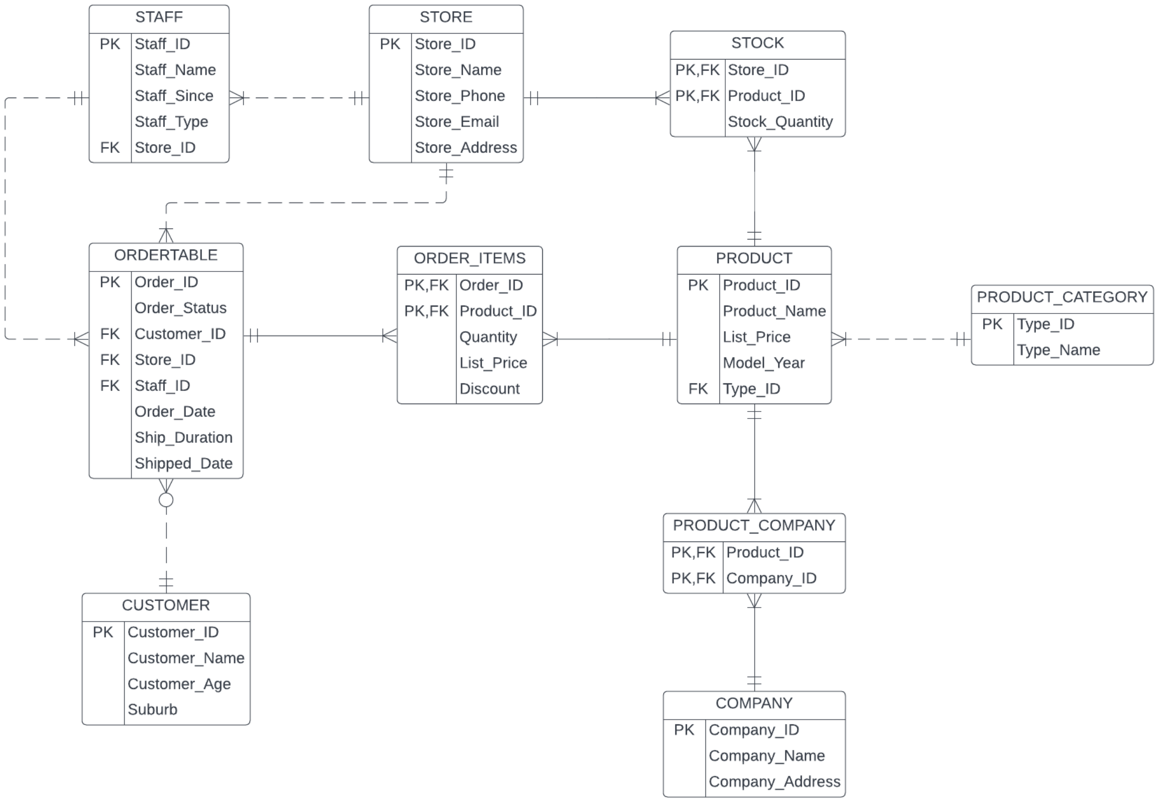
# 1A – ERD

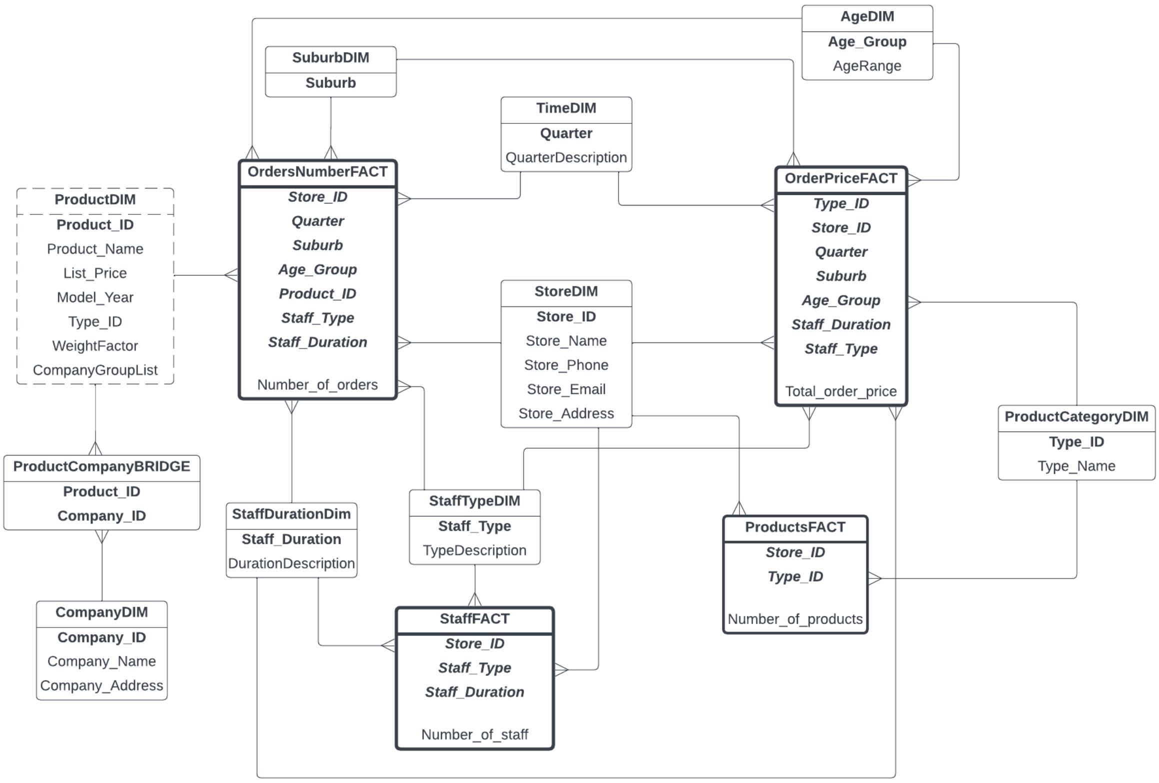


The following assumptions are based on the operational database at the time of designing the data warehouse:

- Each company must supply at least one product
- Each product must be supplied by at least one company
- Each product category must have at least one product
- Each product must be stocked in at least one store
- Each store must stock at least one product
- Each product must be ordered at least once
- Each store must have at least one staff member
- Each store must be have at least one order
- Each staff member must have assisted in at least one order
- Each order must be sold by one staff member
- A customer may exist without placing an order

# 1B – Star Schemas

## Version-1 (Level-1)

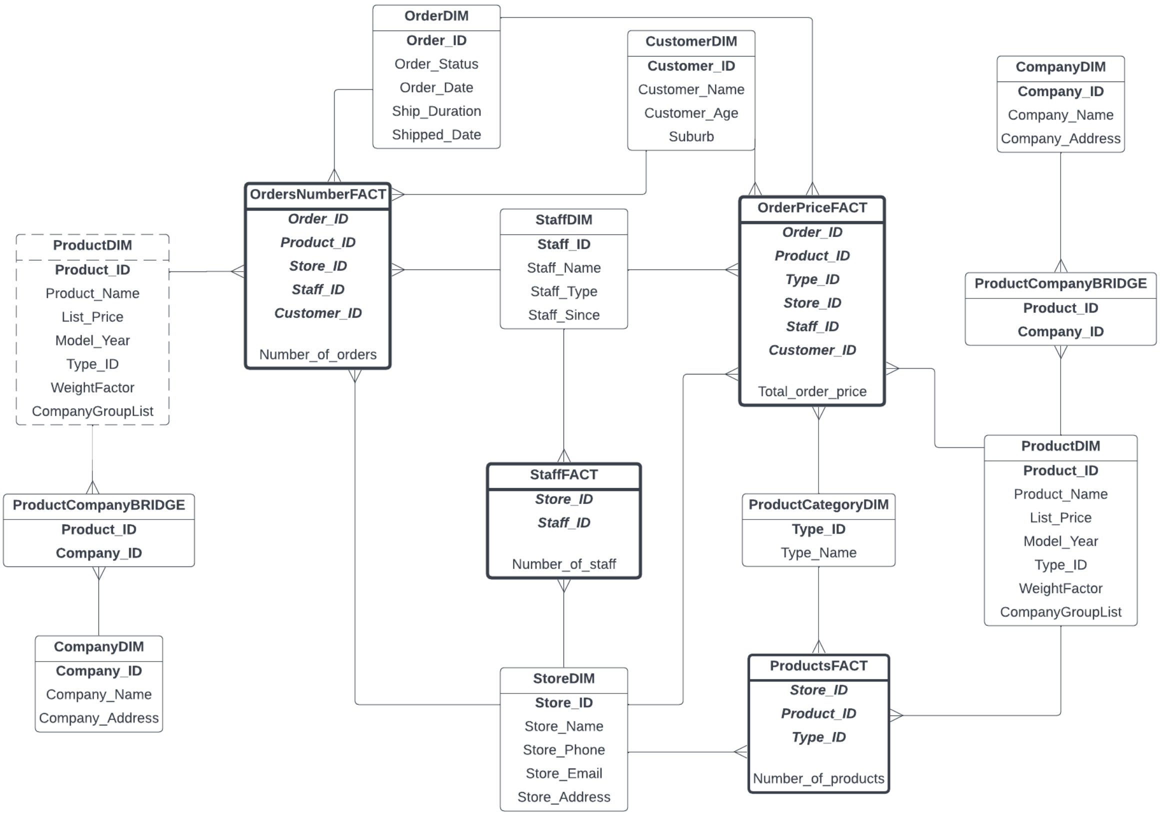


## Version-1 Points

- OrdersNumberFACT
  - The StaffDurationDim and StaffTypeDIM were included as dimensions since the number of orders from these dimensions can be obtained
  - ProductDIM was included as a determinant dimension because if it was not determinant, the number of orders can be double counted as each order can contain multiple products. This dimension is necessary to create a bridge with CompanyDIM

- OrderPriceFACT
  - The StaffDurationDim and StaffTypeDIM were included as dimensions since the total order price from these dimensions can be obtained

Version-2 (Level-0)



Version-2 Points

- There are two ProductDIM because one is determinant and the other is not. So both were included in the schema to differentiate

# 1C – SCD

## 1. Different Types

- SCD type 0: stores the original value of the record in the dimension itself
- SCD type 1: stores the most recent value of the record in the dimension itself
- SCD type 2: the history of each record is mainted in the dimension itself, where the time period and the temporal attribute value in that time period are specified, for all time periods that record exists in. A new identifier key, such as a sequence, is created for each separate time period of the same record.
- SCD type 3: for each record, record the current and direcly preceding value in the dimension itself
- SCD type 4: create a new dimension that contains the history of the temporal attribute values for each record in the main dimension, by specifying the start and end dates of each value for each record

- SCD type 6: a combination of type 2 and type 3. Like type 2, the entire history of the record is within the dimension itself, and like type 3, each row shows the current and directly preceding attribute value

## 2. SCD in the Star Schemas

No temporal dimensions were identified. In coming to this conclusion, the attributes of six tables in the operational database were analysed:

- Company
  - company_address
- Product
  - list_price
  - model_year
- Order_items
  - list_price
- Store
  - store_phone
  - store_email
  - store_address
- Staff
  - staff_type
- Customer
  - suburb

In each of these tables, none of the records have been repeated with a different attribute value; for example in the Product table, no product_name is repeated with a different list_price or model_year. Leading to the conclusion that there are no temporal attributes, therefore no temporal dimension is required.

# 1D – Differences Between Star Schemas

In version-1, the fact measures are aggregated, and some dimensions are also aggregated.

In version-2, the fact measures and dimensions were de-aggregated by making the following changes:

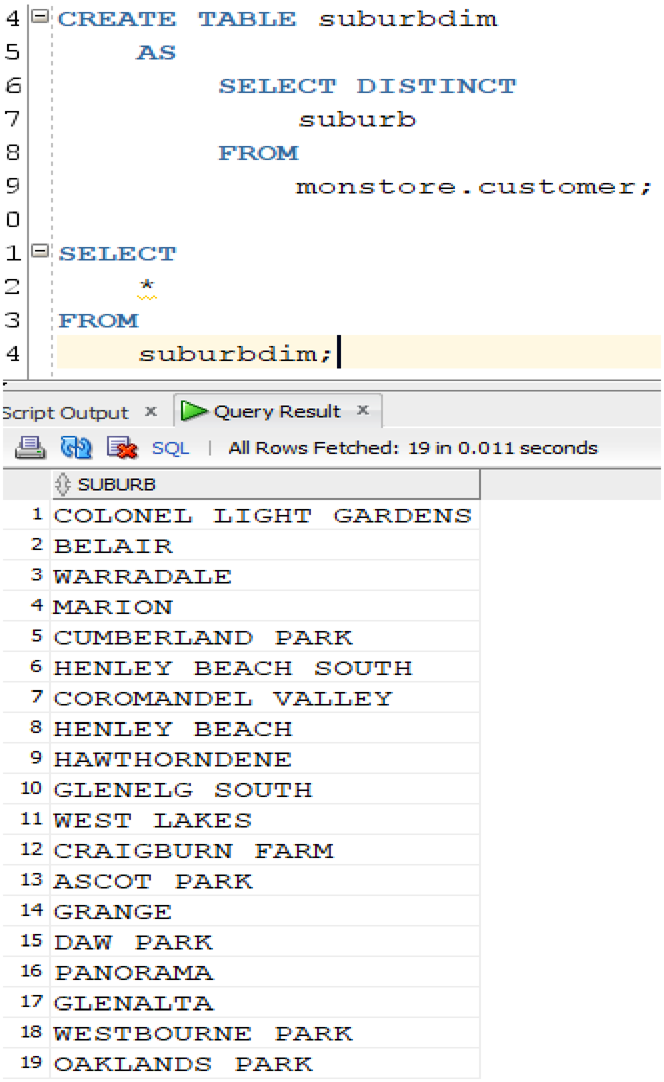
- OrderDIM was added as a dimension to OrdersNumberFACT and OrderPriceFact
- TimeDIM was removed as Order_Date in OrderDIM is the de-aggregated version of Quarter
- CustomerDIM was added as a dimension to OrdersNumberFACT and OrderPriceFact
- AgeDIM was removed as Customer_Age in CustomerDIM is the de-aggregated version of Age_Group
- SuburbDIM was removed as it is included in CustomerDIM

- StaffDIM was added as a dimension to OrdersNumberFACT, OrderPriceFact and StaffFACT
- StaffDurationDIM was removed as Staff_Since in StaffDIM is the de-aggregated version of Staff_Duration
- StaffTypeDIM was removed as it is included in StaffDIM
- ProductDIM was added as a dimension to OrderPriceFACT. Unlike the case with OrdersNumberFACT, it is not a determinant dimension
- ProductCategoryDIM was maintained as a dimension to OrderPriceFACT and ProductsFACT so that querying by the product category **name** is possible, as ProductDIM only shows the Type_ID and not Type_Name

