FINANCE & SUPPLY CHAIN ANALYTICS USING SQL

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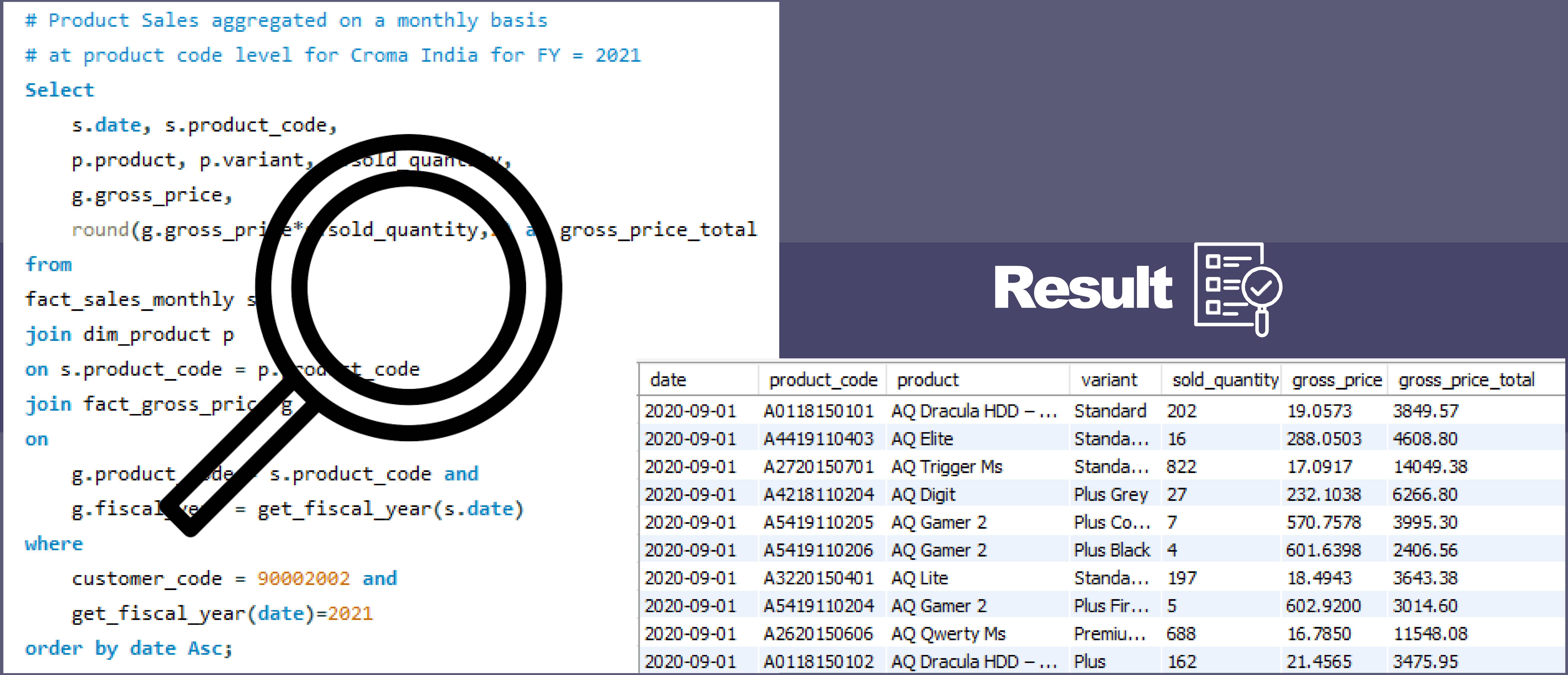
FINANCE ANALYTICS

Data-driven insights will guide strategic decisions, optimizing pricing, inventory, and product development, propelling long-term profitability and market dominance.

