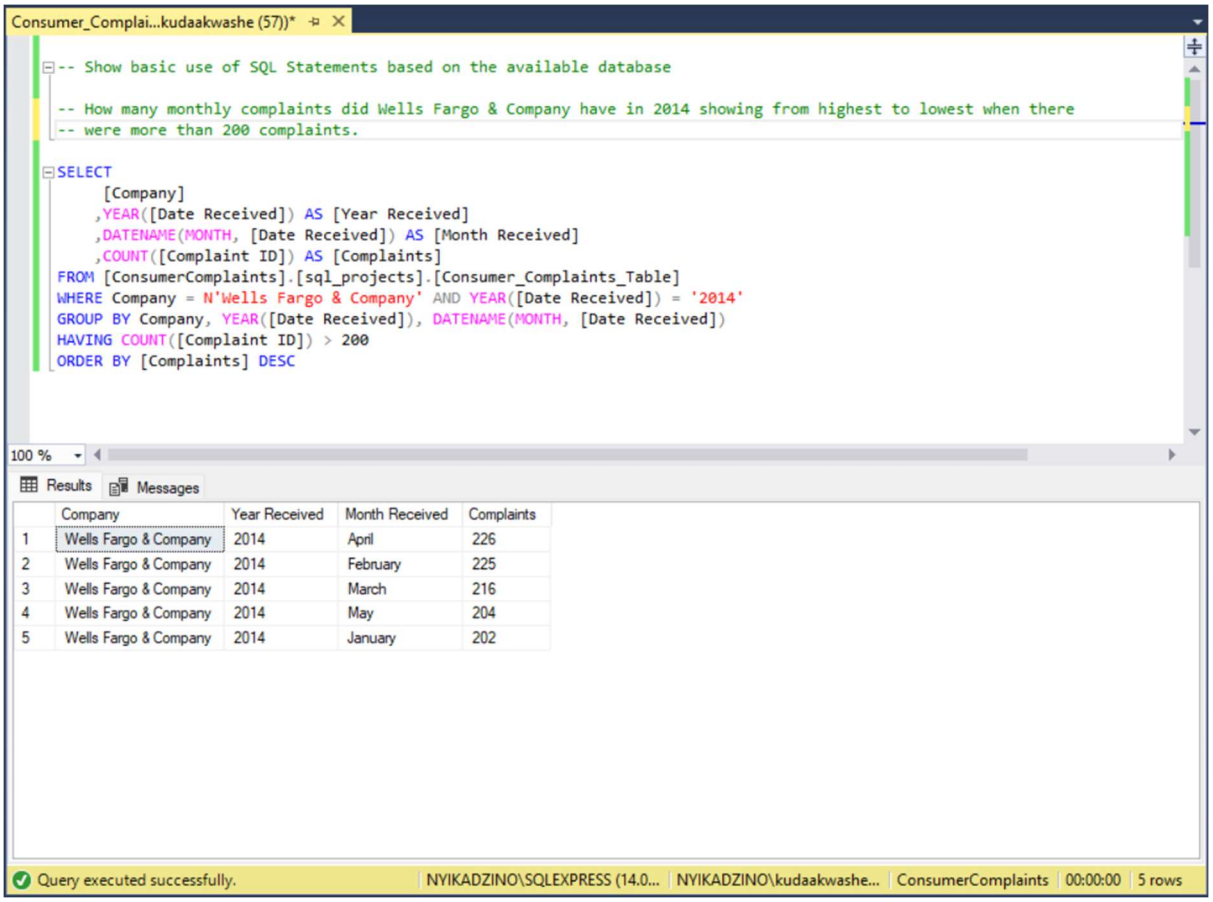
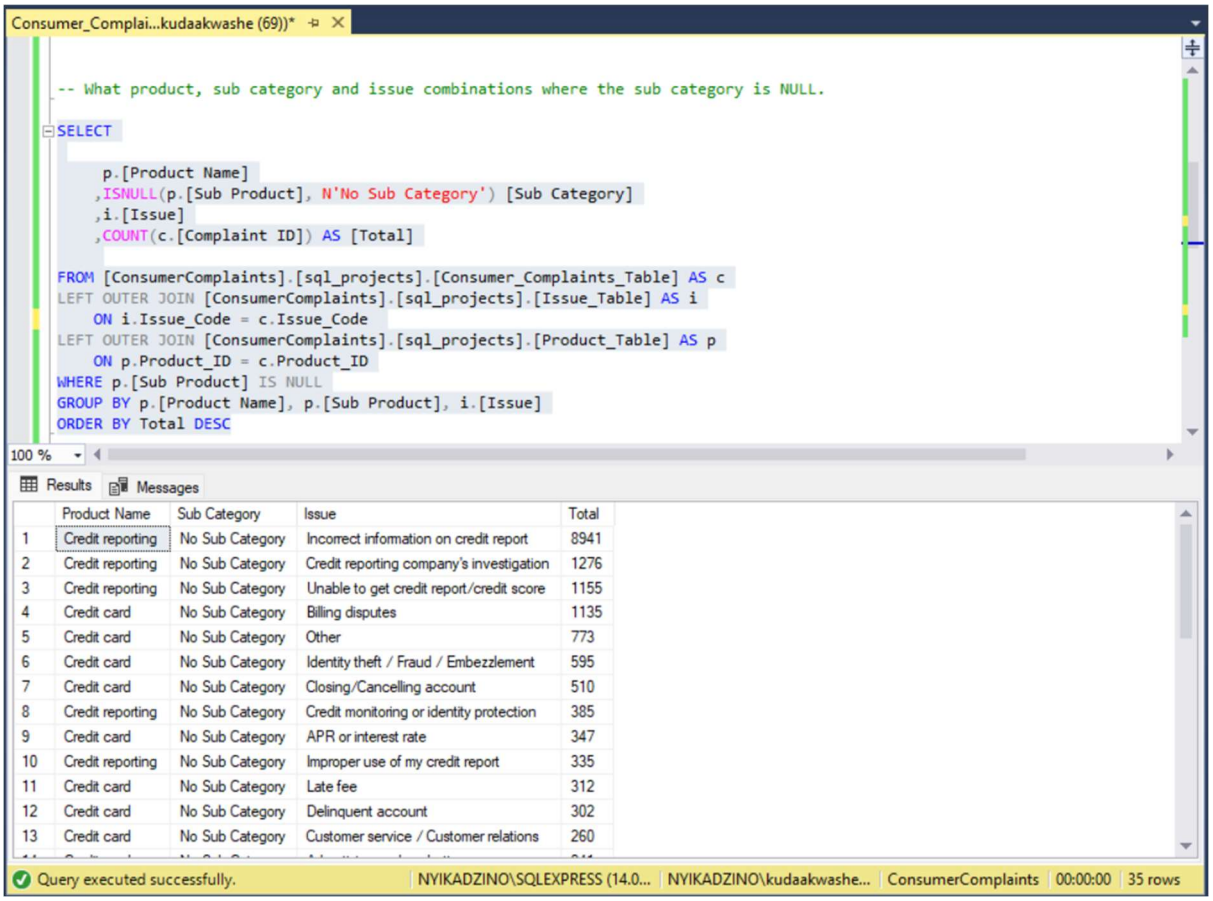
Question 1
How many monthly complaints did Wells Fargo & Company have in 2014 showing from highest to lowest when there were more than 200 complaints.

```
SELECT
        Company
       ,YEAR([Date Received]) AS [Year Received]
       ,DATENAME(MONTH, [Date Received]) AS [Month Received]
       ,COUNT([Complaint ID]) AS [Complaints]
FROM [ConsumerComplaints].[sql_projects].[Consumer_Complaints_Table]
WHERE Company = N'Wells Fargo & Company' AND YEAR([Date Received]) = '2014'
GROUP BY Company, YEAR([Date Received]), DATENAME(MONTH, [Date Received])
HAVING COUNT([Complaint ID]) > 200
ORDER BY [Complaints] DESC
```



