

U2M1.LW.Core SQL

Shkrabatouskaya Vera

https://github.com/VeraShkrabatouskaya/DataMola_Data-Camping-2022

2. Data Warehouse Architecture – Storage Layers

2.1. Task 01: CREATE Storage Objects

Physical Objects according Solution Proposal were created on Module 8.

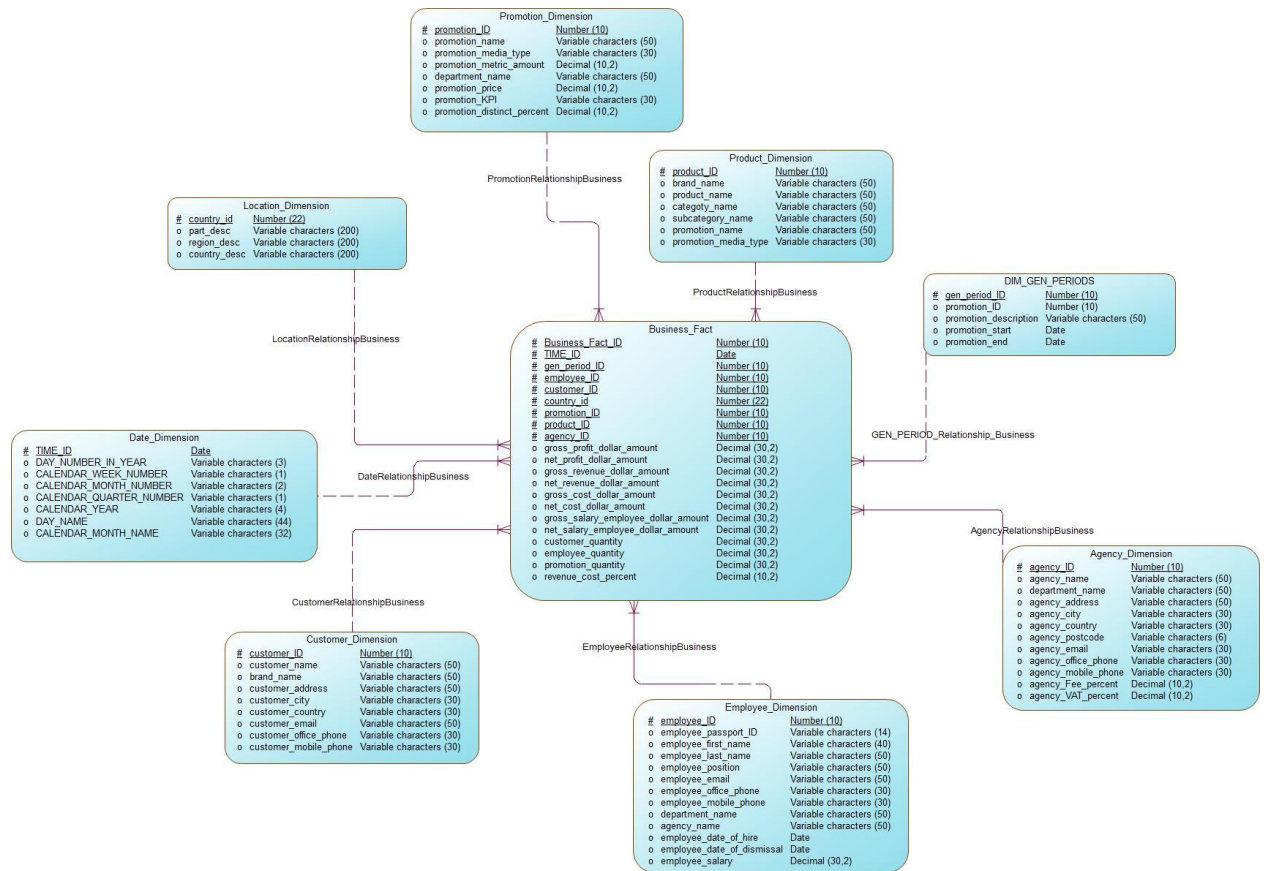
Name Conversation table

Level Type	Object Name	Tablespace	Desctiption
Storage level SA_*	SA_CUSTOMERS	ts_sa_customers_data_01	Loading from structured files. Contains Customer information.
	SA_EMPLOYEES	ts_sa_employees_data_01	Loading from structured files. Contains Employee information.
	SA_PROMOTIONS	ts_sa_promotions_data_01	Loading from structured files. Contains Promotion information.
DW - Cleansing Level	DW_CL	ts_dw_cl	Loading from a scene-level system. Contains information about preparation for subsequent use (cleaning).
DW – Level	DW_DATA	ts_dw_data_01	Loading data from cleansing tables. Contains clean information tending to the 3rd normal form ready to prepare a star schema.
DW- Prepare Star Cleansing Level	SAL_DW_CL	ts_dw_str_cls	Loading data from DW system. Contains views merging objects from DW level.

STAR - Cleansing	SAL_CL	ts_sal_cl	Loading data from DW_CL system. Contains views from previous level but clean any redundancy.
