Medallion Architecture

Bronze Layer
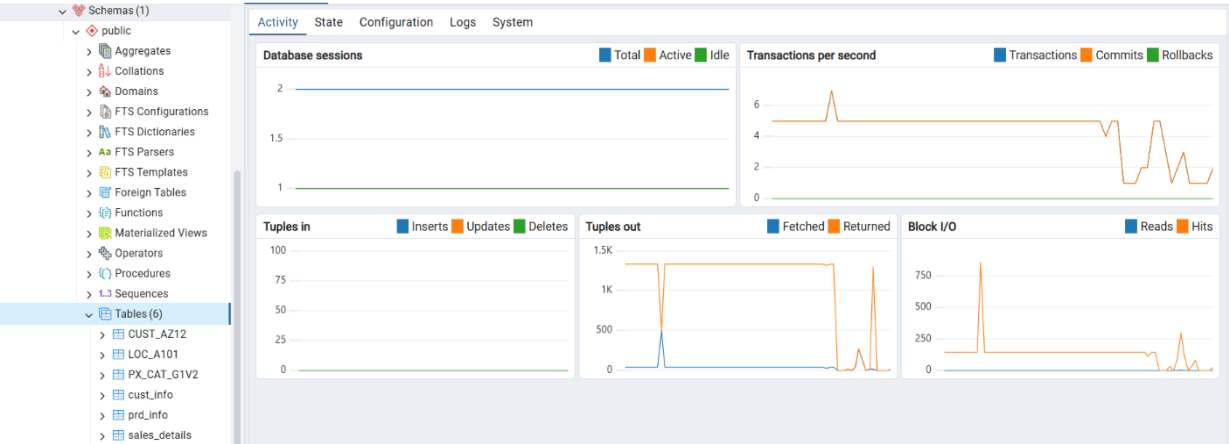
Data Successfully loaded in PostgreSQL.

Cust_info data showing successful data ingestion.

```
1    SELECT * FROM public."CUST_AZ12";
```

Data Output   Messages   Notifications

	CID text	BDATE text	GEN text
1	NASAW00011000	1971-10-06	Male
2	NASAW00011001	1976-05-10	Male
3	NASAW00011002	1971-02-09	Male
4	NASAW00011003	1973-08-14	Female
5	NASAW00011004	1979-08-05	Female
6	NASAW00011005	1976-08-01	Male
7	NASAW00011006	1976-12-02	Female

Silver Layer

Data after transformation correct all table columns and data types.

```
SELECT * FROM public.silver_customers;
```

Output Messages Notifications

Showing rows: 1 to

cst_id [PK] double precision	cst_key double precision	cst_firstname character varying (100)	cst_lastname character varying (100)	cst_marital_status character varying (100)	cst_gndr character varying (10)	cst_create_date date
28890	28890	Jaclyn	Ma	M	F	2026-01-25
19605	19605	Brad	Shan	M	M	2026-01-05
27781	27781	Allen	Sai	S	M	2026-01-25
26306	26306	Kyle	Holt	S	M	2026-01-14
24035	24035	Jaclyn	Wu	S	F	2026-01-05

```
SELECT * FROM public.silver_products;
```

Output Messages Notifications

Showing

prd_id character varying (10)	prd_key [PK] character varying (60)	prd_nm character varying (255)	prd_cost numeric (10,2)	prd_line character varying (10)	prd_start_dt date	prd_end_dt date
CL_GL	GL-F110-S	Full-Finger Gloves- S	16.00	M	2012-07-01	2008-12-27
CO_MF	FR-M94B-42	HL Mountain Frame - Black- 42	739.00	M	2013-07-01	[null]
CO_MF	FR-M21S-48	LL Mountain Frame - Silver- 48	145.00	M	2013-07-01	[null]
BI_TB	BK-T18Y-44	Touring-3000 Yellow- 44	461.00	T	2013-07-01	[null]
CL_JE	SJ-0194-L	Short-Sleeve Classic Jersey- L	42.00	S	2013-07-01	[null]

Corrected prd_id and prd_key

```
SELECT * FROM public.silver_sales;
```

Output Messages Notifications

Showing rows: 1

sls_ord_num [PK] character varying (20)	sls_prd_key character varying (50)	sls_cust_id bigint	sls_order_dt date	sls_ship_dt date	sls_due_dt date	sls_sales numeric (10,2)	sls_quantity integer	sls_price numeric (10,2)
SO43697	BK-R93R-62	21768	1970-08-21	1970-08-21	1970-08-21	3578.00	1	3578.00
SO43698	BK-M82S-44	28389	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00
SO43699	BK-M82S-44	25863	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00
SO43700	BK-R50B-62	14501	1970-08-21	1970-08-21	1970-08-21	699.00	1	699.00
SO43701	BK-M82S-44	11003	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00

```sql
SELECT * FROM public.silver_erp_customers;
```