# 2A/C – Version-1 SQL

## Dimensions

Suburb Dimension

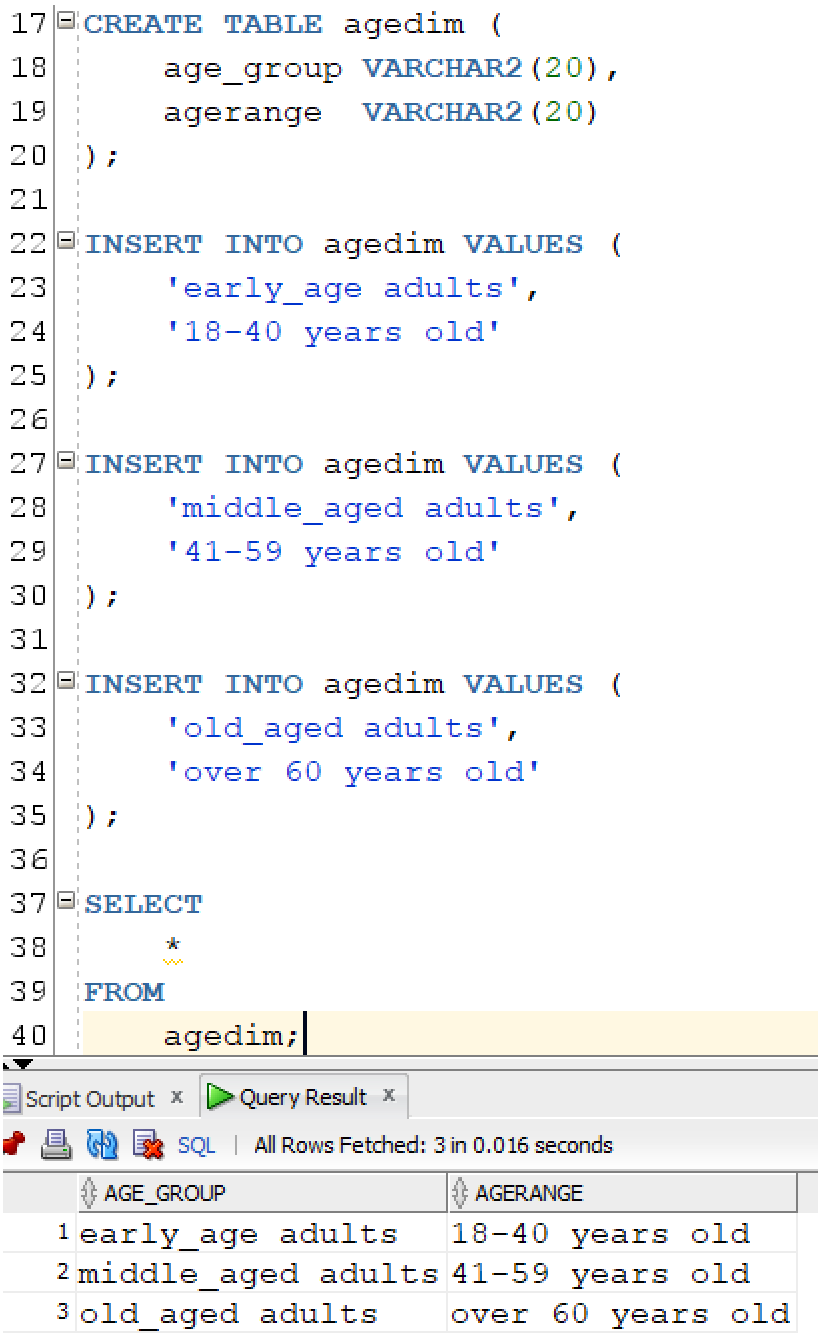


```
CREATE TABLE suburbdim
     AS
          SELECT DISTINCT
               suburb
          FROM
               monstore.customer;

SELECT
     *
FROM
     suburbdim;
```

All Rows Fetched: 19 in 0.011 seconds

```
     SUBURB
  1  COLONEL LIGHT GARDENS
  2  BELAIR
  3  WARRADALE
  4  MARION
  5  CUMBERLAND PARK
  6  HENLEY BEACH SOUTH
  7  COROMANDEL VALLEY
  8  HENLEY BEACH
  9  HAWTHORNDENE
 10  GLENELG SOUTH
 11  WEST LAKES
 12  CRAIGBURN FARM
 13  ASCOT PARK
 14  GRANGE
 15  DAW PARK
 16  PANORAMA
 17  GLENALTA
 18  WESTBOURNE PARK
 19  OAKLANDS PARK
```

Age Dimension

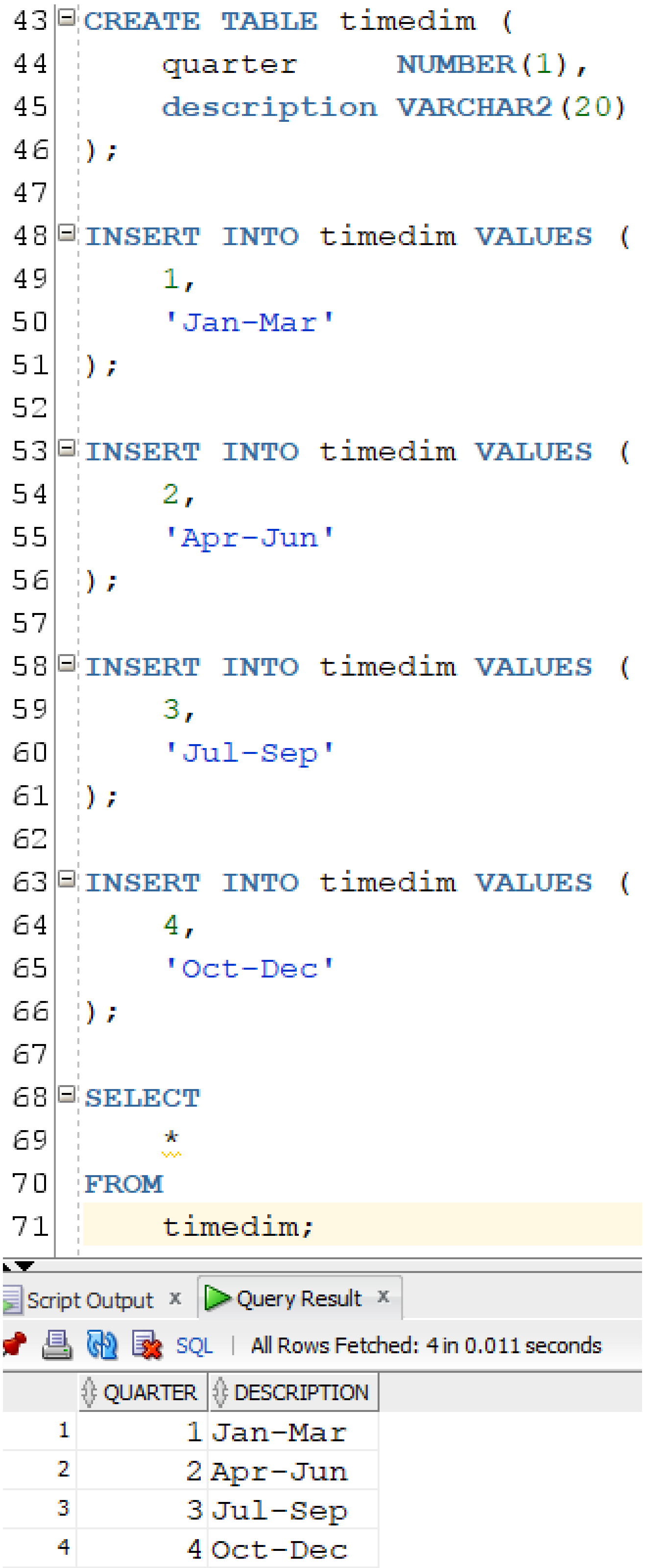


```
CREATE TABLE agedim (
    age_group VARCHAR2(20),
    agerange  VARCHAR2(20)
);

INSERT INTO agedim VALUES (
    'early_age adults',
    '18-40 years old'
);

INSERT INTO agedim VALUES (
    'middle_aged adults',
    '41-59 years old'
);

INSERT INTO agedim VALUES (
    'old_aged adults',
    'over 60 years old'
);

SELECT
    *
FROM
    agedim;
```

All Rows Fetched: 3 in 0.016 seconds

|  | AGE_GROUP | AGERANGE |
|---|---|---|
| 1 | early_age adults | 18-40 years old |
| 2 | middle_aged adults | 41-59 years old |
| 3 | old_aged adults | over 60 years old |

Time Dimension

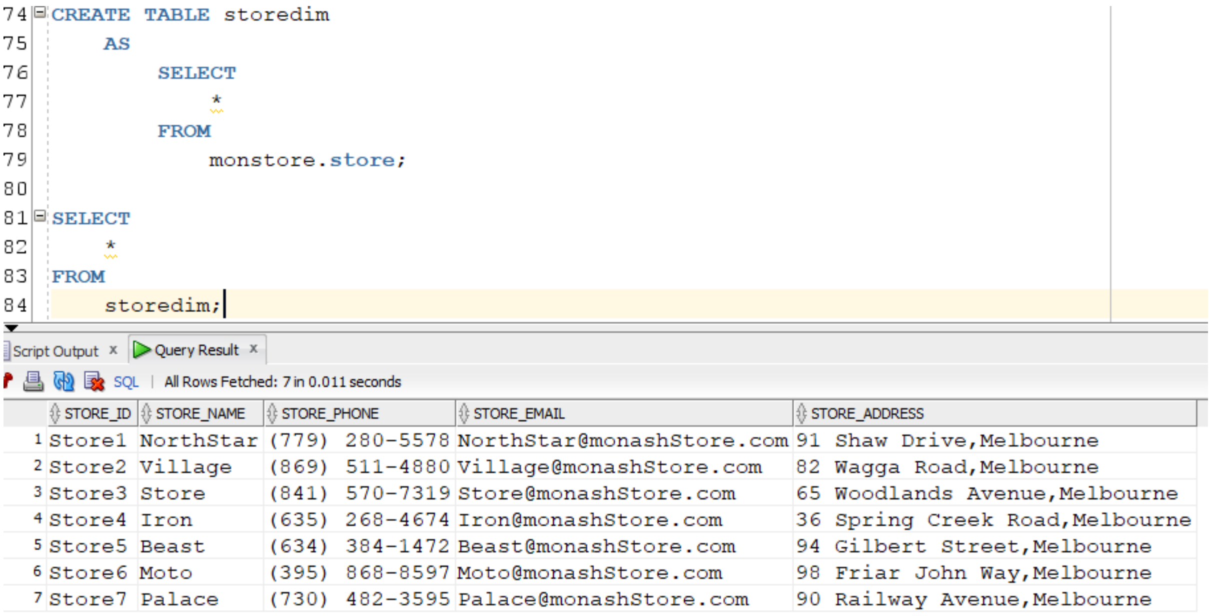


```
CREATE TABLE timedim (
    quarter     NUMBER(1),
    description VARCHAR2(20)
);

INSERT INTO timedim VALUES (
    1,
    'Jan-Mar'
);

INSERT INTO timedim VALUES (
    2,
    'Apr-Jun'
);

INSERT INTO timedim VALUES (
    3,
    'Jul-Sep'
);

INSERT INTO timedim VALUES (
    4,
    'Oct-Dec'
);

SELECT
    *
FROM
    timedim;
```

All Rows Fetched: 4 in 0.011 seconds

```
     QUARTER  DESCRIPTION
1          1  Jan-Mar
2          2  Apr-Jun
3          3  Jul-Sep
4          4  Oct-Dec
```

## Store Dimension

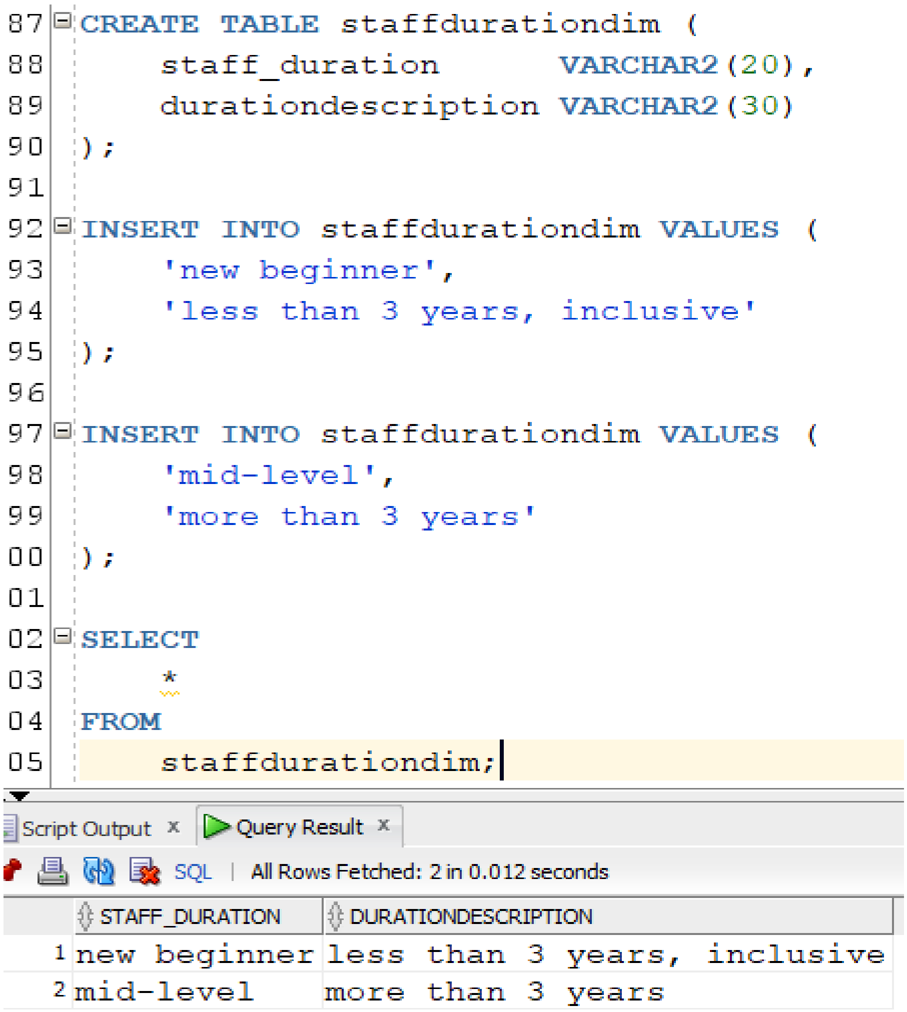


```
CREATE TABLE storedim
    AS
        SELECT
            *
        FROM
            monstore.store;

SELECT
    *
FROM
    storedim;
```

All Rows Fetched: 7 in 0.011 seconds

| | STORE_ID | STORE_NAME | STORE_PHONE | STORE_EMAIL | STORE_ADDRESS |
|---|---|---|---|---|---|
| 1 | Store1 | NorthStar | (779) 280-5578 | NorthStar@monashStore.com | 91 Shaw Drive,Melbourne |
| 2 | Store2 | Village | (869) 511-4880 | Village@monashStore.com | 82 Wagga Road,Melbourne |
| 3 | Store3 | Store | (841) 570-7319 | Store@monashStore.com | 65 Woodlands Avenue,Melbourne |
| 4 | Store4 | Iron | (635) 268-4674 | Iron@monashStore.com | 36 Spring Creek Road,Melbourne |
| 5 | Store5 | Beast | (634) 384-1472 | Beast@monashStore.com | 94 Gilbert Street,Melbourne |
| 6 | Store6 | Moto | (395) 868-8597 | Moto@monashStore.com | 98 Friar John Way,Melbourne |
| 7 | Store7 | Palace | (730) 482-3595 | Palace@monashStore.com | 90 Railway Avenue,Melbourne |

## Staff Duration Dimension

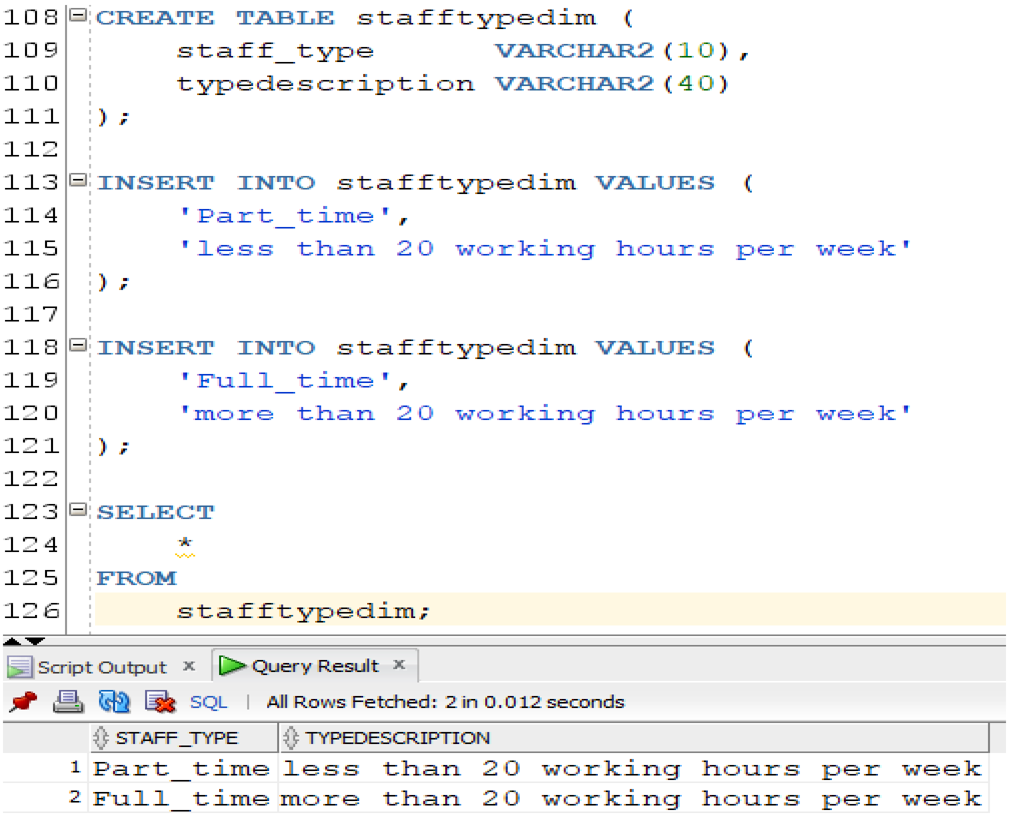


```
CREATE TABLE staffdurationdim (
    staff_duration      VARCHAR2(20),
    durationdescription VARCHAR2(30)
);

INSERT INTO staffdurationdim VALUES (
    'new beginner',
    'less than 3 years, inclusive'
);

INSERT INTO staffdurationdim VALUES (
    'mid-level',
    'more than 3 years'
);

SELECT
    *
FROM
    staffdurationdim;
```

