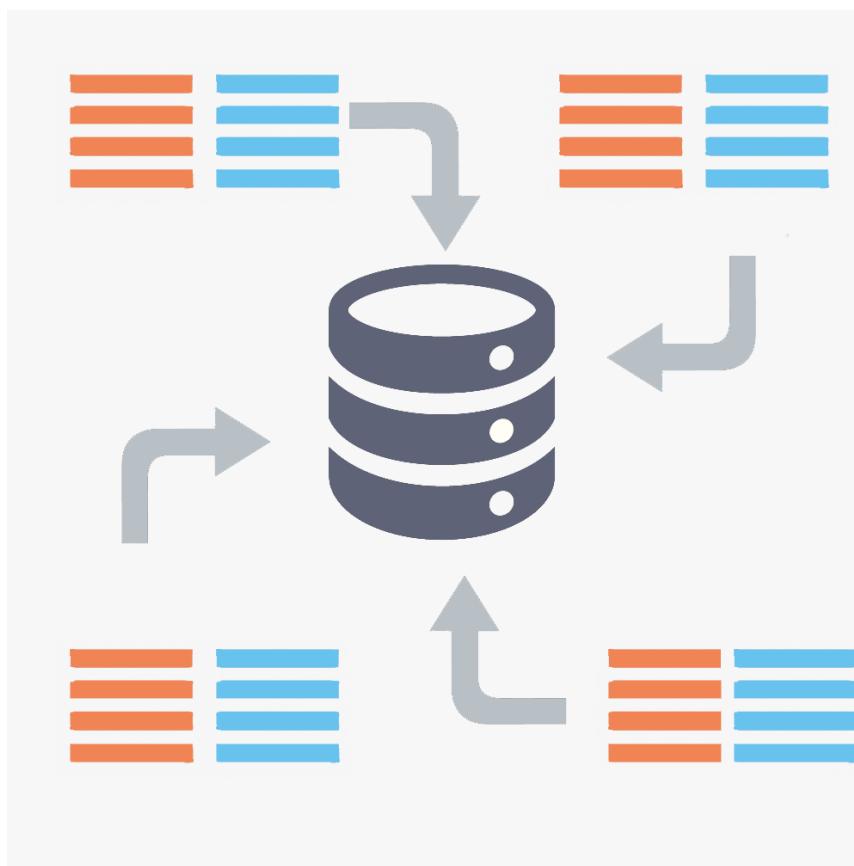


Data Warehouse Final Project

by

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Presented to Dr.Peerapon Vateekul



Special Problems in Computer Engineering I
(Data Warehouse and Business Intelligence)

2110497, semester 1/2018

Department of Computer Engineering,
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Part 1 Database

1.1 Data Preparation

First of all, the data in CardDesc Table. Some value has strange format for example, Tourist/n etc. Also, there is a duplicate foreign key so we clean them all.

The screenshot shows the Power BI Data Flow interface. A blue source icon (representing a table named CARD_DESC) is connected to a blue Clean step icon (labeled 'Clean 1'). This is followed by a green Output icon. The 'Clean 1' step contains two 'Group and Replace' operations:

- Replace [CardName] values: 9 values replaced.
- Replace [CardType] values: "4" replaced by "04".

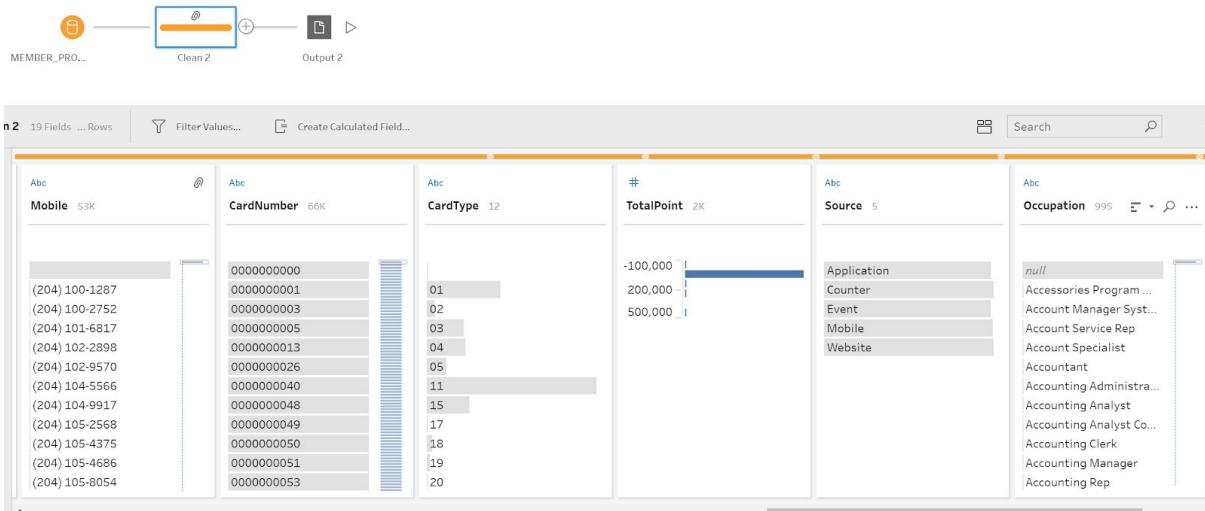
The output table 'Clean 1' has 2 Fields and 22 Rows. It includes columns for 'CardType' and 'CardName'. The 'CardType' column lists values 00, 01, 02, 03, 04, 05, 09, 10, 11, 15, and 17. The 'CardName' column lists various card types such as AM AZURE Card, AM EMERALD Card, AM Employee Type1, etc., ending with Anonymous.