STAR – Level	DM_FCT_KPI	ts_sa_fct_kpi_01	Store information about fact KPI of ad promotions.
	DM_FCT_BUDGET	ts_sa_fct_budget_01	Store information about fact budget.
	DM_FCT_SALARY	ts_sa_fct_salary_01	Store information about fact salary of employees.
	DM_FCT_QUANTITY	ts_sa_fct_quantity_01	Store information about fact quantity of agency customers, employees and promotions.

History of changes

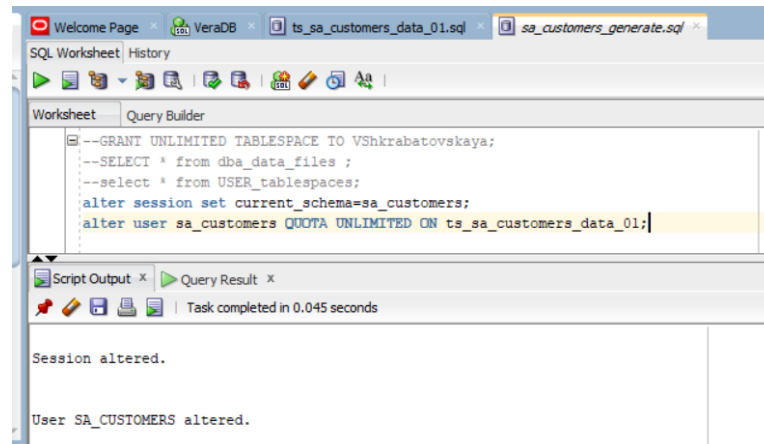
Name	Date	Reason for change	Version
Vera Shkrabatouskaya	7/25/2022	Creation of a STAR data warehouse model.	1.0 draft 1
Vera Shkrabatouskaya	7/26/2022	Changes after approval. Added details to the Business Model.	1.0 approved
Vera Shkrabatouskaya	8/3/2022	Changes after approval. The agency_country field was added to the Agency_Dimension table of the business model.	1.1 approved



2.2. Task 02: Generate Test Data in Storage Layers

Let's generate test data on Storage layers objects.

Object Name	Tablespace
SA_CUSTOMERS	ts_sa_customers_data_01



```
--GRANT UNLIMITED TABLESPACE TO VShkrabatovskaya;
--SELECT * from dba_data_files ;
--select * from USER_tablespaces;
alter session set current_schema=sa_customers;
alter user sa_customers QUOTA UNLIMITED ON ts_sa_customers_data_01;
```

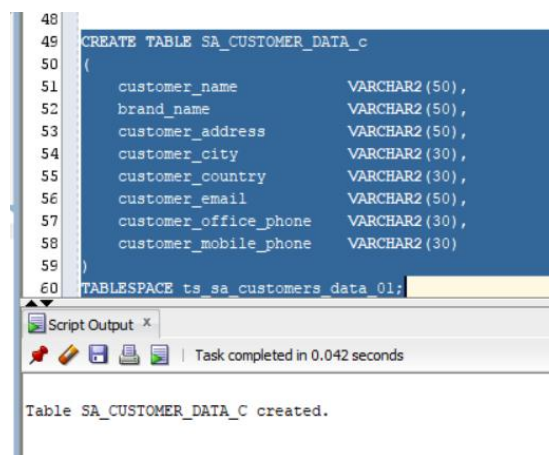
Script Output x Query Result x

Task completed in 0.045 seconds

Session altered.

