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BSc (Hons)n Information Technology

IT3021 – Data Warehousing & Business Intelligence

Assignment 02

Submitted By:
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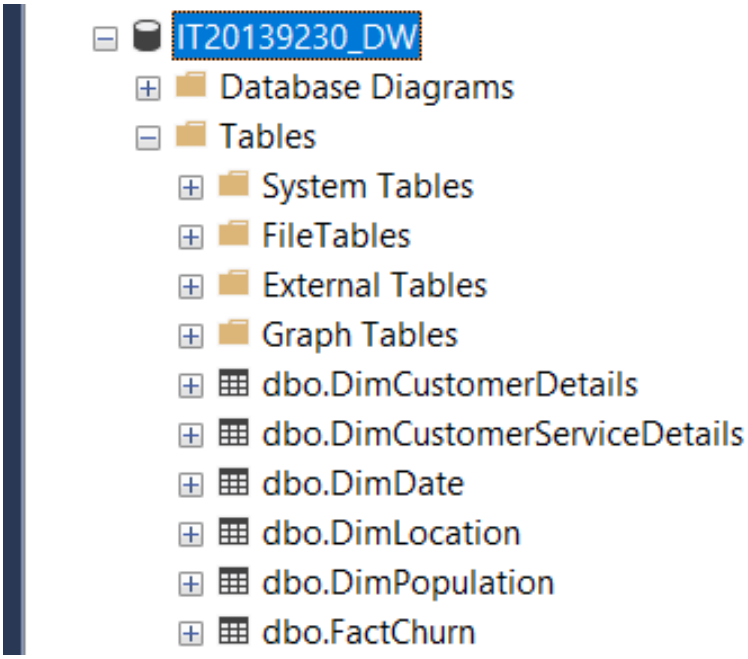
IT20139230

Step 1: Data source for the assignment

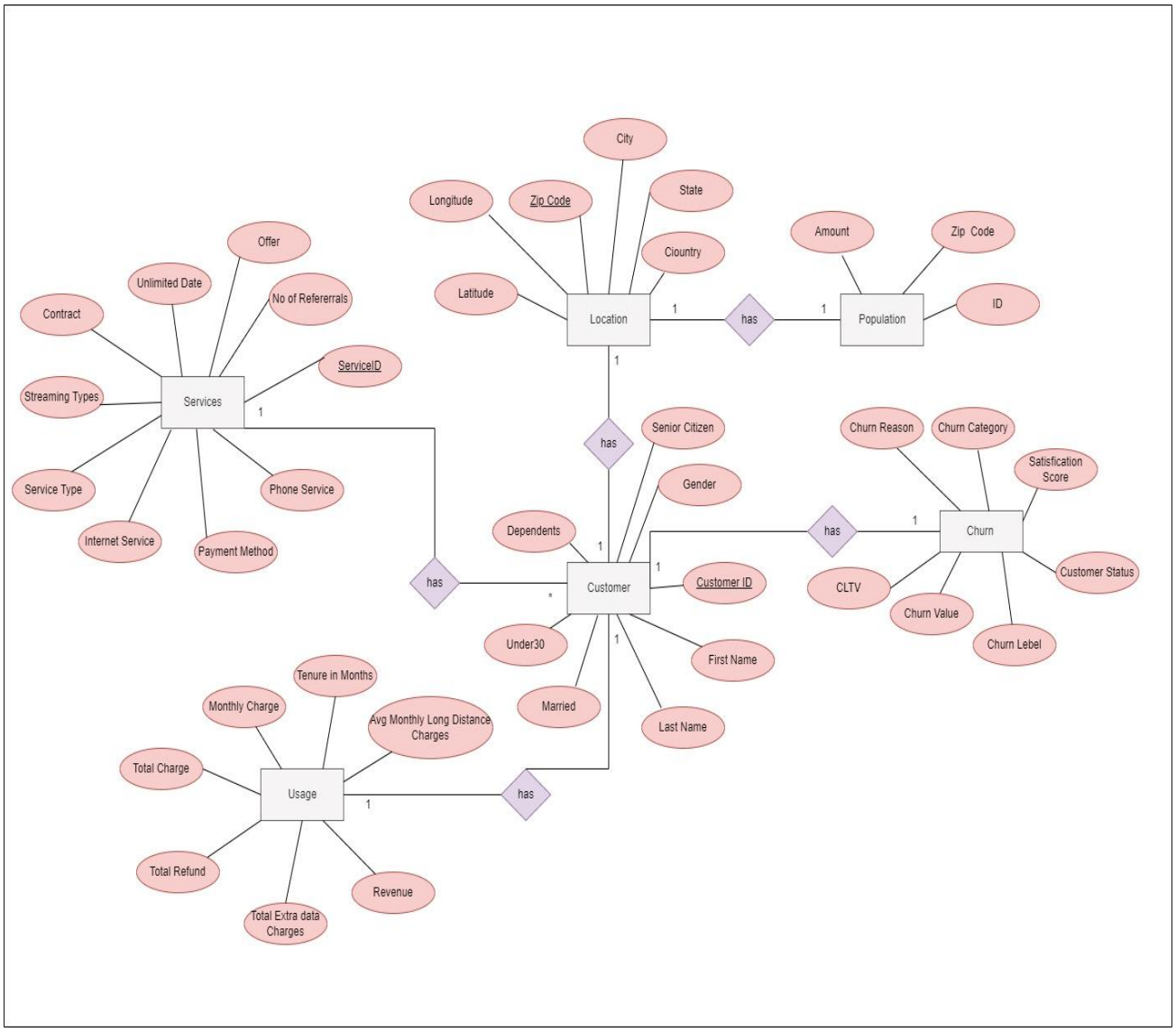
Used IT20139230_DW data warehouse which I have implemented and loaded with data in assignment 1 as the data source for the assignment 2

It contains five dimension tables and one fact table which including measure values of the data source.

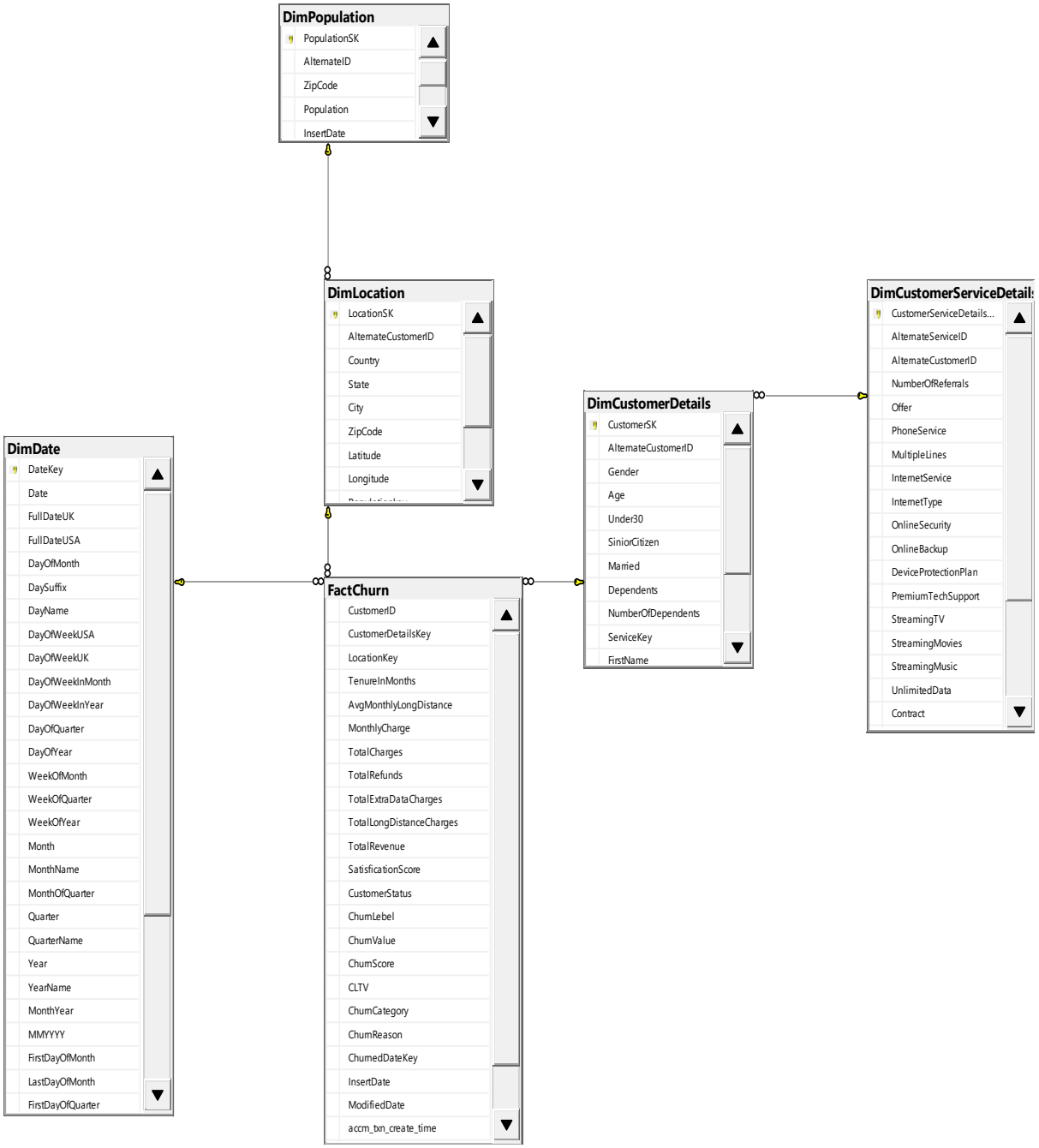
- **DimCustomerDetails**- Details about the Customer
- **DimCustomerServiceDetails**- Details of the services for the customer
- **DimLocation**- Details of the customer loction
- **DimDate**- Hierarchical Details of the dates
- **FactChurn**- Details of the Churn Status and Usage of the customer