All Rows Fetched: 2 in 0.012 seconds

| | STAFF_DURATION | DURATIONDESCRIPTION |
|---|---|---|
| 1 | new beginner | less than 3 years, inclusive |
| 2 | mid-level | more than 3 years |

Staff Type Dimension

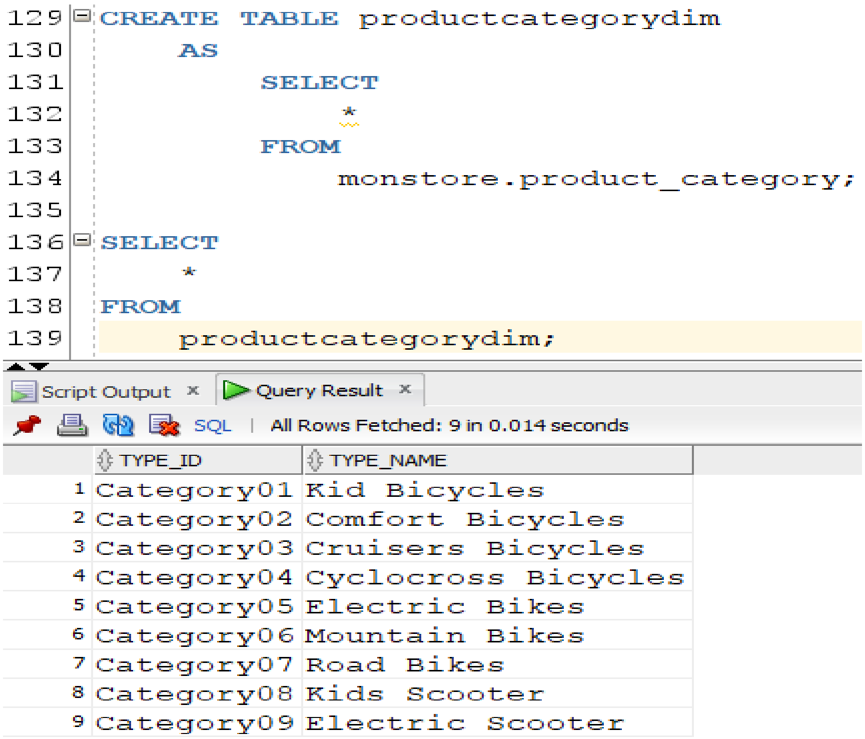


```
CREATE TABLE stafftypedim (
    staff_type      VARCHAR2(10),
    typedescription VARCHAR2(40)
);

INSERT INTO stafftypedim VALUES (
    'Part_time',
    'less than 20 working hours per week'
);

INSERT INTO stafftypedim VALUES (
    'Full_time',
    'more than 20 working hours per week'
);

SELECT
    *
FROM
    stafftypedim;
```

All Rows Fetched: 2 in 0.012 seconds

| | STAFF_TYPE | TYPEDESCRIPTION |
|---|---|---|
| 1 | Part_time | less than 20 working hours per week |
| 2 | Full_time | more than 20 working hours per week |

Product Category Dimension

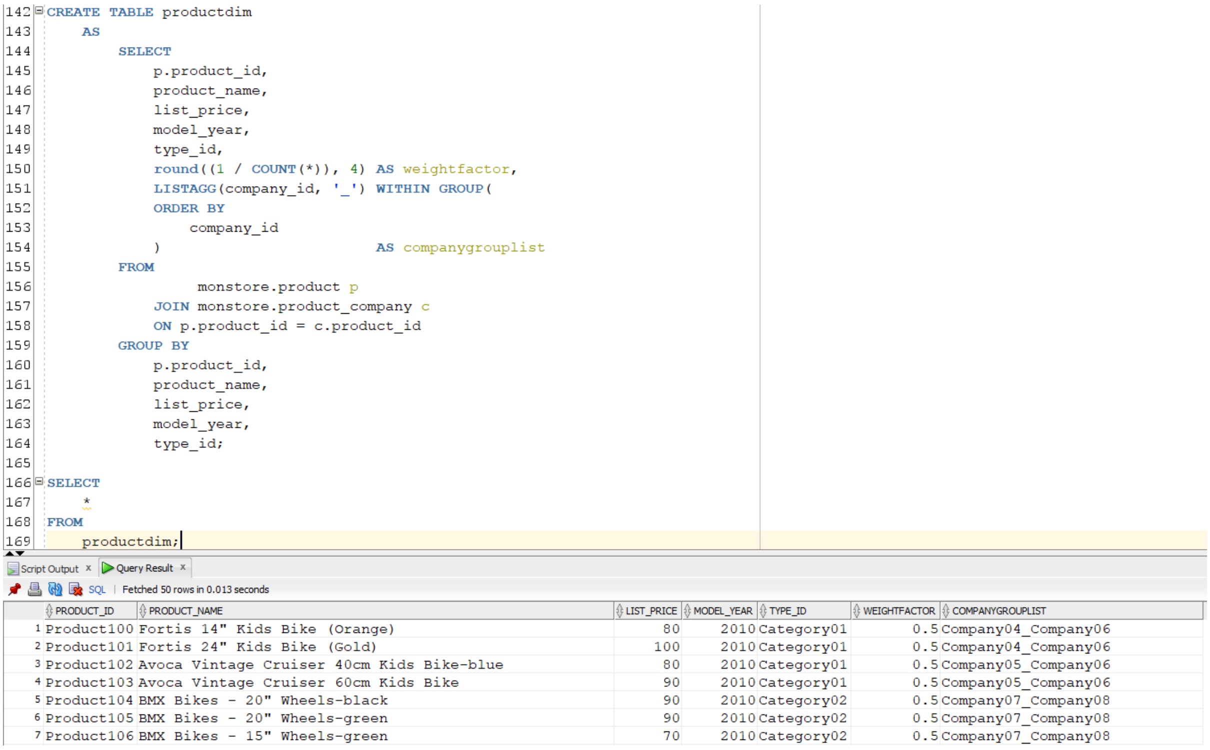


```
CREATE TABLE productcategorydim
    AS
        SELECT
            *
        FROM
            monstore.product_category;

SELECT
    *
FROM
    productcategorydim;
```

All Rows Fetched: 9 in 0.014 seconds

| | TYPE_ID | TYPE_NAME |
|---|---|---|
| 1 | Category01 | Kid Bicycles |
| 2 | Category02 | Comfort Bicycles |
| 3 | Category03 | Cruisers Bicycles |
| 4 | Category04 | Cyclocross Bicycles |
| 5 | Category05 | Electric Bikes |
| 6 | Category06 | Mountain Bikes |
| 7 | Category07 | Road Bikes |
| 8 | Category08 | Kids Scooter |
| 9 | Category09 | Electric Scooter |

## Product Dimension

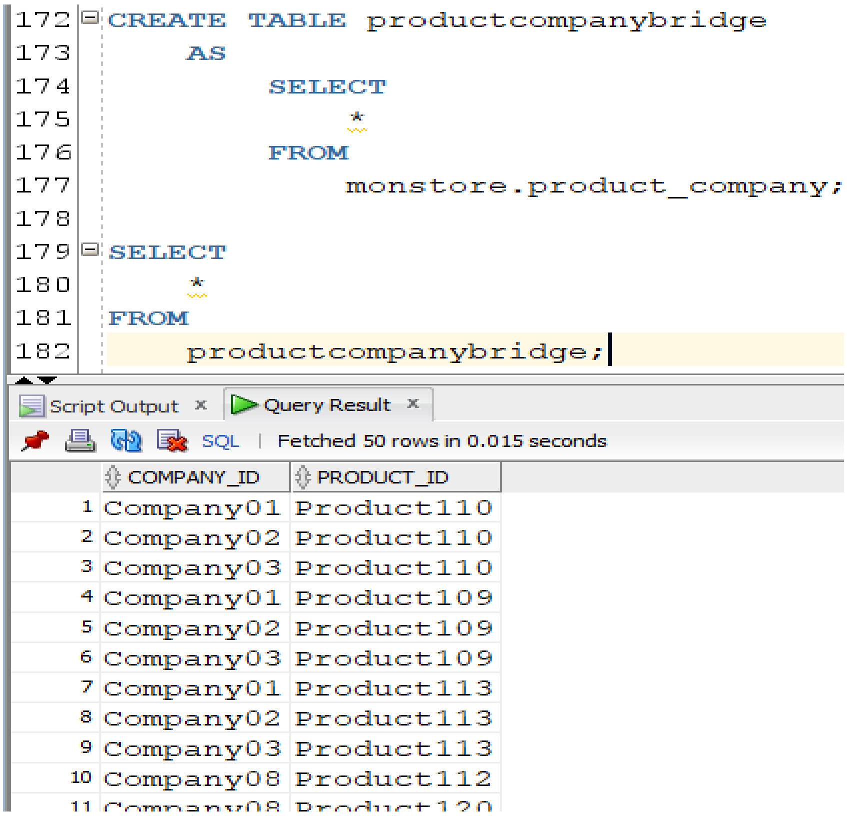


```sql
CREATE TABLE productdim
    AS
        SELECT
            p.product_id,
            product_name,
            list_price,
            model_year,
            type_id,
            round((1 / COUNT(*)), 4) AS weightfactor,
            LISTAGG(company_id, '_') WITHIN GROUP(
            ORDER BY
                company_id
            )                         AS companygrouplist
        FROM
                 monstore.product p
            JOIN monstore.product_company c
            ON p.product_id = c.product_id
        GROUP BY
            p.product_id,
            product_name,
            list_price,
            model_year,
            type_id;

SELECT
    *
FROM
    productdim;
```

Fetched 50 rows in 0.013 seconds

| | PRODUCT_ID | PRODUCT_NAME | LIST_PRICE | MODEL_YEAR | TYPE_ID | WEIGHTFACTOR | COMPANYGROUPLIST |
|---|---|---|---|---|---|---|---|
| 1 | Product100 | Fortis 14" Kids Bike (Orange) | 80 | 2010 | Category01 | 0.5 | Company04_Company06 |
| 2 | Product101 | Fortis 24" Kids Bike (Gold) | 100 | 2010 | Category01 | 0.5 | Company04_Company06 |
| 3 | Product102 | Avoca Vintage Cruiser 40cm Kids Bike-blue | 80 | 2010 | Category01 | 0.5 | Company05_Company06 |
| 4 | Product103 | Avoca Vintage Cruiser 60cm Kids Bike | 90 | 2010 | Category01 | 0.5 | Company05_Company06 |
| 5 | Product104 | BMX Bikes - 20" Wheels-black | 90 | 2010 | Category02 | 0.5 | Company07_Company08 |
| 6 | Product105 | BMX Bikes - 20" Wheels-green | 90 | 2010 | Category02 | 0.5 | Company07_Company08 |
| 7 | Product106 | BMX Bikes - 15" Wheels-green | 70 | 2010 | Category02 | 0.5 | Company07_Company08 |

## Product Company Bridge

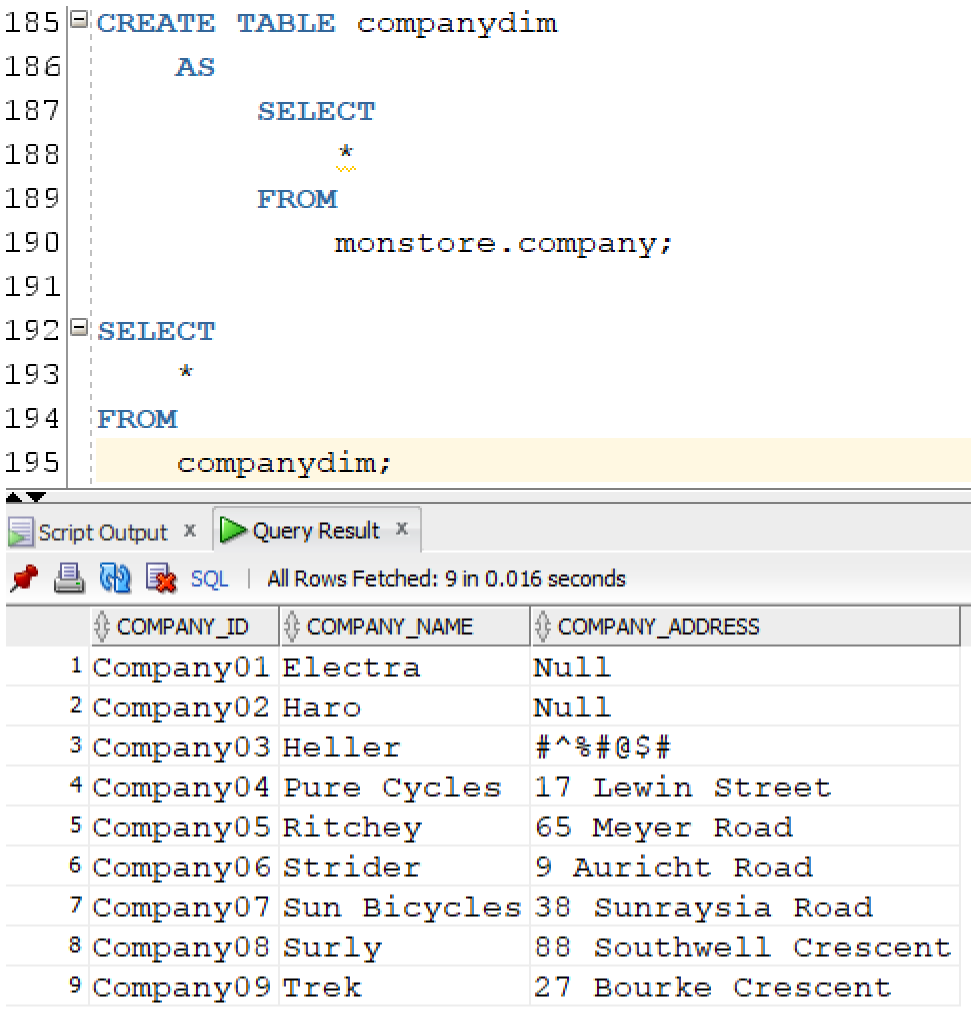


```sql
CREATE TABLE productcompanybridge
    AS
        SELECT
            *
        FROM
            monstore.product_company;

SELECT
    *
FROM
    productcompanybridge;
```

Fetched 50 rows in 0.015 seconds

| | COMPANY_ID | PRODUCT_ID |
|---|---|---|
| 1 | Company01 | Product110 |
| 2 | Company02 | Product110 |
| 3 | Company03 | Product110 |
| 4 | Company01 | Product109 |
| 5 | Company02 | Product109 |
| 6 | Company03 | Product109 |
| 7 | Company01 | Product113 |
| 8 | Company02 | Product113 |
| 9 | Company03 | Product113 |
| 10 | Company08 | Product112 |
| 11 | Company08 | Product120 |