Question 2
What product, subcategory and issue combinations appear the least in the data i.e., appearing once.

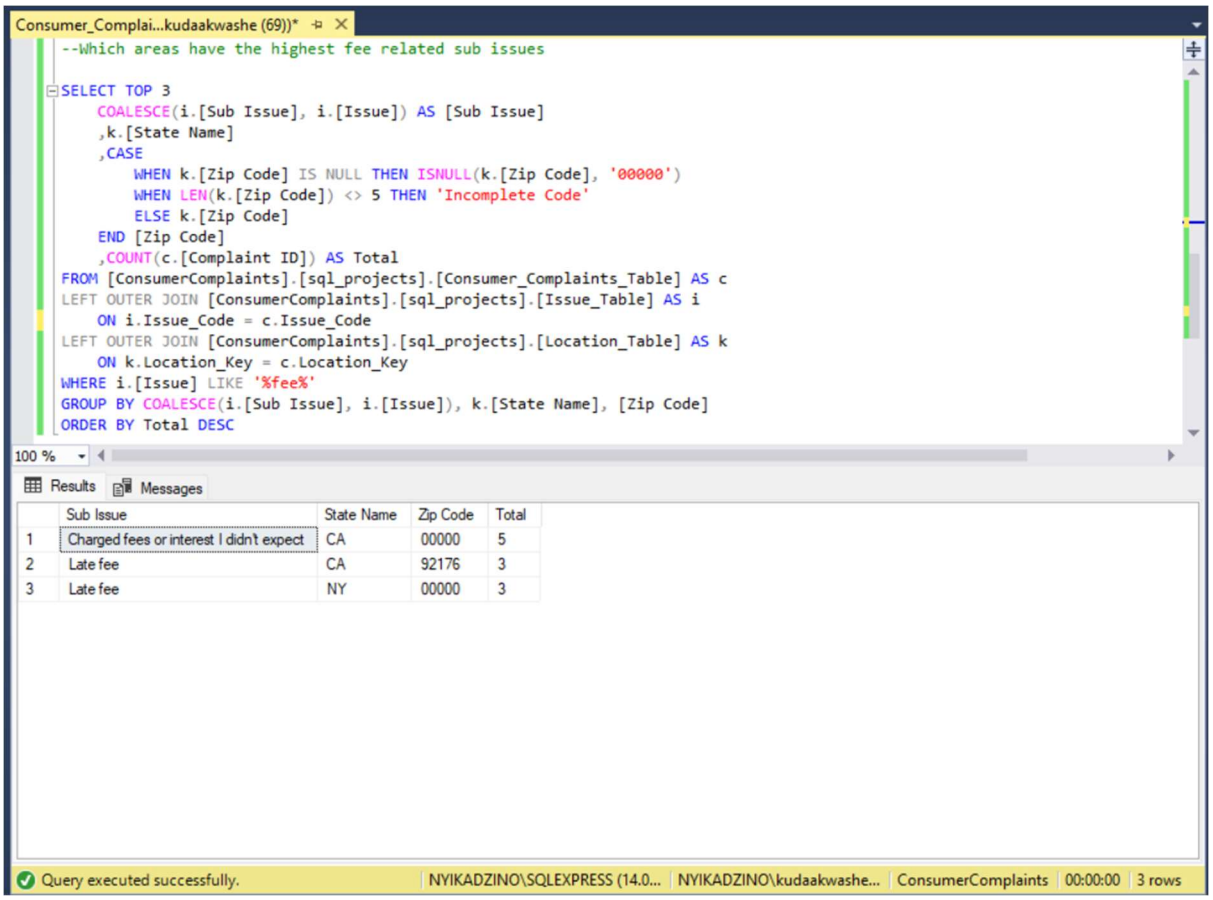
```
SELECT
        p.[Product Name]
       ,ISNULL(p.[Sub Product], N'No Sub Category') [Sub Category]
       ,i.[Issue]
       ,COUNT(c.[Complaint ID]) AS [Total]

FROM [ConsumerComplaints].[sql_projects].[Consumer_Complaints_Table] AS c
LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Issue_Table] AS i
       ON i.Issue_Code = c.Issue_Code
LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Product_Table] AS p
       ON p.Product_ID = c.Product_ID

GROUP BY p.[Product Name], p.[Sub Product], i.[Issue]
HAVING COUNT(c.[Complaint ID]) = 1
ORDER BY Total
```