ER Diagram:

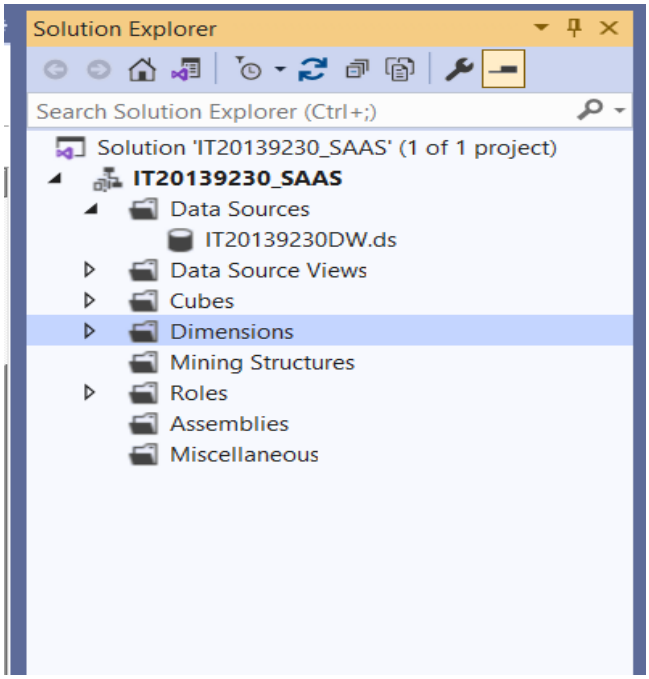

City
Longitude
Zip Code
State
Ciountry
Latitude
Location
1
has
1
Population
Amount
Zip Code
ID
Offer
Unlimited Date
No of Refererrals
Contract
ServiceID
Streaming Types
Services
1
Service Type
Phone Service
Internet Service
Payment Method
has
Senior Citizen
Gender
Dependents
1
has
1
Churn
Churn Reason
Churn Category
Satisfication Score
Customer Status
CLTV
Churn Value
Churn Lebel
has
Customer
*
1
Customer ID
Under30
First Name
Married
Last Name
Tenure in Months
Monthly Charge
Avg Monthly Long Distance Charges
Total Charge
Usage
1
has
Total Refund
Revenue
Total Extra data Charges

Data warehouse Design:

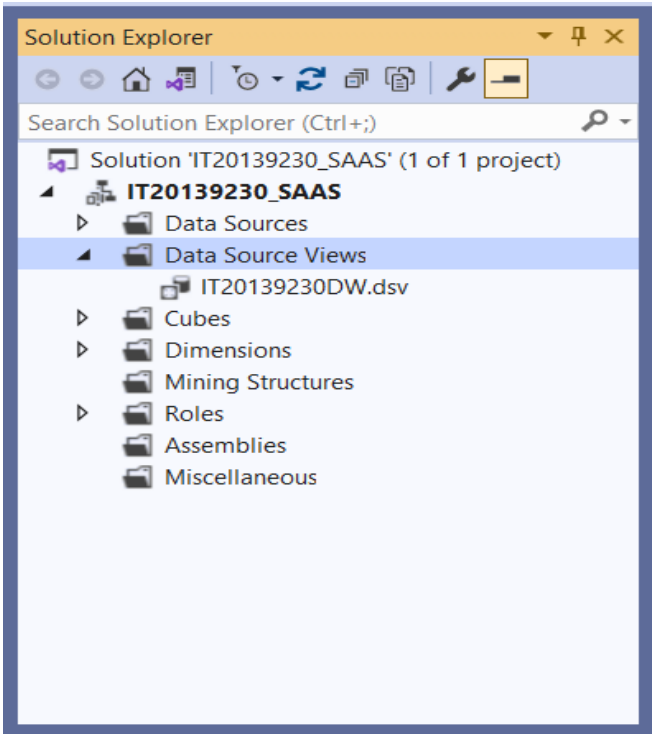


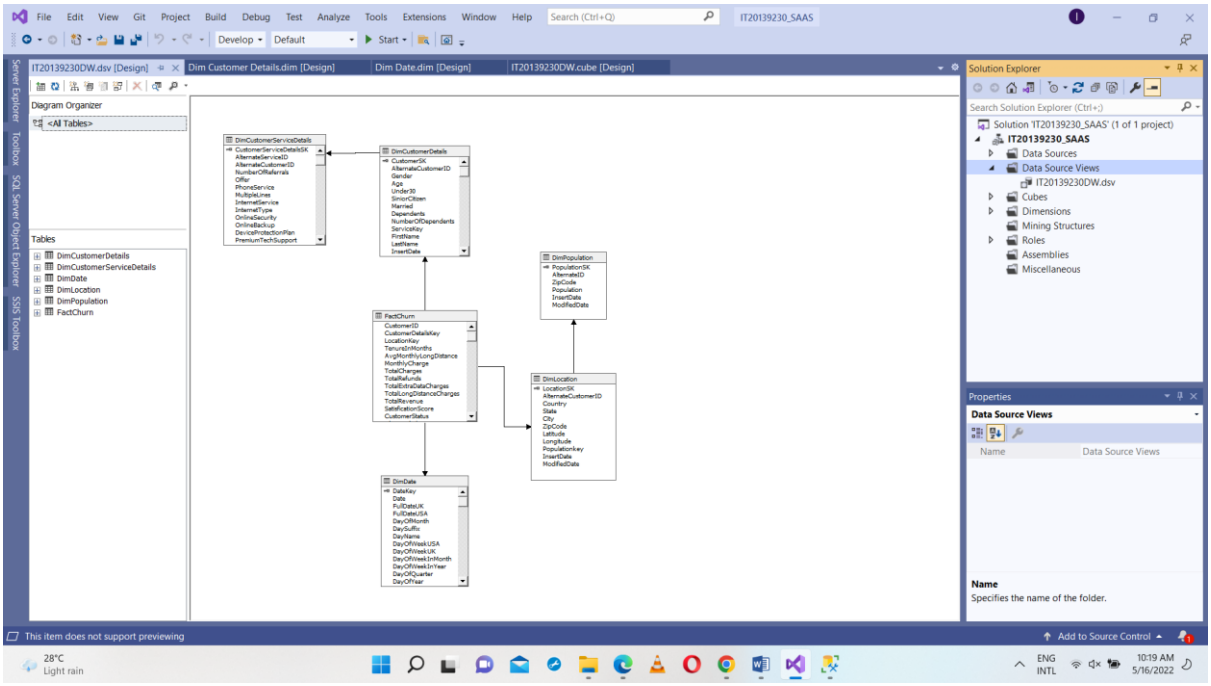
Step 2: SSAS Cube implementation

A new SSAS project was created which named as IT201339230_SAAS to begin the SSAS cube implementation. There after created IT20139230-DW Data warehouse was added as a new Data source and configurations were done.