Secondly, the data in MemberDim We change all NULL value to empty string in order to do the hierarchy in cubes. We also found out that there is ,THA THA and TH values in nationality , so we group it as TH. Also, we group Gender of Unknown and Non-specific together, and Marital status of NULL and NONE together.

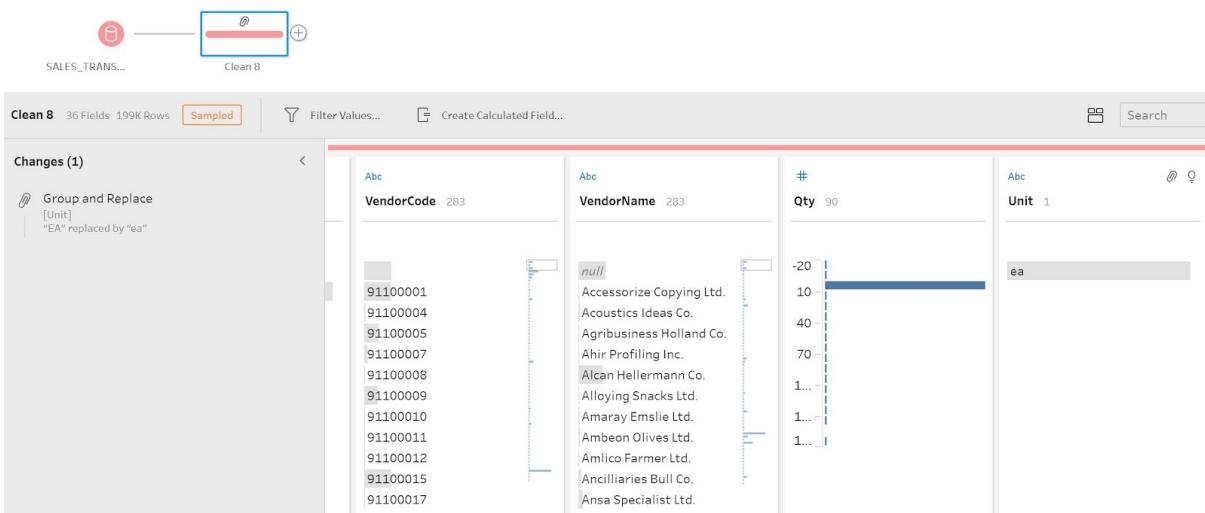
The screenshot shows the Power BI Data Flow interface. A blue source icon (representing a table named MEMBER_PROFILE) is connected to a blue Clean step icon (labeled 'Clean 2'). This is followed by a green Output icon. The 'Clean 2' step contains several 'Group and Replace' operations:

- MaritalStatus: Divorced, Married, None, Single.
- Address: 11 Cardinal Ave., 11 Cask Rd., 11 Catalda St., 11 Cathedral St., 11 Cavins St., 11 Cazenove Rd., 11 Chantl Parade, 11 Chartom Approach, 11 Choir Cr., 11 Cipra Rd., 11 Citreon Ave.
- State: AK, AL, AR, AZ, CA, CO, CT, DC, DE, FL, GA.
- County: Abbeville, Acadia, Accomack, Ada, Adair, Adams, Addison, Aiken, Aitkin, Alachua, Alamance.
- Town: Abbeville, Abbot, Abbotsford, Abbott, Abbottstown, Abbyville, Abercrombie, Aberdeen, Abie, Abilene, Abingdon.
- Postcode: 00501, 01003, 01004, 01007, 01008, 01009, 01011, 01012, 01013, 01020, 01022.

