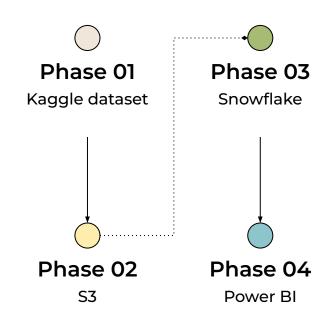
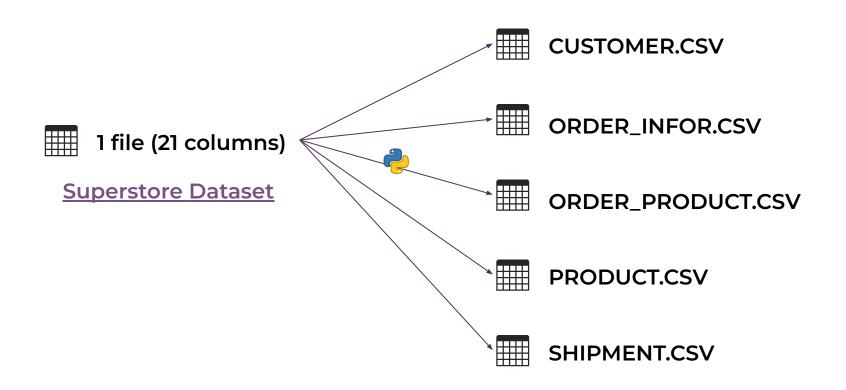
Small Project

Using Snowflake follow team's achitecture







CUSTOMER.CSV (793 rows)

	CUSTOMER_ID	***	CUSTOMER_NAME	
1	CG-12520		Claire Gute	
2	DV-13045		Darrin Van Huff	
3	SO-20335		Sean O'donnell	
4	BH-11710		Brosina Hoffman	
5	AA-10480		Andrew Allen	
6	IM-15070		Irene Maddox	



ORDER_INFOR.CSV (5009 rows)

ORDER_ID	ORDER_DATE	CUSTOMER_ID
CA-2016-152156	2016-11-08	CG-12520
CA-2016-138688	2016-06-12	DV-13045
US-2015-108966	2015-10-11	SO-20335
CA-2014-115812	2014-06-09	BH-11710
CA-2017-114412	2017-04-15	AA-10480
CA-2016-161389	2016-12-05	IM-15070



ORDER_PRODUCT.CSV (9993 rows)

PROFI	DISCOUNT	QUANTITY	SALES	PRODUCT_ID	ORDER_ID	ID
41.913	0.00	2	261.9600	FUR-BO-10001798	CA-2016-152156	0
219.582	0.00	3	731.9400	FUR-CH-10000454	CA-2016-152156	1
6.871	0.00	2	14.6200	OFF-LA-10000240	CA-2016-138688	2
-383.031	0.45	5	957.5775	FUR-TA-10000577	US-2015-108966	3
2.516	0.20	2	22.3680	OFF-ST-10000760	US-2015-108966	4
14.169	0.00	7	48.8600	FUR-FU-10001487	CA-2014-115812	5



PRODUCT.CSV (1894 rows)