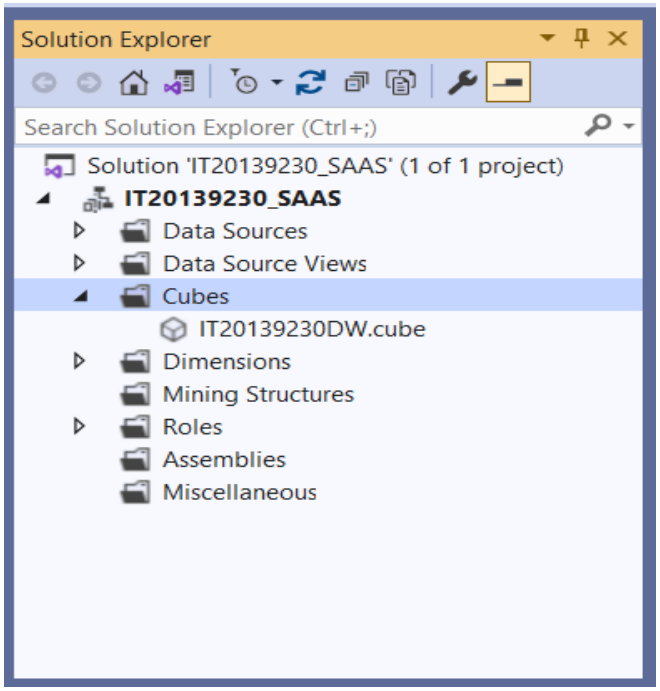
After selected IT20139230_DW as a data source and included all the dimensions and Fact table.

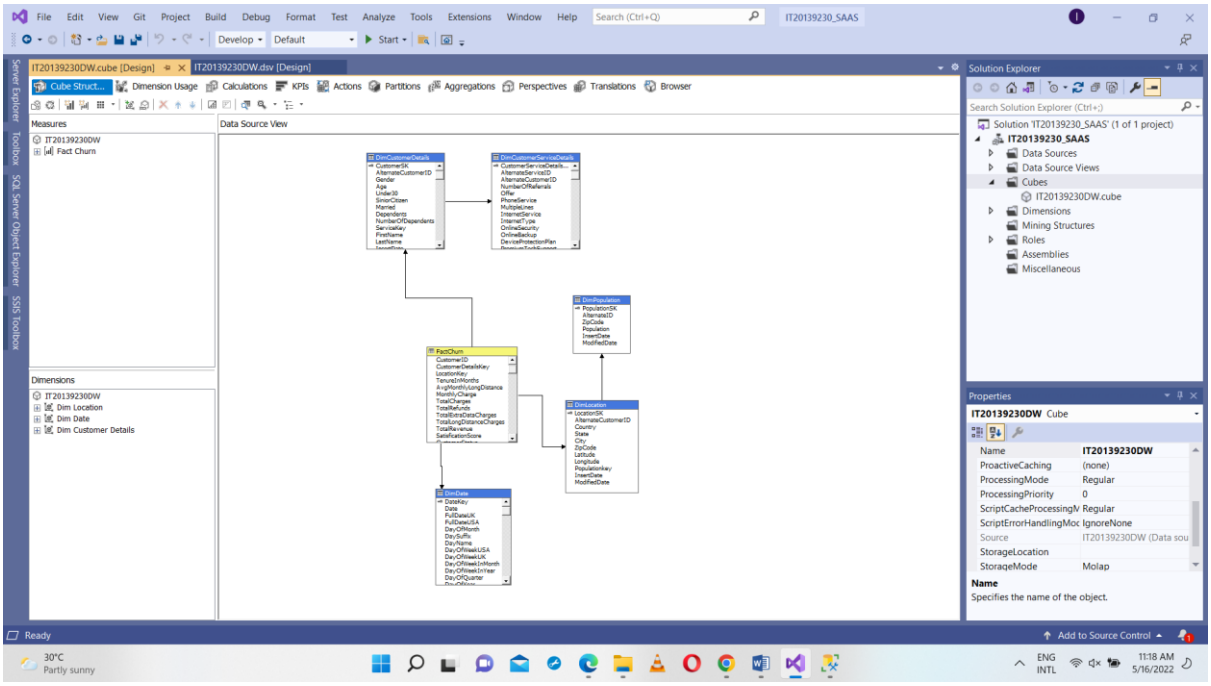




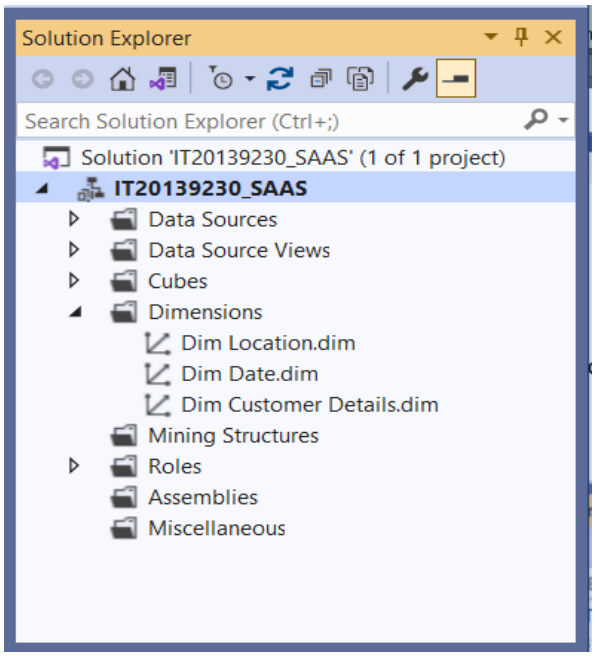
20139230DW.dsv Design

Next a cube was created by adding a new cube and selected the FactChurn table as the measures.