The output table 'Clean 2' has 19 Fields and 39K Rows. It includes columns for MaritalStatus, Address, State, County, Town, and Postcode.



Finally, in Sale_transaction table the unit has both ea and EA so we group it, and we update Brand NULL to empty string.



1.2 Simulate Data

Member_Profile

- since all data in Income Per month column is NULL, we simulate it to make it more realistic by update the rows with random income.

1.3 Summary

Table Name	Description	# of rows
CARD_DESC	Description about member cards	22

MEMBER_PROFILE	Profile of members	640,242
SALE_TRANSACTION_SUMMARY	Transaction made by members	1,156,849
SHOP_TENANT	Information about Tenant Store	1619
SHOP_RETAIL	Information about Retail shop	54
SALE_PAYMENT TRANSACTION	Information about payment of transaction	2,281,648
SALE_DISCOUNT TRANSACTION	Information about discount of transaction	2,523,836
DISCOUNT_MASTER	Information about discount promotion	11,354
SALE_TRANSACTION	Informations about transaction made from retails	4,422,810
PRODUCT_MASTER	Information about products	223,823
PRODUCT_HIERARCHY	Information about products hierarchy	3,508

Part 2 Data Warehouse

1. Designing the Data Warehouse

a. Dimensions

There are 10 dimensions in our data warehouse

CompanyDim

	Column Name	Data Type	Allow Nulls
1	CompanyKey	int	<input type="checkbox"/>
2	CompanyCode	nvarchar(5)	<input type="checkbox"/>
3	CompanyName	nvarchar(100)	<input checked="" type="checkbox"/>
4			<input type="checkbox"/>

	CompanyKey	CompanyCode	CompanyName
1	1	200	PINK POMELO,Ltd.
2	2	203	The Chosen One,Ltd.
3	3	204	Explorer Retail,Ltd.
4	4	205	The Grand Retail,Ltd.

DateDim

	Column Name	Data Type	Allow Nulls
1	DateKey	int	<input type="checkbox"/>
2	TheDate	datetime	<input type="checkbox"/>
3	DayNumber	int	<input checked="" type="checkbox"/>
4	DayName	nvarchar(50)	<input checked="" type="checkbox"/>
5	MonthNumber	int	<input checked="" type="checkbox"/>
6	MonthName	nvarchar(50)	<input checked="" type="checkbox"/>
7	Year	int	<input checked="" type="checkbox"/>
8	isWeekend	nvarchar(50)	<input checked="" type="checkbox"/>
9	Quarter	int	<input checked="" type="checkbox"/>

	DateKey	TheDate	DayNumber	DayName	MonthNumber	MonthName	Year	isWeekend	Quarter
1	1	1990-01-01 00:00:00.000	1	Monday	1	January	1990	NON-WEEKEND	1
2	2	1990-01-02 00:00:00.000	2	Tuesday	1	January	1990	NON-WEEKEND	1
3	3	1990-01-03 00:00:00.000	3	Wednesday	1	January	1990	NON-WEEKEND	1
4	4	1990-01-04 00:00:00.000	4	Thursday	1	January	1990	NON-WEEKEND	1
5	5	1990-01-05 00:00:00.000	5	Friday	1	January	1990	NON-WEEKEND	1
6	6	1990-01-06 00:00:00.000	6	Saturday	1	January	1990	WEEKEND	1
7	7	1990-01-07 00:00:00.000	7	Sunday	1	January	1990	WEEKEND	1
8	8	1990-01-08 00:00:00.000	8	Monday	1	January	1990	NON-WEEKEND	1
9	9	1990-01-09 00:00:00.000	9	Tuesday	1	January	1990	NON-WEEKEND	1

MemberDemographicDim

	Column Name	Data Type	Allow Nulls
1	MemberDemographicKey	int	<input type="checkbox"/>
2	AgeBand	varchar(50)	<input checked="" type="checkbox"/>
3	GenderBand	varchar(50)	<input checked="" type="checkbox"/>
4	MaritalStatus	varchar(50)	<input checked="" type="checkbox"/>
5	IncomeBand	varchar(50)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