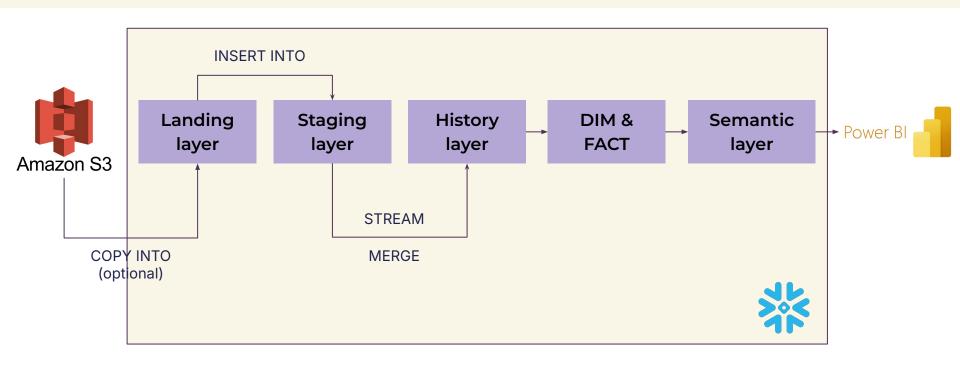
PRODUCT_ID	CATEGORY	SUB_CATEGORY	PRODUCT_NAME
FUR-BO-10001798	Furniture	Bookcases	Bush Somerset Collection Bookcase
FUR-CH-10000454	Furniture	Chairs	Hon Deluxe Fabric Upholstered Stacking Chairs, Rounded Back
OFF-LA-10000240	Office Supplies	Labels	Self-Adhesive Address Labels for Typewriters by Universal
FUR-TA-10000577	Furniture	Tables	Bretford CR4500 Series Slim Rectangular Table
OFF-ST-10000760	Office Supplies	Storage	Eldon Fold 'N Roll Cart System
FUR-FU-10001487	Furniture	Furnishings	Eldon Expressions Wood and Plastic Desk Accessories, Cherry Wood
OFF-AR-10002833	Office Supplies	Art	Newell 322
TEC-PH-10002275	Technology	Phones	Mitel 5320 IP Phone VoIP phone



SHIPMENT.CSV (5009 rows)

REGI	POSTAL_CODE	STATE	CITY	COUNTRY	SEGMENT	SHIP_MODE	SHIP_DATE	ORDER_ID	SHIPMENT_ID
) Sout	42420	Kentucky	Henderson	United States	Consumer	Second Class	2016-11-11	CA-2016-152156	0
6 West	90036	California	Los Angeles	United States	Corporate	Second Class	2016-06-16	CA-2016-138688	2
1 Sout	33311	Florida	Fort Lauderdale	United States	Consumer	Standard Class	2015-10-18	US-2015-108966	3
2 West	90032	California	Los Angeles	United States	Consumer	Standard Class	2014-06-14	CA-2014-115812	5
7 Sout	28027	North Carolina	Concord	United States	Consumer	Standard Class	2017-04-20	CA-2017-114412	12
3 West	98103	Washington	Seattle	United States	Consumer	Standard Class	2016-12-10	CA-2016-161389	13
6 Cent	76106	Texas	Fort Worth	United States	Home Office	Standard Class	2015-11-26	US-2015-118983	14
1 Cent	53711	Wisconsin	Madison	United States	Consumer	Standard Class	2014-11-18	CA-2014-105893	16
4 West	84084	Utah	West Jordan	United States	Consumer	Second Class	2014-05-15	CA-2014-167164	17

Requirements



Project





ORDER_PRODUCT.CSV

PRODUCT.CSV

SHIPMENT.CSV

Upload to Snowflake









Project

Create database (SUPERSTORE)

Create 5 schemas

```
use database SUPERSTORE;

/*

CREATE SCHEMAS

for landing-layer, staging-layer, history-layer

*/

create or replace schema landing_layer;

create or replace schema staging_layer;

create or replace schema history_layer;

create or replace schema dim_and_fact;

create or replace schema semantic_layer;

show schemas;
```