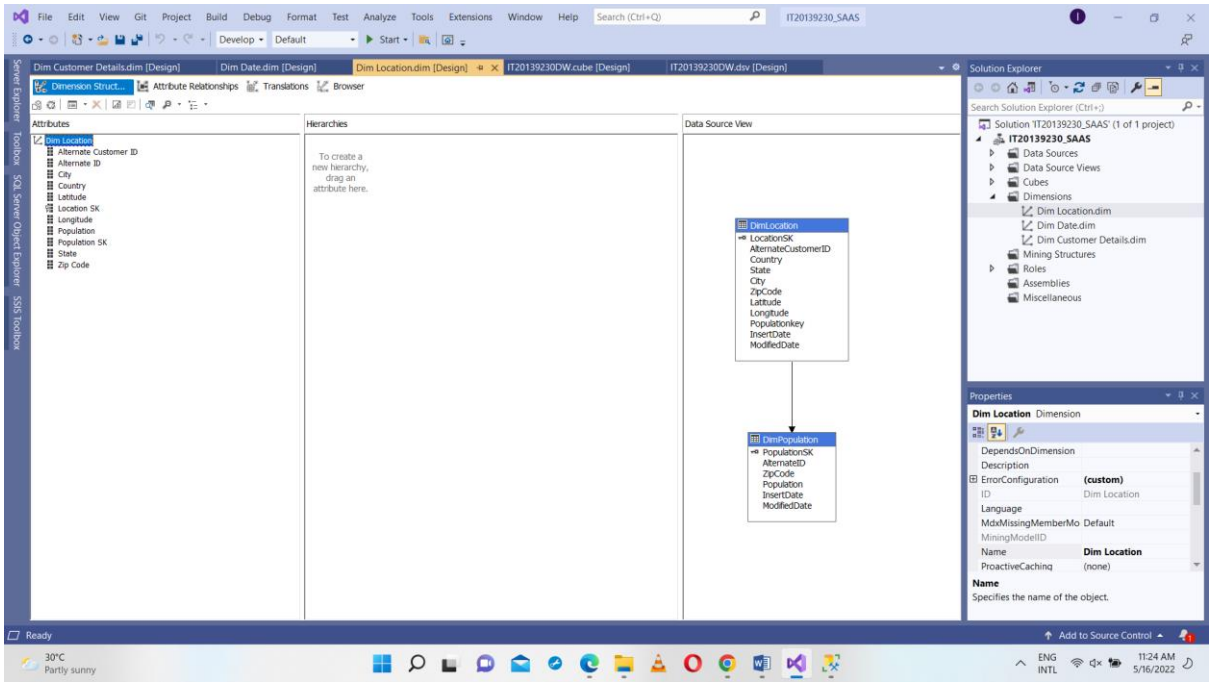


20139230DW.cube Design



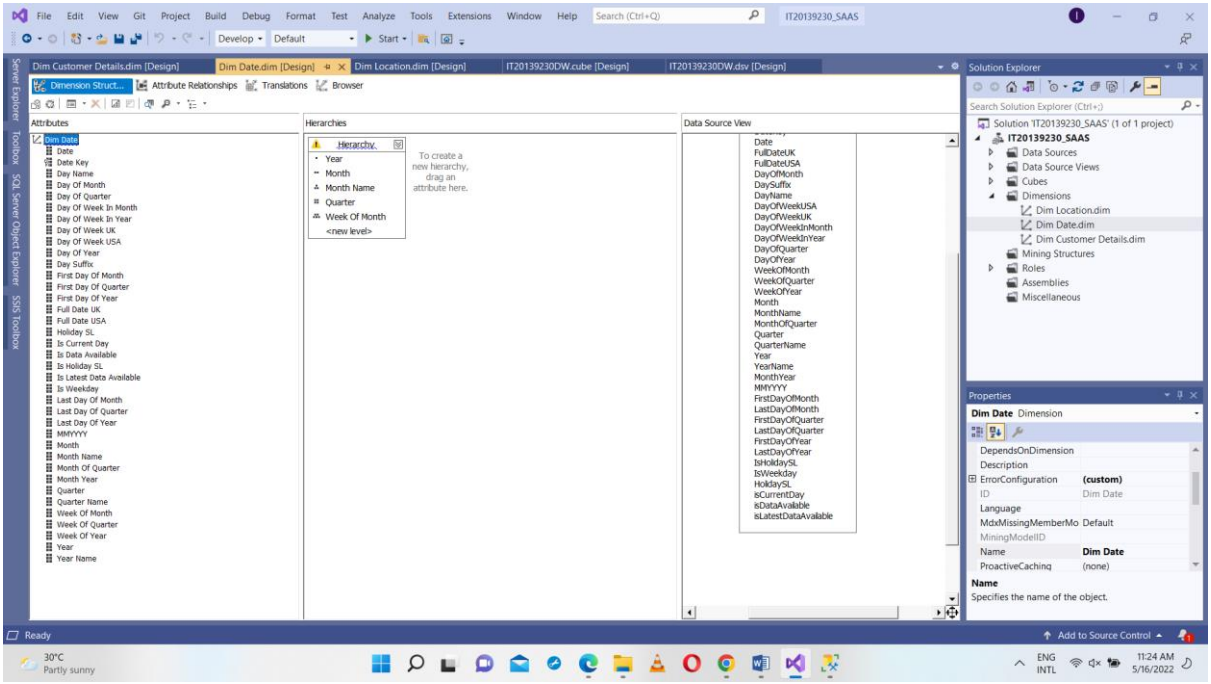
Dim Location

Selected all other attributes except Location SK, from the data source view and added into the Attributes.



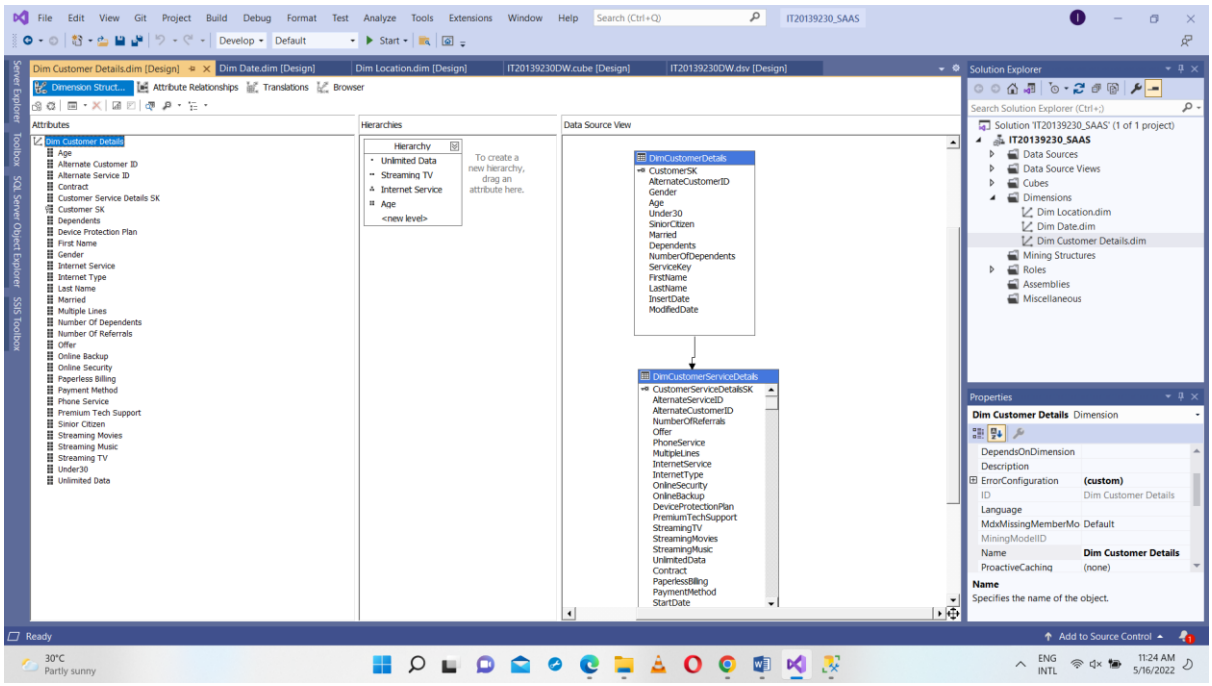
Dim Date

Selected all other attributes except Date Key, from the data source view and added into the Attributes. And also a hierarchy was created for the easiness for the process of analyzing data.

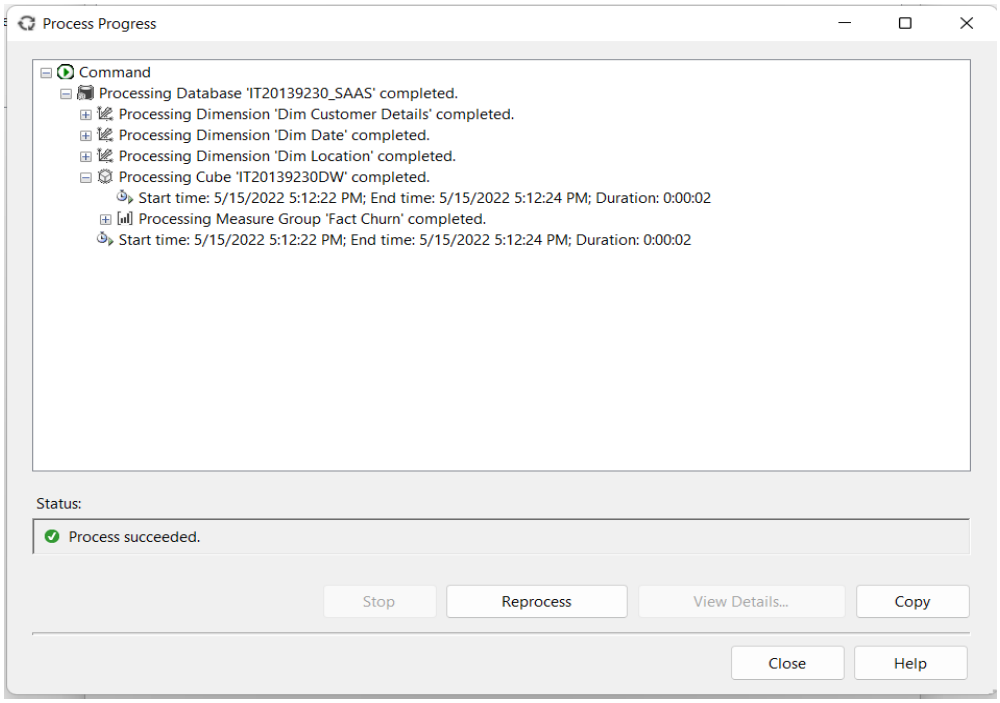


Dim Customer Details

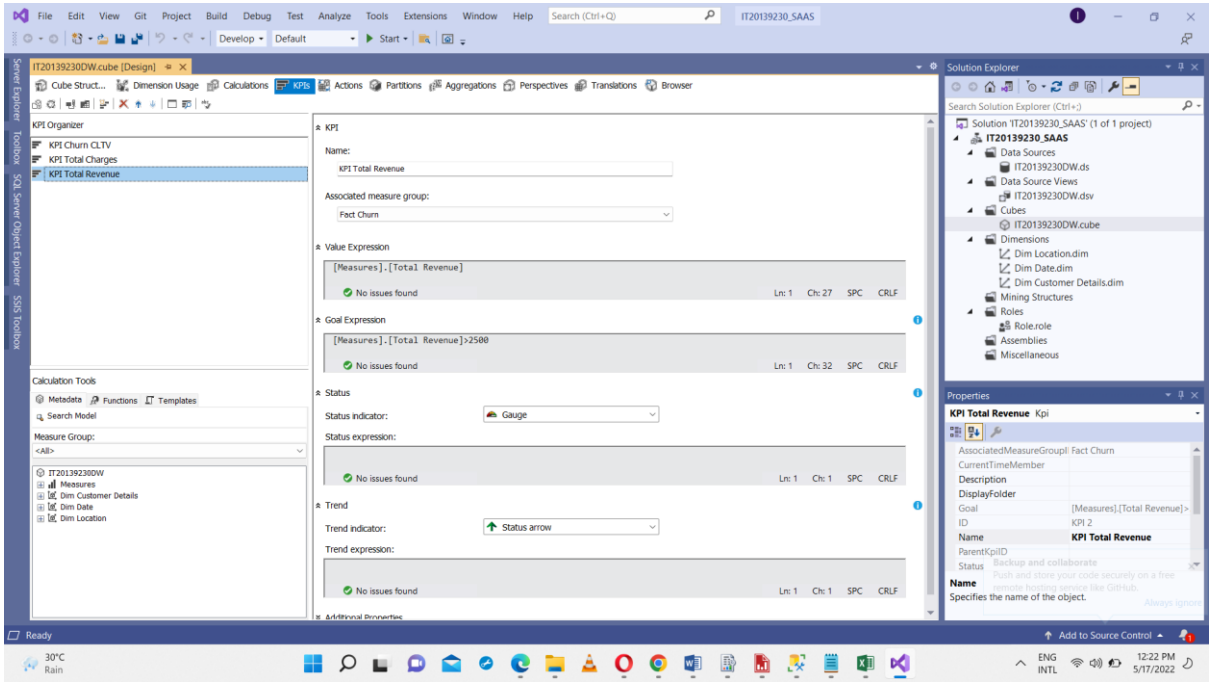
Selected all other attributes except Customer SK, from the data source view and added into the Attributes. And also a hierarchy was created for the easiness for the process of analyzing data.