User SA_CUSTOMERS altered.

Create a table SA_CUSTOMER_DATA_c about the Samsung Electronics customer.

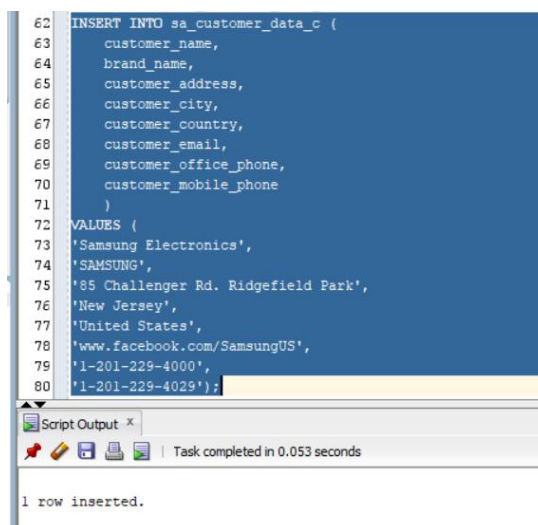


```
48
49 CREATE TABLE SA_CUSTOMER_DATA_c
50 (
51     customer_name          VARCHAR2(50),
52     brand_name             VARCHAR2(50),
53     customer_address       VARCHAR2(50),
54     customer_city          VARCHAR2(30),
55     customer_country       VARCHAR2(30),
56     customer_email         VARCHAR2(50),
57     customer_office_phone  VARCHAR2(30),
58     customer_mobile_phone  VARCHAR2(30)
59 )
60 TABLESPACE ts_sa_customers_data_01;
```

Script Output x

Task completed in 0.042 seconds

Table SA_CUSTOMER_DATA_C created.



```
62 INSERT INTO sa_customer_data_c (
63     customer_name,
64     brand_name,
65     customer_address,
66     customer_city,
67     customer_country,
68     customer_email,
69     customer_office_phone,
70     customer_mobile_phone
71 )
72 VALUES (
73     'Samsung Electronics',
74     'SAMSUNG',
75     '85 Challenger Rd. Ridgefield Park',
76     'New Jersey',
77     'United States',
78     'www.facebook.com/SamsungUS',
79     '1-201-229-4000',
80     '1-201-229-4029');

```

Script Output x

Task completed in 0.053 seconds

1 row inserted.


82

select * from sa_customer_data_c;

83

Script Output x

Query Result x

 SQL | All Rows Fetched: 1 in 0.024 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE	CUSTOMER_MOBILE
1	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	

Create a table SA_CUSTOMER_DATA_p about the Samsung Electronics products for an advertising campaign.

84 `CREATE TABLE SA_CUSTOMER_DATA_p`
85 `(`
86 `product_name VARCHAR2 (50)`
87 `)`
88 `TABLESPACE ts_sa_customers_data_01;`

Script Output x

Task completed in 0.048 seconds

Table SA_CUSTOMER_DATA_P created.

104 `select * from sa_customer_data_p;`

Script Output x Query Result x

SQL | All Rows Fetched: 12 in 0.014 seconds

	PRODUCT_NAME
1	Refrigerators
2	Ovens
3	Cooking ovens
4	Washing machines
5	Dishwashers
6	Microwave ovens
7	Vacuum Cleaners
8	Smart watches
9	TVs
10	Smartphones
11	Headphones
12	Tablets

Cross join of SA_CUSTOMER_DATA_c with SA_CUSTOMER_DATA_p.