Output   Messages   Notifications

cid [PK] double precision	bdate date	gen character varying (10)
29254	1961-04-13	Female
26722	1971-10-05	Female
11040	1983-01-29	
18130	1962-08-08	Female

```sql
SELECT * FROM public.silver_locations;
```

Output   Messages   Notifications

cid [PK] double precision	cntry character varying (100)
26612	United States
29335	
22889	Canada
22069	United States
16357	USA

```sql
SELECT * FROM public.silver_product_categories;
```

Output   Messages   Notifications

id [PK] character varying (20)	cat character varying (50)	subcat character varying (50)	maintenance character varying (15)
AC_LI	Accessories	Lights	Yes
CO_HS	Components	Headsets	No
CO_CH	Components	Chains	Yes
CO_BB	Components	Bottom Brackets	Yes
AC_BS	Accessories	Bike Stands	No

After data transformation established foreign key relationships (Referential Integrity).

ERD Diagram

silver_locations (public)
- 🔑 cid double precision
- cntry character varying(100)

silver_erp_customers (public)
- 🔑 cid double precision
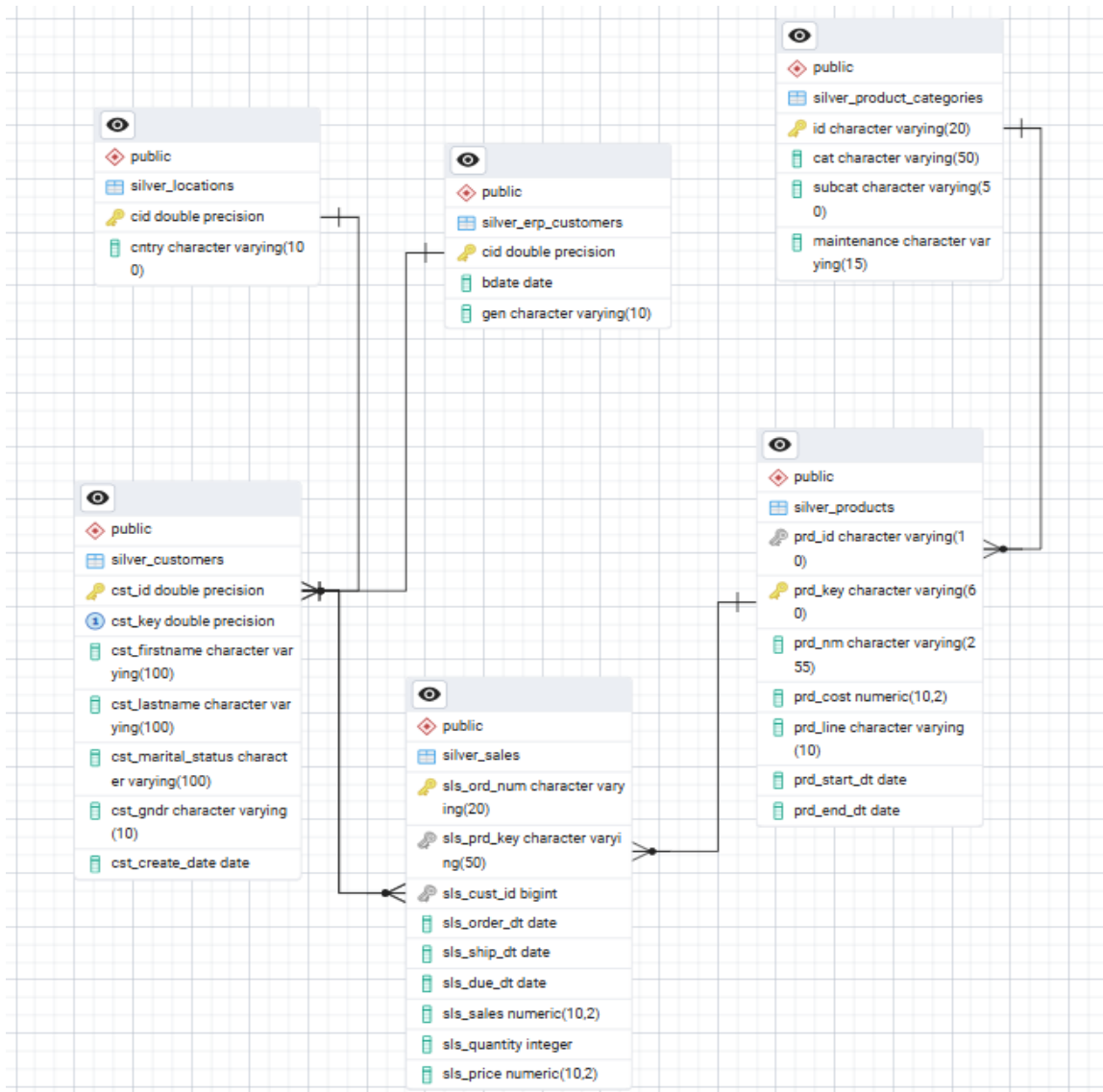- bdate date
- gen character varying(10)