Company Dimension



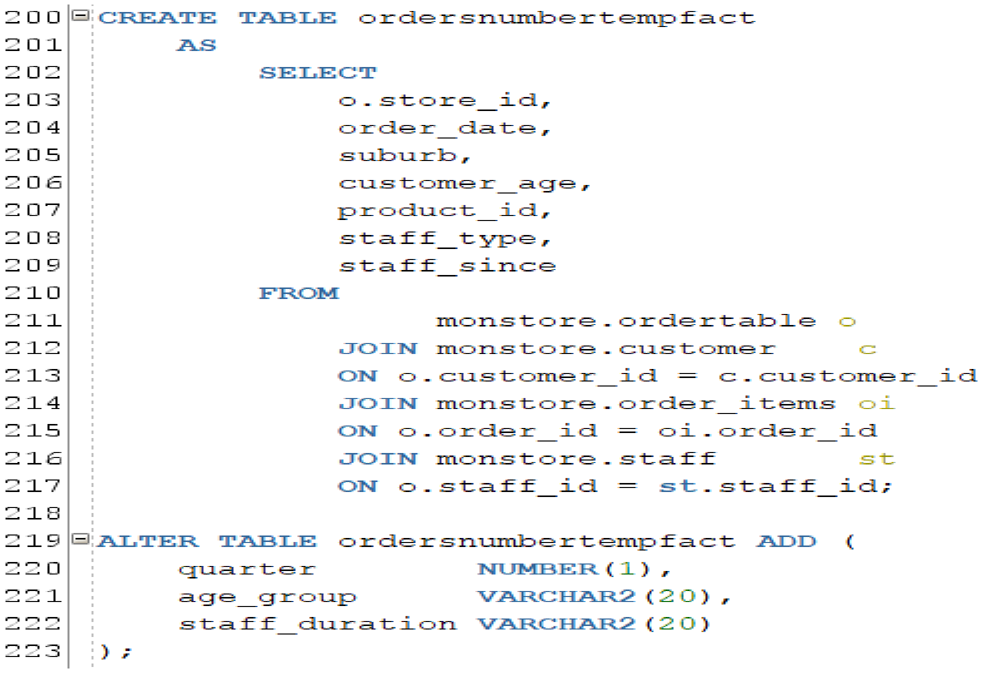
```
CREATE TABLE companydim
    AS
        SELECT
            *
        FROM
            monstore.company;

SELECT
    *
FROM
    companydim;
```

All Rows Fetched: 9 in 0.016 seconds

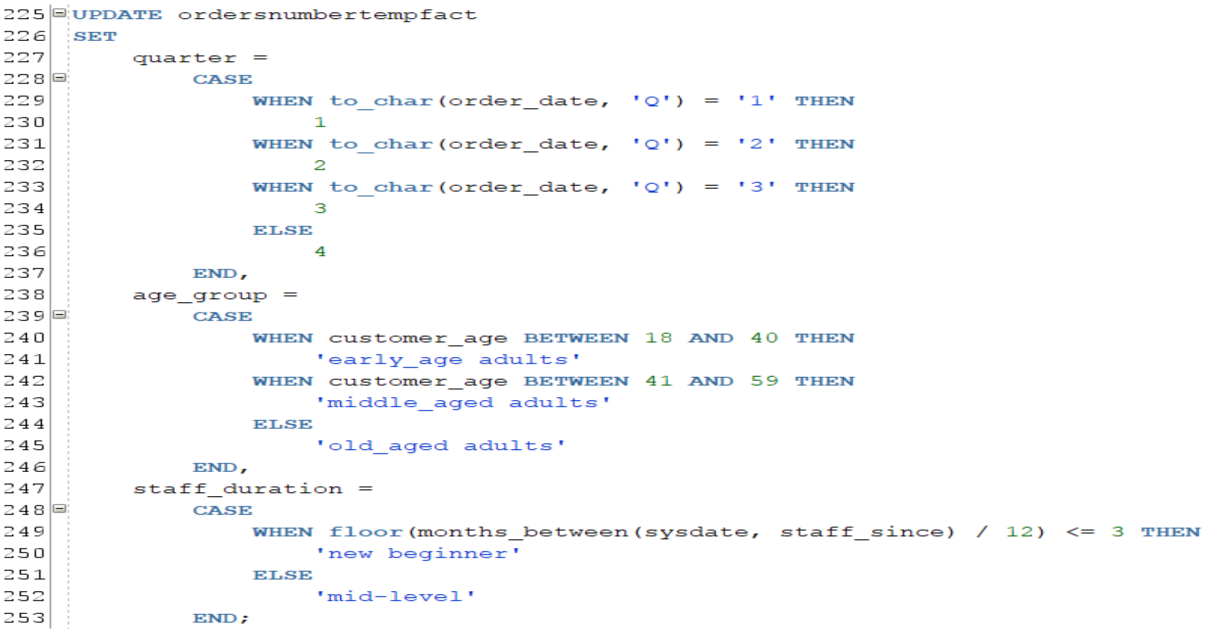
| | COMPANY_ID | COMPANY_NAME | COMPANY_ADDRESS |
|---|---|---|---|
| 1 | Company01 | Electra | Null |
| 2 | Company02 | Haro | Null |
| 3 | Company03 | Heller | #^%#@$# |
| 4 | Company04 | Pure Cycles | 17 Lewin Street |
| 5 | Company05 | Ritchey | 65 Meyer Road |
| 6 | Company06 | Strider | 9 Auricht Road |
| 7 | Company07 | Sun Bicycles | 38 Sunraysia Road |
| 8 | Company08 | Surly | 88 Southwell Crescent |
| 9 | Company09 | Trek | 27 Bourke Crescent |

## Facts

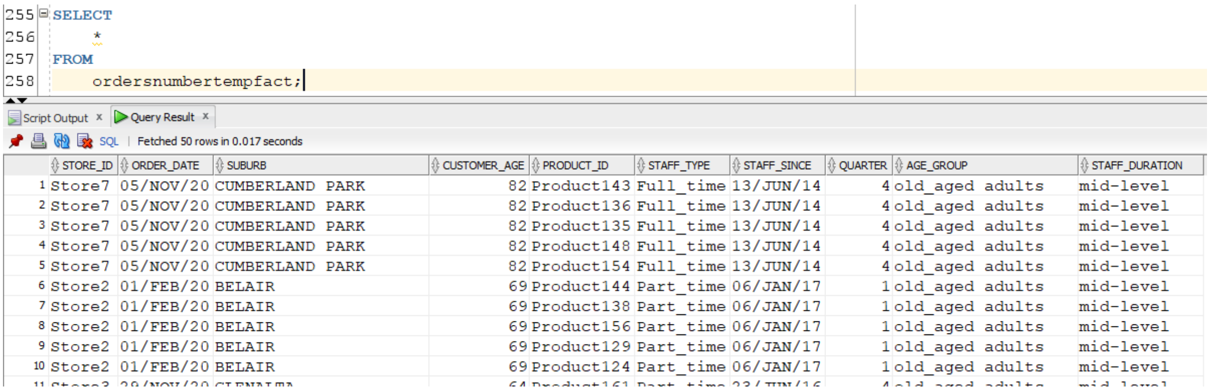
### Orders Number Temporary FAct



```
CREATE TABLE ordersnumbertempfact
    AS
        SELECT
            o.store_id,
            order_date,
            suburb,
            customer_age,
            product_id,
            staff_type,
            staff_since
        FROM
                 monstore.ordertable o
            JOIN monstore.customer    c
            ON o.customer_id = c.customer_id
            JOIN monstore.order_items oi
            ON o.order_id = oi.order_id
            JOIN monstore.staff       st
            ON o.staff_id = st.staff_id;

ALTER TABLE ordersnumbertempfact ADD (
    quarter        NUMBER(1),
    age_group      VARCHAR2(20),
    staff_duration VARCHAR2(20)
);
```



```
UPDATE ordersnumbertempfact
SET
    quarter =
        CASE
            WHEN to_char(order_date, 'Q') = '1' THEN
                1
            WHEN to_char(order_date, 'Q') = '2' THEN
                2
            WHEN to_char(order_date, 'Q') = '3' THEN
                3
            ELSE
                4
        END,
    age_group =
        CASE
            WHEN customer_age BETWEEN 18 AND 40 THEN
                'early_age adults'
            WHEN customer_age BETWEEN 41 AND 59 THEN
                'middle_aged adults'
            ELSE
                'old_aged adults'
        END,
    staff_duration =
        CASE
            WHEN floor(months_between(sysdate, staff_since) / 12) <= 3 THEN
                'new beginner'
            ELSE
                'mid-level'
        END;
```

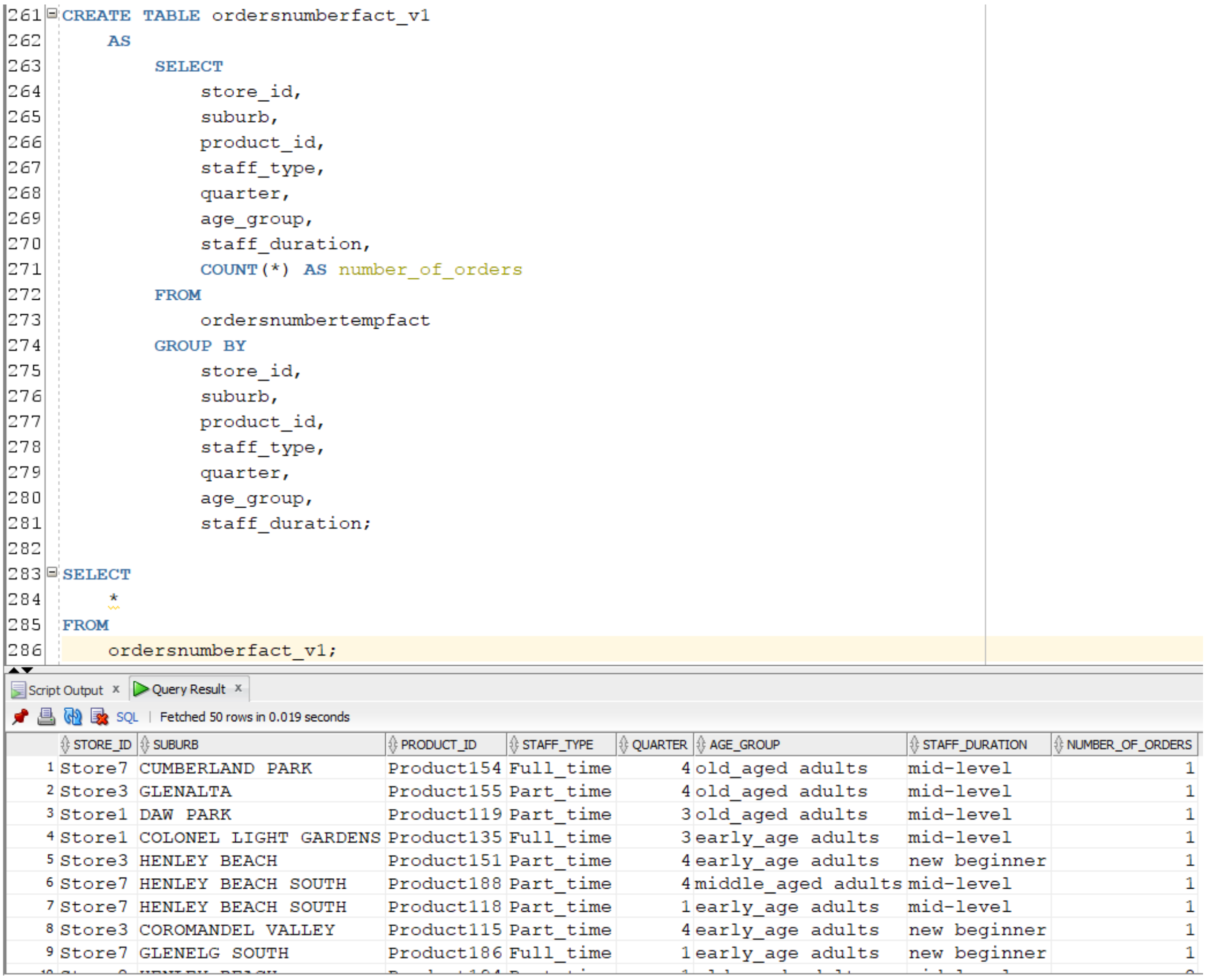


```
SELECT
    *
FROM
    ordersnumbertempfact;
```

Fetched 50 rows in 0.017 seconds

| | STORE_ID | ORDER_DATE | SUBURB | CUSTOMER_AGE | PRODUCT_ID | STAFF_TYPE | STAFF_SINCE | QUARTER | AGE_GROUP | STAFF_DURATION |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Product143 | Full_time | 13/JUN/14 | 4 | old_aged adults | mid-level |
| 2 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Product136 | Full_time | 13/JUN/14 | 4 | old_aged adults | mid-level |
| 3 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Product135 | Full_time | 13/JUN/14 | 4 | old_aged adults | mid-level |
| 4 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Product148 | Full_time | 13/JUN/14 | 4 | old_aged adults | mid-level |
| 5 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Product154 | Full_time | 13/JUN/14 | 4 | old_aged adults | mid-level |
| 6 | Store2 | 01/FEB/20 | BELAIR | 69 | Product144 | Part_time | 06/JAN/17 | 1 | old_aged adults | mid-level |
| 7 | Store2 | 01/FEB/20 | BELAIR | 69 | Product138 | Part_time | 06/JAN/17 | 1 | old_aged adults | mid-level |
| 8 | Store2 | 01/FEB/20 | BELAIR | 69 | Product156 | Part_time | 06/JAN/17 | 1 | old_aged adults | mid-level |
| 9 | Store2 | 01/FEB/20 | BELAIR | 69 | Product129 | Part_time | 06/JAN/17 | 1 | old_aged adults | mid-level |
| 10 | Store2 | 01/FEB/20 | BELAIR | 69 | Product124 | Part_time | 06/JAN/17 | 1 | old_aged adults | mid-level |
| 11 | Store3 | 29/NOV/20 | GLENALTA | 64 | Product161 | Part_time | 23/JUN/16 | 4 | old_aged adults | mid-level |

## Orders Number Fact version-1

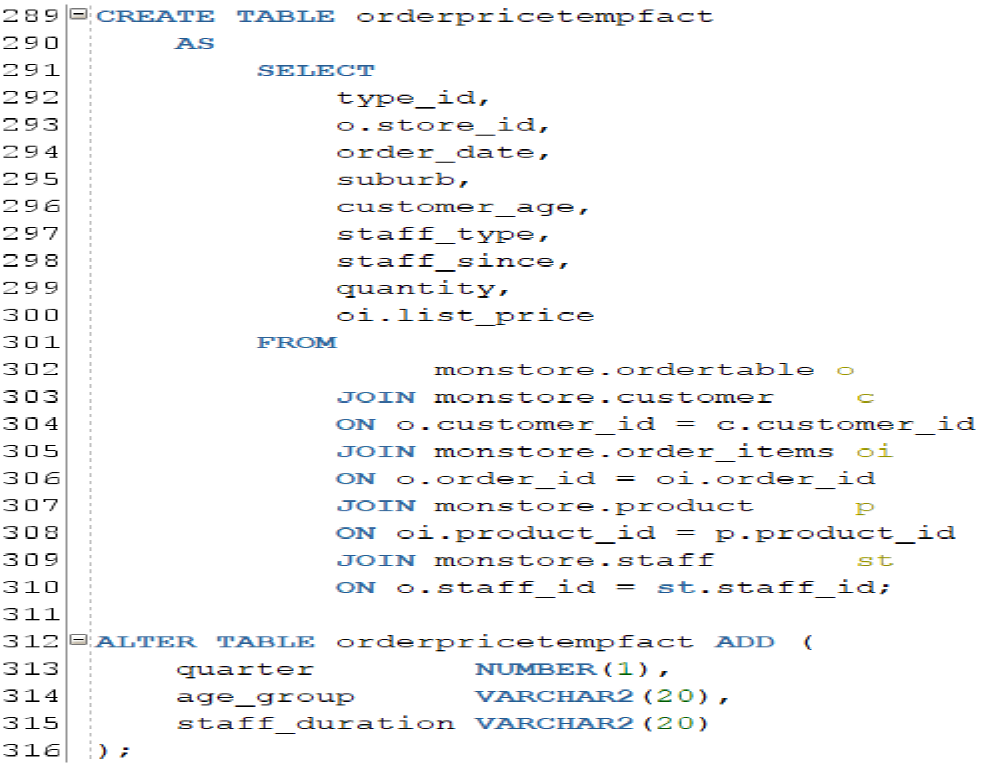


```
CREATE TABLE ordersnumberfact_v1
    AS
        SELECT
            store_id,
            suburb,
            product_id,
            staff_type,
            quarter,
            age_group,
            staff_duration,
            COUNT(*) AS number_of_orders
        FROM
            ordersnumbertempfact
        GROUP BY
            store_id,
            suburb,
            product_id,
            staff_type,
            quarter,
            age_group,
            staff_duration;

SELECT
    *
FROM
    ordersnumberfact_v1;
```