Gross Sales Report - Monthly Sales (Product Wise) for Customer (Croma, India)

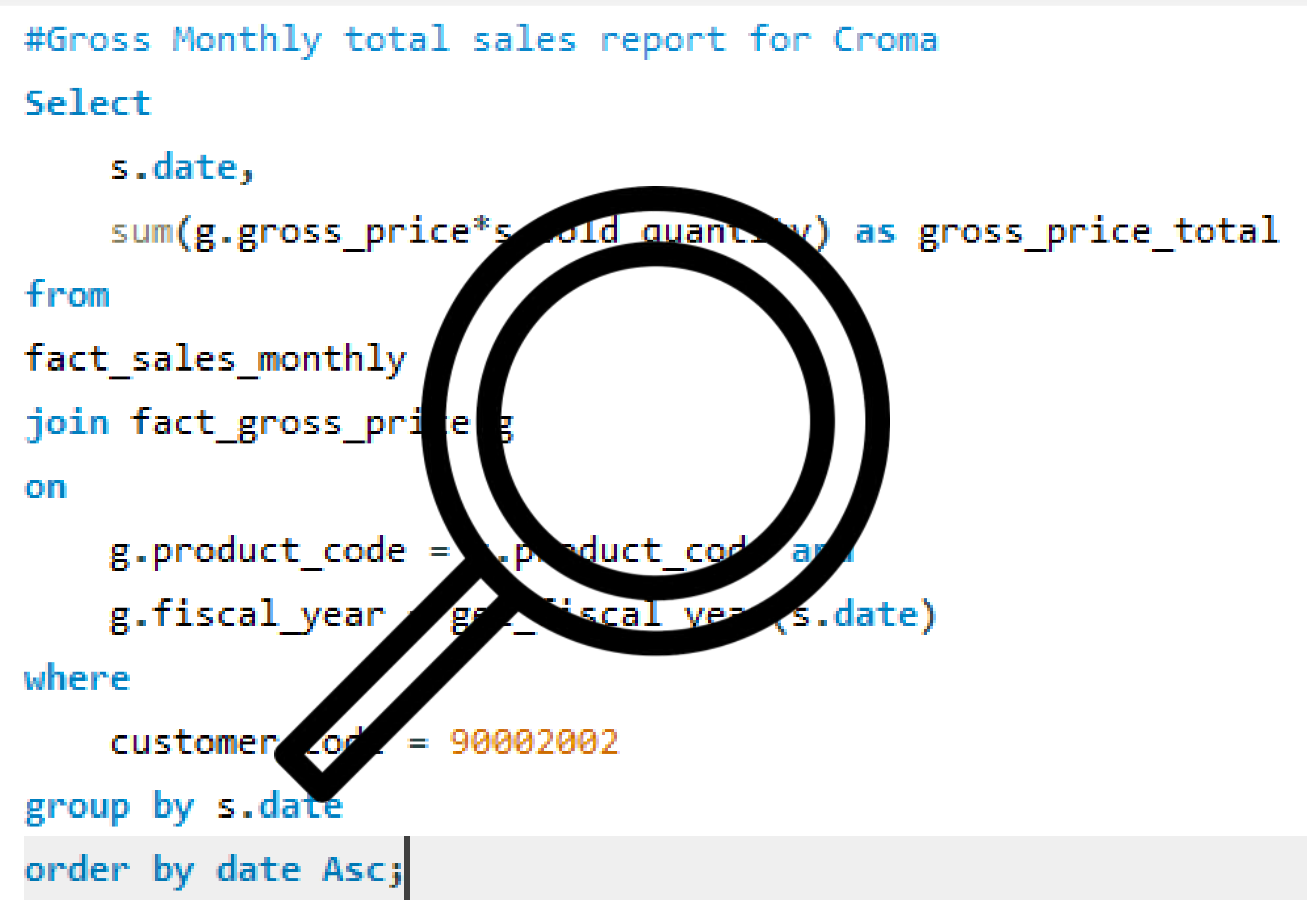


```
# Product Sales aggregated on a monthly basis
# at product code level for Croma India for FY = 2021
Select
    s.date, s.product_code,
    p.product, p.variant, s.sold_quantity,
    g.gross_price,
    round(g.gross_price*s.sold_quantity,[illegible]) as gross_price_total
from
fact_sales_monthly s
join dim_product p
on s.product_code = p.product_code
join fact_gross_price g
on
    g.product_code = s.product_code and
    g.fiscal_year = get_fiscal_year(s.date)
where
    customer_code = 90002002 and
    get_fiscal_year(date)=2021
order by date Asc;
```