Project - LANDING LAYER

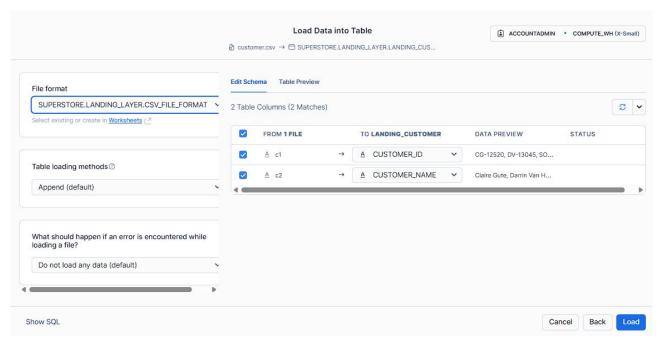
Create 5 transient tables

```
-- create customer table
create or replace transient table landing_customer (
   CUSTOMER ID varchar.
   CUSTOMER NAME varchar
--create order_infor table
create or replace transient table landing_order_infor (
   ORDER_ID varchar,
   ORDER DATE date.
   CUSTOMER ID varchar
-- create order_product table
create or replace transient table landing_order_product (
   ID NUMBER (38.0).
   ORDER_ID VARCHAR(16777216),
   PRODUCT ID VARCHAR(16777216).
   SALES NUMBER (38,4).
   QUANTITY NUMBER (38.0),
   DISCOUNT NUMBER (38,2),
   PROFIT NUMBER (38,4)
```

```
-- create product table
create or replace transient table landing_product (
    PRODUCT_ID VARCHAR(),
    CATEGORY VARCHAR(),
    SUB_CATEGORY VARCHAR(),
    PRODUCT NAME VARCHAR()
1:
--create shipment table
create or replace transient table landing_shipment (
    SHIPMENT ID NUMBER (38,0).
    ORDER_ID VARCHAR(16777216).
    SHIP_DATE DATE,
    SHIP MODE VARCHAR (16777216).
    SEGMENT VARCHAR (16777216).
    COUNTRY VARCHAR (16777216),
    CITY VARCHAR (16777216),
    STATE VARCHAR (16777216),
    POSTAL_CODE NUMBER (38,0),
    REGION VARCHAR (16777216)
show tables:
```

Project - LANDING LAYER

Upload files



Project - LANDING LAYER

Create a storage integration

```
-- Create a cloud storage integration in Snowflake

create storage integration s3_snowie_data

type = external_stage

storage_provider = 'S3'

enabled = TRUE

storage_aws_role_arn = 'arn:aws:iam::449143050604:role/snowflake-snowie-role'

storage_allowed_locations = ('s3://snowie-snowflake-bucket/');
```

Create a stage + COPY INTO

```
create or replace stage aws_ext_stage_integration
   url = 's3://snowie-snowflake-bucket'
    storage_integration = s3_snowie_data;
list @aws_ext_stage_integration;
copy into SUPERSTORE.LANDING_LAYER.LANDING_PRODUCT
from @aws_ext_stage_integration/product.csv
file_format = SUPERSTORE.LANDING_LAYER.CSV_FILE_FORMAT
on_error = abort_statement
force=true:
copy into SUPERSTORE.LANDING_LAYER.LANDING_SHIPMENT
from @aws_ext_stage_integration/shipment.csv
file_format = SUPERSTORE.LANDING_LAYER.CSV_FILE_FORMAT
on_error = abort_statement
force=true:
```

Create 5 permanent tables

```
-- STAGING_CUSTOMER
create or replace table staging_customer (
    CUSTOMER_ID varchar(20),
    CUSTOMER_NAME varchar(50)
):
-- STAGING_ORDER_INFOR
create or replace table staging_order_infor (
    ORDER_ID varchar(20),
   ORDER_DATE date,
   CUSTOMER_ID varchar(20)
-- STAGING_ORDER_PRODUCT
create or replace table staging_order_product (
    ID NUMBER (38,0),
   ORDER_ID VARCHAR(20),
    PRODUCT_ID VARCHAR(20),
    SALES NUMBER (38,4),
    QUANTITY NUMBER (38,0),
   DISCOUNT NUMBER (38,2),
    PROFIT NUMBER (38,4)
):
```

+ Do the same for the others

CREATING 5 TASKs TO SEND NEW DATA TO STAGING-LAYER + Transform

```
-- CUSTOMER
create or replace task INSERT_CUSTOMER_TASK
   warehouse = compute_wh
   schedule = '1 MINUTE'
as
insert into SUPERSTORE.STAGING LAYER.STAGING CUSTOMER (
   CUSTOMER ID.
   CUSTOMER NAME
select
   CUSTOMER ID.
   INITCAP(CUSTOMER_NAME)
from SUPERSTORE.LANDING_LAYER.LANDING_CUSTOMER lc
where not exists (
   select *
   from SUPERSTORE.STAGING_LAYER.STAGING_CUSTOMER sc
   where lc.CUSTOMER_ID = sc.CUSTOMER_ID and INITCAP(lc.CUSTOMER_NAME) = sc.CUSTOMER_NAME
);
```