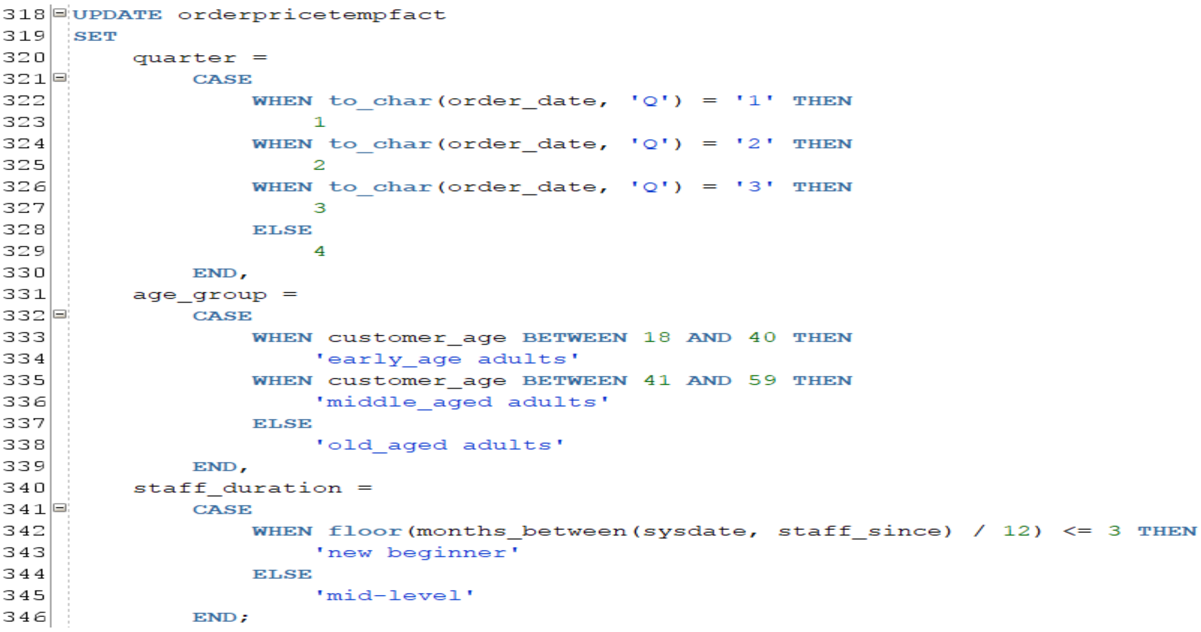
Fetched 50 rows in 0.019 seconds

| | STORE_ID | SUBURB | PRODUCT_ID | STAFF_TYPE | QUARTER | AGE_GROUP | STAFF_DURATION | NUMBER_OF_ORDERS |
|---|---|---|---|---|---|---|---|---|
| 1 | Store7 | CUMBERLAND PARK | Product154 | Full_time | 4 | old_aged adults | mid-level | 1 |
| 2 | Store3 | GLENALTA | Product155 | Part_time | 4 | old_aged adults | mid-level | 1 |
| 3 | Store1 | DAW PARK | Product119 | Part_time | 3 | old_aged adults | mid-level | 1 |
| 4 | Store1 | COLONEL LIGHT GARDENS | Product135 | Full_time | 3 | early_age adults | mid-level | 1 |
| 5 | Store3 | HENLEY BEACH | Product151 | Part_time | 4 | early_age adults | new beginner | 1 |
| 6 | Store7 | HENLEY BEACH SOUTH | Product188 | Part_time | 4 | middle_aged adults | mid-level | 1 |
| 7 | Store7 | HENLEY BEACH SOUTH | Product118 | Part_time | 1 | early_age adults | mid-level | 1 |
| 8 | Store3 | COROMANDEL VALLEY | Product115 | Part_time | 4 | early_age adults | new beginner | 1 |
| 9 | Store7 | GLENELG SOUTH | Product186 | Full_time | 1 | early_age adults | new beginner | 1 |

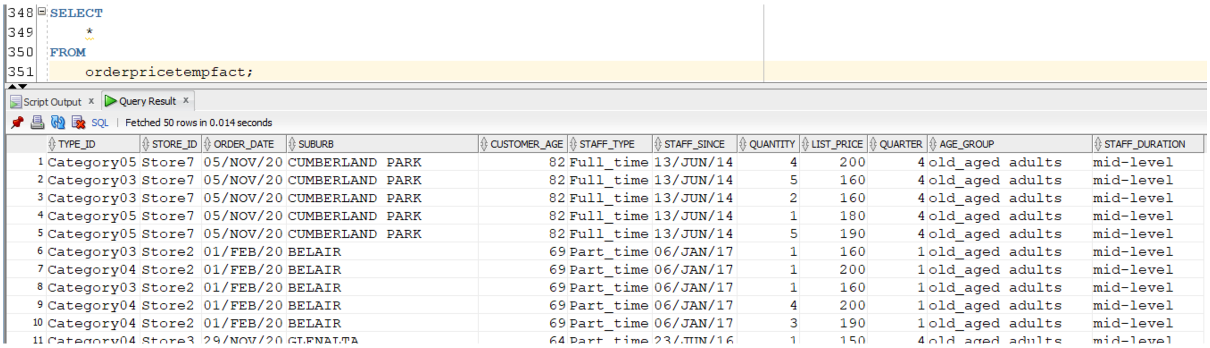
## Order Price Temporary Fact



```sql
CREATE TABLE orderpricetempfact
    AS
        SELECT
            type_id,
            o.store_id,
            order_date,
            suburb,
            customer_age,
            staff_type,
            staff_since,
            quantity,
            oi.list_price
        FROM
                 monstore.ordertable o
            JOIN monstore.customer    c
            ON o.customer_id = c.customer_id
            JOIN monstore.order_items oi
            ON o.order_id = oi.order_id
            JOIN monstore.product     p
            ON oi.product_id = p.product_id
            JOIN monstore.staff       st
            ON o.staff_id = st.staff_id;

ALTER TABLE orderpricetempfact ADD (
    quarter        NUMBER(1),
    age_group      VARCHAR2(20),
    staff_duration VARCHAR2(20)
);
```



```sql
UPDATE orderpricetempfact
SET
    quarter =
        CASE
            WHEN to_char(order_date, 'Q') = '1' THEN
                1
            WHEN to_char(order_date, 'Q') = '2' THEN
                2
            WHEN to_char(order_date, 'Q') = '3' THEN
                3
            ELSE
                4
        END,
    age_group =
        CASE
            WHEN customer_age BETWEEN 18 AND 40 THEN
                'early_age adults'
            WHEN customer_age BETWEEN 41 AND 59 THEN
                'middle_aged adults'
            ELSE
                'old_aged adults'
        END,
    staff_duration =
        CASE
            WHEN floor(months_between(sysdate, staff_since) / 12) <= 3 THEN
                'new beginner'
            ELSE
                'mid-level'
        END;
```



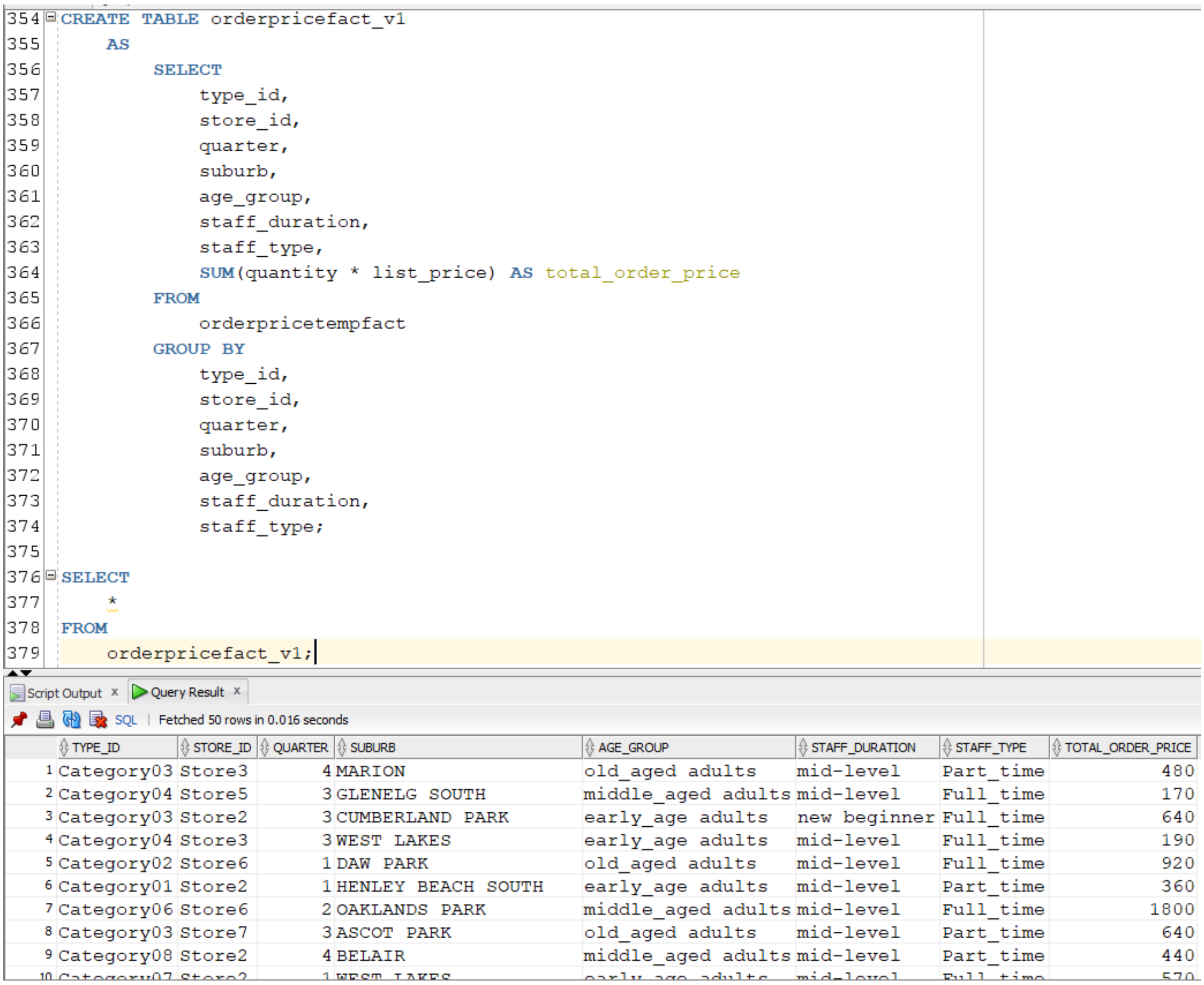
```sql
SELECT
    *
FROM
    orderpricetempfact;
```

Script Output × Query Result ×

SQL | Fetched 50 rows in 0.014 seconds

| | TYPE_ID | STORE_ID | ORDER_DATE | SUBURB | CUSTOMER_AGE | STAFF_TYPE | STAFF_SINCE | QUANTITY | LIST_PRICE | QUARTER | AGE_GROUP | STAFF_DURATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Category05 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Full_time | 13/JUN/14 | 4 | 200 | 4 | old_aged adults | mid-level |
| 2 | Category03 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Full_time | 13/JUN/14 | 5 | 160 | 4 | old_aged adults | mid-level |
| 3 | Category03 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Full_time | 13/JUN/14 | 2 | 160 | 4 | old_aged adults | mid-level |
| 4 | Category05 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Full_time | 13/JUN/14 | 1 | 180 | 4 | old_aged adults | mid-level |
| 5 | Category05 | Store7 | 05/NOV/20 | CUMBERLAND PARK | 82 | Full_time | 13/JUN/14 | 5 | 190 | 4 | old_aged adults | mid-level |
| 6 | Category03 | Store2 | 01/FEB/20 | BELAIR | 69 | Part_time | 06/JAN/17 | 1 | 160 | 1 | old_aged adults | mid-level |
| 7 | Category04 | Store2 | 01/FEB/20 | BELAIR | 69 | Part_time | 06/JAN/17 | 1 | 200 | 1 | old_aged adults | mid-level |
| 8 | Category03 | Store2 | 01/FEB/20 | BELAIR | 69 | Part_time | 06/JAN/17 | 1 | 160 | 1 | old_aged adults | mid-level |
| 9 | Category04 | Store2 | 01/FEB/20 | BELAIR | 69 | Part_time | 06/JAN/17 | 4 | 200 | 1 | old_aged adults | mid-level |
| 10 | Category04 | Store2 | 01/FEB/20 | BELAIR | 69 | Part_time | 06/JAN/17 | 3 | 190 | 1 | old_aged adults | mid-level |
| 11 | Category04 | Store3 | 29/NOV/20 | GLENALTA | 64 | Part_time | 23/JUN/16 | 1 | 150 | 4 | old_aged adults | mid-level |

# Order Price Fact Version-1

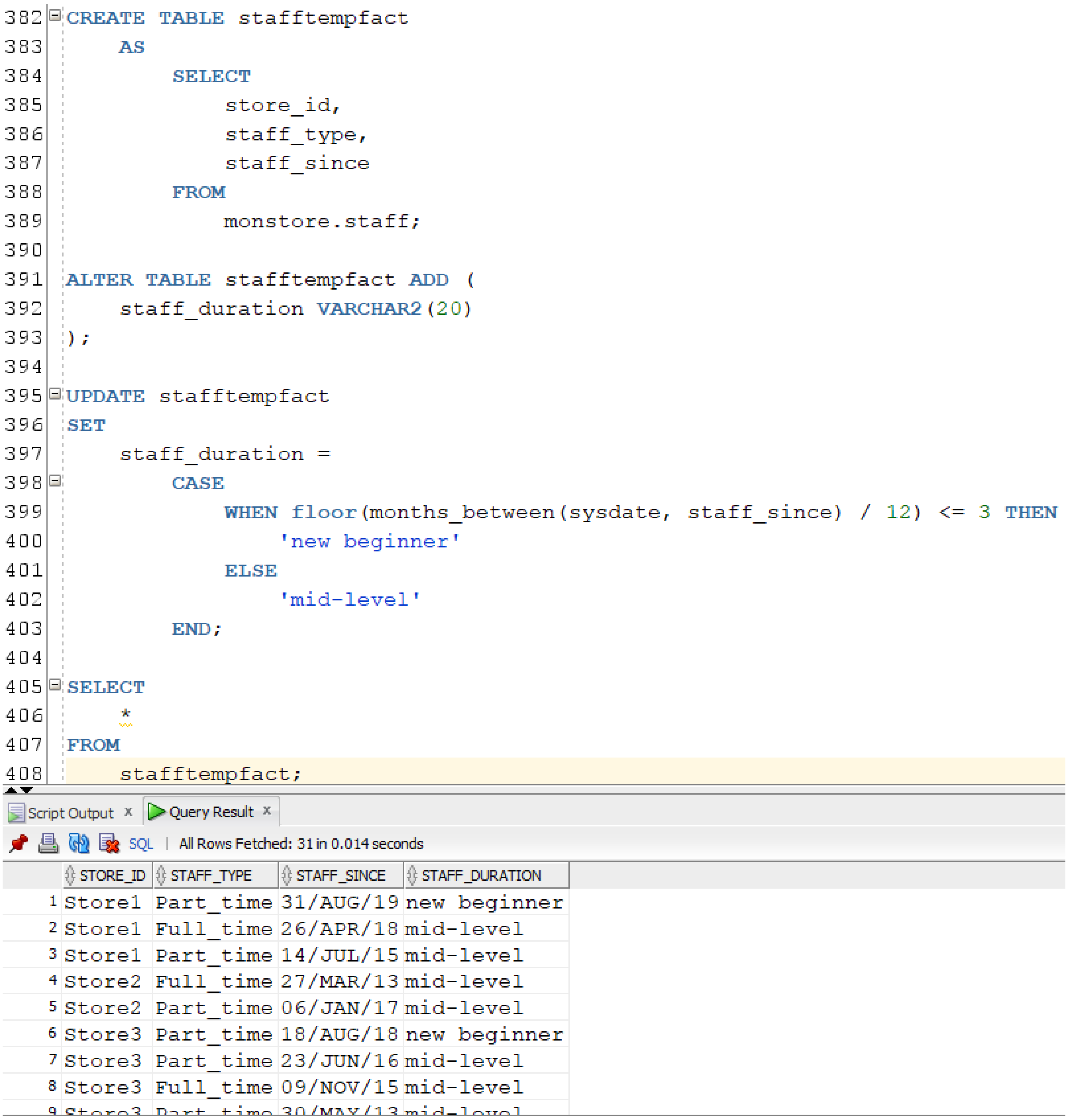


```sql
CREATE TABLE orderpricefact_v1
    AS
        SELECT
            type_id,
            store_id,
            quarter,
            suburb,
            age_group,
            staff_duration,
            staff_type,
            SUM(quantity * list_price) AS total_order_price
        FROM
            orderpricetempfact
        GROUP BY
            type_id,
            store_id,
            quarter,
            suburb,
            age_group,
            staff_duration,
            staff_type;

SELECT
    *
FROM
    orderpricefact_v1;
```