106

select sa_customer_data_c.*, sa_customer_data_p.*

107

from sa_customer_data_c, sa_customer_data_p;

108

Script Output x

Query Result x

SQL

All Rows Fetched: 12 in 0.012 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE	CUSTOMER_MOBILE
1	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
2	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
3	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
4	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
5	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
6	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
7	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
8	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
9	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
10	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
11	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	
12	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029	

Create a table SA_CUSTOMER_DATA_c2 about the Visa International Service Association customer.

```
109 CREATE TABLE SA_CUSTOMER_DATA_c2
110 (
111     customer_name      VARCHAR2(50),
112     brand_name         VARCHAR2(50),
113     customer_address   VARCHAR2(50),
114     customer_city      VARCHAR2(30),
115     customer_country   VARCHAR2(30),
116     customer_email     VARCHAR2(50),
117     customer_office_phone VARCHAR2(30),
118     customer_mobile_phone VARCHAR2(30)
119 )
120 TABLESPACE ts_sa_customers_data_01;
```

Script Output x Query Result x
Task completed in 0.058 seconds

1 row inserted.
1 row inserted.
1 row inserted.
2 rows deleted.
1 row inserted.
Table SA_CUSTOMER_DATA_C2 created.

```
122 INSERT INTO sa_customer_data_c2 (
123     customer_name,
124     brand_name,
125     customer_address,
126     customer_city,
127     customer_country,
128     customer_email,
129     customer_office_phone,
130     customer_mobile_phone
131 )
132 VALUES (
133     'Visa International Service Association',
134     'VISA',
135     '900 Metro Center Blvd.',
136     'Foster City',
137     'United States',
138     'https://usa.visa.com/contact-us.html',
139     '1-800-847-2911',
140     '1-800-847-2922');

```

Script Output x Query Result x
Task completed in 0.024 seconds

1 row inserted.

```
102 select * from sa_customer_data_c2;
```

Query Result x
All Rows Fetched: 1 in 0.009 seconds

CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE
1 Visa International Service Association	VISA	900 Metro Center Blvd.	Foster City	United States	https://usa.visa.com/contact-us.html	1-800-847-2911

Create a table SA_CUSTOMER_DATA_p2 about the Visa International Service Association for an advertising campaign.

```
144 CREATE TABLE SA_CUSTOMER_DATA_p2
145 (
146     product_name      VARCHAR2(50)
147 )
148 TABLESPACE ts_sa_customers_data_01;
```

Script Output x Query Result x
Task completed in 0.022 seconds

Table SA_CUSTOMER_DATA_P2 created.

```

151 INSERT INTO sa_customer_data_p2 (product_name) VALUES ('Sponsorship');
152 INSERT INTO sa_customer_data_p2 (product_name) VALUES ('Card');
153 INSERT INTO sa_customer_data_p2 (product_name) VALUES ('Benefit');
154 INSERT INTO sa_customer_data_p2 (product_name) VALUES ('Service');

```

Script Output x Query Result x

Task completed in 0.051 seconds

Table SA_CUSTOMER_DATA_P2 created.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.021

	PRODUCT_NAME
1	Sponsorship
2	Card
3	Benefit
4	Service

Cross join of SA_CUSTOMER_DATA_c2 with SA_CUSTOMER_DATA_p2.

```

157 select sa_customer_data_c2.*, sa_customer_data_p2.*
158 from sa_customer_data_c2, sa_customer_data_p2;
159

```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.017 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE
1	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States		https://usa.visa.com/contact-us.html	1-800-847-2911
2	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States		https://usa.visa.com/contact-us.html	1-800-847-2911
3	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States		https://usa.visa.com/contact-us.html	1-800-847-2911
4	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States		https://usa.visa.com/contact-us.html	1-800-847-2911

Create a table SA_CUSTOMER_DATA_a about the Starcom network agencies serving product promotion for the customer.

```

122 CREATE TABLE SA_CUSTOMER_DATA_a
123 (
124     agency_name          VARCHAR2 (50),
125     agency_city          VARCHAR2 (30),
126     agency_country       VARCHAR2 (30),
127     agency_address       VARCHAR2 (50),
128     agency_postcode      VARCHAR2 (6),
129     agency_email         VARCHAR2 (30),
130     agency_office_phone   VARCHAR2 (30),
131     agency_mobile_phone   VARCHAR2 (30),
132     agency_Fee_percent   DECIMAL (10,2),
133     agency_VAT_percent    DECIMAL (10,2)
134 )
135 TABLESPACE ts_sa_customers_data_01;