	MemberDemographicKey	AgeBand	GenderBand	MaritalStatus	IncomeBand
1	1	Adult	Female	Married	< 25000
2	2	Adult	Female	Married	25000-50000
3	3	Adult	Female	Married	50000 and up
4	4	Adult	Female	None	< 25000
5	5	Adult	Female	None	25000-50000
6	6	Adult	Female	None	50000 and up
7	7	Adult	Female	Single	< 25000
8	8	Adult	Female	Single	25000-50000
9	9	Adult	Female	Single	50000 and up
10	10	Old	Female	Divorced	< 25000
11	11	Old	Female	Divorced	25000-50000

MemberDim

	Column Name	Data Type	Allow Nulls
1	MemberKey	int	<input type="checkbox"/>
2	AccountNum	nvarchar(20)	<input checked="" type="checkbox"/>
3	NameEN	nvarchar(25)	<input checked="" type="checkbox"/>
4	SurnameEN	nvarchar(25)	<input checked="" type="checkbox"/>
5	BirthDate	date	<input checked="" type="checkbox"/>
6	Nationality	nvarchar(50)	<input checked="" type="checkbox"/>
7	Address	nvarchar(250)	<input checked="" type="checkbox"/>
8	State	nvarchar(250)	<input checked="" type="checkbox"/>
9	County	nvarchar(250)	<input checked="" type="checkbox"/>
10	Town	nvarchar(250)	<input checked="" type="checkbox"/>
11	PostCode	nvarchar(250)	<input checked="" type="checkbox"/>
12	Mobile	nvarchar(265)	<input checked="" type="checkbox"/>
13	CardNumber	nvarchar(30)	<input checked="" type="checkbox"/>
14	CardType	nvarchar(64)	<input checked="" type="checkbox"/>
15	TotalPoint	numeric(32, 16)	<input checked="" type="checkbox"/>
16	Source	nvarchar(200)	<input checked="" type="checkbox"/>
17	Occupation	nvarchar(50)	<input checked="" type="checkbox"/>
18	CardName	nvarchar(80)	<input checked="" type="checkbox"/>

	MemberKey	AccountNum	NameEN	SurnameEN	BirthDate	Nationality	Address
1	1	9200131414	Shahzad	Kowal	1981-11-14	76 Naphtaly Side	
2	2	0000059631	Kala	Gillette	1966-08-30	THA	529 Bockstanz Esplanade
3	3	9200044322	Ilse	Czachor	1951-11-15		100B Couley St.
4	4	01101504019	Cinda	Warzecha	1982-12-20	THA	850 Thomsen Rd.
5	5	02101300055	Brendon	Unzueta	1959-12-11	THA	34 Mair Avenue
6	6	9203000017	Bamey	Kitten	1990-03-19		76 Demmer Rd.
7	7	9200015920	Genoveva	Adriou	1978-12-28		NULL
8	8	9203000003	Lydia	Bridge	1975-05-27		51 Bijan Gardens
9	9	9203000026	Novella	Griffiths	NULL		90 Niemira Gardens
10	10	9203000026	Novella	Griffiths	NULL		90 Niemira Gardens
11	11	9203000006	Desmond	Anmeman	1998-09-18		76 Shomake Hill
12	12	9203000008	Sushila	Bahri	1984-02-11		56 Hertseau Ave.
13	13	9203000023	Linnea	Linsky	NULL		74 Hedding Promenade
14	14	9203000023	Linnea	Linsky	NULL		74 Hartlinn Promenade

State	County	Town	PostCode	Mobile	CardNumber	CardType	TotalPoint	Source	Occupation	CardName
MO	Barry	Eagle Rock	65641	(613) 318-8039	0000000000	11	0.0000000000000000	Counter	NULL	AM EMERALD Card
KY	Ohio	Dundee	42338	(403) 227-9872	0000000001	11	0.0000000000000000	Website	Ergonomics Engineer	AM EMERALD Card
NY	NULL	NULL	14831	(780) 144-4179	0000000003	05	0.0000000000000000	Event	NULL	PM Bangsan
MN	Marshall	Oslo	56744	(250) 979-6712	00000005686	11	0.0000000000000000	Counter	NULL	AM EMERALD Card
PA	Somerset	Fairhope	15538	(902) 387-6731	0000000013	15	0.0000000000000000	Counter	NULL	AM AZURE Card
AL	Montgomery	Montgomery	36111	NULL	0000000026	15	0.0000000000000000	Event	Driver	AM AZURE Card
NULL	NULL	NULL	NULL	(867) 779-2881	0000000040	15	0.0000000000000000	Event	NULL	AM AZURE Card
MN	Carver	Monticello	55561	NULL	0000000048	11	0.0000000000000000	Event	NULL	AM EMERALD Card
MI	Hillsdale	Jerome	49249	NULL	0000000049	15	0.0000000000000000	Mobile	NULL	AM AZURE Card
MI	Hillsdale	Jerome	49249	NULL	0000000049	15	0.0000000000000000	Mobile	NULL	AM AZURE Card
NJ	Somerset	Somerset	08875	NULL	0000000051	11	0.0000000000000000	Mobile	NULL	AM EMERALD Card
TX	Bosque	Meridian	76665	NULL	0000000053	15	0.0000000000000000	Application	NULL	AM AZURE Card
NE	Lincoln	Dickens	69132	NULL	0000000055	11	0.0000000000000000	Website	NULL	AM EMERALD Card
NF	Lincoln	Dickens	69132	NULL	0000000055	11	0.0000000000000000	Website	NULL	AM EMERALD Card