Result

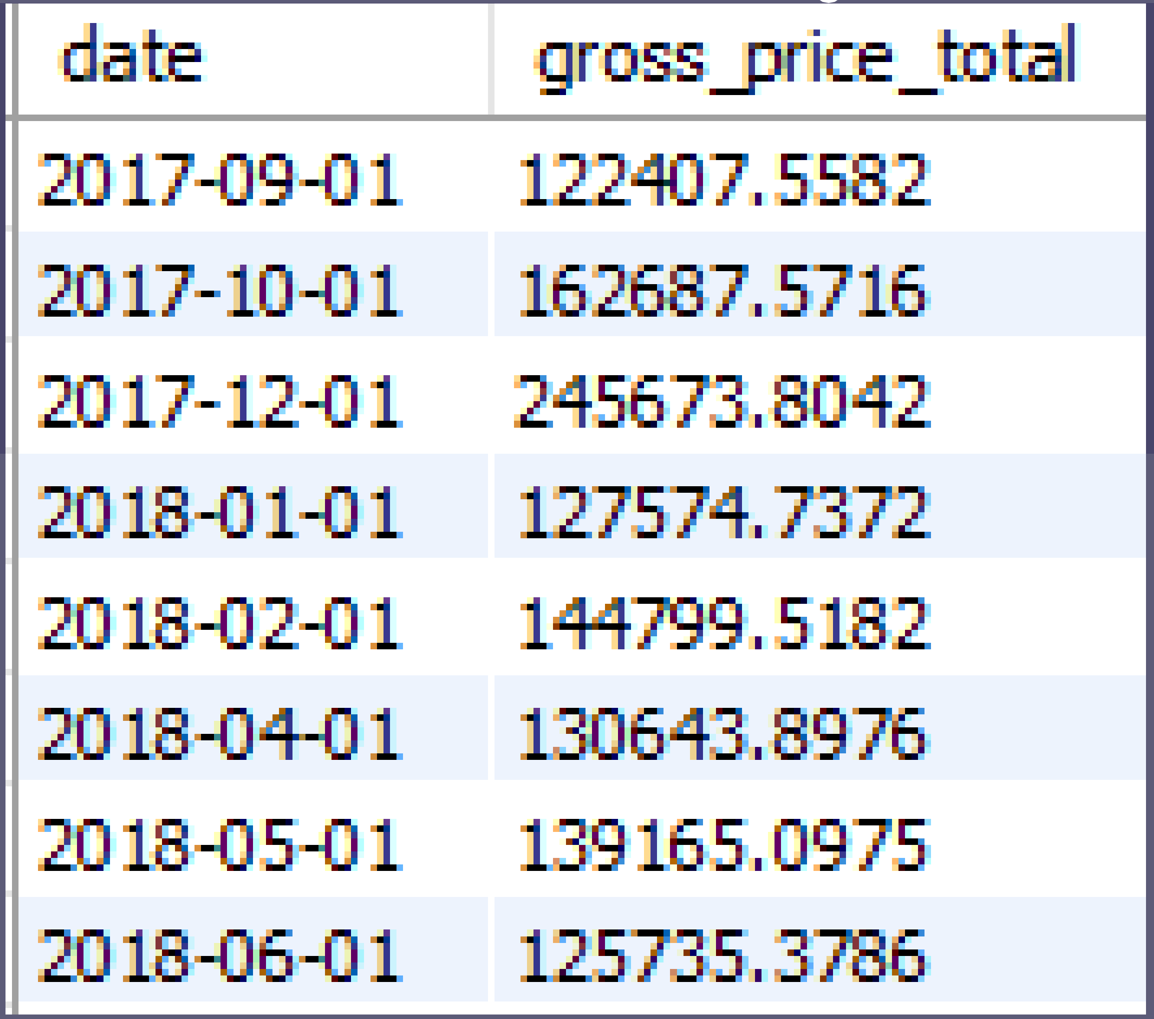
date	product_code	product	variant	sold_quantity	gross_price	gross_price_total
2020-09-01	A0118150101	AQ Dracula HDD – ...	Standard	202	19.0573	3849.57
2020-09-01	A4419110403	AQ Elite	Standa...	16	288.0503	4608.80
2020-09-01	A2720150701	AQ Trigger Ms	Standa...	822	17.0917	14049.38
2020-09-01	A4218110204	AQ Digit	Plus Grey	27	232.1038	6266.80
2020-09-01	A5419110205	AQ Gamer 2	Plus Co...	7	570.7578	3995.30
2020-09-01	A5419110206	AQ Gamer 2	Plus Black	4	601.6398	2406.56
2020-09-01	A3220150401	AQ Lite	Standa...	197	18.4943	3643.38
2020-09-01	A5419110204	AQ Gamer 2	Plus Fir...	5	602.9200	3014.60
2020-09-01	A2620150606	AQ Qwerty Ms	Premiu...	688	16.7850	11548.08
2020-09-01	A0118150102	AQ Dracula HDD – ...	Plus	162	21.4565	3475.95

