) as avg_balance

from bank_records

where Exited = 1

group by Exited;
```



Result Grid | Filter Rows: | Expo

	Exited	max_balance	min_balance	avg_balance
▶	1	250898	0	91109

- **Let's check the Complaint and Satisfaction Score Vs Exited.**

```
select `Satisfaction Score`, count(Complain) count_Complain

from bank_records

where Exited = 1

group by `Satisfaction Score` order by 1;
```

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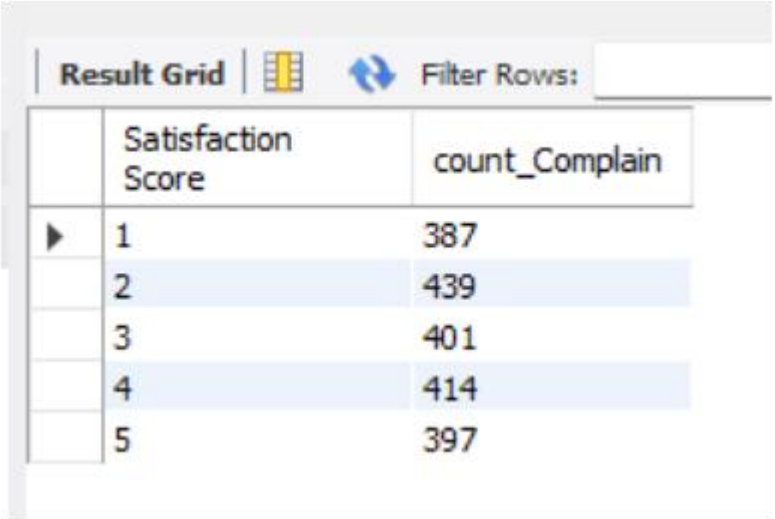

Result Grid | Filter Rows:

	Satisfaction Score	count_Complain
▶	1	387
	2	439
	3	401
	4	414
	5	397

Observation: people who raised the complaint and churned = 1 and their satisfaction score were 1 ,2 3, 4, 5

- **customer retention strategies**

Creating View for Exited =1

```
Create view bank_data_for_chunk as
select CustomerId,Tenure,NumOfProducts,EstimatedSalary,Balance
from bank_records
where Exited =1 ;
```

Alter view for creating new columns i.e spent:

```
CREATE
    ALGORITHM = UNDEFINED
    DEFINER = `root`@`localhost`
    SQL SECURITY DEFINER
VIEW `bank_data_for_chunk` AS
    SELECT
        `bank_records`.`CustomerId` AS `CustomerId`,
        `bank_records`.`Tenure` AS `Tenure`,
        `bank_records`.`NumOfProducts` AS `NumOfProducts`,
        `bank_records`.`EstimatedSalary` AS `EstimatedSalary`,
        `bank_records`.`Balance` AS `Balance`,
```

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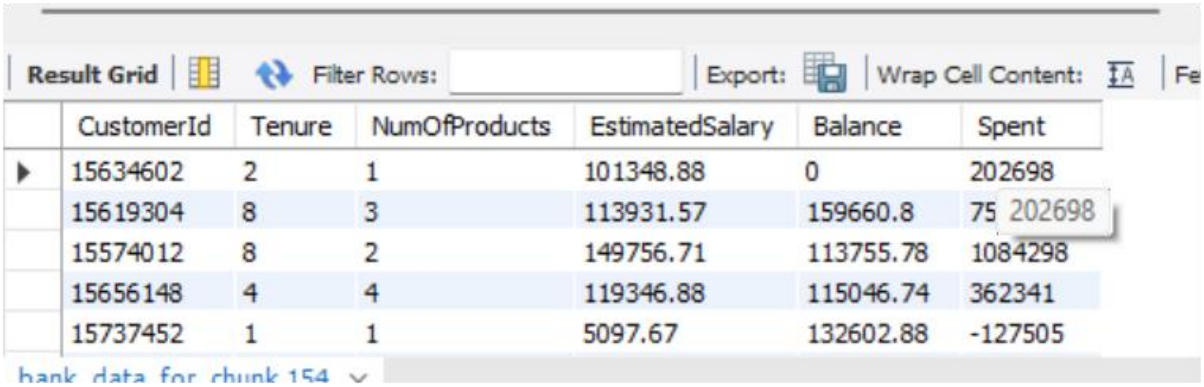
((`bank_records`.`EstimatedSalary` * `bank_records`.`Tenure`) - `bank_records`.`Balance`) AS `Spent`

FROM

`bank_records`

WHERE

(`bank_records`.`Exited` = 1)



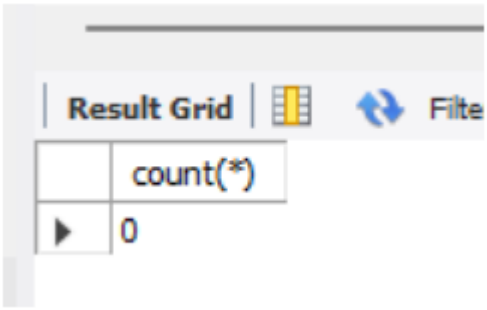
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

CustomerId	Tenure	NumOfProducts	EstimatedSalary	Balance	Spent
15634602	2	1	101348.88	0	202698
15619304	8	3	113931.57	159660.8	75 202698
15574012	8	2	149756.71	113755.78	1084298
15656148	4	4	119346.88	115046.74	362341
15737452	1	1	5097.67	132602.88	-127505

bank_data_for_chunk 154

- **Let's check for the negative balance data.**

select count(*) from bank_data_for_chunk where Balance < 0;



Result Grid | Filte

count(*)
0