	Product Name	Sub Category	Issue	Total
1	Credit reporting	No Sub Category	Incorrect information on credit report	8941
2	Credit reporting	No Sub Category	Credit reporting company's investigation	1276
3	Credit reporting	No Sub Category	Unable to get credit report/credit score	1155
4	Credit card	No Sub Category	Billing disputes	1135
5	Credit card	No Sub Category	Other	773
6	Credit card	No Sub Category	Identity theft / Fraud / Embezzlement	595
7	Credit card	No Sub Category	Closing/Cancelling account	510
8	Credit reporting	No Sub Category	Credit monitoring or identity protection	385
9	Credit card	No Sub Category	APR or interest rate	347
10	Credit reporting	No Sub Category	Improper use of my credit report	335
11	Credit card	No Sub Category	Late fee	312
12	Credit card	No Sub Category	Delinquent account	302
13	Credit card	No Sub Category	Customer service / Customer relations	260

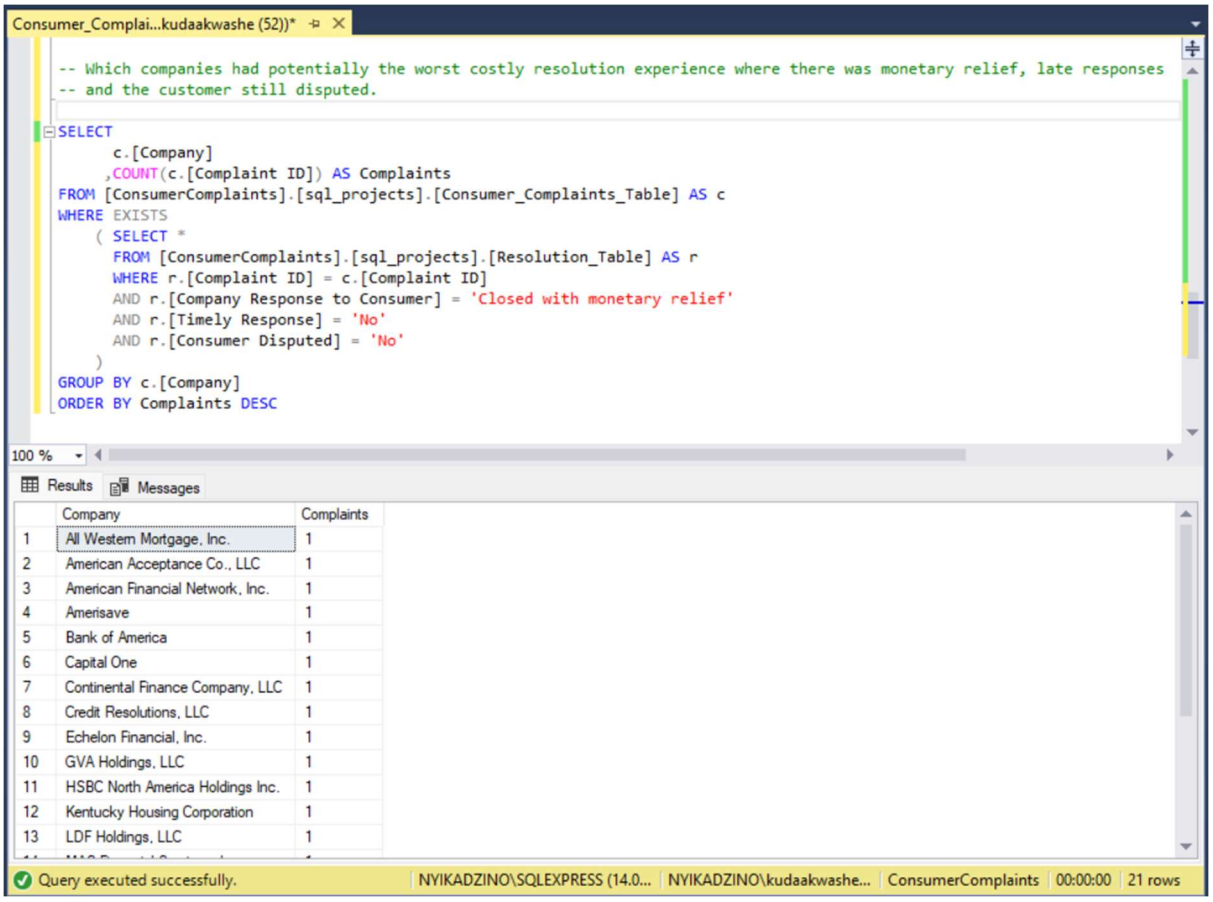
Question 3
Identify the top 3 areas with fee related sub issues. Where the sub issue is not available, use the issue instead. In the process make sure that when the zip code is null replace with zeros and if the length of the zip code is not 5 replace with 'Incomplete Code'.

```
SELECT TOP 3
	COALESCE(i.[Sub Issue], i.[Issue]) AS [Sub Issue]
	,k.[State Name]
	,CASE
		WHEN k.[Zip Code] IS NULL THEN ISNULL(k.[Zip Code], '00000')
		WHEN LEN(k.[Zip Code]) <> 5 THEN 'Incomplete Code'
		ELSE k.[Zip Code]
	END [Zip Code]
	,COUNT(c.[Complaint ID]) AS Total
FROM [ConsumerComplaints].[sql_projects].[Consumer_Complaints_Table] AS c
LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Issue_Table] AS i
	ON i.Issue_Code = c.Issue_Code
LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Location_Table] AS k
	ON k.Location_Key = c.Location_Key
WHERE i.[Issue] LIKE '%fee%'
GROUP BY COALESCE(i.[Sub Issue], i.[Issue]), k.[State Name], [Zip Code]
ORDER BY Total DESC
```