Gross Sales Report - Monthly Sales for Customer (Croma, India) for all Financial Years



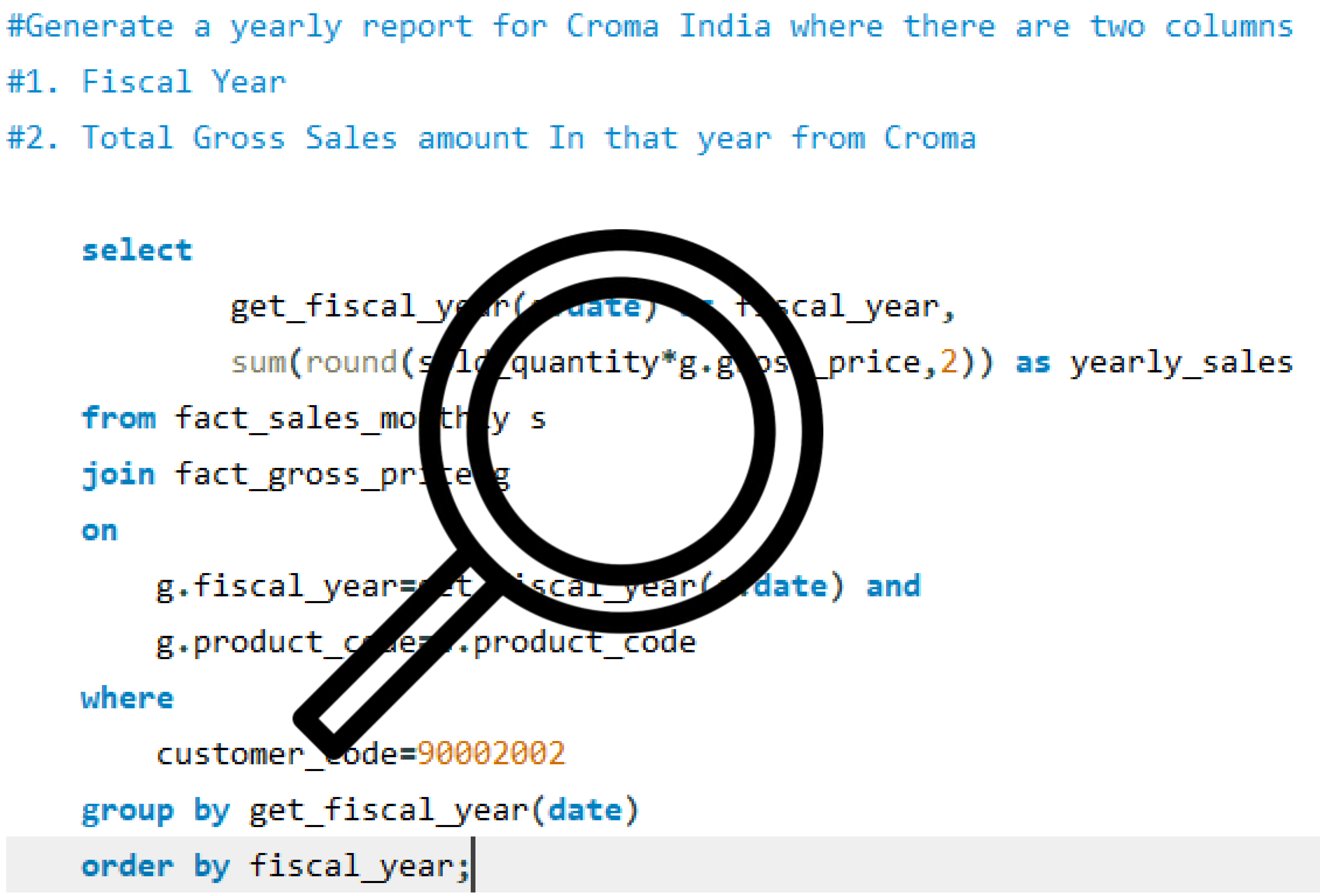
```
#Gross Monthly total sales report for Croma
Select
    s.date,
    sum(g.gross_price*s.sold_quantity) as gross_price_total
from
fact_sales_monthly
join fact_gross_price g
on
    g.product_code = s.product_code and
    g.fiscal_year = get_fiscal_year(s.date)
where
    customer_code = 90002002
group by s.date
order by date Asc;
```