	Column Name	Data Type	Allow Nulls
1	ShopRetailKey	int	<input type="checkbox"/>
2	CompanyKey	int	<input type="checkbox"/>
3	TransactionDateKey	int	<input type="checkbox"/>
4	TransactionTimeKey	int	<input type="checkbox"/>
5	DiscountKey	int	<input type="checkbox"/>
6	ReceiptID	nvarchar(18)	<input type="checkbox"/>
7	SalesLine	numeric(32, 16)	<input type="checkbox"/>
8	DiscAmount	numeric(32, 16)	<input checked="" type="checkbox"/>

	ShopRetailKey	ShopRetailNumber	ShopRetailName	ShopRetailCategory
1	1	2000	PM Head Quarter	PM
2	2	2020	PM 4PM	PM
3	3	2021	(NOT USE)PM The Square	PM
4	4	2022	PM The Park	PM
5	5	2023	(NOT USE)PM 4AM	PM
6	6	2024	PM ZPELL	PM
7	7	2025	PM Bangsan	PM
8	8	2026	PM 4P	PM

TenantDim

	Column Name	Data Type	Allow Nulls
1	TenantID	nvarchar(50)	<input checked="" type="checkbox"/>
2	TenantName	nvarchar(100)	<input checked="" type="checkbox"/>
3	IsActive	bit	<input checked="" type="checkbox"/>
4	AREA	varchar(10)	<input checked="" type="checkbox"/>
5	TenantKey	int	<input type="checkbox"/>

	TenantID	TenantName	IsActive	AREA	TenantKey
1	1	None	1	None	1
2	1	ก้ายเดียวเจียกพอด - Oasis*	0	Oasis	2
3	10	Adidas (4PM)	0	4PM	3
4	100	Hair Decor	0	4PM	4
5	1000	Paradise Gems - Oasis	0	Oasis	5
6	1001	Club 3 EX by Thanyaporn Jewely - Oasis*	0	Oasis	6
7	1002	Greyhound Original - 4PL	1	4PL	7
8	1003	Dairy Queen (4AM)	1	4AM	8
9	1004	Chanel (4AM)	0	4AM	9
10	1005	GIVENCHY	1	4PL	10
11	1006	PM Zpell	0	Oasis	11
12	1007	HAY (4AM)	0	4AM	12
13	1008	Fuku Matcha Kyoto Cafe	1	4AM	13

TimeDim

Column Name	Data Type	Allow Nulls
TimeKey	int	<input type="checkbox"/>
Time	varchar(8)	<input type="checkbox"/>
Hour	tinyint	<input type="checkbox"/>
MinuteNumber	tinyint	<input type="checkbox"/>
SecondNumber	tinyint	<input type="checkbox"/>
TimeInSecond	int	<input type="checkbox"/>
HourlyBucket	varchar(15)	<input type="checkbox"/>
DayTimeBucket	varchar(100)	<input type="checkbox"/>

	TimeKey	Time	Hour	MinuteNumber	SecondNumber	TimeInSecond	HourlyBucket	DayTimeBucket
1	0	00:00:00	0	0	0	0	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
2	1	00:00:01	0	0	1	1	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
3	2	00:00:02	0	0	2	2	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
4	3	00:00:03	0	0	3	3	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
5	4	00:00:04	0	0	4	4	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
6	5	00:00:05	0	0	5	5	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
7	6	00:00:06	0	0	6	6	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
8	7	00:00:07	0	0	7	7	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
9	8	00:00:08	0	0	8	8	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
10	9	00:00:09	0	0	9	9	00:00-00:59	Late Night (00:00 AM To 02:59 AM)
11	10	00:00:10	0	0	10	10	00:00-00:59	Late Night (00:00 AM To 02:59 AM)