```

Script Output x

Task completed in 0.048 seconds

Table SA_CUSTOMER_DATA_A created.


```

347
348 INSERT INTO SA_CUSTOMER_DATA_a
349 VALUES (
350 'Starcom',
351 'London',
352 'United Kingdom',
353 '2 Television Centre, 101 Wood Lane',
354 '19721',
355 'www.starcommw.com/contact',
356 '44-204-577-43-17',
357 '44-204-577-43-17',
358 25,
359 20,
360 )
361 ;

```

Script Output x

Task completed in 0.153 seconds

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

363 select * from sa_customer_data_a;

Script Output x Query Result x

All Rows Fetched: 15 in 0.012 seconds

	AGENCY_NAME	AGENCY_CITY	AGENCY_COUNTRY	AGENCY_ADDRESS	AGENCY_POSTCODE	AGENCY_EMAIL	AGENCY_OFFICE_PHONE	AGENCY_MOBI
1	Starcom	New York	United States	375 Hudson St. Floor 12	10014	www.starcommw.com/contact	1-212-468-3888	1-212-468-35
2	Starcom	Sydney	Australia	21 Harris Street, Pyrmont	2009	www.starcommw.com/contact	612-9666-8000	612-9666-801
3	Starcom	Paris	France	30-34 chemin Vert Street	75011	www.starcommw.com/contact	33-1-58-74-08-68	33-1-58-74-7
4	Starcom	Zurich	Switzerland	Stadelhoferstrasse 258	8001	www.starcommw.com/contact	41-43-366-61-61	41-43-366-66
5	Starcom	Nicosia	Cyprus	21 Academias Ave. KEMA Building	2107	www.starcommw.com/contact	357-22378828	357-22378833
6	Starcom	Hong Kong	China	29/F, Paul Y. Centre 51 Hung To Road Kwun Tong	12345	www.starcommw.com/contact	39-051-77-44-90	34-911-99-37
7	Starcom	Berlin	Germany	Paul Lincke Ufer 39-40	10999	www.starcommw.com/contact	49-211-5684962	49-211-56849
8	Starcom	Shanghai	China	21/F Henderson 688	12345	www.starcommw.com/contact	39-051-77-55-90	39-051-77-99
9	Starcom	Cairo	Egypt	City Stars 4th Floor	10521	www.starcommw.com/contact	202-0-2-4800-941	202-0-5-4800
10	Starcom	Warsaw	Poland	44 A Domaniewska Street	02-672	www.starcommw.com/contact	48-22-493-99-99	48-22-493-09
11	Starcom	Barcelona	Spain	385 Aragon Street	08013	www.starcommw.com/contact	34-933-96-77-00	34-933-96-88
12	Starcom	Milan	Italy	C.R. Darwin Street, 20	20143	www.starcommw.com/contact	39-02-66-798-1	39-02-66-798
13	Starcom	Dubai	UAE	King Salman Bin Abdulaziz Al Saud St.	7534	www.starcommw.com/contact	971-0-4-367-6400	971-0-4-367-
14	Starcom	Moscow	Russia	15 Leningradsky prospekt, bld 1	194021	www.starcommw.com/contact	7-495-969-2010	7-495-969-20
15	Starcom	London	United Kingdom	2 Television Centre, 101 Wood Lane	19721	www.starcommw.com/contact	44-204-577-43-17	44-204-577-4

Create a table SA_CUSTOMER_DATA_pm about the type of promotion the customer chooses for the products.

```

542 CREATE TABLE SA_CUSTOMER_DATA_pm
543 (
544     promotion_media_type    VARCHAR2(50)
545 )
546 TABLESPACE ts_sa_customers_data_01;

```

Script Output x

Task completed in 0.047 seconds

Table SA_CUSTOMER_DATA_PM created.


```

548
549 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('TV');
550 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('press');
551 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('digital');
552 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('radio');
553 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('OOH');
554 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('production');
555 INSERT INTO SA_CUSTOMER_DATA_pm (promotion_media_type) VALUES ('design');

```

Script Output x | Task completed in 0.057 seconds

```

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

```

```

557
558 select * from SA_CUSTOMER_DATA_pm;