Do the same for the others

Create 5 streams to capture new data arrival

```
create or replace stream CUSTOMER_STREAM
    on table SUPERSTORE.STAGING_LAYER.STAGING_CUSTOMER;
-- ORDER INFOR
create or replace stream ORDER_INFOR_STREAM
    on table SUPERSTORE.STAGING_LAYER.STAGING_ORDER_INFOR;
-- ORDER_PRODUCT
create or replace stream ORDER_PRODUCT_STREAM
    on table SUPERSTORE.STAGING_LAYER.STAGING_ORDER_PRODUCT;
-- PRODUCT
create or replace stream PRODUCT_STREAM
    on table SUPERSTORE.STAGING_LAYER.STAGING_PRODUCT:
-- SHIPMENT
create or replace stream SHIPMENT_STREAM
    on table SUPERSTORE.STAGING_LAYER.STAGING_SHIPMENT:
```

Create 5 stored procedure to merge data into HISTORY LAYER

```
CREATE OR REPLACE PROCEDURE SP_MERGE_CUSTOMER_HISTORY()
RETURNS STRING
LANGUAGE SQL
AS
$$
BEGIN
    -- Create a temporary table to store data from stream
    CREATE OR REPLACE TEMPORARY TABLE TEMP_STREAM AS
    SELECT
        CUSTOMER ID.
        CUSTOMER_NAME,
        METADATA$ACTION AS ACTION,
        METADATASISUPDATE AS IS UPDATE
    FROM CUSTOMER_STREAM;
    -- Close current record if it has the same CUSTOMER ID
    MERGE INTO SUPERSTORE. HISTORY_LAYER. HISTORY_CUSTOMER AS t
    USING TEMP_STREAM AS s
    ON t.CUSTOMER_ID = s.CUSTOMER_ID AND t.IS_CURRENT = TRUE
    WHEN MATCHED
        AND s.ACTION = 'INSERT'
    THEN UPDATE SET
        t.IS_CURRENT = FALSE,
        t.END_DATE = CURRENT_DATE;
    -- Insert new record or update record
    INSERT INTO SUPERSTORE.HISTORY_LAYER.HISTORY_CUSTOMER
        CUSTOMER_ID,
        CUSTOMER_NAME,
        START_DATE,
        END DATE.
        IS_CURRENT
```

Do the same for the others

Create 5 tasks which call stored procedure to merge data into HISTORY LAYER

```
-- create a task to merge CUSTOMER table
create or replace task MERGE_CUSTOMER_TASK
   warehouse = compute wh
   after SUPERSTORE.STAGING_LAYER.INSERT_CUSTOMER_TASK
call SP_MERGE_CUSTOMER_HISTORY():
-- create a task to merge ORDER_INFOR table
create or replace task MERGE_ORDER_INFOR_TASK
   warehouse = compute_wh
   after SUPERSTORE.STAGING_LAYER.INSERT_ORDER_INFOR_TASK
call SP_MERGE_ORDER_INFOR_HISTORY();
-- create a task to merge ORDER PRODUCT table
create or replace task MERGE_ORDER_PRODUCT_TASK
   warehouse = compute_wh
   after SUPERSTORE.STAGING_LAYER.INSERT_ORDER_PRODUCT_TASK
call SP_MERGE_ORDER_PRODUCT_HISTORY();
-- create a task to merge PRODUCT table
create or replace task MERGE_PRODUCT_TASK
   warehouse = compute wh
   after SUPERSTORE.STAGING_LAYER.INSERT_PRODUCT_TASK
call SP_MERGE_PRODUCT_HISTORY();
-- create a task to merge SHIPMENT table
create or replace task MERGE_SHIPMENT_TASK
   warehouse = compute_wh
   after SUPERSTORE STAGING LAYER INSERT SHIPMENT TASK
call SP_MERGE_SHIPMENT_HISTORY();
```