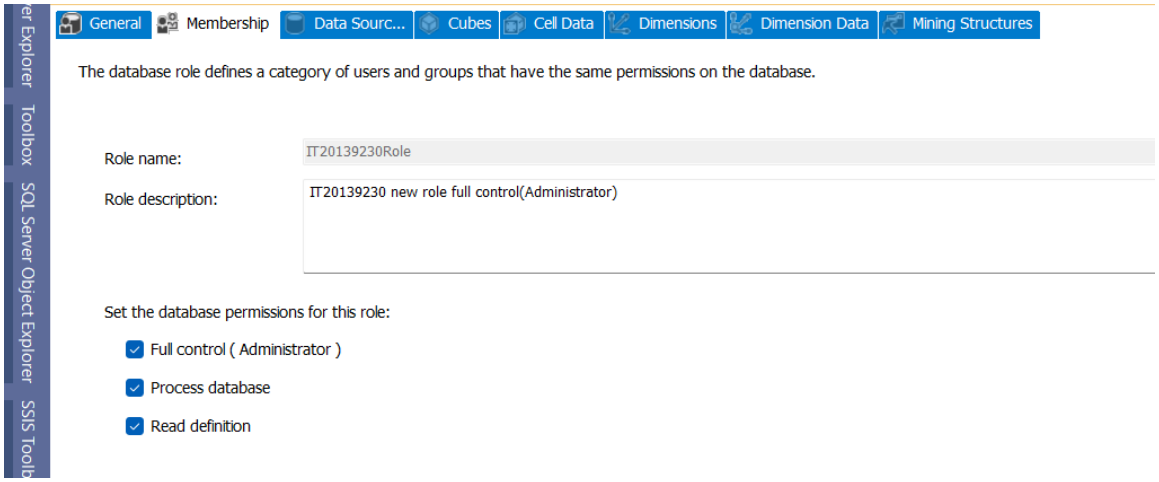
After all those were done IT20139230DW.cube was deployed to make sure steps have been followed properly so far.



As the next step KPI Total Revenue KPI were created to address business requirements. The below KPIs were created accordingly

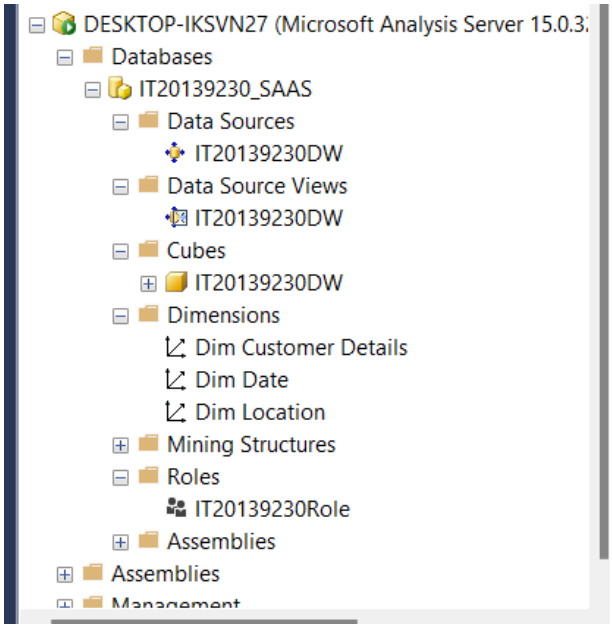


As the final step IT20139230Role role was created by defining permissions assigned to the role. As the last step of cube implementation, the cube was deployed.



Step 3: Demonstration of OLAP operations

After deployment the created cube is shown in the SQL Server Management Studio



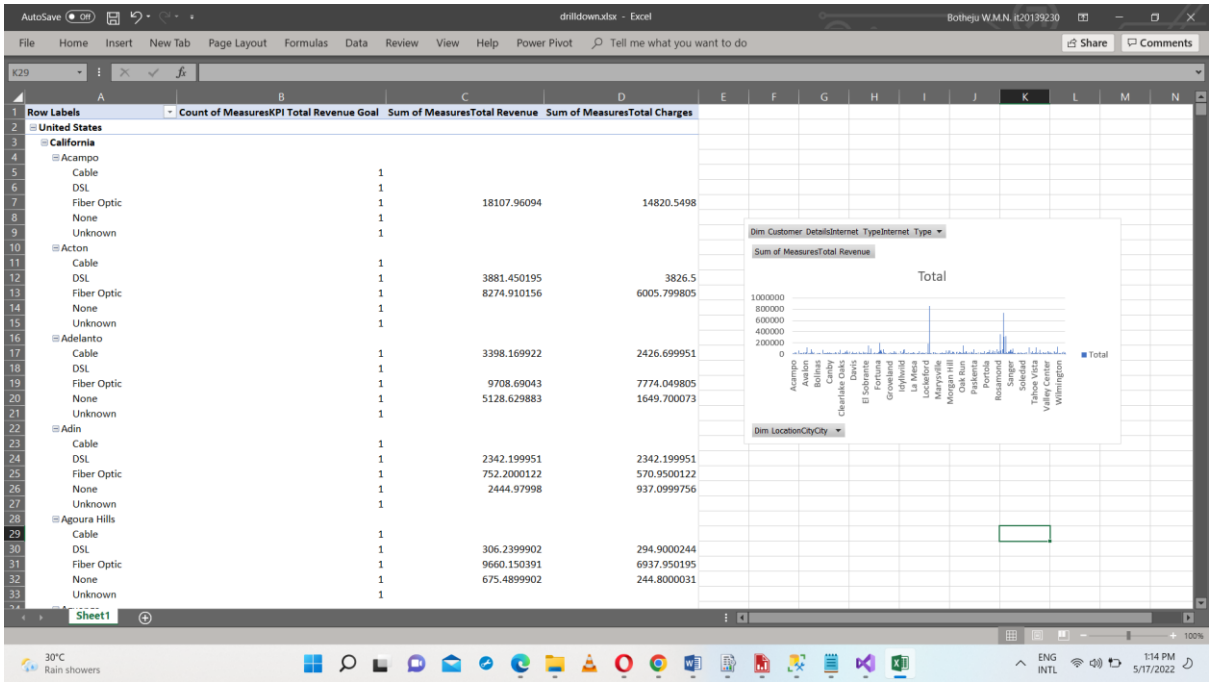
Connected to Excel workbook to the Cube and used connecting Excel workbook using features available in POWERPIVOT mode.

By dragging and dropping the necessary fields the MDX queries were generated. And extracting the generated MDX queries to Excel power pivot, reports were created.

Created Pivot Tables and Pivot Charts.