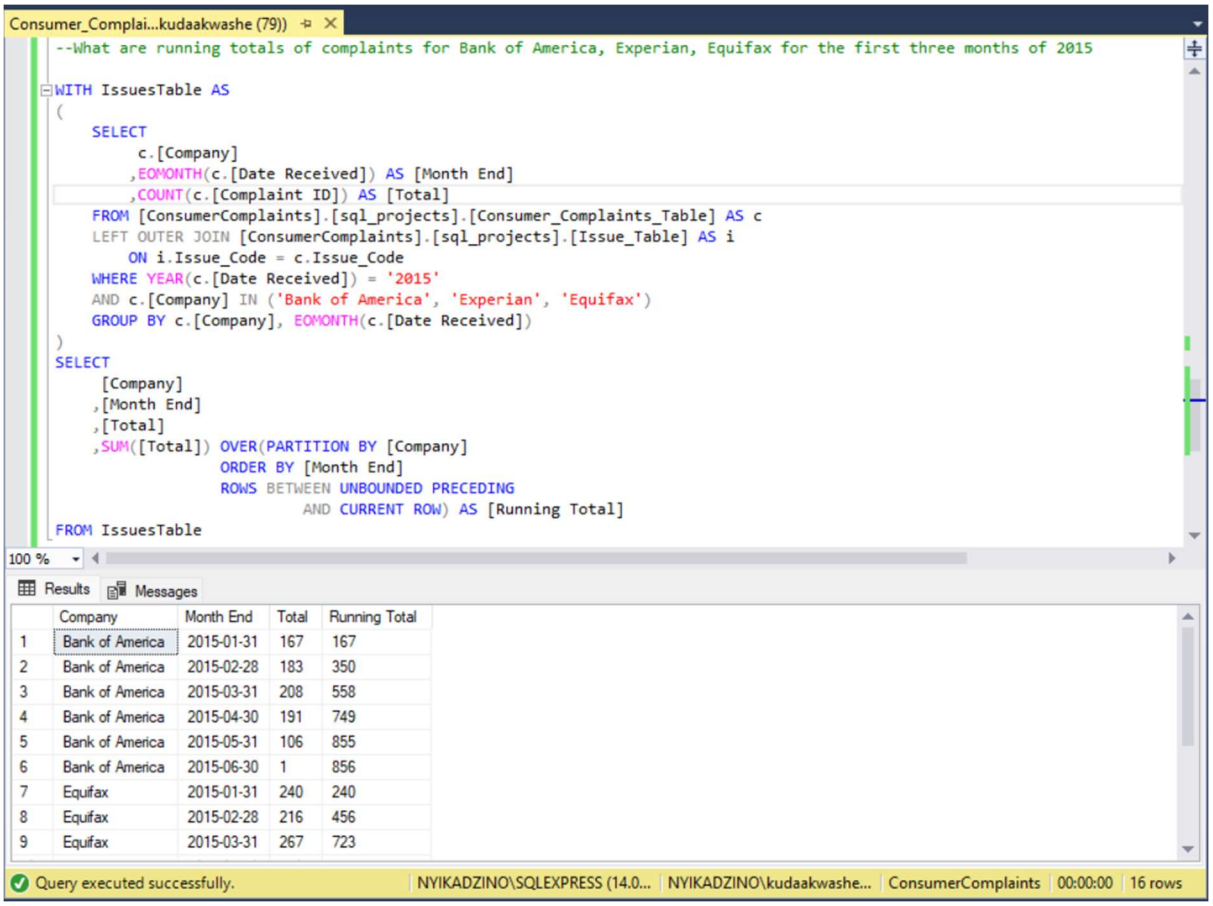
Question 4
Which companies had the worst resolution experience where the resolution was costly, late and disputed by the clients and how many of these did each company receive.

```
SELECT
        c.[Company]
       ,COUNT(c.[Complaint ID]) AS Complaints
FROM [ConsumerComplaints].[sql_projects].[Consumer_Complaints_Table] AS c
WHERE EXISTS
      ( SELECT *
        FROM [ConsumerComplaints].[sql_projects].[Resolution_Table] AS r
        WHERE r.[Complaint ID] = c.[Complaint ID]
        AND r.[Company Response to Consumer] = 'Closed with monetary relief'
        AND r.[Timely Response] = 'No'
        AND r.[Consumer Disputed] = 'No'
      )
GROUP BY c.[Company]
ORDER BY Complaints DESC
```