Observation: we don't have any negative balance account it shows we have no customer who have defaulted while exiting the bank after using its service.

- **Let's check who's spent is in Negative.**

select *,count(*) over() as total from bank_data_for_chunk where Spent < 0 ;

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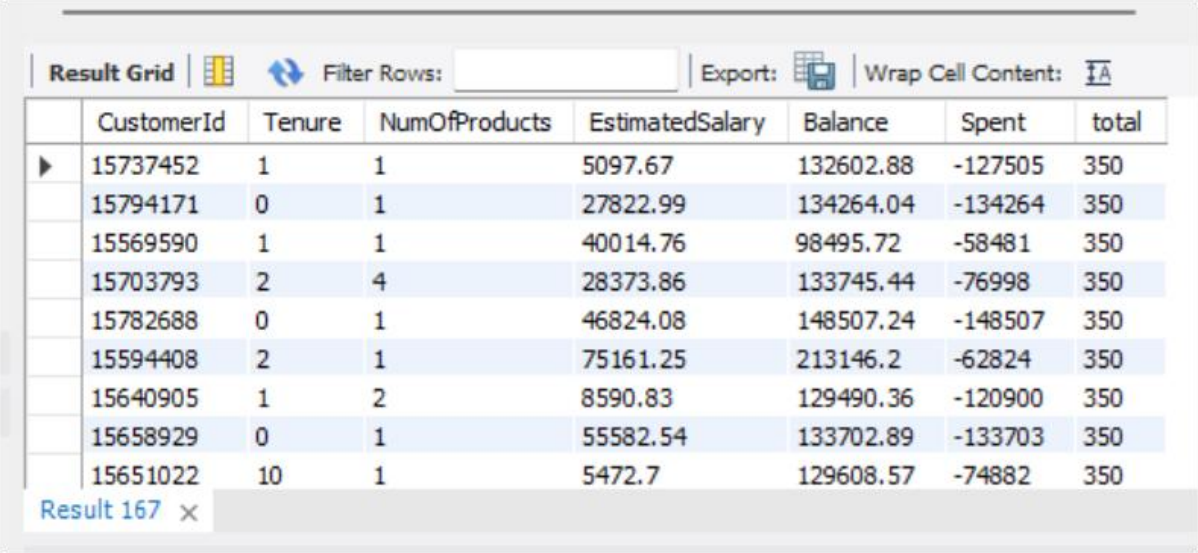


Result Grid | Filter Rows: | Export: | Wrap Cell Content:

CustomerId	Tenure	NumOfProducts	EstimatedSalary	Balance	Spent	total
15737452	1	1	5097.67	132602.88	-127505	350
15794171	0	1	27822.99	134264.04	-134264	350
15569590	1	1	40014.76	98495.72	-58481	350
15703793	2	4	28373.86	133745.44	-76998	350
15782688	0	1	46824.08	148507.24	-148507	350
15594408	2	1	75161.25	213146.2	-62824	350
15640905	1	2	8590.83	129490.36	-120900	350
15658929	0	1	55582.54	133702.89	-133703	350
15651022	10	1	5472.7	129608.57	-74882	350

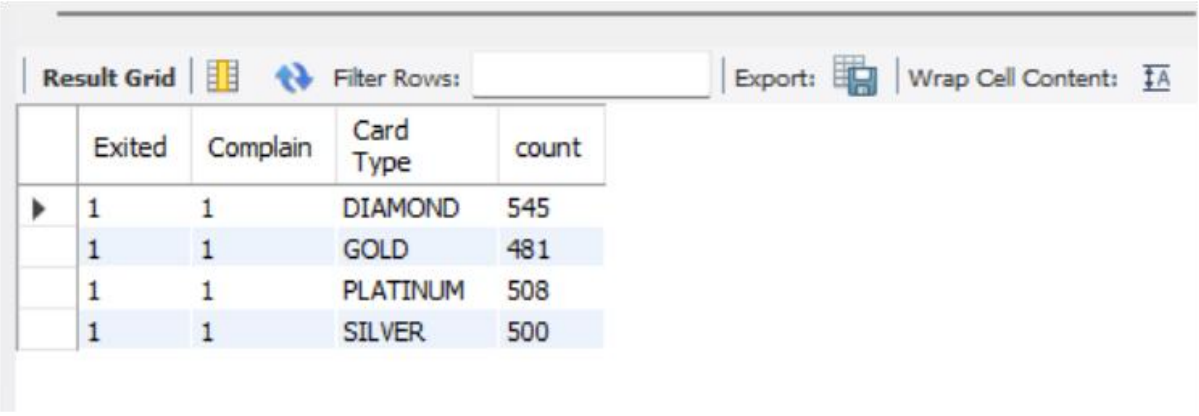
Result 167

Observation: The above analysis shows the out of total people who left 350 are of people whose balance were more than their estimated salary according to Their bank tenure usage which speaks that apart from their estimated salary they have had more balance not from salary but from other assets.

bank is at loss for loosing such customers

- **Customer count with exited and has complain.**