VendorDim

Column Name	Data Type	Allow Nulls
VendorKey	int	<input type="checkbox"/>
VendorCode	nvarchar(20)	<input type="checkbox"/>
VendorName	nvarchar(100)	<input checked="" type="checkbox"/>

	VendorKey	VendorCode	VendorName
1	1	91200006	Scout Forms Ltd.
2	2	91101254	Stand Scutt Co.
3	3	91100049	Hinbest Registers Inc.
4	4	91100118	Refinishing Speaker Ltd.
5	5	91101335	Crewe Bouncing Co.
6	6	91101898	Starrett Printer Ltd.
7	7	91102028	Minolta Blindmaker Ltd.
8	8	91102300	Salmon Cypriot Co.
9	9	91100127	Indictors Disposals Ltd.
10	10	91100035	Sercery Brooksbank Co.
11	11	91102054	Datacom Memorials Inc.

ProductDim

Column Name	Data Type	Allow Nulls
ProductKey	int	<input type="checkbox"/>
ProductCode	nvarchar(20)	<input type="checkbox"/>
ProductName	nvarchar(60)	<input checked="" type="checkbox"/>
ProductGroupName	nvarchar(60)	<input checked="" type="checkbox"/>
Brand	nvarchar(50)	<input checked="" type="checkbox"/>
CategoryName	nvarchar(254)	<input checked="" type="checkbox"/>
ParentCategoryName	nvarchar(254)	<input checked="" type="checkbox"/>
DivisionName	nvarchar(254)	<input checked="" type="checkbox"/>
ProductPrice	numeric(32, 16)	<input checked="" type="checkbox"/>
Unit	nvarchar(10)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

	ProductKey	ProductCode	ProductName	ProductGroupName	Brand	CategoryName	ParentCategoryName
1	1	1001884	ការ់គិនអេវរ៉ែ Favor	Pay After Sales Local		41BB3 - OCCASIONAL CARD	41BB0 - C
2	2	1001926	ការ់គិនអេវរ៉ែ : 20	Pay After Sales Local		41BB3 - OCCASIONAL CARD	41BB0 - C
3	3	1001928	ការ់គិនអេវរ៉ែ Favor : 140	Pay After Sales Local		41BB3 - OCCASIONAL CARD	41BB0 - C
4	4	1001936	ការ់គិនអេវរ៉ែ Favor	Pay After Sales Local		41BB3 - OCCASIONAL CARD	41BB0 - C
5	5	1001940	ទុងខ្សោយបុរី Favor 160	Pay After Sales Local		41BC1 - GIFT BAG	41BC0 - V
6	6	1002481	កល់សម្រាប់បុរី : 48	Pay After Sales Local		41BC2 - GIFT BOX	41BC0 - V
7	7	1002481	កល់សម្រាប់បុរី : 48	Pay After Sales Local		41BC2 - GIFT BOX	41BC0 - V
8	8	1002489	កល់សម្រាប់បុរី : 95	Pay After Sales Local		41BC2 - GIFT BOX	41BC0 - V
9	9	1004096	អូកតំបន់ដឹកជញ្ជូនប៊ូតាមគាត់285 :1500	Pay After Sales Local		41121 - BALLPOINT PEN	41120 - B
10	10	1004114	ទូរសព្ទនៃតុកដាក់337កោតា 370	Pay After Sales Local		41111 - ROLLER PEN/ REFILL	41110 - R
11	11	1004114	ទូរសព្ទនៃតុកដាក់337កោតា 370	Pay After Sales Local		41111 - ROLLER PEN/ REFILL	41110 - R
12	12	1004451	CMC ស៊ីអីការ 20 ដឹកជញ្ជូន@COMMERCIAL	Pay After Sales Local	CMC	41673 - GLUE ALBUM	41670 - P
13	13	1006279	ឯកតុកដាក់អេឡិចត្រូនិក@Landex : 7600	Pay After Sales Local		43231 - OTHERS	43230 - O
14	14	1006279	ឯកតុកដាក់អេឡិចត្រូនិក@Landex : 7600	Pay After Sales Local		43231 - OTHERS	43230 - O

DiscountDim

Column Name	Data Type	Allow Nulls
DiscountKey	int	<input type="checkbox"/>
DiscountCode	nvarchar(20)	<input type="checkbox"/>
CompanyCode	nvarchar(5)	<input checked="" type="checkbox"/>
CompanyName	nvarchar(100)	<input checked="" type="checkbox"/>
DiscountName	nvarchar(60)	<input checked="" type="checkbox"/>
StartDate	datetime	<input checked="" type="checkbox"/>
EndDate	datetime	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