Create 5 tasks to delete data in LANDING-LAYER after merging into HISTORY LAYER

```
-- CUSTOMER table
create or replace task DELETE_CUSTOMER_TASK
    warehouse = compute_wh
    after SUPERSTORE, STAGING LAYER, MERGE CUSTOMER TASK
delete from SUPERSTORE.LANDING_LAYER.LANDING_CUSTOMER lc
where lc.CUSTOMER_ID in (
    select hc.CUSTOMER_ID
    from SUPERSTORE. HISTORY_LAYER. HISTORY_CUSTOMER hc
);
-- ORDER INFOR table
create or replace task DELETE_ORDER_INFOR_TASK
    warehouse = compute_wh
    after SUPERSTORE.STAGING_LAYER.MERGE_ORDER_INFOR_TASK
delete from SUPERSTORE.LANDING_LAYER.LANDING_ORDER_INFOR lo
where lo.ORDER_ID in (
    select ho.ORDER_ID
    from SUPERSTORE. HISTORY_LAYER. HISTORY_ORDER_INFOR ho
```

Do the same for the others

Project - HISTORY LAYER

Create 5 tables which has 3 more columns to store historical data

```
create or replace table history_customer (
    CUSTOMER ID varchar(20).
    CUSTOMER NAME varchar (50),
    START_DATE date,
    END_DATE date,
    IS_CURRENT boolean
create or replace table history_order_infor (
    ORDER ID varchar (20).
    ORDER_DATE date,
    CUSTOMER ID varchar(20),
    START_DATE date,
    END_DATE date,
    IS_CURRENT boolean
create or replace table history_order_product (
    ID number (38,0).
    ORDER_ID varchar(20),
    PRODUCT ID varchar(20).
    SALES number (38, 4),
    QUANTITY number (38, 0).
    DISCOUNT number (38, 2),
    PROFIT number (38,4),
    START_DATE date.
    END_DATE date,
    IS CURRENT boolean
```

```
create or replace table history_product (
    PRODUCT ID varchar(20).
    CATEGORY varchar (50).
    SUB CATEGORY varchar (50).
    PRODUCT_NAME varchar(200),
    START_DATE date,
   END_DATE date,
    IS CURRENT boolean
create or replace table history_shipment
    SHIPMENT_ID NUMBER(38,0),
    ORDER_ID VARCHAR (16777216).
    SHIP_DATE DATE,
    SHIP_MODE VARCHAR(16777216),
    SEGMENT VARCHAR (16777216),
    COUNTRY VARCHAR (16777216).
    CITY VARCHAR (16777216).
    STATE VARCHAR (16777216),
    POSTAL_CODE NUMBER (38,0),
    REGION VARCHAR (16777216)
    START DATE date.
   END_DATE date.
    IS CURRENT boolean
);
```

Project - RUN PIPELINE

Resume all tasks (resume child task first)

```
RESUME TASKS DELETE DATA in LANDING-LAYER
alter task DELETE_CUSTOMER_TASK resume:
alter task DELETE_ORDER_INFOR_TASK resume;
alter task DELETE_ORDER_PRODUCT_TASK resume;
alter task DELETE_PRODUCT_TASK resume;
alter task DELETE_SHIPMENT_TASK resume;
        RESUME TASKS MERGE DATA in HISTORY-LAYER
alter task MERGE_CUSTOMER_TASK resume:
alter task MERGE_ORDER_INFOR_TASK resume;
alter task MERGE_ORDER_PRODUCT_TASK resume;
alter task MERGE_PRODUCT_TASK resume:
alter task MERGE SHIPMENT TASK resume:
```

```
resume task to send new data to staging-layer

*/
alter task INSERT_CUSTOMER_TASK resume;
alter task INSERT_ORDER_INFOR_TASK resume;
alter task INSERT_ORDER_PRODUCT_TASK resume;
alter task INSERT_PRODUCT_TASK resume;
alter task INSERT_SHIPMENT_TASK resume;
```

Then check data

Project - RUN PIPELINE

Try to add one new row to LANDING-LAYER SHIPMENT table

```
insert into SUPERSTORE.LANDING_LAYER.LANDING_SHIPMENT
    SHIPMENT ID.
    ORDER_ID,
    SHIP_DATE,
    SHIP_MODE,
    SEGMENT,
    COUNTRY.
    CITY,
    STATE,
    POSTAL_CODE,
    REGION
) values (
    'CA-2016-152156',
    current_date,
    'ShipMode=Tuyet',
    'Segment=Tuyet',
    'country=Tuyet',
    'city',
    'state',
    999999
    'region=Tuyet'
);
```