Question 5
What are running totals of complaints for Bank of America, Experian, Equifax for the first three months of 2015.

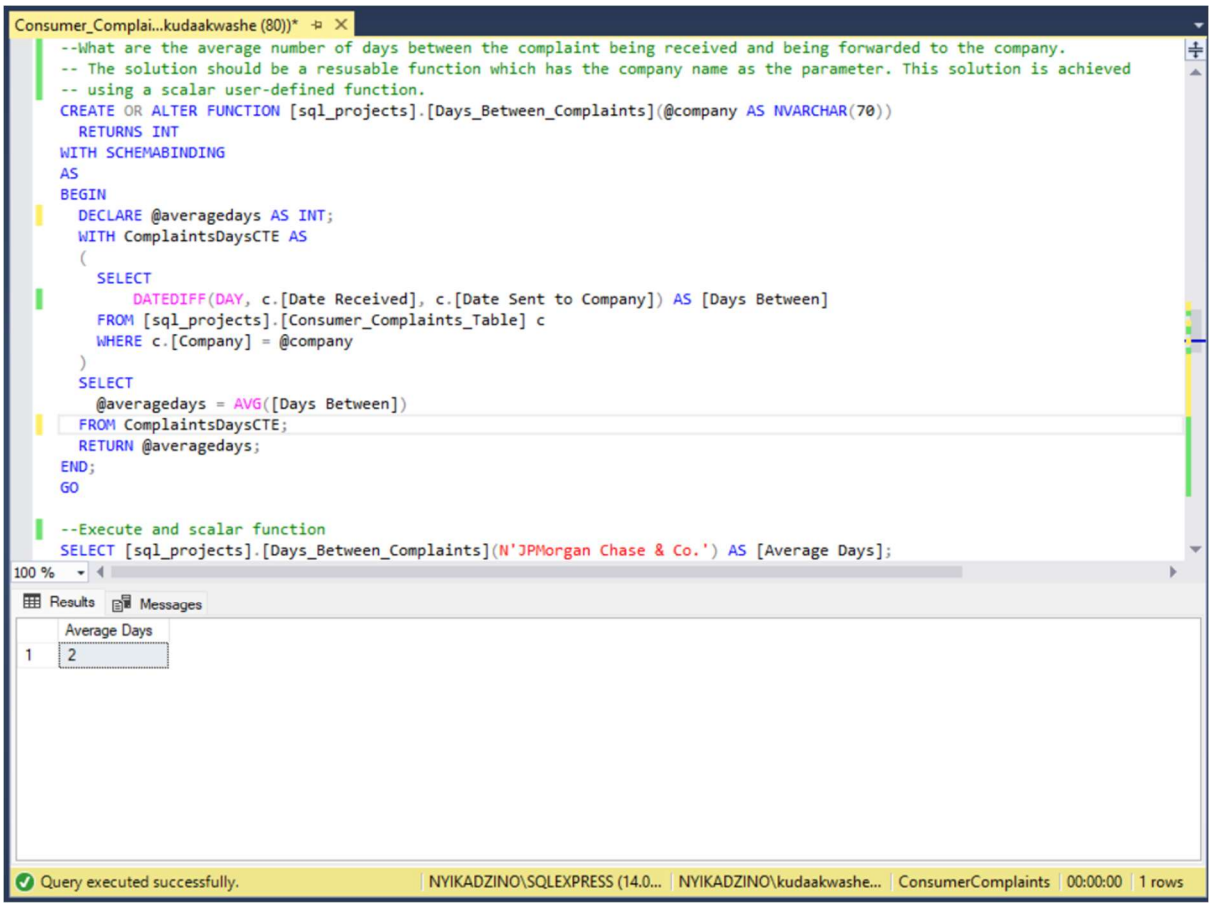
```sql
WITH IssuesTable AS
(
	SELECT
		 c.[Company]
		,EOMONTH(c.[Date Received]) AS [Month End]
		,COUNT(c.[Complaint ID]) AS [Total]
	FROM [ConsumerComplaints].[sql_projects].[Consumer_Complaints_Table] AS c
	LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Issue_Table] AS i
		ON i.Issue_Code = c.Issue_Code
	WHERE YEAR(c.[Date Received]) = '2015'
	AND c.[Company] IN ('Bank of America', 'Experian', 'Equifax')
	GROUP BY c.[Company], EOMONTH(c.[Date Received])
)
SELECT
	 [Company]
	,[Month End]
	,[Total]
    ,SUM([Total]) OVER(PARTITION BY [Company]
		ORDER BY [Month End]
		ROWS BETWEEN UNBOUNDED PRECEDING
			AND CURRENT ROW) AS [Running Total]
FROM IssuesTable
```