Fetched 50 rows in 0.016 seconds

| | TYPE_ID | STORE_ID | QUARTER | SUBURB | AGE_GROUP | STAFF_DURATION | STAFF_TYPE | TOTAL_ORDER_PRICE |
|---|---|---|---|---|---|---|---|---|
| 1 | Category03 | Store3 | 4 | MARION | old_aged adults | mid-level | Part_time | 480 |
| 2 | Category04 | Store5 | 3 | GLENELG SOUTH | middle_aged adults | mid-level | Full_time | 170 |
| 3 | Category03 | Store2 | 3 | CUMBERLAND PARK | early_age adults | new beginner | Full_time | 640 |
| 4 | Category04 | Store3 | 3 | WEST LAKES | early_age adults | mid-level | Full_time | 190 |
| 5 | Category02 | Store6 | 1 | DAW PARK | old_aged adults | mid-level | Full_time | 920 |
| 6 | Category01 | Store2 | 1 | HENLEY BEACH SOUTH | early_age adults | mid-level | Part_time | 360 |
| 7 | Category06 | Store6 | 2 | OAKLANDS PARK | middle_aged adults | mid-level | Full_time | 1800 |
| 8 | Category03 | Store7 | 3 | ASCOT PARK | old_aged adults | mid-level | Part_time | 640 |
| 9 | Category08 | Store2 | 4 | BELAIR | middle_aged adults | mid-level | Part_time | 440 |
| 10 | Category07 | Store2 | 1 | WEST LAKES | early_age adults | mid-level | Full_time | 570 |

## Staff Temporary Fact

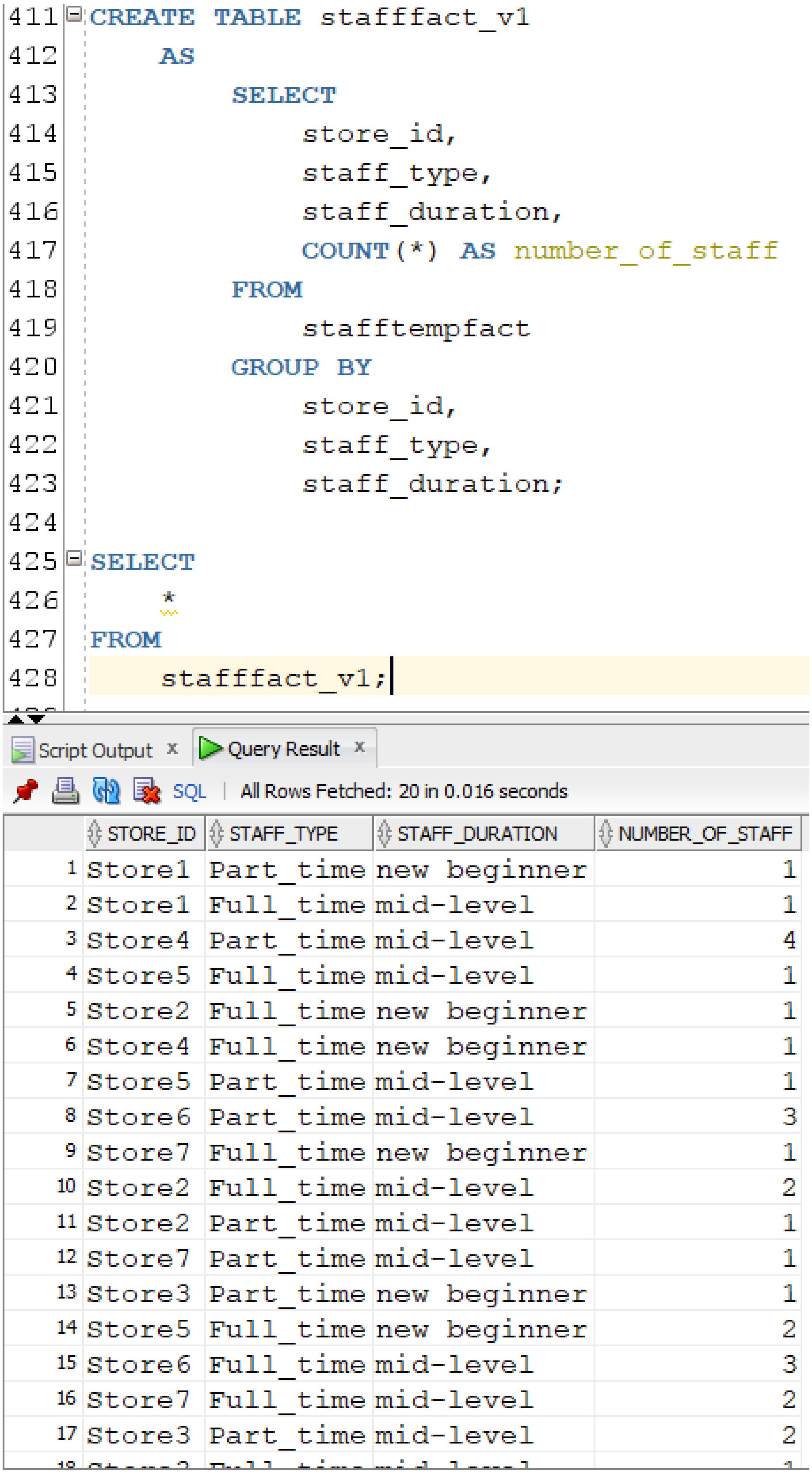


```
CREATE TABLE stafftempfact
    AS
        SELECT
            store_id,
            staff_type,
            staff_since
        FROM
            monstore.staff;

ALTER TABLE stafftempfact ADD (
    staff_duration VARCHAR2(20)
);

UPDATE stafftempfact
SET
    staff_duration =
        CASE
            WHEN floor(months_between(sysdate, staff_since) / 12) <= 3 THEN
                'new beginner'
            ELSE
                'mid-level'
        END;

SELECT
    *
FROM
    stafftempfact;
```

All Rows Fetched: 31 in 0.014 seconds

| | STORE_ID | STAFF_TYPE | STAFF_SINCE | STAFF_DURATION |
|---|---|---|---|---|
| 1 | Store1 | Part_time | 31/AUG/19 | new beginner |
| 2 | Store1 | Full_time | 26/APR/18 | mid-level |
| 3 | Store1 | Part_time | 14/JUL/15 | mid-level |
| 4 | Store2 | Full_time | 27/MAR/13 | mid-level |
| 5 | Store2 | Part_time | 06/JAN/17 | mid-level |
| 6 | Store3 | Part_time | 18/AUG/18 | new beginner |
| 7 | Store3 | Part_time | 23/JUN/16 | mid-level |
| 8 | Store3 | Full_time | 09/NOV/15 | mid-level |
| 9 | Store3 | Part_time | 30/MAY/13 | mid-level |

Staff Fact Version-1

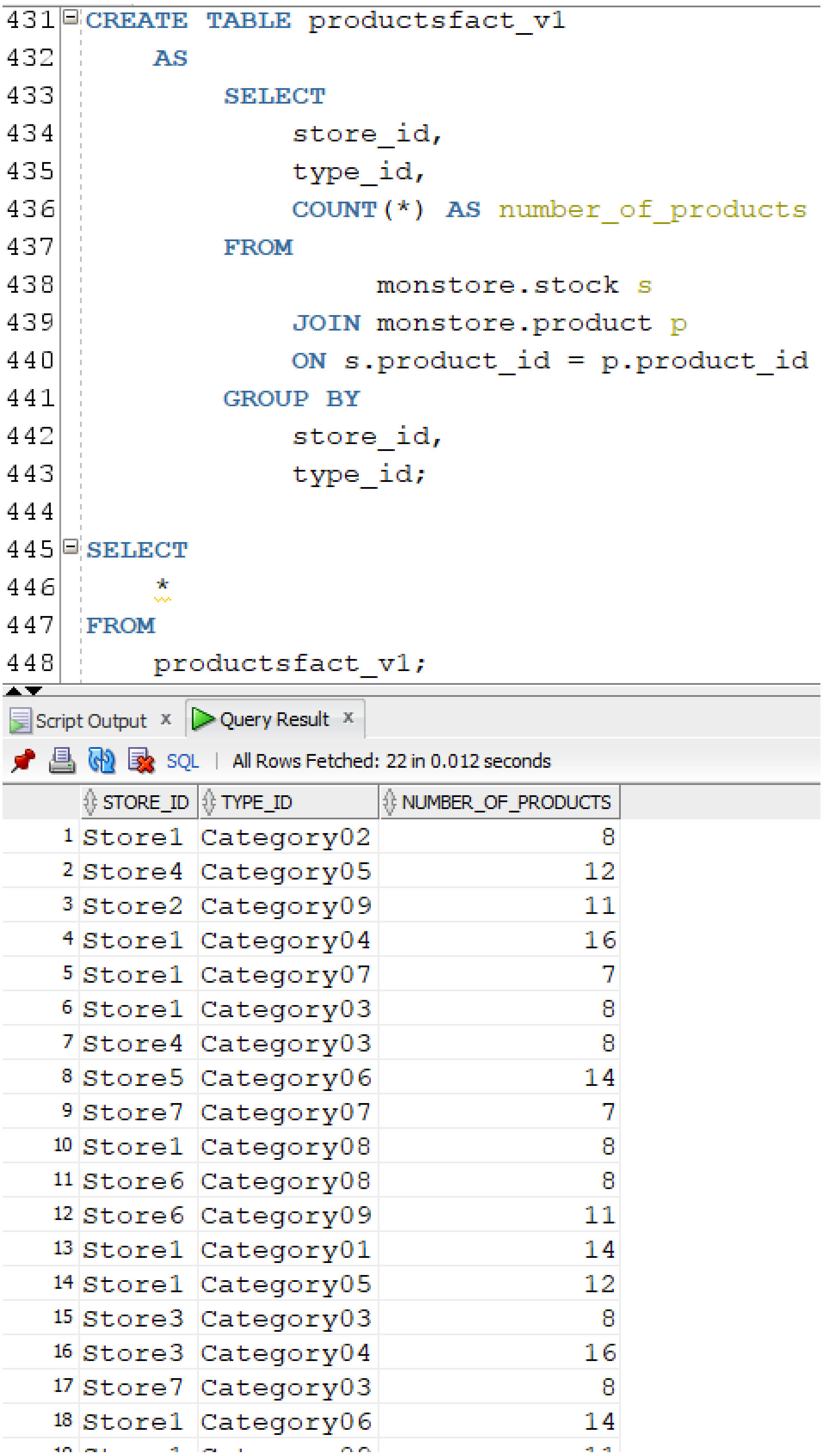


```sql
CREATE TABLE stafffact_v1
    AS
        SELECT
            store_id,
            staff_type,
            staff_duration,
            COUNT(*) AS number_of_staff
        FROM
            stafftempfact
        GROUP BY
            store_id,
            staff_type,
            staff_duration;

SELECT
    *
FROM
    stafffact_v1;
```

All Rows Fetched: 20 in 0.016 seconds

| | STORE_ID | STAFF_TYPE | STAFF_DURATION | NUMBER_OF_STAFF |
|---|---|---|---|---|
| 1 | Store1 | Part_time | new beginner | 1 |
| 2 | Store1 | Full_time | mid-level | 1 |
| 3 | Store4 | Part_time | mid-level | 4 |
| 4 | Store5 | Full_time | mid-level | 1 |
| 5 | Store2 | Full_time | new beginner | 1 |
| 6 | Store4 | Full_time | new beginner | 1 |
| 7 | Store5 | Part_time | mid-level | 1 |
| 8 | Store6 | Part_time | mid-level | 3 |
| 9 | Store7 | Full_time | new beginner | 1 |
| 10 | Store2 | Full_time | mid-level | 2 |
| 11 | Store2 | Part_time | mid-level | 1 |
| 12 | Store7 | Part_time | mid-level | 1 |
| 13 | Store3 | Part_time | new beginner | 1 |
| 14 | Store5 | Full_time | new beginner | 2 |
| 15 | Store6 | Full_time | mid-level | 3 |
| 16 | Store7 | Full_time | mid-level | 2 |
| 17 | Store3 | Part_time | mid-level | 2 |
| 18 | Store3 | Full_time | mid-level | 1 |

Products Fact Version-1



```
CREATE TABLE productsfact_v1
    AS
        SELECT
            store_id,
            type_id,
            COUNT(*) AS number_of_products
        FROM
                 monstore.stock s
            JOIN monstore.product p
            ON s.product_id = p.product_id
        GROUP BY
            store_id,
            type_id;

SELECT
    *
FROM
    productsfact_v1;
```

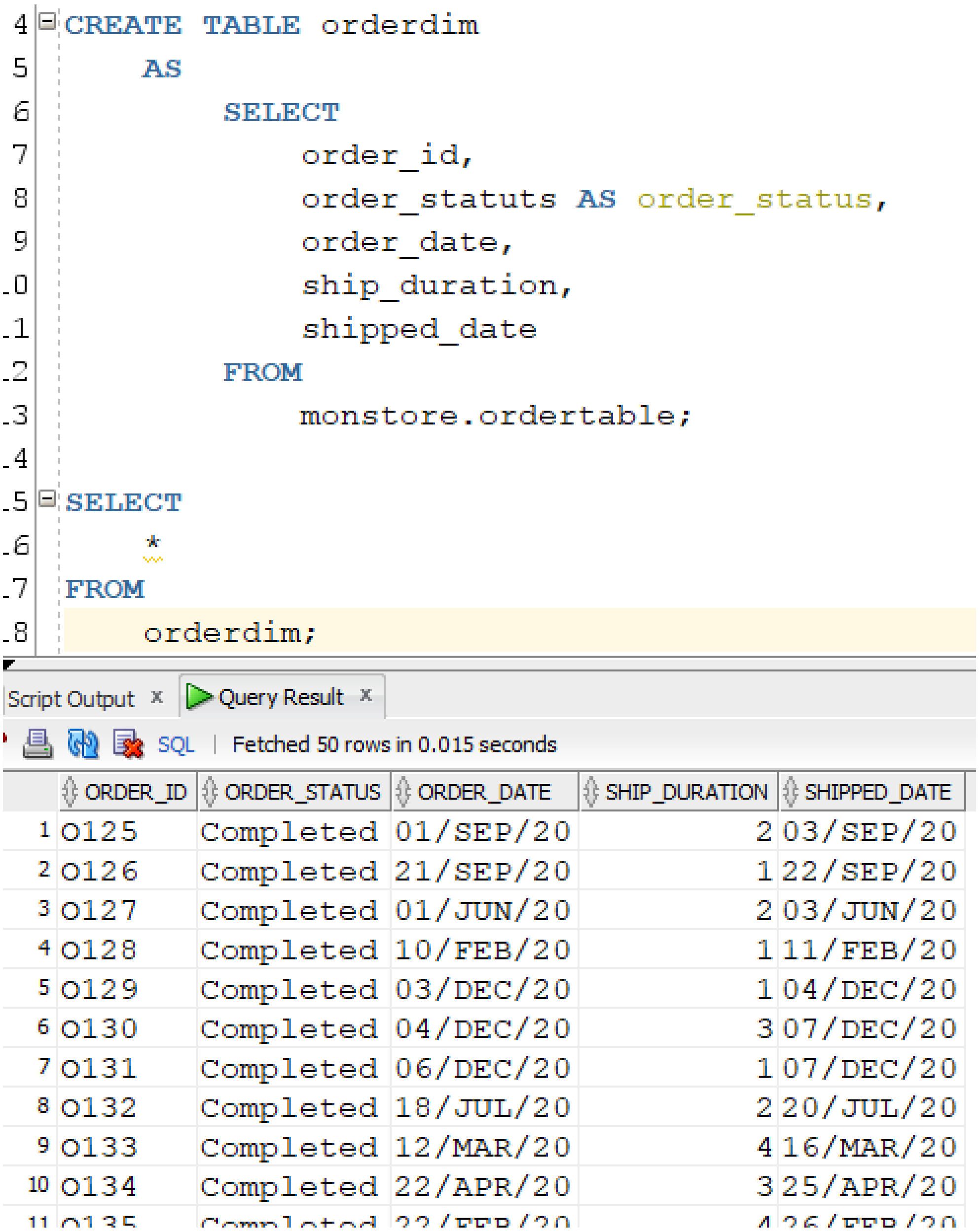
All Rows Fetched: 22 in 0.012 seconds

| | STORE_ID | TYPE_ID | NUMBER_OF_PRODUCTS |
|---|---|---|---|
| 1 | Store1 | Category02 | 8 |
| 2 | Store4 | Category05 | 12 |
| 3 | Store2 | Category09 | 11 |
| 4 | Store1 | Category04 | 16 |
| 5 | Store1 | Category07 | 7 |
| 6 | Store1 | Category03 | 8 |
| 7 | Store4 | Category03 | 8 |
| 8 | Store5 | Category06 | 14 |
| 9 | Store7 | Category07 | 7 |
| 10 | Store1 | Category08 | 8 |
| 11 | Store6 | Category08 | 8 |
| 12 | Store6 | Category09 | 11 |
| 13 | Store1 | Category01 | 14 |
| 14 | Store1 | Category05 | 12 |
| 15 | Store3 | Category03 | 8 |
| 16 | Store3 | Category04 | 16 |
| 17 | Store7 | Category03 | 8 |
| 18 | Store1 | Category06 | 14 |