silver_product_categories (public)
- 🔑 id character varying(20)
- cat character varying(50)
- subcat character varying(50)
- maintenance character varying(15)

silver_customers (public)
- 🔑 cst_id double precision
- ⓘ cst_key double precision
- cst_firstname character varying(100)
- cst_lastname character varying(100)
- cst_marital_status character varying(100)
- cst_gndr character varying(10)
- cst_create_date date

silver_sales (public)
- 🔑 sls_ord_num character varying(20)
- 🔑 sls_prd_key character varying(50)
- 🔑 sls_cust_id bigint
- sls_order_dt date
- sls_ship_dt date
- sls_due_dt date
- sls_sales numeric(10,2)
- sls_quantity integer
- sls_price numeric(10,2)

silver_products (public)
- 🔑 prd_id character varying(10)
- 🔑 prd_key character varying(60)
- prd_nm character varying(255)
- prd_cost numeric(10,2)
- prd_line character varying(10)
- prd_start_dt date
- prd_end_dt date

Gold Layer

Created three table fact_sales, dim_customers, dim_products and inserted values and create relationship between them.

```
SELECT * FROM public.fact_sales;
```

Output Messages Notifications

Showing row

order_num character varying (20)	customer_key double precision	product_key character varying (60)	order_date date	ship_date date	due_date date	total_sales numeric (10,2)	quantity integer	price numeric (10,2)
SO43697	21768	BK-R93R-62	1970-08-21	1970-08-21	1970-08-21	3578.00	1	3578.00
SO43698	28389	BK-M82S-44	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00
SO43699	25863	BK-M82S-44	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00
SO43700	14501	BK-R50B-62	1970-08-21	1970-08-21	1970-08-21	699.00	1	699.00
SO43701	11003	BK-M82S-44	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00

Fact_sales Table

```
SELECT * FROM public.dim_customers;
```

Output Messages Notifications

Showing rows: 1 to 1000   Page No: 1

customer_id double precision	customer_key [PK] double precision	first_name character varying (100)	last_name character varying (100)	birth_date date	gender character varying (10)	marital_status character varying (10)	country character varying (100)	create_date date
28890	28890	Jaclyn	Ma	1950-10-13	Female	M	Germany	2026-01-25
19605	19605	Brad	Shan	1971-11-24	Male	M	Australia	2026-01-05
27781	27781	Allen	Sai	1976-01-08	Male	S	United Kingdom	2026-01-25
26306	26306	Kyle	Holt	1980-04-22	Male	S	United States	2026-01-14
24035	24035	Jaclyn	Wu	1924-10-05	Female	S	United Kingdom	2026-01-05

Dim_customers Table

```
SELECT * FROM public.dim_products;
```

Output Messages Notifications

Showing rows: 1 to 288   Page No: 1

product_id character varying (10)	product_key [PK] character varying (60)	product_name character varying (255)	cost numeric (10,2)	category character varying (50)	subcategory character varying (50)	maintenance character varying (15)	start_date date	end_date date
CL_GL	GL-F110-S	Full-Finger Gloves- S	16.00	Clothing	Gloves	No	2012-07-01	2008-12-27
CO_MF	FR-M94B-42	HL Mountain Frame - Black- 42	739.00	Components	Mountain Frames	Yes	2013-07-01	[null]
CO_MF	FR-M21S-48	LL Mountain Frame - Silver- 48	145.00	Components	Mountain Frames	Yes	2013-07-01	[null]
BI_TB	BK-T18Y-44	Touring-3000 Yellow- 44	461.00	Bikes	Touring Bikes	Yes	2013-07-01	[null]
CL_JE	SJ-0194-L	Short-Sleeve Classic Jersey- L	42.00	Clothing	Jerseys	No	2013-07-01	[null]