DiscountKey	DiscountCode	CompanyCode	CompanyName	DiscountName	StartDate	EndDate
1	54776	CP20000006	200	PINK POMELO.Ltd	PM Yellow Bazaar 150 THB	2017-06-20 00:00:00.000
2	54777	CP20000007	200	PINK POMELO.Ltd	PM Yellow Bazaar 200 THB	2017-06-20 00:00:00.000
3	54778	CP20000008	200	PINK POMELO.Ltd	PM Yellow Bazaar 250 THB	2017-06-20 00:00:00.000
4	54779	CP20000011	200	PINK POMELO.Ltd	PM Yellow Bazaar 400 THB	2017-06-20 00:00:00.000
5	54780	CP20000017	200	PINK POMELO.Ltd	1st Anniversary MB 100.-	2017-08-12 00:00:00.000
6	54781	CP20000018	200	PINK POMELO.Ltd	1st Anniversary MB 150.-	2017-08-12 00:00:00.000
7	54782	CP20000019	200	PINK POMELO.Ltd	1st Anniversary MB 400.-	2017-08-12 00:00:00.000
8	54783	CP20000026	200	PINK POMELO.Ltd	PM Special Buy 15,000 THB get coupon 3,000 THB	2017-11-11 00:00:00.000
9	54784	CP20400013	204	Explorer Retail.Ltd	Discount coupon value 500 THB	2017-07-27 00:00:00.000
10	54785	CP20400023	204	Explorer Retail.Ltd	ORANGE DAY SPECIAL Coupon500THB	2017-08-31 00:00:00.000
11	54786	CP20400025	204	Explorer Retail.Ltd	NEW WORLD NEW YOU Buy 5,000 get coupon 200 THB	2017-11-03 00:00:00.000
12	54787	CP20400038	204	Explorer Retail.Ltd	Lifed by Love Lucky Draw Coupon300THB	2018-02-01 00:00:00.000
13	54788	CP20400045	204	Explorer Retail.Ltd	Chinese New Year2018 Weekend coupon800THB	2018-02-15 00:00:00.000
14	54789	CP20400048	204	Explorer Retail.Ltd	Coupon 2,000THB Club21 Chinese New Year2018	2018-02-23 00:00:00.000
						2018-02-25 00:00:00.000

Special Techniques :

Use SCD4(Mini-dimension) for MemberDemographicDim

Use Hierarchy techniques in ProductDim

b.Fact tables

1. MemberTransaction Fact
2. Promotion Fact
3. RetailSalesTransaction Fact
4. RetailReturnTransaction fact

1.1 MemberTransaction Fact

Identify the business process : Information about transaction of each member

Granularity : per receipt

Dimension : DateDim, TimeDim, MemberDim, MemberDemographicDim, TenantDim, ShopRetailDim

Measure : TotalNetSale

Note : RetailType attribute to indicate that members made transaction from retail or tenant store

ReceiptID as degenerate dimension

1.2 Promotion Fact

Identify the business process : Discount promotion Analysis

Granularity : per receipt

Dimension : DateDim, DiscountDim

TimeDim,ShopRetailDim,CompanyDim

Measure : DiscAmount

Note :

SaleLine and Discount type attribute for extra information about the fact

ReceiptID as degenerate dimension

1.3 RetailSalesTransaction Fact

Identify the business process : Sales analysis of shop retails

Granularity : per product

Dimension : ShopRetailDim,

DateDim,TimeDim,ProductDim,VendorDim,CompanyDim

Measure : Qty,Cost, SalesAmount, NetSalesAmount, NetSalesAmountExcTax,

TaxAmount,DiscAmount,Benefit

Note :

SalesOrderID,TransactionID,ReceiptID as Degenerate Dimension

SaleOrderStatus, SaleLine,Barcode as extra information for fact.

1.4 RetailReturnTransaction Fact

Identify the business process : Return product analysis of shop retails

Granularity : per receipt

Dimension :

ShopRetailDim,DateDim,TimeDim,ProductDim,VendorDim,CompanyDim

Measure : Qty,Cost, SalesAmount, NetSalesAmount, NetSalesAmountExcTax,

TaxAmount,DiscAmount,Benefit

Note :

SalesOrderID,TransactionID,ReceiptID,ReturnTransactionID as Degenerate Dimension

SaleOrderStatus, SaleLine,Barcode as extra information for fact.