## 2B/C – Version-2 SQL

### Dimensions

Order Dimension

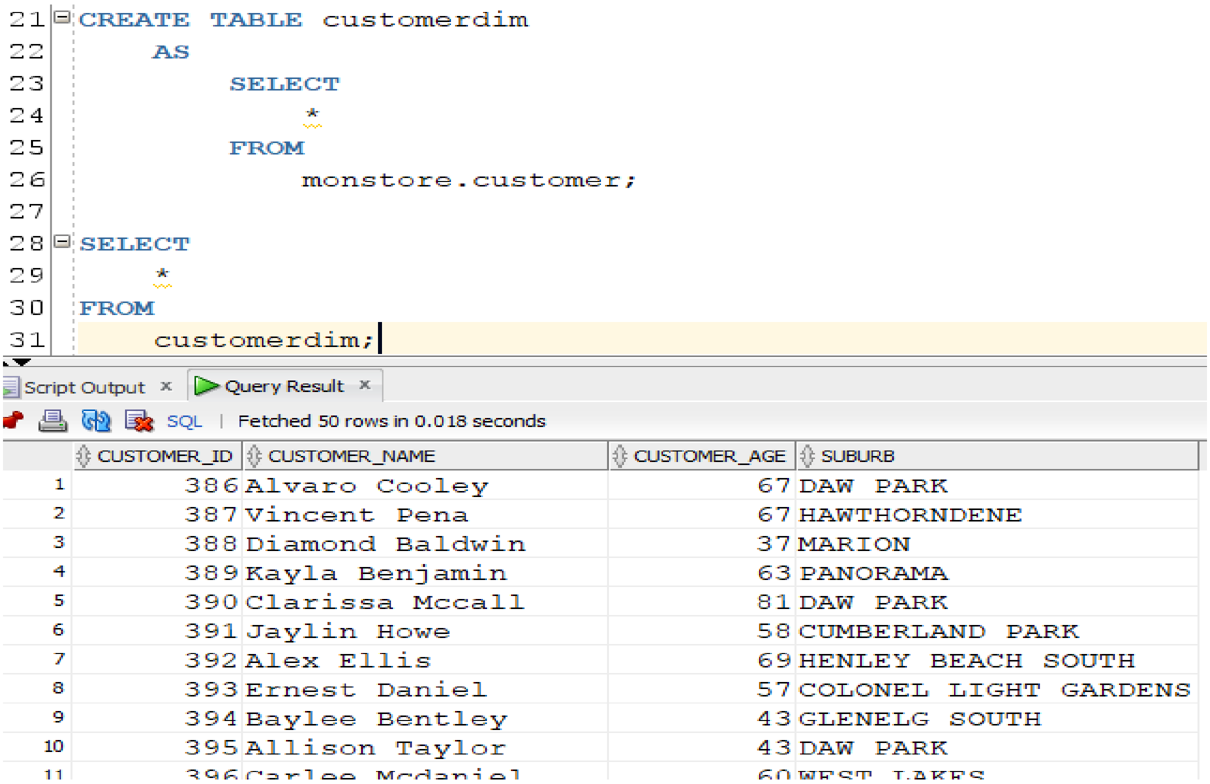


```
CREATE TABLE orderdim
    AS
        SELECT
            order_id,
            order_statuts AS order_status,
            order_date,
            ship_duration,
            shipped_date
        FROM
            monstore.ordertable;

SELECT
    *
FROM
    orderdim;
```

Fetched 50 rows in 0.015 seconds

```
    ORDER_ID  ORDER_STATUS  ORDER_DATE  SHIP_DURATION  SHIPPED_DATE
 1  O125      Completed     01/SEP/20               2  03/SEP/20
 2  O126      Completed     21/SEP/20               1  22/SEP/20
 3  O127      Completed     01/JUN/20               2  03/JUN/20
 4  O128      Completed     10/FEB/20               1  11/FEB/20
 5  O129      Completed     03/DEC/20               1  04/DEC/20
 6  O130      Completed     04/DEC/20               3  07/DEC/20
 7  O131      Completed     06/DEC/20               1  07/DEC/20
 8  O132      Completed     18/JUL/20               2  20/JUL/20
 9  O133      Completed     12/MAR/20               4  16/MAR/20
10  O134      Completed     22/APR/20               3  25/APR/20
11  O135      Completed     22/FEB/20               4  26/FEB/20
```

## Customer Dimension

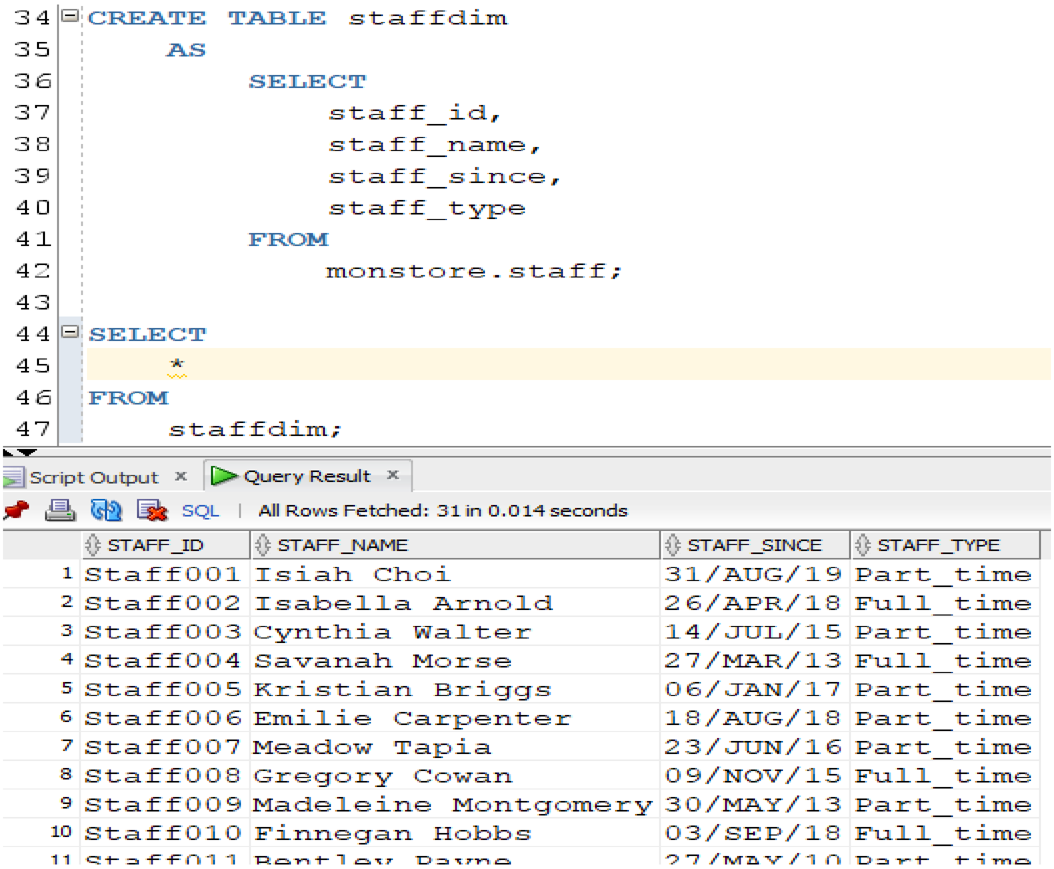


```
CREATE TABLE customerdim
    AS
        SELECT
            *
        FROM
            monstore.customer;

SELECT
    *
FROM
    customerdim;
```

Fetched 50 rows in 0.018 seconds

| | CUSTOMER_ID | CUSTOMER_NAME | CUSTOMER_AGE | SUBURB |
|---|---|---|---|---|
| 1 | 386 | Alvaro Cooley | 67 | DAW PARK |
| 2 | 387 | Vincent Pena | 67 | HAWTHORNDENE |
| 3 | 388 | Diamond Baldwin | 37 | MARION |
| 4 | 389 | Kayla Benjamin | 63 | PANORAMA |
| 5 | 390 | Clarissa Mccall | 81 | DAW PARK |
| 6 | 391 | Jaylin Howe | 58 | CUMBERLAND PARK |
| 7 | 392 | Alex Ellis | 69 | HENLEY BEACH SOUTH |
| 8 | 393 | Ernest Daniel | 57 | COLONEL LIGHT GARDENS |
| 9 | 394 | Baylee Bentley | 43 | GLENELG SOUTH |
| 10 | 395 | Allison Taylor | 43 | DAW PARK |
| 11 | 396 | Carlee Mcdaniel | 60 | WEST LAKES |

## Staff Dimension



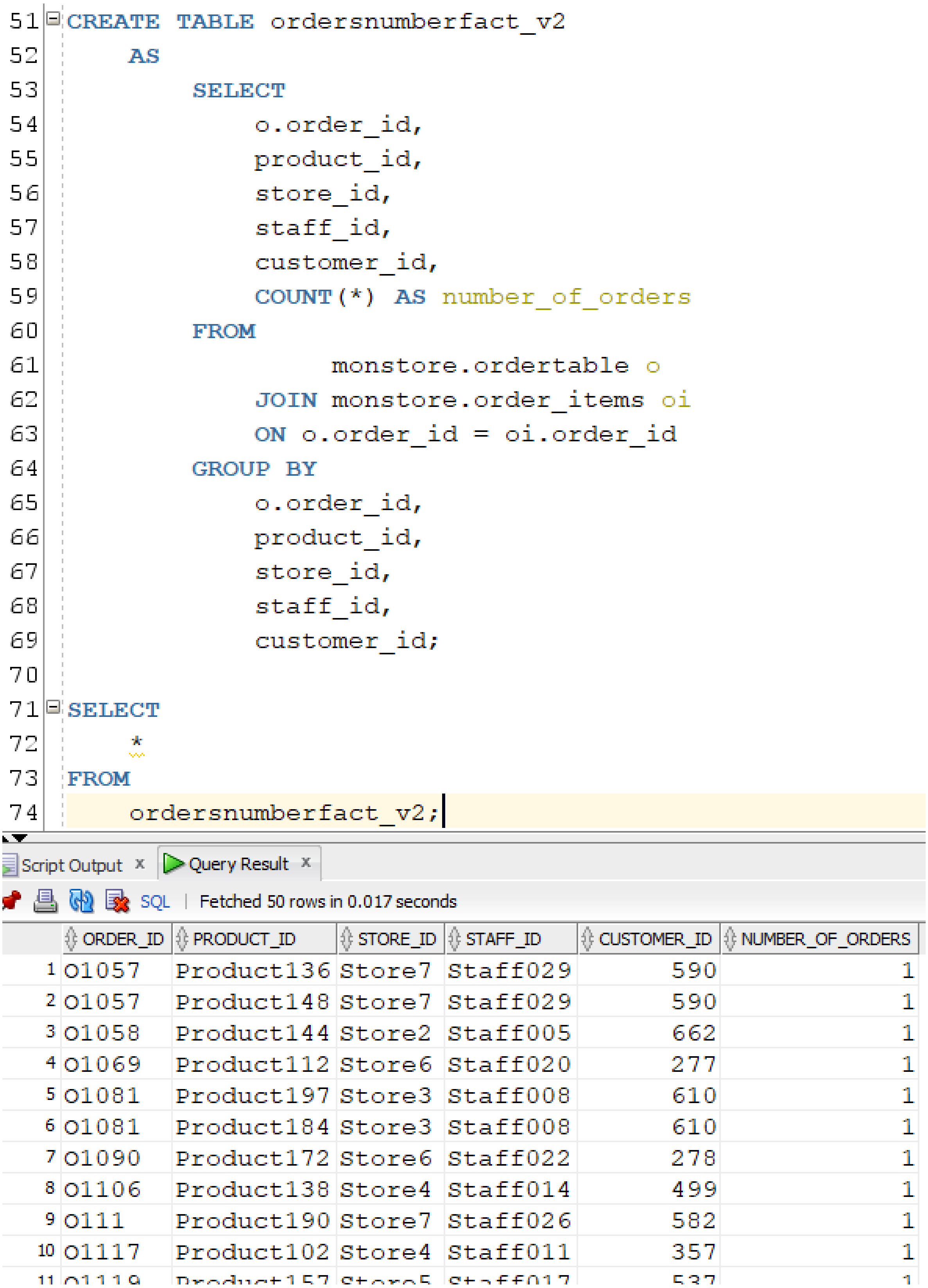
```
CREATE TABLE staffdim
    AS
        SELECT
            staff_id,
            staff_name,
            staff_since,
            staff_type
        FROM
            monstore.staff;

SELECT
    *
FROM
    staffdim;
```

All Rows Fetched: 31 in 0.014 seconds

| | STAFF_ID | STAFF_NAME | STAFF_SINCE | STAFF_TYPE |
|---|---|---|---|---|
| 1 | Staff001 | Isiah Choi | 31/AUG/19 | Part_time |
| 2 | Staff002 | Isabella Arnold | 26/APR/18 | Full_time |
| 3 | Staff003 | Cynthia Walter | 14/JUL/15 | Part_time |
| 4 | Staff004 | Savanah Morse | 27/MAR/13 | Full_time |
| 5 | Staff005 | Kristian Briggs | 06/JAN/17 | Part_time |
| 6 | Staff006 | Emilie Carpenter | 18/AUG/18 | Part_time |
| 7 | Staff007 | Meadow Tapia | 23/JUN/16 | Part_time |
| 8 | Staff008 | Gregory Cowan | 09/NOV/15 | Full_time |
| 9 | Staff009 | Madeleine Montgomery | 30/MAY/13 | Part_time |
| 10 | Staff010 | Finnegan Hobbs | 03/SEP/18 | Full_time |
| 11 | Staff011 | Bentley Payne | 27/MAY/10 | Part_time |