	Company	Month End	Total	Running Total
1	Bank of America	2015-01-31	167	167
2	Bank of America	2015-02-28	183	350
3	Bank of America	2015-03-31	208	558
4	Bank of America	2015-04-30	191	749
5	Bank of America	2015-05-31	106	855
6	Bank of America	2015-06-30	1	856
7	Equifax	2015-01-31	240	240
8	Equifax	2015-02-28	216	456
9	Equifax	2015-03-31	267	723

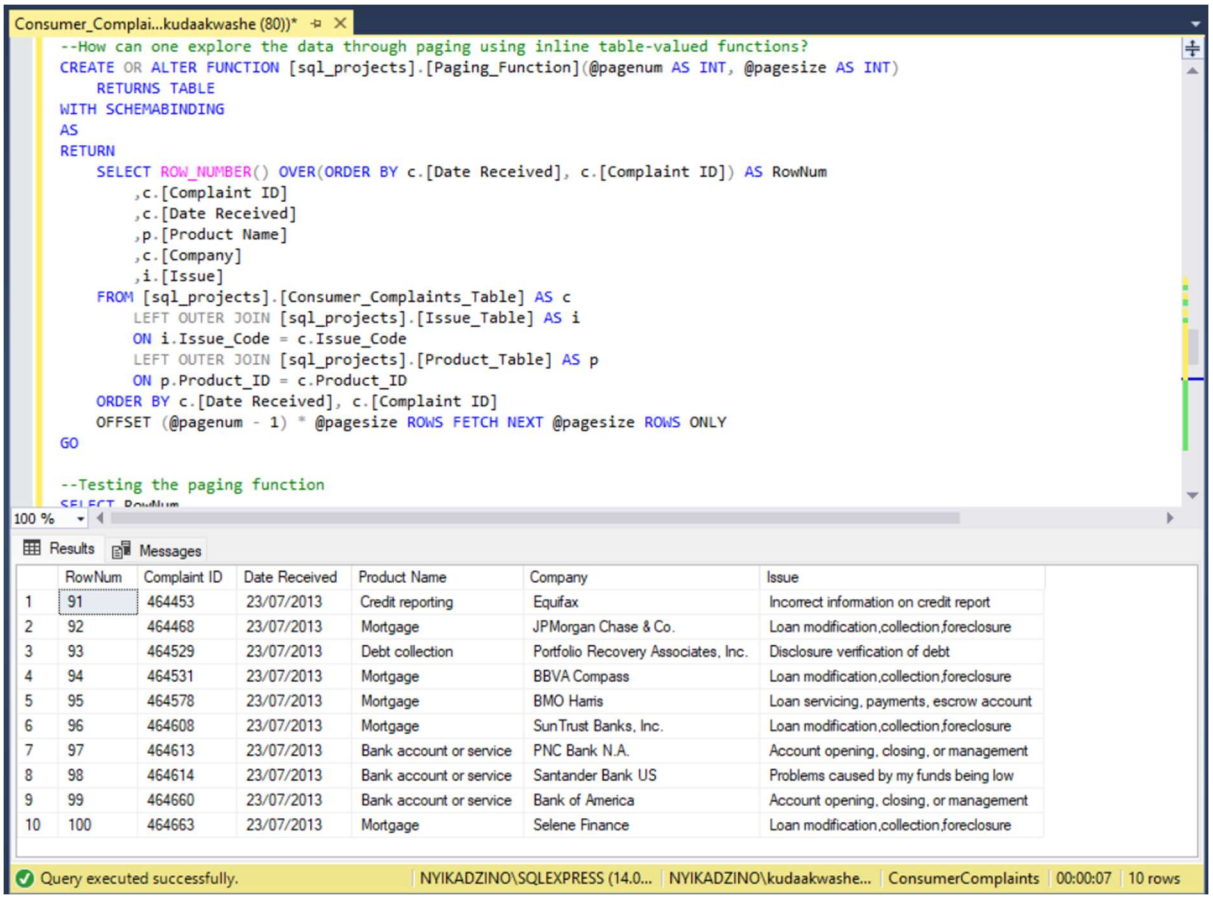
Question 6
What are the average number of days between the complaint being received and being forwarded to the company. The solution should be a reusable function which has the company name as the parameter. This solution is achieved using a scalar user-defined function.

```
CREATE OR ALTER FUNCTION [sql_projects].[Days_Between_Complaints](@company AS
NVARCHAR(70))
  RETURNS INT
WITH SCHEMABINDING
AS
BEGIN
  DECLARE @averagedays AS INT;

  WITH ComplaintsDaysCTE AS
  (
       SELECT
              DATEDIFF(DAY, c.[Date Received], c.[Date Sent to Company]) AS [Days
Between]
    FROM [sql_projects].[Consumer_Complaints_Table] c
       WHERE c.[Company] = @company
  )
  SELECT
       @averagedays = AVG([Days Between])
  FROM ComplaintsDaysCTE;

  RETURN @averagedays;
END;
GO

--Execute and scalar function
SELECT [sql_projects].[Days_Between_Complaints](N'JPMorgan Chase & Co.') AS [Average
Days];
GO
```