Result



date	gross_price_total
2017-09-01	122407.5582
2017-10-01	162687.5716
2017-12-01	245673.8042
2018-01-01	127574.7372
2018-02-01	144799.5182
2018-04-01	130643.8976
2018-05-01	139165.0975
2018-06-01	125735.3786

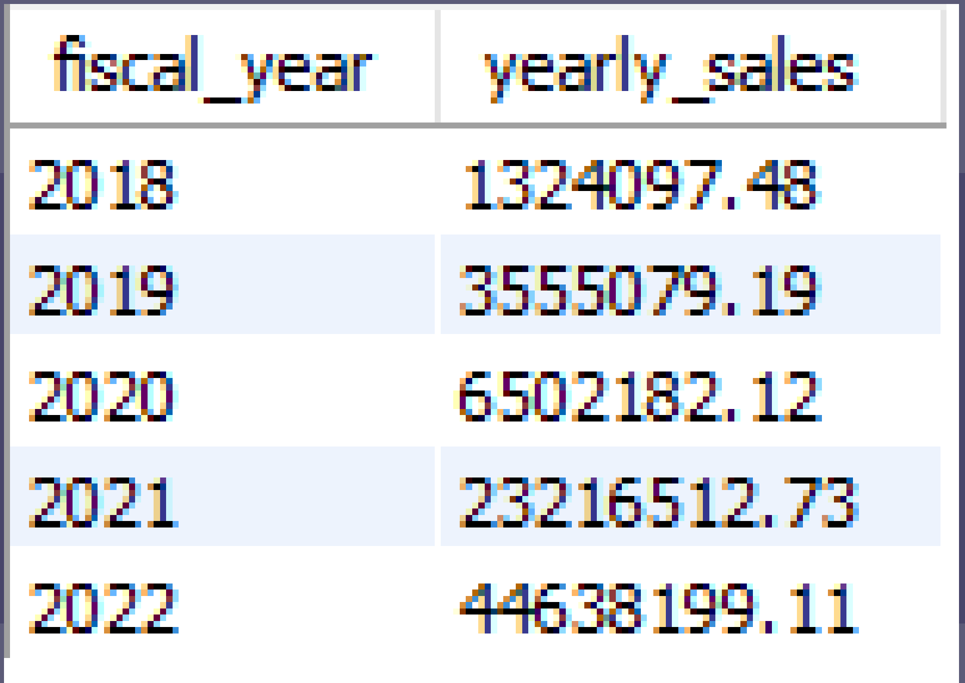
Gross Sales Report - Yearly Sales for Customer (Croma, India)