```

Script Output x | Query Result x | All Rows Fetched: 7 in 0.01 seconds

PROMOTION_MEDIA_TYPE
1 TV
2 press
3 digital
4 radio
5 OOH
6 production
7 design

Using the Cross join tables and CTE subqueries defined in the WITH clause, as well as generating total_ID and TIME_ID to promote the order from the customer, we got a common table SA_CUSTOMER_DATA on the SA_CUSTOMERS storage level in the ts_sa_customers_data_01 tablespace for customers.

```

385 with cte_customer_agency AS (
386   select sa_customer_data_c.*, sa_customer_data_p.*, sa_customer_data_a.*, SA_CUSTOMER_DATA_pm.*
387   from sa_customer_data_c, sa_customer_data_p, sa_customer_data_a, SA_CUSTOMER_DATA_pm
388   union all
389   select sa_customer_data_c2.*, sa_customer_data_p2.*, sa_customer_data_a.*, SA_CUSTOMER_DATA_pm.*
390   from sa_customer_data_c2, sa_customer_data_p2, sa_customer_data_a, SA_CUSTOMER_DATA_pm
391 ),
392 SA_CUSTOMER_DATA AS (
393   select ROW_NUMBER() OVER (ORDER BY TIME_ID) total_ID, t.*, cte_customer_agency.*
394   from (
395     SELECT
396       TRUNC( sd + rn ) time_id
397     FROM
398       (
399         SELECT
400           TO_DATE( '12/31/2021', 'MM/DD/YYYY' ) sd,
401           rownum rn
402         FROM dual
403         CONNECT BY level <= 200
404       ) t,
405     cte_customer_agency
406   order by TOTAL_ID ASC)
407   select * from SA_CUSTOMER_DATA;

```

Script Output x | Query Result x | SQL | Fetched 50 rows in 0.566 seconds

TOTAL_ID	TIME_ID	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PH
1	1 01-JAN-22	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park	New Jersey	United States	www.facebook.com/SamsungUS 1-201-229-4000	
2	2 01-JAN-22	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park	New Jersey	United States	www.facebook.com/SamsungUS 1-201-229-4000	
3	3 01-JAN-22	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park	New Jersey	United States	www.facebook.com/SamsungUS 1-201-229-4000	
4	4 01-JAN-22	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park	New Jersey	United States	www.facebook.com/SamsungUS 1-201-229-4000	
5	5 01-JAN-22	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park	New Jersey	United States	www.facebook.com/SamsungUS 1-201-229-4000	

```

385 with cte_customer_agency AS (
386   select sa_customer_data_c.*, sa_customer_data_p.*, sa_customer_data_a.*, SA_CUSTOMER_DATA_pm.*
387   from sa_customer_data_c, sa_customer_data_p, sa_customer_data_a, SA_CUSTOMER_DATA_pm
388   union all
389   select sa_customer_data_c2.*, sa_customer_data_p2.*, sa_customer_data_a.*, SA_CUSTOMER_DATA_pm.*
390   from sa_customer_data_c2, sa_customer_data_p2, sa_customer_data_a, SA_CUSTOMER_DATA_pm
391   ),
392   SA_CUSTOMER_DATA AS (
393   select ROW_NUMBER() OVER (ORDER BY TIME_ID) total_ID, t.*, cte_customer_agency.*
394   from (
395     SELECT
396       TRUNC( sd + rn ) time_id
397     FROM
398       (
399         SELECT
400           TO_DATE( '12/31/2021', 'MM/DD/YYYY' ) sd,
401           rownum rn
402         FROM dual
403         CONNECT BY level <= 200
404       ) t,
405     cte_customer_agency
406     order by TOTAL_ID DESC)
407   select * from SA_CUSTOMER_DATA;

```

Script Output

Query Result

SQL

Fetched 50 rows in 2.202 seconds

	TOTAL_ID	TIME_ID	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL
1	336000	19-JUL-22	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1
2	335999	19-JUL-22	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1
3	335998	19-JUL-22	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1
4	335997	19-JUL-22	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1
5	335996	19-JUL-22	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1