Consumer_Complai...kudaakwashe (80))*
--What are the average number of days between the complaint being received and being forwarded to the company.
-- The solution should be a resusable function which has the company name as the parameter. This solution is achieved
-- using a scalar user-defined function.
CREATE OR ALTER FUNCTION [sql_projects].[Days_Between_Complaints](@company AS NVARCHAR(70))
RETURNS INT
WITH SCHEMABINDING
AS
BEGIN
DECLARE @averagedays AS INT;
WITH ComplaintsDaysCTE AS
(
SELECT
DATEDIFF(DAY, c.[Date Received], c.[Date Sent to Company]) AS [Days Between]
FROM [sql_projects].[Consumer_Complaints_Table] c
WHERE c.[Company] = @company
)
SELECT
@averagedays = AVG([Days Between])
FROM ComplaintsDaysCTE;
RETURN @averagedays;
END;
GO
--Execute and scalar function
SELECT [sql_projects].[Days_Between_Complaints](N'JPMorgan Chase & Co.') AS [Average Days];
100 %
Results
Messages
Average Days
1
2
Query executed successfully.
NYIKADZINO\SQLEXPRESS (14.0...
NYIKADZINO\kudaakwashe...
ConsumerComplaints
00:00:00
1 rows

Question 7
How can one explore the data through paging using inline table-valued functions?

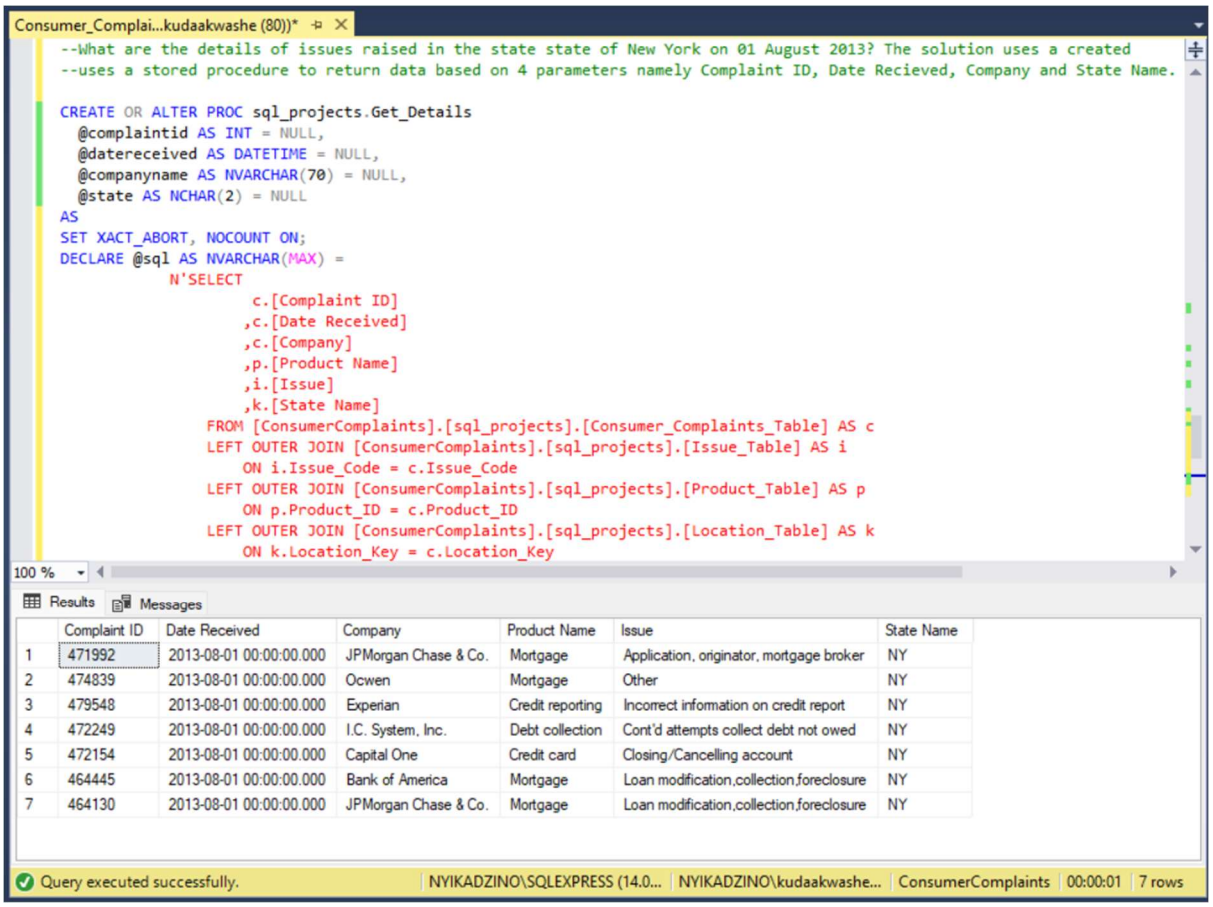
```
CREATE OR ALTER FUNCTION [sql_projects].[Paging_Function](@pagenum AS INT, @pagesize
AS INT)
	RETURNS TABLE
WITH SCHEMABINDING
AS
RETURN
SELECT ROW_NUMBER() OVER(ORDER BY c.[Date Received], c.[Complaint ID]) AS RowNum
	,c.[Complaint ID]
	,c.[Date Received]
	,p.[Product Name]
	,c.[Company]
	,i.[Issue]
FROM [sql_projects].[Consumer_Complaints_Table] AS c
LEFT OUTER JOIN [sql_projects].[Issue_Table] AS i
	ON i.Issue_Code = c.Issue_Code
LEFT OUTER JOIN [sql_projects].[Product_Table] AS p
	ON p.Product_ID = c.Product_ID
ORDER BY c.[Date Received], c.[Complaint ID]
OFFSET (@pagenum - 1) * @pagesize ROWS FETCH NEXT @pagesize ROWS ONLY
GO
--Testing the paging function
SELECT RowNum, [Complaint ID]
	,FORMAT([Date Received],  'dd/MM/yyyy') AS [Date Received]
	,[Product Name], [Company], [Issue]
FROM [sql_projects].[Paging_Function](10, 10) AS c;
```