Conform Bus Matrix

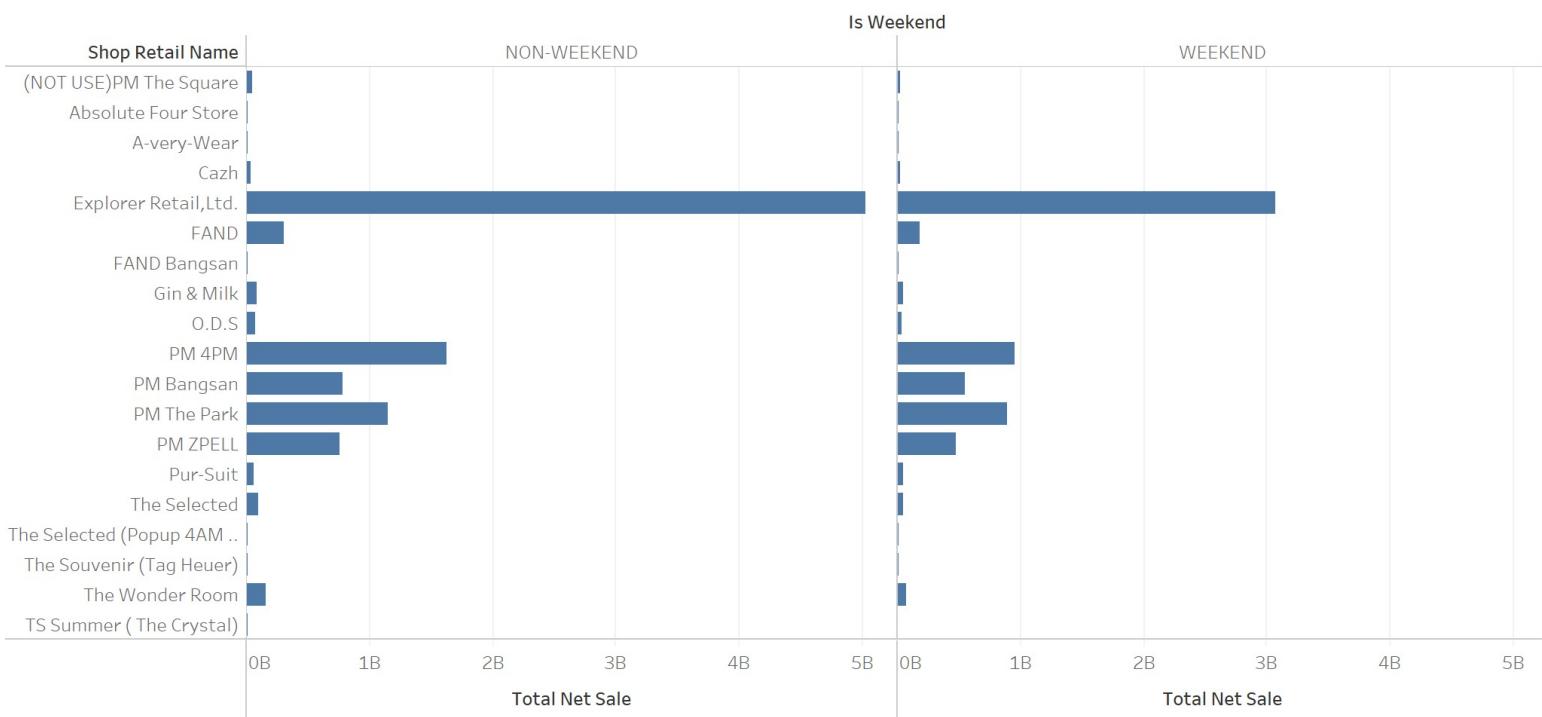
	Company Dim	Date Dim	Discount Dim	Member Dim	Member Demographic Dim	Product Dim	Shop Retail Dim	Tenant Dim	Time Dim	Vendor Dim
Member Transaction		✓		✓	✓		✓	✓	✓	
RetailReturn Transaction	✓	✓				✓	✓		✓	✓
RetailSales Transaction	✓	✓				✓	✓		✓	
Promotion	✓	✓	✓				✓		✓	

2. ETL Process

3. BI Report

4. Example Analysis and Fact findings

Retail by isWeekend



Total Net Sale for each Shop Retail Dim broken down by Date Dim. The view is filtered on Exclusions (Is Weekend,Shop Retail Name), which keeps 96 members.