Dim_products Table

ERD Diagram
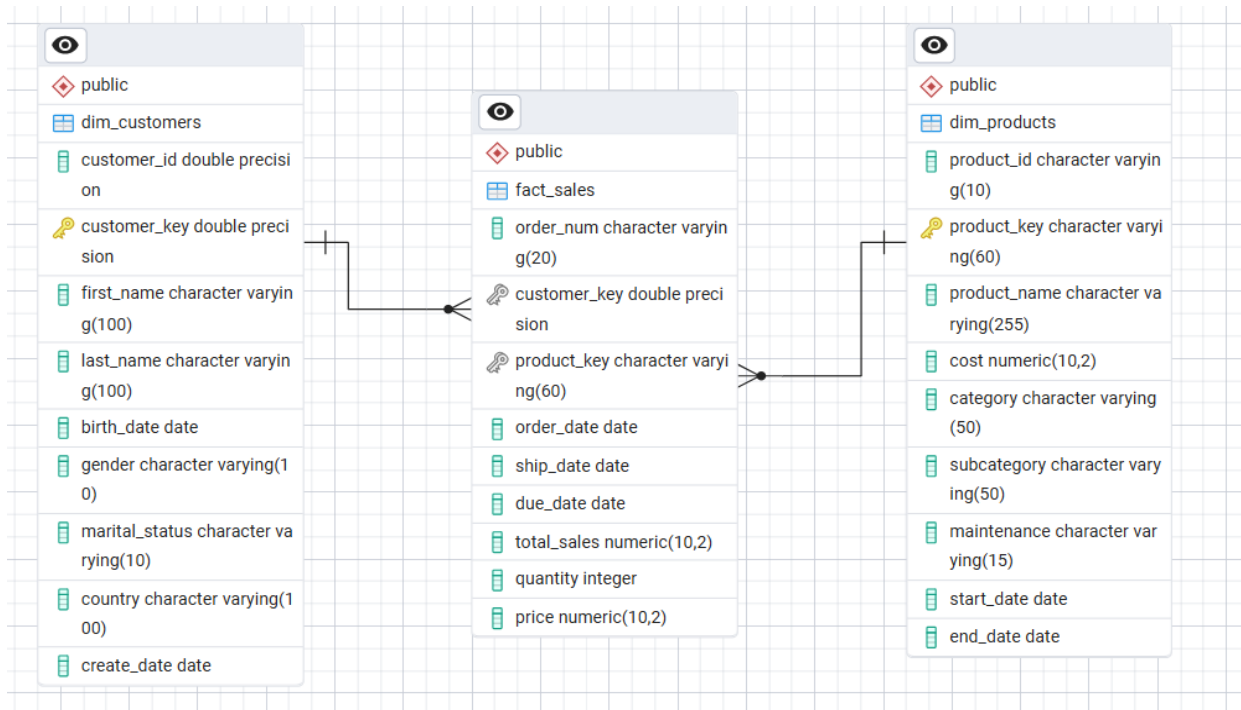
Indexing

```
-- Indexing

CREATE INDEX idx_fact_sales_customer ON public.fact_sales(customer_key);
CREATE INDEX idx_fact_sales_products ON public.fact_sales(product_key);
CREATE INDEX idx_fact_sales_date ON public.fact_sales(order_date);

CREATE INDEX idx_dim_customers_name ON public.dim_customers(first_name, last_name);
CREATE INDEX idx_dim_products_category ON public.dim_products(category, subcategory);
```

Single Big Table (SBT)

```sql
SELECT * FROM public.single_big_table;
```

Output   Messages   Notifications

order_num character varying (20)	order_date date	ship_date date	due_date date	total_sales numeric (10,2)	quantity integer	price numeric (10,2)	customer_key double precision	first_name character varying (100)	last_name character varying (100)	birth_date date	gender character varying (10)	marital_st character
SO43697	1970-08-21	1970-08-21	1970-08-21	3578.00	1	3578.00	21768	Cole	Watson	1952-02-19	Unknown	S
SO43698	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00	28389	Rachael	Martinez	1970-06-17	Female	S
SO43699	1970-08-21	1970-08-21	1970-08-21	3400.00	1	3400.00	25863	Sydney	Wright	1952-06-01	Female	S
SO43700	1970-08-21	1970-08-21	1970-08-21	699.00	1	699.00	14501	Ruben	Prasad	1943-11-10	Male	M

rows: 16612   Query complete 00:00:00.734   CRLF   Ln 437, Col 39

Created single big table for BI and Analytics tools

Adding Indexes:

```sql
-- Adding indexes

CREATE INDEX idx_sbt_order_date ON public.single_big_table(order_date);
CREATE INDEX idx_sbt_customer_key ON public.single_big_table(customer_key);
CREATE INDEX idx_sbt_product_key ON public.single_big_table(product_key);
```