Table 01

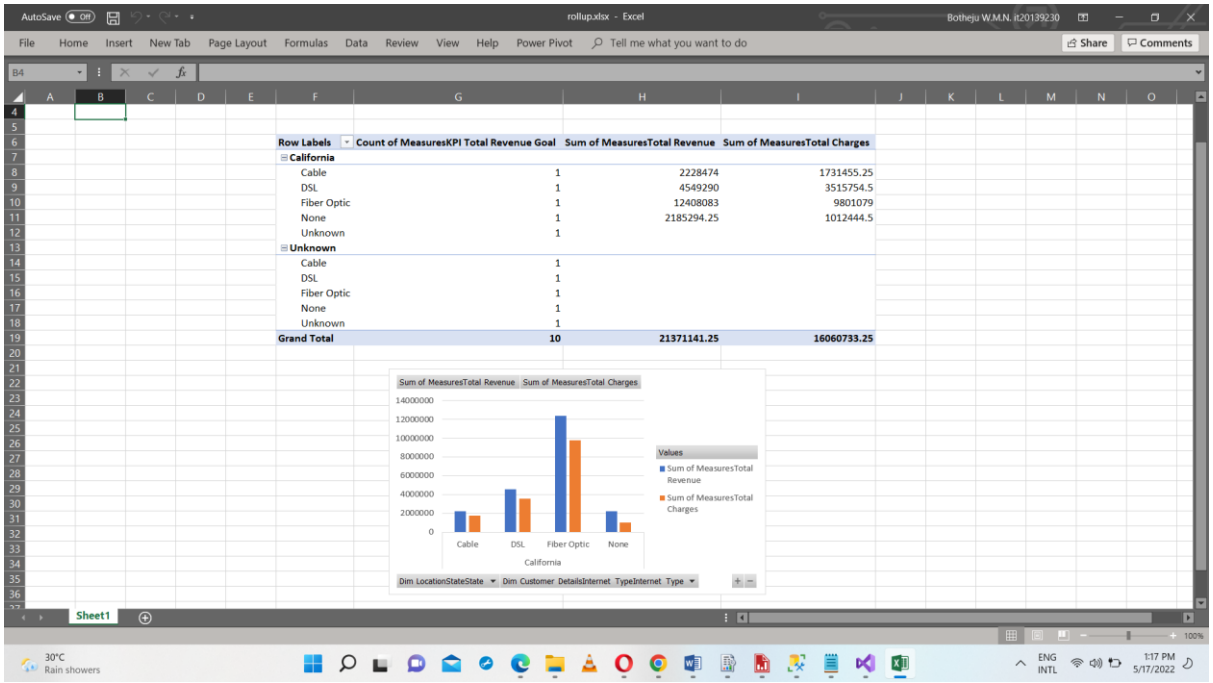
This table analyzes Sum of the Total Revenue and Some of the Total based on Country, State and the Customer Internet Types to do so I have used Drill-Down and Pivot olap operations.



Row Labels	Count of MeasuresKPI Total Revenue Goal	Sum of MeasuresTotal Revenue	Sum of MeasuresTotal Charges
United States			
California			
Acampo			
Cable	1		
DSL	1		
Fiber Optic	1	18107.96094	14820.5498
None	1		
Unknown	1		
Acton			
Cable	1		
DSL	1	3881.450195	3826.5
Fiber Optic	1	8274.910156	6005.799805
None	1		
Unknown	1		
Adelanto			
Cable	1	3398.169922	2426.699951
DSL	1		
Fiber Optic	1	9708.69043	7774.049805
None	1	5128.629883	1649.700073
Unknown	1		
Adin			
Cable	1		
DSL	1	2342.199951	2342.199951
Fiber Optic	1	752.2000122	570.9500122
None	1	2444.97998	937.0999756
Unknown	1		
Agoura Hills			
Cable	1		
DSL	1	306.2399902	294.9000244
Fiber Optic	1	9660.150391	6937.950195
None	1	675.4899902	244.8000031
Unknown	1		

Table 02

This table analyzes Sum of the Total Revenue and Some of the Total based on State and the Customer Internet Types, to do so I have used Roll-Up and Pivot olap operations.



Row Labels	Count of MeasuresKPI Total Revenue Goal	Sum of MeasuresTotal Revenue	Sum of MeasuresTotal Charges
California			
Cable	1	2228474	1731455.25
DSL	1	4549290	3515754.5
Fiber Optic	1	12408083	9801079
None	1	2185294.25	1012444.5
Unknown	1		
Unknown			
Cable	1		
DSL	1		
Fiber Optic	1		
None	1		
Unknown	1		
Grand Total	10	21371141.25	16060733.25

Table 03

This table analyzes Sum of the Total Revenue and Some of the Total based on the Customer Internet Types which are used by the customers, to do so I have used Dice and Pivot olap operations

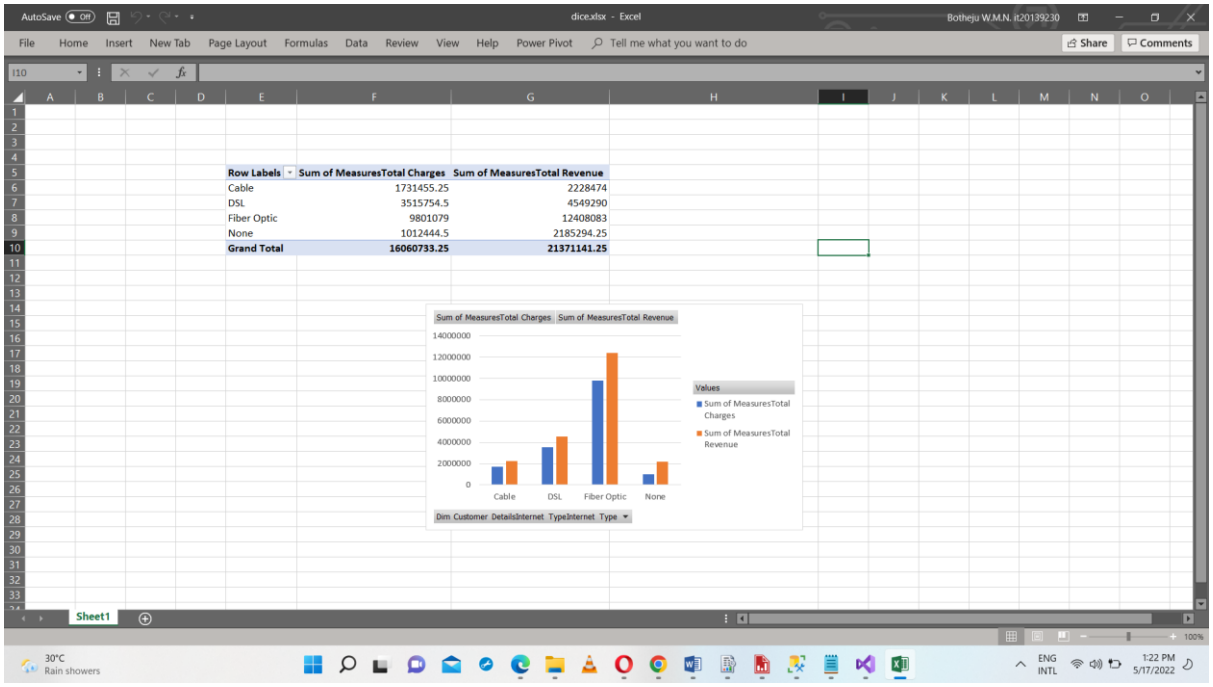
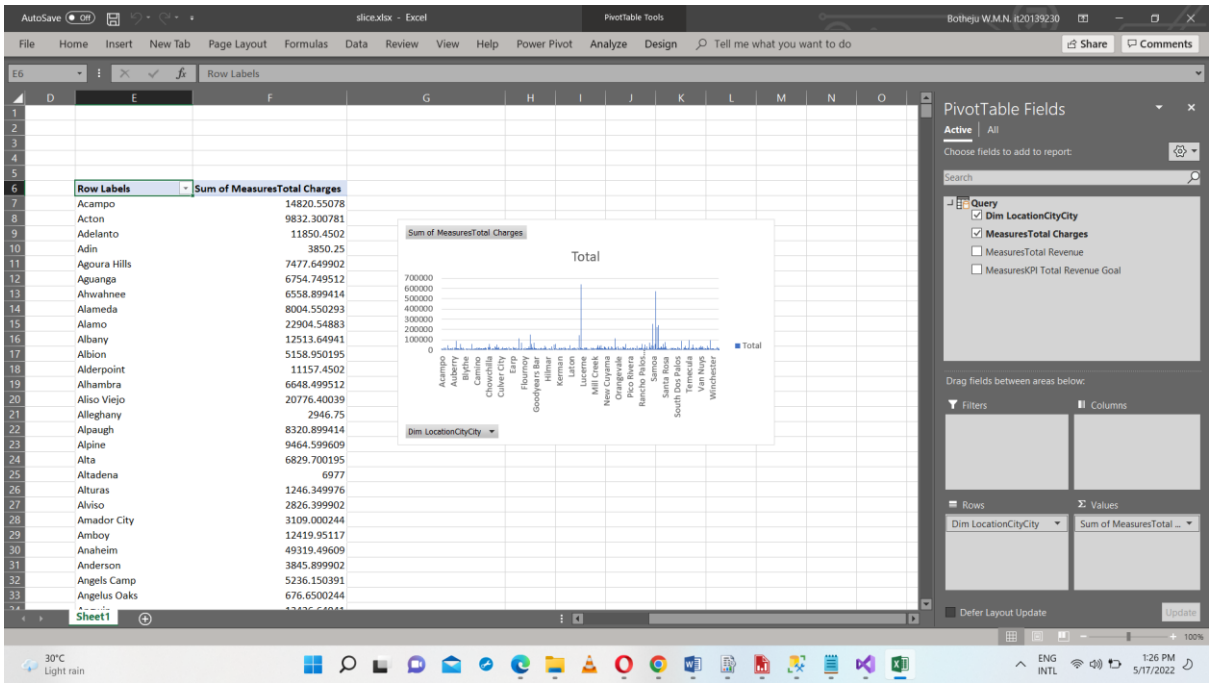