## Facts

Orders Number Fact Version-2

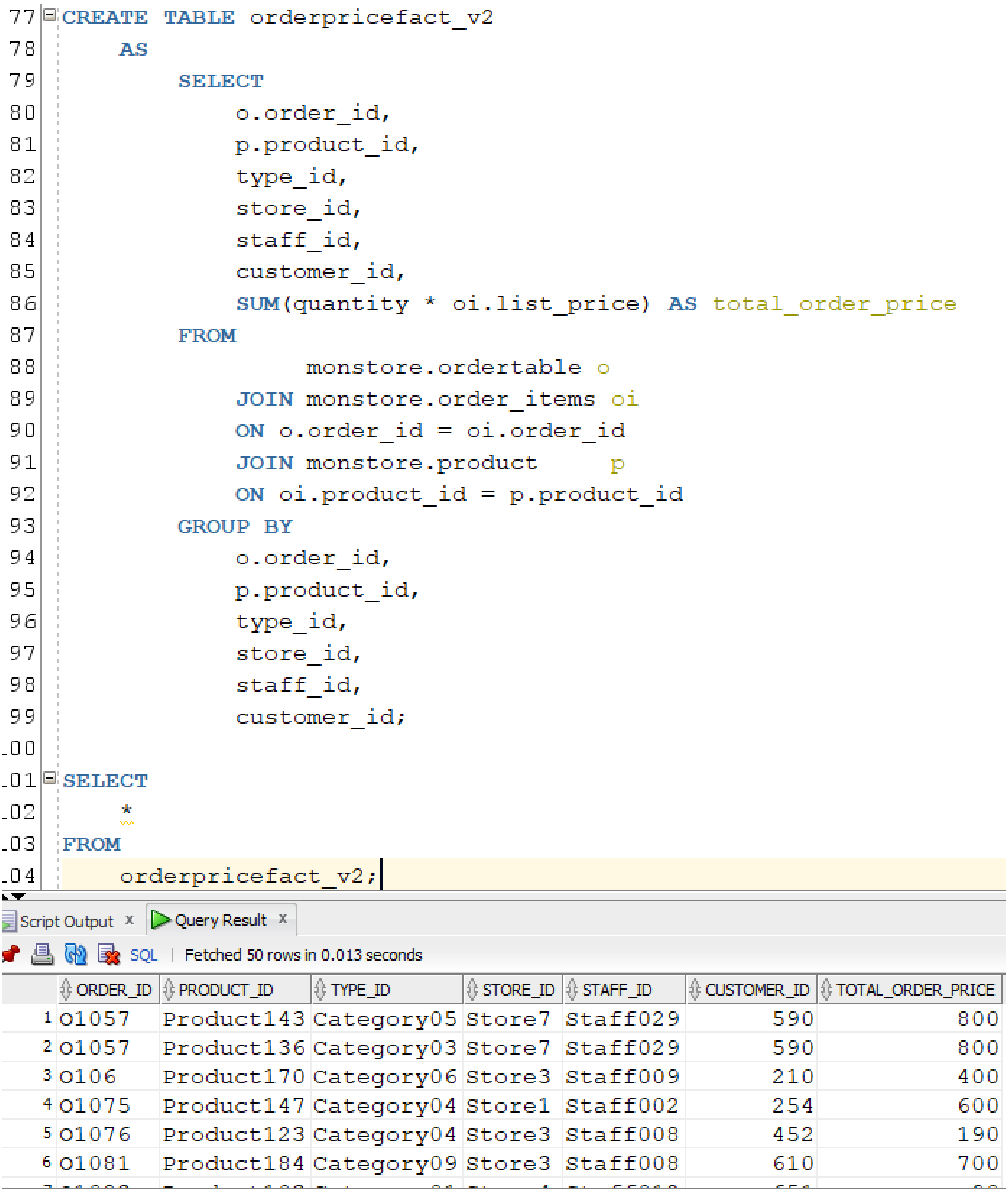


```
CREATE TABLE ordersnumberfact_v2
    AS
        SELECT
            o.order_id,
            product_id,
            store_id,
            staff_id,
            customer_id,
            COUNT(*) AS number_of_orders
        FROM
                 monstore.ordertable o
            JOIN monstore.order_items oi
            ON o.order_id = oi.order_id
        GROUP BY
            o.order_id,
            product_id,
            store_id,
            staff_id,
            customer_id;

SELECT
    *
FROM
    ordersnumberfact_v2;
```

Fetched 50 rows in 0.017 seconds

| | ORDER_ID | PRODUCT_ID | STORE_ID | STAFF_ID | CUSTOMER_ID | NUMBER_OF_ORDERS |
|---|---|---|---|---|---|---|
| 1 | O1057 | Product136 | Store7 | Staff029 | 590 | 1 |
| 2 | O1057 | Product148 | Store7 | Staff029 | 590 | 1 |
| 3 | O1058 | Product144 | Store2 | Staff005 | 662 | 1 |
| 4 | O1069 | Product112 | Store6 | Staff020 | 277 | 1 |
| 5 | O1081 | Product197 | Store3 | Staff008 | 610 | 1 |
| 6 | O1081 | Product184 | Store3 | Staff008 | 610 | 1 |
| 7 | O1090 | Product172 | Store6 | Staff022 | 278 | 1 |
| 8 | O1106 | Product138 | Store4 | Staff014 | 499 | 1 |
| 9 | O111 | Product190 | Store7 | Staff026 | 582 | 1 |
| 10 | O1117 | Product102 | Store4 | Staff011 | 357 | 1 |
| 11 | O1119 | Product157 | Store5 | Staff017 | 537 | 1 |

Order Price Fact Version-2

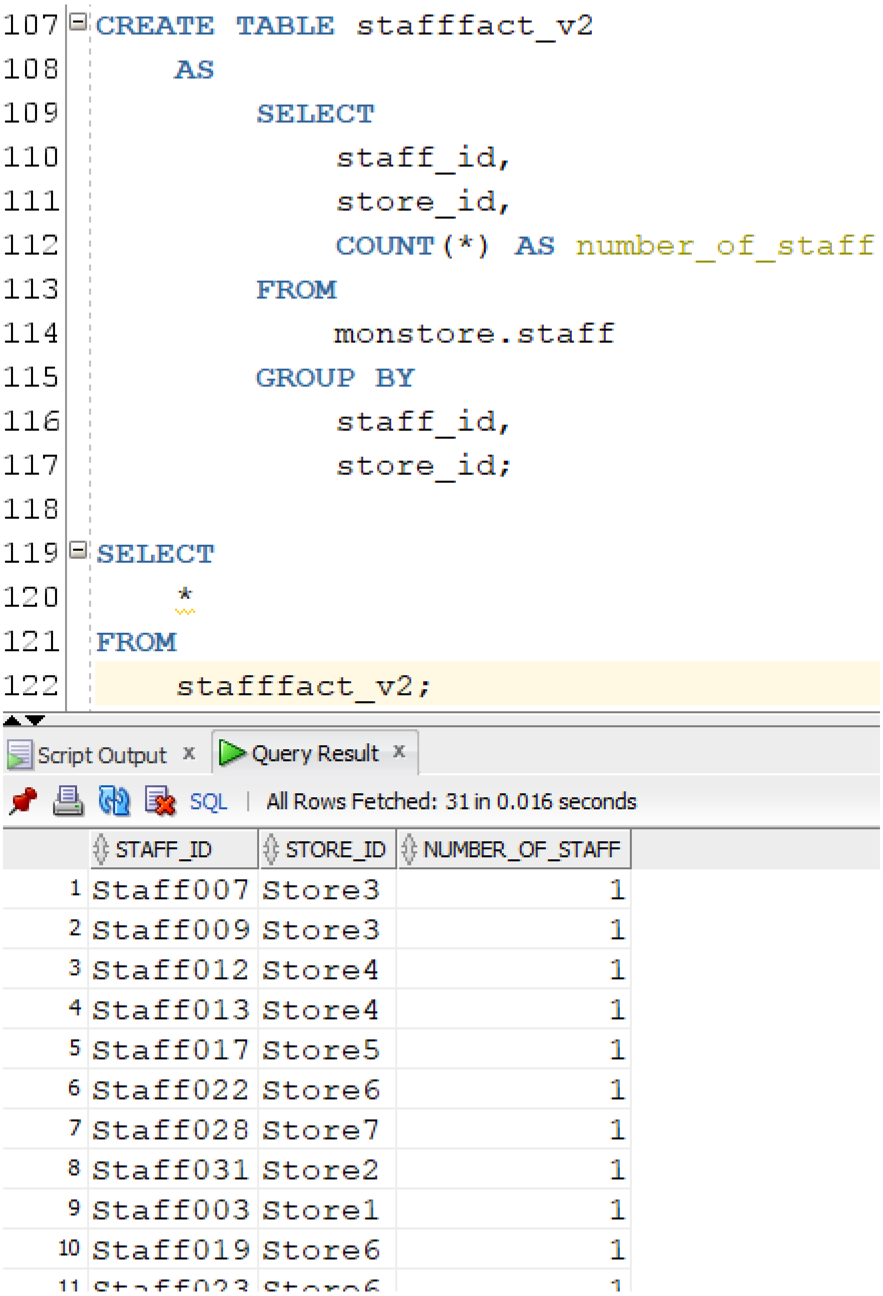


```
CREATE TABLE orderpricefact_v2
    AS
        SELECT
            o.order_id,
            p.product_id,
            type_id,
            store_id,
            staff_id,
            customer_id,
            SUM(quantity * oi.list_price) AS total_order_price
        FROM
                 monstore.ordertable o
            JOIN monstore.order_items oi
            ON o.order_id = oi.order_id
            JOIN monstore.product     p
            ON oi.product_id = p.product_id
        GROUP BY
            o.order_id,
            p.product_id,
            type_id,
            store_id,
            staff_id,
            customer_id;

SELECT
    *
FROM
    orderpricefact_v2;
```

Fetched 50 rows in 0.013 seconds

| | ORDER_ID | PRODUCT_ID | TYPE_ID | STORE_ID | STAFF_ID | CUSTOMER_ID | TOTAL_ORDER_PRICE |
|---|---|---|---|---|---|---|---|
| 1 | O1057 | Product143 | Category05 | Store7 | Staff029 | 590 | 800 |
| 2 | O1057 | Product136 | Category03 | Store7 | Staff029 | 590 | 800 |
| 3 | O106 | Product170 | Category06 | Store3 | Staff009 | 210 | 400 |
| 4 | O1075 | Product147 | Category04 | Store1 | Staff002 | 254 | 600 |
| 5 | O1076 | Product123 | Category04 | Store3 | Staff008 | 452 | 190 |
| 6 | O1081 | Product184 | Category09 | Store3 | Staff008 | 610 | 700 |

Staff Fact Version-2

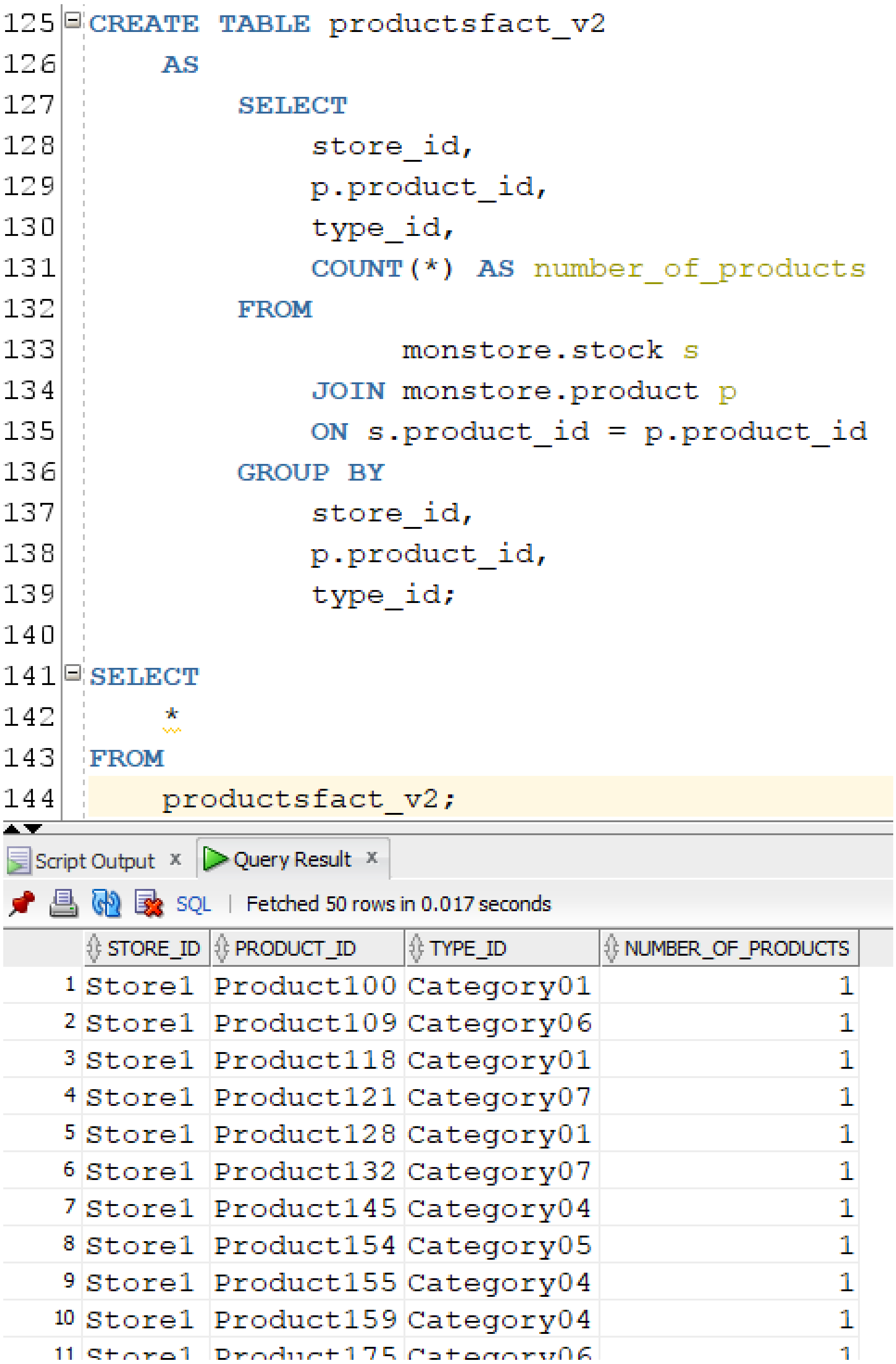


```
CREATE TABLE stafffact_v2
    AS
        SELECT
            staff_id,
            store_id,
            COUNT(*) AS number_of_staff
        FROM
            monstore.staff
        GROUP BY
            staff_id,
            store_id;

SELECT
    *
FROM
    stafffact_v2;
```

All Rows Fetched: 31 in 0.016 seconds

| | STAFF_ID | STORE_ID | NUMBER_OF_STAFF |
|---|---|---|---|
| 1 | Staff007 | Store3 | 1 |
| 2 | Staff009 | Store3 | 1 |
| 3 | Staff012 | Store4 | 1 |
| 4 | Staff013 | Store4 | 1 |
| 5 | Staff017 | Store5 | 1 |
| 6 | Staff022 | Store6 | 1 |
| 7 | Staff028 | Store7 | 1 |
| 8 | Staff031 | Store2 | 1 |
| 9 | Staff003 | Store1 | 1 |
| 10 | Staff019 | Store6 | 1 |
| 11 | Staff023 | Store6 | 1 |

Products Fact Version-2



```
CREATE TABLE productsfact_v2
    AS
        SELECT
            store_id,
            p.product_id,
            type_id,
            COUNT(*) AS number_of_products
        FROM
                 monstore.stock s
            JOIN monstore.product p
            ON s.product_id = p.product_id
        GROUP BY
            store_id,
            p.product_id,
            type_id;

SELECT
    *
FROM
    productsfact_v2;
```

Fetched 50 rows in 0.017 seconds

|  | STORE_ID | PRODUCT_ID | TYPE_ID | NUMBER_OF_PRODUCTS |
|---|---|---|---|---|
| 1 | Store1 | Product100 | Category01 | 1 |
| 2 | Store1 | Product109 | Category06 | 1 |
| 3 | Store1 | Product118 | Category01 | 1 |
| 4 | Store1 | Product121 | Category07 | 1 |
| 5 | Store1 | Product128 | Category01 | 1 |
| 6 | Store1 | Product132 | Category07 | 1 |
| 7 | Store1 | Product145 | Category04 | 1 |
| 8 | Store1 | Product154 | Category05 | 1 |
| 9 | Store1 | Product155 | Category04 | 1 |
| 10 | Store1 | Product159 | Category04 | 1 |
| 11 | Store1 | Product175 | Category06 | 1 |