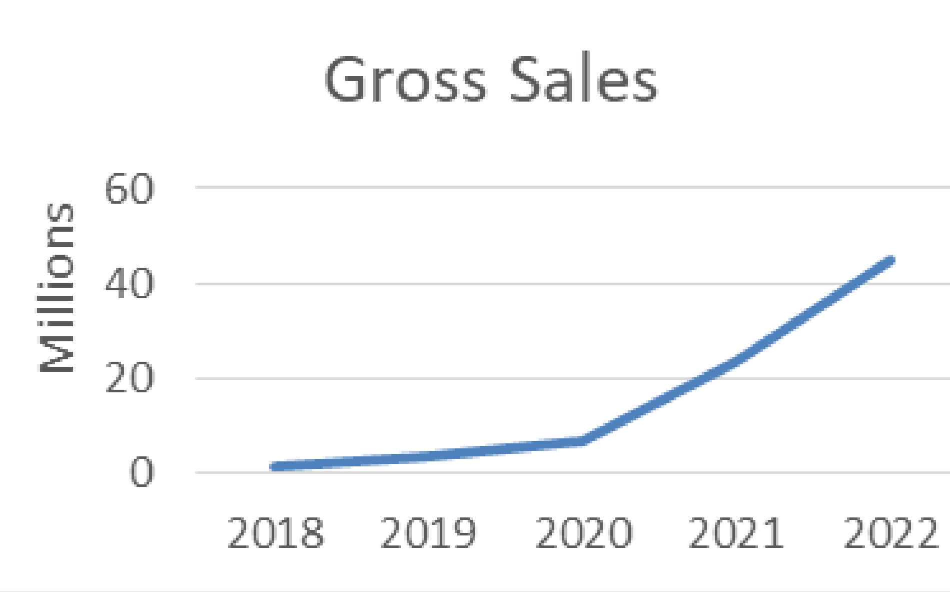
```
#Generate a yearly report for Croma India where there are two columns
#1. Fiscal Year
#2. Total Gross Sales amount In that year from Croma

    select
            get_fiscal_year(date) as fiscal_year,
            sum(round(sold_quantity*g.gross_price,2)) as yearly_sales
    from fact_sales_monthly s
    join fact_gross_price g
    on
        g.fiscal_year=get_fiscal_year(s.date) and
        g.product_code=s.product_code
    where
        customer_code=90002002
    group by get_fiscal_year(date)
    order by fiscal_year;
```