336,000 rows were generated.

```

409
410 with cte_customer_agency AS (
411     select sa_customer_data_c.*, sa_customer_data_p.*, sa_customer_data_a.*, SA_CUSTOMER_DATA_pm.*
412     from sa_customer_data_c, sa_customer_data_p, sa_customer_data_a, SA_CUSTOMER_DATA_pm
413     union all
414     select sa_customer_data_c2.*, sa_customer_data_p2.*, sa_customer_data_a.*, SA_CUSTOMER_DATA_pm.*
415     from sa_customer_data_c2, sa_customer_data_p2, sa_customer_data_a, SA_CUSTOMER_DATA_pm
416 ),
417 CUSTOMER_DATA AS (
418     select ROW_NUMBER() OVER (ORDER BY TIME_ID) total_ID, t.*, cte_customer_agency.*
419     from (
420         SELECT
421             TRUNC( sd + rn ) time_id
422         FROM
423             (
424                 SELECT
425                     TO_DATE( '12/31/2021', 'MM/DD/YYYY' ) sd,
426                     rownum rn
427                 FROM dual
428                 CONNECT BY level <= 200
429             )
430         ) t,
431         cte_customer_agency
432     order by TOTAL_ID ASC)
433 select count(*) from CUSTOMER_DATA;

```

COUNT(*)	
1	336000

As a result, we can explore the total CUSTOMER_DATA table in terms of metrics.

```
447
448
449 (
450     SELECT
451         TO_DATE( '12/31/2021', 'MM/DD/YYYY' ) sd,
452         rownum rn
453     FROM dual
454     CONNECT BY level <= 200
455 ) t,
456 cte_customer_agency
457 order by TOTAL_ID ASC)
458 select distinct(CUSTOMER_DATA.agency_city) from CUSTOMER_DATA;
459
```

AGENCY_CITY
1 New York
2 Sydney
3 Paris
4 Zurich
5 Nicosia
6 Hong Kong
7 Berlin
8 Shanghai
9 Cairo
10 Warsaw
11 Barcelona
12 Milan
13 Dubai
14 Moscow
15 London

NOTE: Generation of test data on Storage layer objects such as SA_EMPLOYEES and SA_PROMOTIONS will be created later and added to the report.

2.3. Task 03: Create Group by Plan

Prepare adhoc SQL for segregate data view on SA_* objects (Storage).

Operations:

- Select
 - Group by

```
470
471 TRUNC( sd + rn ) time_id
472 FROM
473 (
474     SELECT
475         TO_DATE( '12/31/2021', 'MM/DD/YYYY' ) sd,
476         rownum rn
477     FROM dual
478     CONNECT BY level <= 200
479 ) t,
480 cte_customer_agency
481 order by TOTAL_ID ASC)
482 select CUSTOMER_DATA.brand_name, CUSTOMER_DATA.promotion_media_type from CUSTOMER_DATA
483 GROUP BY CUSTOMER_DATA.brand_name, CUSTOMER_DATA.promotion_media type;
```

BRAND_NAME	PROMOTION_MEDIA_TYPE
1 SAMSUNG	TV
2 SAMSUNG	press
3 SAMSUNG	digital
4 SAMSUNG	radio
5 SAMSUNG	OOH
6 SAMSUNG	production
7 SAMSUNG	design
8 VISA	TV
9 VISA	press
10 VISA	digital
11 VISA	radio
12 VISA	OOH
13 VISA	production
14 VISA	design

In this selection, we can see which services and for which brands have been ordered through the Starcom network of agencies.

The following selection shows that Starcom provides services in different parts of the world.