Business KPIs

Total Sales by Country:

```sql
-- Total Sales by Country

CREATE VIEW public.vw_total_sales_by_country AS
SELECT
    country,
    SUM(total_sales) AS total_sales
FROM public.single_big_table
GROUP BY country
ORDER BY total_sales DESC;

SELECT * FROM public.vw_total_sales_by_country;
```

Output   Messages   Notifications

country character varying (100)	total_sales numeric
Australia	8830561.00
United States	3663904.00
United Kingdom	3265320.00
US	2908699.00
France	2555530.00

al rows: 12   Query complete 00:00:00.077

Top 5 Customers by Revenue:

```
461    -- Top 5 Customers by Revenue
462
463 ⌄  CREATE VIEW public.vw_top_customers AS
464    SELECT
465        customer_key,
466        first_name,
467        last_name,
468        SUM(total_sales) AS Revenue
469    FROM public.single_big_table
470    GROUP BY customer_key, first_name, last_name
471    ORDER BY Revenue DESC LIMIT 5;
472
473    SELECT * FROM public.vw_top_customers;
474
```

Data Output   Messages   Notifications

	customer_key double precision	first_name character varying (100)	last_name character varying (100)	revenue numeric
1	12301	Nichole	Nara	13109.00
2	12300	Adriana	Gonzalez	13109.00
3	12131	Randall	Dominguez	13109.00
4	12321	Rosa	Hu	13084.00
5	12308	Margaret	He	13084.00

Total rows: 5   Query complete 00:00:00.394

Best-Selling Products:

```
476    -- Best-Selling Products
477
478 ∨  CREATE VIEW public.vw_best_selling_products AS
479    SELECT
480        product_key,
481        product_name,
482        SUM(quantity) AS total_quantity_sold
483    FROM public.single_big_table
484    GROUP BY product_key, product_name
485    ORDER BY total_quantity_sold DESC LIMIT 10;
486
487    SELECT * FROM public.vw_best_selling_products;
```

Data Output Messages Notifications

	product_key character varying (60) 🔒	product_name character varying (255) 🔒	total_quantity_sold 🔒 bigint
1	BK-M68B-46	Mountain-200 Black- 46	620
2	BK-M68B-42	Mountain-200 Black- 42	614
3	BK-M68S-38	Mountain-200 Silver- 38	596
4	BK-M68B-38	Mountain-200 Black- 38	582
5	BK-M68S-46	Mountain-200 Silver- 46	579

Total rows: 10   Query complete 00:00:00.075

Customer Retention Rate:

```
490    -- Customer Retention Rate
491
492 ⌄  CREATE VIEW public.vw_customer_retention_rate AS
493    WITH customer_orders AS (
494        SELECT
495            customer_key,
496            COUNT(DISTINCT order_date) AS order_count
497        FROM public.single_big_table
498        GROUP BY customer_key
499    )
500    SELECT
501        COUNT(CASE WHEN order_count > 1 THEN customer_key END) * 100.0 / COUNT(customer_key) AS retention_rate
502    FROM customer_orders;
503
504    SELECT * FROM public.vw_customer_retention_rate;
```

Data Output   Messages   Notifications

retention_rate 🔒 numeric
1	6.2869117927224233

Category-wise Sales Performance:

```
507    -- Category-wise Sales Performance
508
509 ⌄  CREATE VIEW public.vw_category_sales_performance AS
510    SELECT
511        category,
512        SUM(total_sales) AS total_sales
513    FROM public.single_big_table
514    GROUP BY category
515    ORDER BY total_sales DESC;
516
517    SELECT * FROM public.vw_category_sales_performance;
```

Data Output   Messages   Notifications

category 🔒 character varying (50)	total_sales 🔒 numeric
1	Bikes	28172999.00
2	Clothing	80535.00
3	Accessories	6595.00