Table 04

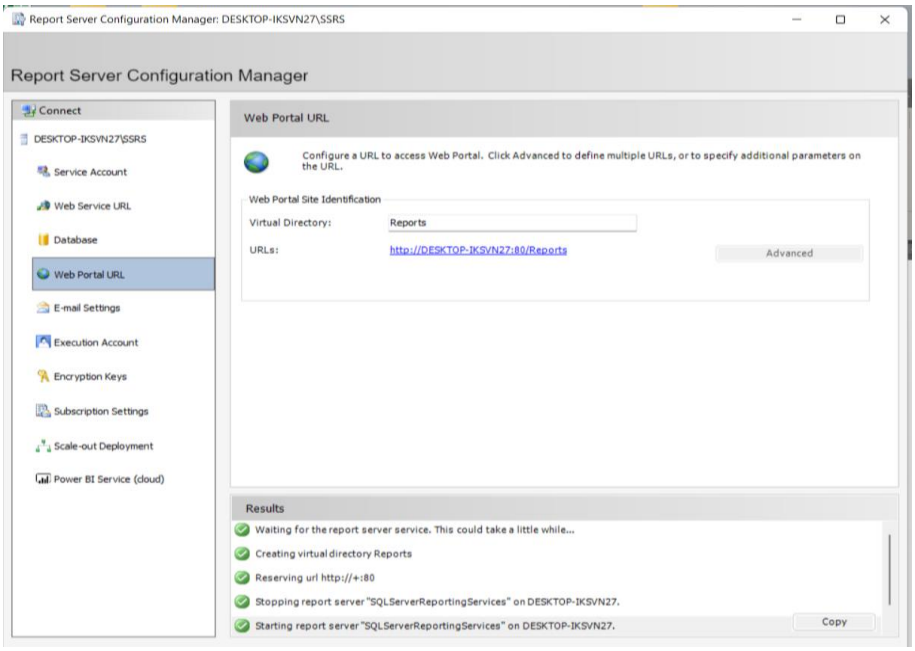
This table analyzes Some of the Total Charges based on the Cities, to do so I have used Slice and Pivot olap operations.



Step 4: SSRS Reports

Developed and publish following reports in SSRS Web Portal. Before generating SSRS Reports, SQL Server Services Configuration manager was configured and the web portal was accessed using the URL mentioned below:

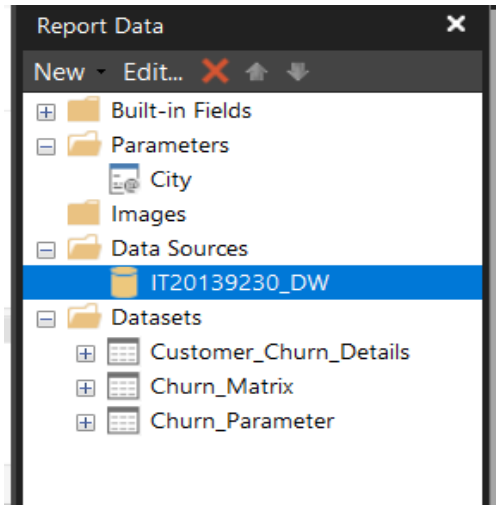
http://desktop-iksvn27/Reports/browse/



Next the SSRS project was created by giving the server name and data warehouse accordingly. Paginated reports can be created using SQL Server Data Tools or Report Builder. First step is to create a Data Source. Data source is a connection to the source of the data.

Next step is to create Datasets. Dataset is the actual data that will be loaded to be used the report visualizations.

Next step is to create the visualization in report.

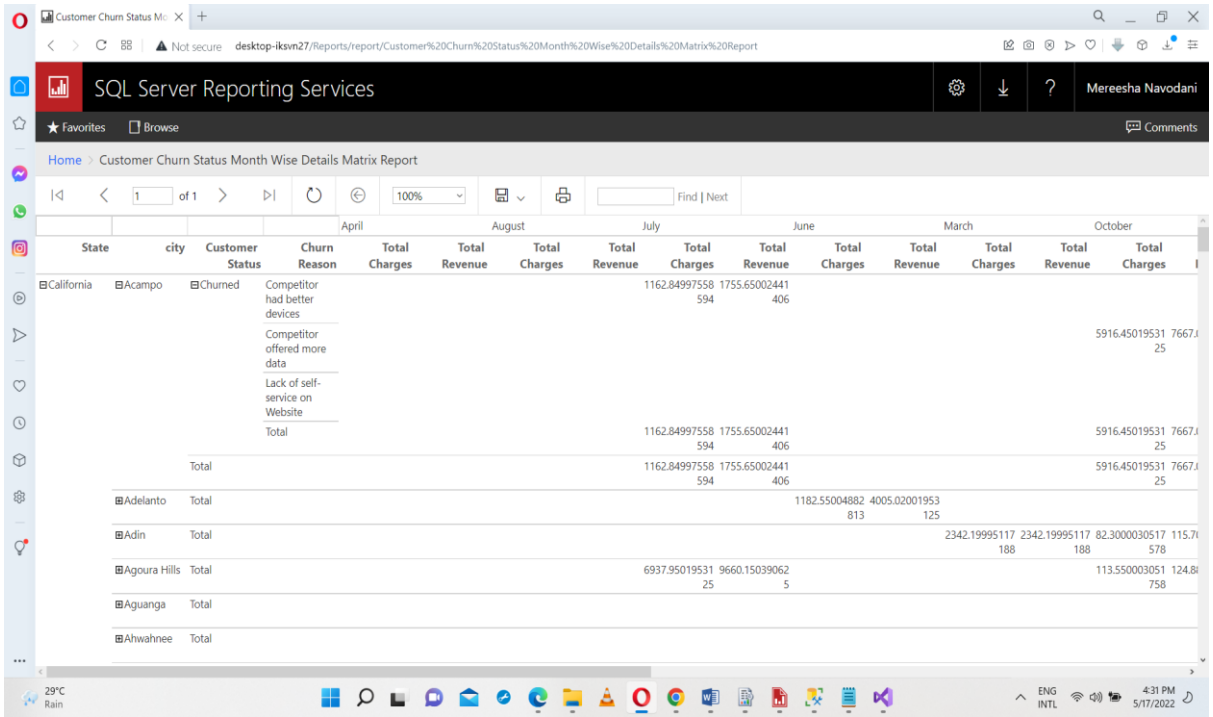


Query used for creating Reports

```
select fc.CustomerID,fc.CustomerStatus ,fc.ChurnReason,
fc.TotalCharges,fc.TotalRevenue, fc.MonthlyCharge,
fc.SatisficationScore, fc.CLTV, dl.State,dl.city,
dd.Date,dd.year,dd.MonthName,dd.Quarter,dcd.FirstName,dcd.Age,dcsd.
InternetService,dcsd.UnlimitedData
from FactChurn fc
inner join DimCustomerDetails dcd on
fc.CustomerID=dcd.AlternateCustomerID
inner join DimCustomerServiceDetails dcsd on
dcsd.CustomerServiceDetailsSK=dcd.ServiceKey
inner join DimLocation dl on fc.LocationKey=dl.LocationSK
inner join DimPopulation dp on dl.Populationkey=dp.PopulationSK
        inner join DimDate dd on dd.DateKey=fc.ChurnedDateKey
```