Worksheet Query Builder

```

476 rownum rn
477 FROM dual
478 CONNECT BY level <= 200
479 )
480 ) t,
481 cte_customer_agency
482 order by TOTAL_ID ASC)
483 select CUSTOMER_DATA.agency_country, CUSTOMER_DATA.agency_city, CUSTOMER_DATA.brand_name, CUSTOMER_DATA.promotion_media_type from CUSTOMER_DATA
484 GROUP BY CUSTOMER_DATA.agency_country, CUSTOMER_DATA.agency_city, CUSTOMER_DATA.brand_name, CUSTOMER_DATA.promotion_media_type;

```

Query Result x

SQL | All Rows Fetched: 210 in 0.948 seconds

	AGENCY_COUNTRY	AGENCY_CITY	BRAND_NAME	PROMOTION_MEDIA_TYPE
1	United States	New York	SAMSUNG	TV
2	Australia	Sydney	SAMSUNG	TV
3	France	Paris	SAMSUNG	TV
4	Switzerland	Zurich	SAMSUNG	TV
5	Cyprus	Nicosia	SAMSUNG	TV
6	China	Hong Kong	SAMSUNG	TV
7	Germany	Berlin	SAMSUNG	TV
8	China	Shanghai	SAMSUNG	TV
9	Egypt	Cairo	SAMSUNG	TV
10	Poland	Warsaw	SAMSUNG	TV
11	Spain	Barcelona	SAMSUNG	TV
12	Italy	Milan	SAMSUNG	TV
13	UAE	Dubai	SAMSUNG	TV
14	Russia	Moscow	SAMSUNG	TV
15	United Kingdom	London	SAMSUNG	TV
16	United States	New York	SAMSUNG	press
17	Australia	Sydney	SAMSUNG	press
18	France	Paris	SAMSUNG	press
19	Switzerland	Zurich	SAMSUNG	press

- Merge
 - Group by

The MERGE statement is a single command that combines the ability to update or insert rows into a table by conditionally deriving the rows to be updated or inserted from one or more sources.

Consider two customer tables with the same set of columns. Let's consider the use of the MERGE operator.

516

517 select * from sa_customer_data c;

Query Result x

SQL | All Rows Fetched: 1 in 0.008 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE	CUSTOMER_MOBILE
1	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park	New Jersey	United States	www.facebook.com/SamsungUS	1-201-229-4000	1-201-229-4029

518

519 select * from sa_customer_data c2;

520

Query Result x

SQL | All Rows Fetched: 1 in 0.006 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE
1	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	Foster City	United States	https://usa.visa.com/contact-us.html	1-800-847-2911

```
529 MERGE INTO sa_customer_data_c t1
530 USING sa_customer_data_c2 t2
531 ON (t1.customer_name = t2.customer_name)
532 WHEN MATCHED THEN
533 UPDATE SET
534 t1.brand_name = t2.brand_name,
535 t1.customer_address = t2.customer_address,
536 t1.customer_city = t2.customer_city,
537 t1.customer_country = t2.customer_country,
538 t1.customer_email = t2.customer_email,
539 t1.customer_office_phone = t2.customer_office_phone,
540 t1.customer_mobile_phone = t2.customer_mobile_phone
541 WHEN NOT MATCHED THEN
542 INSERT (t1.customer_name, t1.brand_name, t1.customer_address, t1.customer_city, t1.customer_country, t1.customer_email, t1.customer_office_phone, t1.customer_mobile_phone)
543 VALUES (t2.customer_name, t2.brand_name, t2.customer_address, t2.customer_city, t2.customer_country, t2.customer_email, t2.customer_office_phone, t2.customer_mobile_phone)
544
```

Script Output x

Task completed in 0.046 seconds

1 row merged.

It may be noted that the MERGE operator is suitable for updating and merging data in tables.

Updated table:

```
535
536 select * from sa_customer_data_c t1;
```

Query Result x

All Rows Fetched: 2 in 0.036 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_MOBILE_PHONE
1	Samsung Electronics	SAMSUNG	85 Challenger Rd. Ridgefield Park New Jersey	United States	www.facebook.com/SamsungUS	1-201-229	
2	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1-800-847	

Additional table:

```
537 select * from sa_customer_data_c2 t2;
```

Query Result x

All Rows Fetched: 1 in 0.011 seconds

	CUSTOMER_NAME	BRAND_NAME	CUSTOMER_ADDRESS	CUSTOMER_CITY	CUSTOMER_COUNTRY	CUSTOMER_EMAIL	CUSTOMER_OFFICE_PHONE
1	Visa International Service Association	VISA	900 Metro Center Blvd. Foster City	United States	https://usa.visa.com/contact-us.html	1-800-847-2911	