```
select Exited,Complain,`Card Type` ,count(*) as count
from bank_records
where Exited = 1 and Complain = 1
group by Exited,Complain,`Card Type` order by 1,2,3
```



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

Exited	Complain	Card Type	count
1	1	DIAMOND	545
1	1	GOLD	481
1	1	PLATINUM	508
1	1	SILVER	500

- **Let's check the Exited, Complain Vs card type Vs Statisfaction_Score.**

```
with cte as (select Exited,Complain,`Card Type`,`Satisfaction Score` ,count(*) as count
from bank_records
where Exited = 1 and Complain = 1
```

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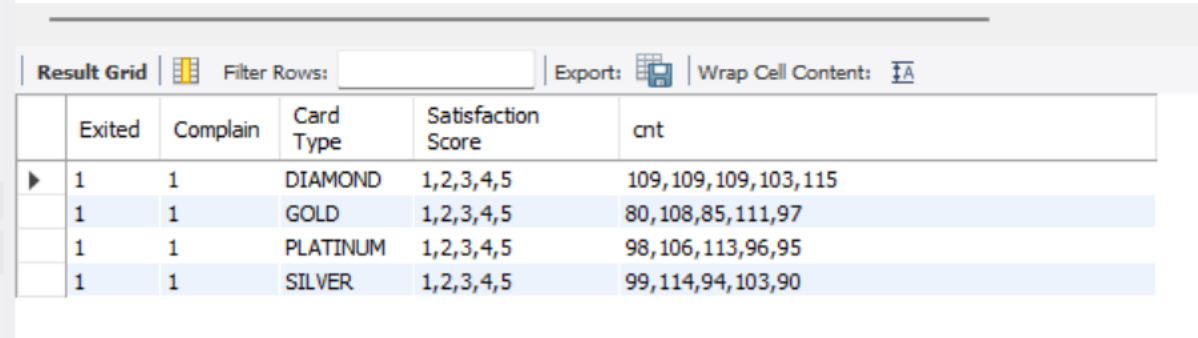
group by Exited,Complain,`Card Type`,`Satisfaction Score` order by 1,2,3,4)

select Exited,Complain,`Card Type`, group_concat(`Satisfaction Score`) as `Satisfaction Score`, group_concat(`count`) as cnt

from cte

group by Exited,Complain,`Card Type`;



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

Exited	Complain	Card Type	Satisfaction Score	cnt
1	1	DIAMOND	1,2,3,4,5	109,109,109,103,115
1	1	GOLD	1,2,3,4,5	80,108,85,111,97
1	1	PLATINUM	1,2,3,4,5	98,106,113,96,95
1	1	SILVER	1,2,3,4,5	99,114,94,103,90

Observation: satisfaction score for Customer who churned out and have complained to banking services were visualize as below shown

- **Age Group Vs chunked customer:**

with cte as (select Age,

case

when Age between 0 and 20 then 1

when Age between 21 and 40 then 2

when Age between 41 and 60 then 3

when Age between 61 and 80 then 4

when Age between 81 and 100 then 5

end as bin,

count(Exited) as cnt

from bank_records

where Exited = 1

group by Age order by 2 desc)

select bin, sum(cnt) from cte group by bin

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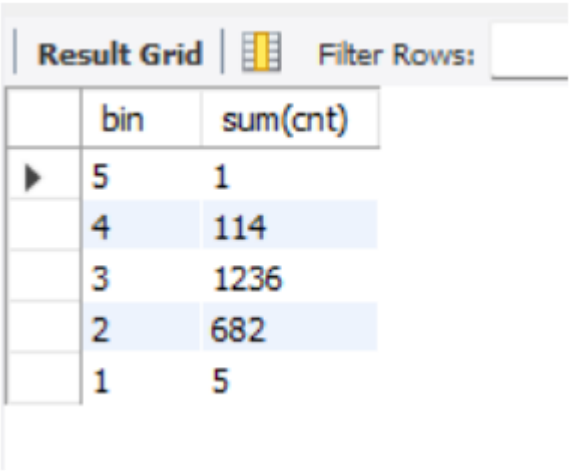

Result Grid | Filter Rows:

	bin	sum(cnt)
▶	5	1
	4	114
	3	1236
	2	682
	1	5

Observation: The chunk rate is more in the 2 and 3 mean 20 to 60 age group.

Overall Observation:

The Customer churning are dependent on Variables like Credit Score ,Age and Geography Tenure has no relation with customer who churned

Recommendation:

Focus on Customer with Credit score between 600-700 as they are more likely to churn. Keep a guard rail check on the 30-40 year of age people as they are loyal customers the Age from 40 – 50 were the mostly who churned so incentivize them too so they not churned in future Gender has an impact on churning so and incentives for gender can benefits the customer Focus on credit card service and bring innovation as people who left were most of who have credit card with them

Observation & Recommendation:

The Customer churning are dependent on Variables like Credit Score ,Age and Geography, Balance Tenure has no relation with customer who churned

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