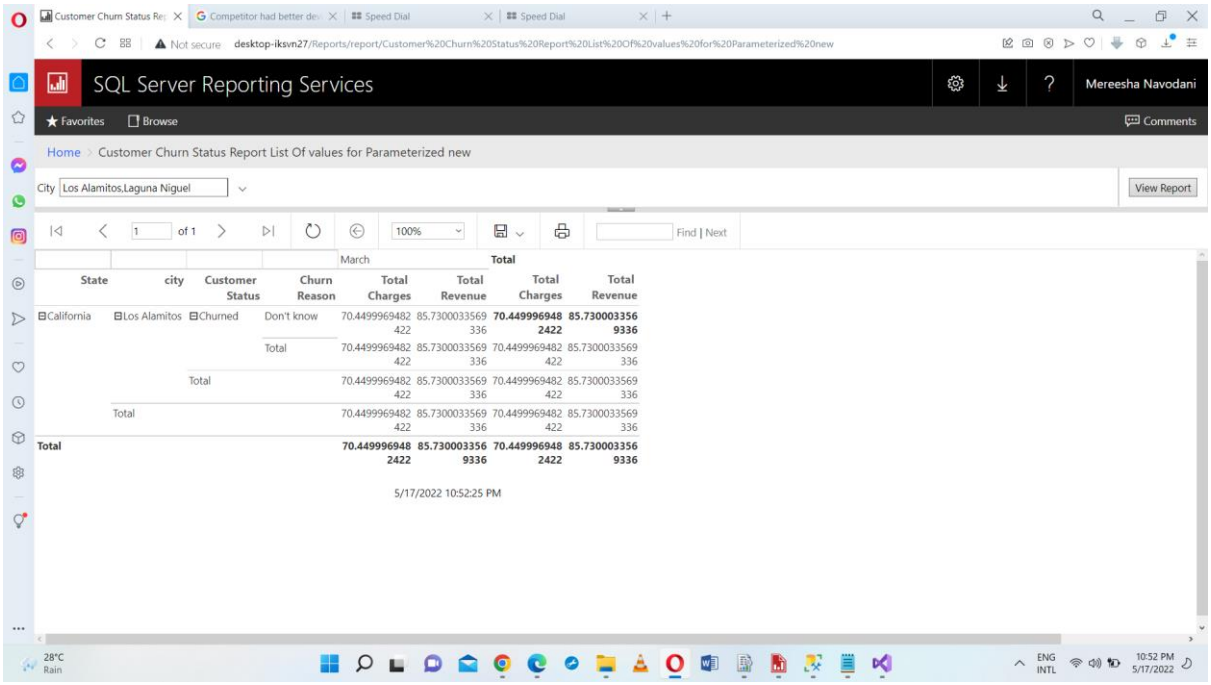
Report 1: Report with a matrix

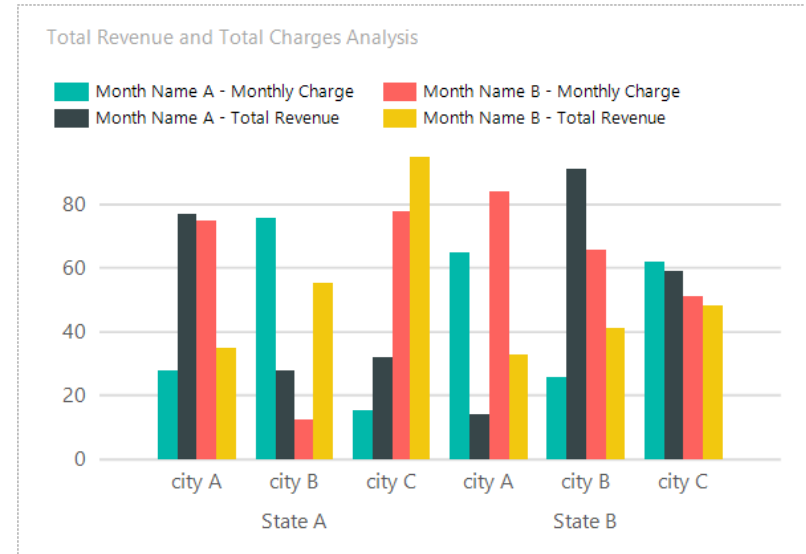
At the point of selecting fields for Row groups and Column groups, dragged and dropped State and City to Row groups section and Month to Column groups section and Total Charges and Total Revenue to Values section.



Report 2: Report with more than one parameter

User Can select a city and view report details to relevant for that.

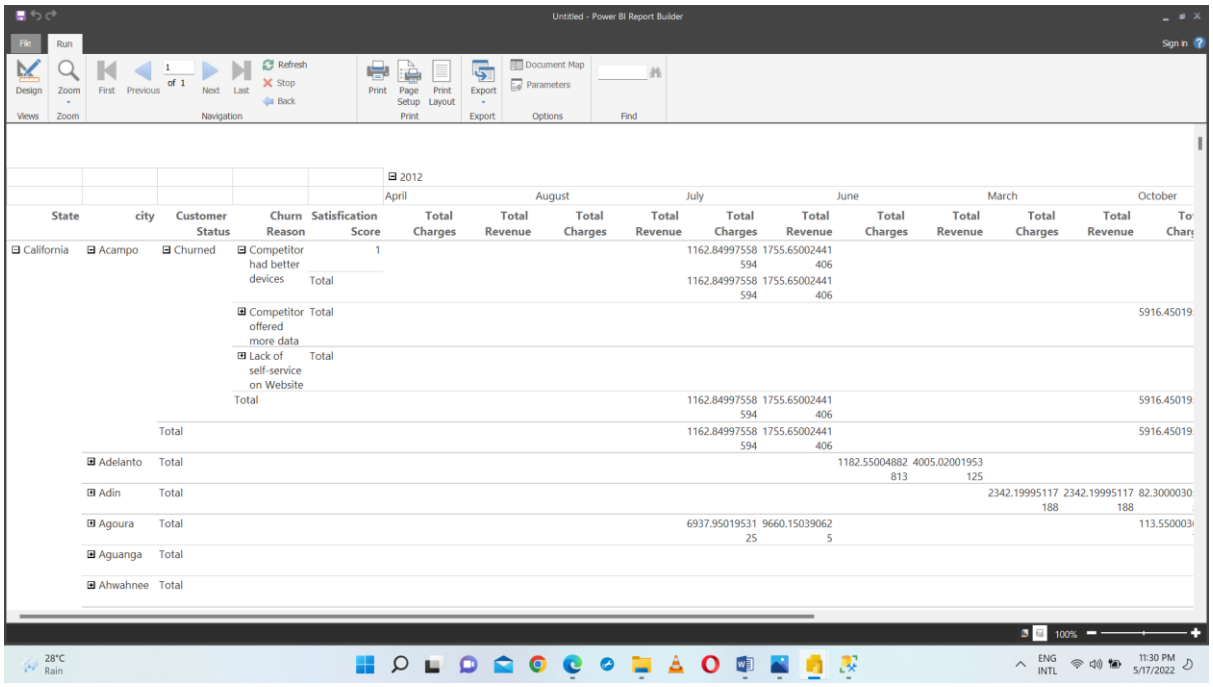


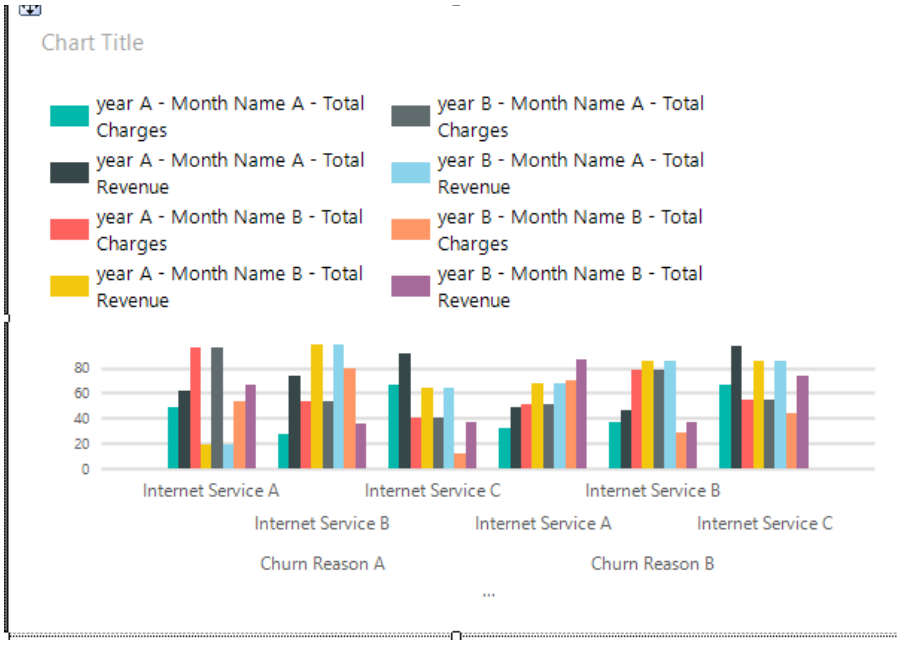


State and City wise Total Revenue and Total Charge Analysis

Report 3: Create an SSRS drill-down report.

At the point of selecting fields for Row groups and Column groups, dragged and dropped State,City,Customer Status,Churn Reason and Satisfication Score to Row groups section and Year and Month to Column groups section and Total Charges and Total Revenue to Values section.





Report 4: Create an SSRS drill-through report.

At the point of selecting fields for Row groups and Column groups, drag and drop State, City, Customer Status and churn Reason to Row groups section and Month to Column groups section and Total Charges and Total Revenue to Values section. This report Also Used SSRS Matrix.