	RowNum	Complaint ID	Date Received	Product Name	Company	Issue
1	91	464453	23/07/2013	Credit reporting	Equifax	Incorrect information on credit report
2	92	464468	23/07/2013	Mortgage	JPMorgan Chase & Co.	Loan modification,collection,foreclosure
3	93	464529	23/07/2013	Debt collection	Portfolio Recovery Associates, Inc.	Disclosure verification of debt
4	94	464531	23/07/2013	Mortgage	BBVA Compass	Loan modification,collection,foreclosure
5	95	464578	23/07/2013	Mortgage	BMO Harris	Loan servicing, payments, escrow account
6	96	464608	23/07/2013	Mortgage	SunTrust Banks, Inc.	Loan modification,collection,foreclosure
7	97	464613	23/07/2013	Bank account or service	PNC Bank N.A.	Account opening, closing, or management
8	98	464614	23/07/2013	Bank account or service	Santander Bank US	Problems caused by my funds being low
9	99	464660	23/07/2013	Bank account or service	Bank of America	Account opening, closing, or management
10	100	464663	23/07/2013	Mortgage	Selene Finance	Loan modification,collection,foreclosure

Question 8
What are the details of issues raised in the state of New York on 01 August 2013? The solution uses a created uses a stored procedure to return data based on 4 parameters namely Complaint ID, Date Received, Company and State Name.

```
CREATE OR ALTER PROC sql_projects.Get_Details
  @complaintid AS INT = NULL,
  @datereceived AS DATETIME = NULL,
  @companyname AS NVARCHAR(70) = NULL,
  @state AS NCHAR(2) = NULL
AS
SET XACT_ABORT, NOCOUNT ON;
DECLARE @sql AS NVARCHAR(MAX) =
       N'SELECT
              c.[Complaint ID]
              ,c.[Date Received]
              ,c.[Company]
              ,p.[Product Name]
              ,i.[Issue]
              ,k.[State Name]
       FROM [ConsumerComplaints].[sql_projects].[Consumer_Complaints_Table] AS c
       LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Issue_Table] AS i
              ON i.Issue_Code = c.Issue_Code
       LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Product_Table] AS p
              ON p.Product_ID = c.Product_ID
       LEFT OUTER JOIN [ConsumerComplaints].[sql_projects].[Location_Table] AS k
              ON k.Location_Key = c.Location_Key
       WHERE 1 = 1'
       + CASE WHEN @complaintid IS NOT NULL THEN N' AND c.[Complaint ID]  =
       @complaintid ' ELSE N'' END
       + CASE WHEN @datereceived IS NOT NULL THEN N' AND c.[Date Received] =
       @datereceived ' ELSE N'' END
       + CASE WHEN @companyname IS NOT NULL THEN N' AND c.[Company] =
       @companyname ' ELSE N'' END
       + CASE WHEN @state IS NOT NULL THEN N' AND k.[State Name] =
       @state ' ELSE N'' END + N';'

EXEC sys.sp_executesql
  @stmt = @sql,
  @params = N'@complaintid AS INT, @datereceived AS DATETIME,
              @companyname AS NVARCHAR(70), @state AS NCHAR(2)',
  @complaintid = @complaintid,
  @datereceived = @datereceived,
  @companyname = @companyname,
  @state = @state;
GO

-- Execute and test procedure
EXEC sql_projects.Get_Details @datereceived = '20130801', @state = 'NY';
```



	Complaint ID	Date Received	Company	Product Name	Issue	State Name
1	471992	2013-08-01 00:00:00.000	JPMorgan Chase & Co.	Mortgage	Application, originator, mortgage broker	NY
2	474839	2013-08-01 00:00:00.000	Ocwen	Mortgage	Other	NY
3	479548	2013-08-01 00:00:00.000	Experian	Credit reporting	Incorrect information on credit report	NY
4	472249	2013-08-01 00:00:00.000	I.C. System, Inc.	Debt collection	Cont'd attempts collect debt not owed	NY
5	472154	2013-08-01 00:00:00.000	Capital One	Credit card	Closing/Cancelling account	NY
6	464445	2013-08-01 00:00:00.000	Bank of America	Mortgage	Loan modification,collection,foreclosure	NY
7	464130	2013-08-01 00:00:00.000	JPMorgan Chase & Co.	Mortgage	Loan modification,collection,foreclosure	NY