Project - RUN PIPELINE

Result - there is a new row added in HISTORY-LAYER

- Old Shipment
 - End date is today
 - Is_curent becomes FALSE
- New Shipment
 - Start date is today
 - Is_curent becomes TRUE



Project - DIM and FACT LAYER

Create DIM tables from HISTORY tables

Create FACT tables from DIM tables

Project - SEMANTIC LAYER

Create a view of each order product

```
create or replace view VIEW_FACT_ORDER_PRODUCT as
select
    f.ORDER PRODUCT ID.
    f.ORDER_ID,
    f. SALES.
    f.QUANTITY.
    f.DISCOUNT,
    f. PROFIT,
    c.CUSTOMER ID.
    c.CUSTOMER_NAME,
    p.PRODUCT_ID,
    p. PRODUCT_NAME,
    p.CATEGORY as PRODUCT_CATEGORY.
    p.SUB_CATEGORY as PRODUCT_SUB_CATEGORY,
    o.ORDER_DATE,
    day(o.ORDER_DATE) as ORDER_DAY,
    month(o.ORDER_DATE) as ORDER_MONTH,
    vear (o. ORDER_DATE) as ORDER_YEAR,
    s.SHIP_DATE,
    s.SHIP_MODE,
    s.SEGMENT.
    s.CITY,
    s.STATE,
    s.COUNTRY.
    s.REGION
from SUPERSTORE.DIM_AND_FACT.FACT_ORDER_PRODUCT f
left join SUPERSTORE.DIM_AND_FACT.DIM_CUSTOMER c on f.CUSTOMER_ID = c.CUSTOMER_ID
left join SUPERSTORE.DIM_AND_FACT.DIM_ORDER o on f.ORDER_ID = o.ORDER_ID
left join SUPERSTORE.DIM_AND_FACT.DIM_PRODUCT p on f.PRODUCT_ID = p.PRODUCT_ID
left join SUPERSTORE.DIM_AND_FACT.DIM_SHIPMENT s on f.ORDER_ID = s.ORDER_ID;
```

Project - Power BI

Get latest data:

- Refresh data
- Select DirectQuery instead import when choosing table

Project - Power BI

CITY	COUNTRY	CUSTOMER_II	D CUSTOMER_NAME Sur	m of DISCOUNT Sum o	FORDER_MONTH Count of C	ORDER_PRODUCT_ID Sui	m of ORDER_YEAR PRODUCT_NAME	▼ Filters ◎ ≫	Visualizations >>	Data
Aberdeen	United States	JL-15505	Jeremy Lonsdale	0.00	11.00	1	2,017.00 Acme Titanium Bonded Scissors		Build visual	
bilene	United States	DK-13375	Dennis Kane	0.80	12.00	1	2,017.00 Hoover Commercial Lightweight Upright Va	∠ Search		Q Search
Akron	United States	AT-10435	Alyssa Tate	0.70	11.00	1	2,014.00 Acco Expandable Hanging Binders	Search		
kron	United States	EB-13705	Ed Braxton	0.40	10.00	1	2,017.00 Chromcraft Rectangular Conference Tables			✓ ✓ VIEW_FACT_ORDER_PRODUCT OUT OUT OUT OUT OUT OUT OUT
kron	United States	EB-13705	Ed Braxton	0.20	10.00	1	2,017.00 Deluxe Rollaway Locking File with Drawer	Filters on this visual	CITY COUNTRY	
kron	United States	JM-15865	John Murray	0.20	5.00	1	2,017.00 SAFCO Commercial Wire Shelving, Black			
Akron	United States	KB-16315	Karl Braun	0.70	2.00	1	2,015.00 Acco Hanging Data Binders	СІТУ		COUNTRY
kron	United States	KB-16315	Karl Braun	0.20	2.00	1	2,015.00 Belkin F8E887 USB Wired Ergonomic Keybo			✓ CUSTOMER ID
kron	United States	KB-16315	Karl Braun	0.70	2.00	1	2,015.00 GBC Standard Therm-A-Bind Covers	is (All)		
kron	United States	KB-16315	Karl Braun	0.40	2.00	1	2,015.00 Google Nexus 5			CUSTOMER_NAME
Akron	United States	KB-16315	Karl Braun	0.20	2.00	1	2,015.00 Newell 315	Count of ORDER_PR		☑ ∑ DISCOUNT
Akron	United States	KH-16630	Ken Heidel	0.20	9.00	1	2,017.00 Xerox 1906	- CAN	E AV By ■ R	> Grouper Date
kron	United States	MB-17305	Maria Bertelson	0.20	6.00	1	2,017.00 Southworth 25% Cotton Linen-Finish Paper	is (All)		The state of the s
Akron	United States	MD-17350	Maribeth Dona	0.20	9.00	1	2,017.00 DIXON Oriole Pencils		Py 🖻 📲 🖵 🖹 🛡	□ ∑ ORDER_DAY
Akron	United States	MD-17350	Maribeth Dona	0.70	9.00	1	2,017.00 GBC Recycled VeloBinder Covers	COUNTRY		☐ ORDER ID
Akron	United States	MD-17350	Maribeth Dona	0.20	9.00	1	2,017.00 Telephone Message Books with Fax/Mobile	is (All)		
Akron	United States	MD-17350	Maribeth Dona	0.70	9.00	1	2,017.00 Wilson Jones Active Use Binders			☑ ∑ ORDER_MONTH
Akron	United States	RD-19810	Ross Devincentis	0.20	12.00	1	2,016.00 OIC Colored Binder Clips, Assorted Sizes			☑ ∑ ORDER_PRODUCT_ID
kron	United States	SP-20650	Stephanie Phelps	0.40	8.00	1	2,016.00 Cisco IP Phone 7961G-GE VoIP phone	CUSTOMER_ID is (All)	Columns	☑ ∑ ORDER_YEAR
Akron	United States	SP-20650	Stephanie Phelps	0.40	8.00	1	2,016.00 Cisco Unified IP Phone 7945G VoIP phone		Coldinis	Office and the second of the
Akron	United States	SP-20650	Stephanie Phelps	0.20	8.00	1	2,016.00 Logitech G500s Laser Gaming Mouse with a		CITY VX	☐ PRODUCT_CATEGORY
Akron	United States	SP-20650	Stephanie Phelps	0.40	8.00	1	2,016.00 Plantronics Voyager Pro Legend		COUNTRY VX	□ PRODUCT_ID
Akron	United States	TT-21070	Ted Trevino	0.20	5.00	1	2,014.00 Deflect-o Glass Clear Studded Chair Mats	CUSTOMER_NAME	COUNTRY	
Akron	United States	TT-21070	Ted Trevino	0.20	5.00	1	2,014.00 Xerox 1949	is (All)	CUSTOMER_ID VX	☑ PRODUCT_NAME
Albuquerque	United States	BF-11215	Benjamin Farhat	0.20	3.00	1	2,017.00 AT&T CL2909	is (Aii)	CUSTOMER NAME VX	☐ PRODUCT_SUB_CATEGO
Albuquerque	United States	BF-11215	Benjamin Farhat	0.00	3.00	1	2,017.00 Logitech Wireless Headset H600 Over-The-		COSTONER_NAME VX	□ Σ PROFIT
Albuquerque	United States	BF-11215	Benjamin Farhat	0.20	3.00	1	2,017.00 OtterBox Commuter Series Case - iPhone 5	PRODUCT_NAME	Sum of DISCOUNT VX	
otal				1,609.69	80,670.00 10330	10330	20,822,429.00	is (All)	Sum of ORDER_MON ∨ ×	Σ QUANTITY
									Count of ORDER PRO V X	REGION
							₹	Sum of DISCOUNT	1	□ ∑ SALES
									Sum of ORDER_YEAR ∨×	□ SEGMENT
								is (All)	PRODUCT_NAME VX	> SHIP_DATE
								Sum of ORDER_MO	Drill through	☐ SHIP_MODE
										□ STATE