Result



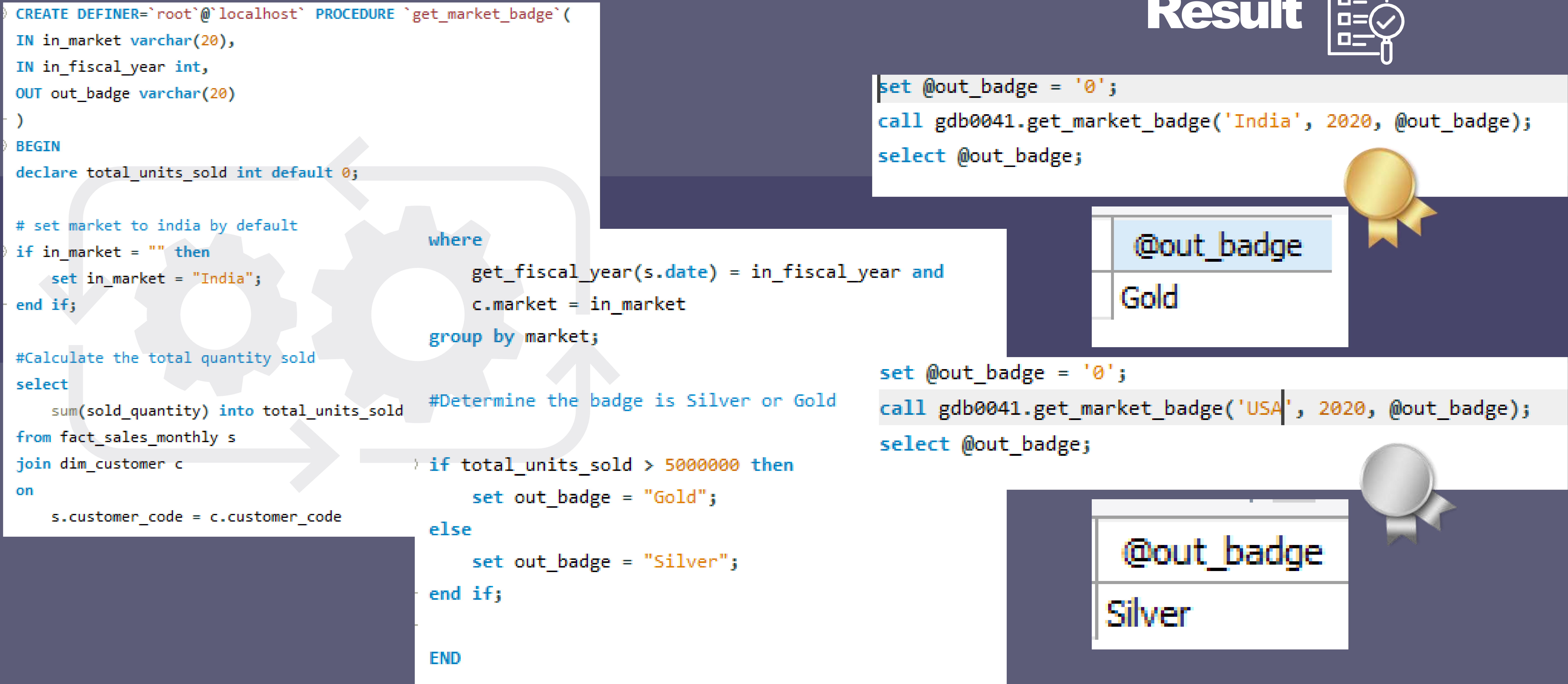
fiscal_year	yearly_sales
2018	1324097.48
2019	3555079.19
2020	6502182.12
2021	23216512.73
2022	44638199.11



Gross Sales

Stored Procedure to retrieve market badge

(if **total sold quantity** is greater than **5Million** market is considered **Gold** else **Silver**)



```
CREATE DEFINER=`root`@`localhost` PROCEDURE `get_market_badge`(
IN in_market varchar(20),
IN in_fiscal_year int,
OUT out_badge varchar(20)
)
BEGIN
declare total_units_sold int default 0;

# set market to india by default
if in_market = "" then
    set in_market = "India";
end if;

#Calculate the total quantity sold
select
    sum(sold_quantity) into total_units_sold
from fact_sales_monthly s
join dim_customer c
on
    s.customer_code = c.customer_code
where
    get_fiscal_year(s.date) = in_fiscal_year and
    c.market = in_market
group by market;

#Determine the badge is Silver or Gold

if total_units_sold > 5000000 then
    set out_badge = "Gold";
else
    set out_badge = "Silver";
end if;

END
```

Result

```
set @out_badge = '0';
call gdb0041.get_market_badge('India', 2020, @out_badge);
select @out_badge;
```

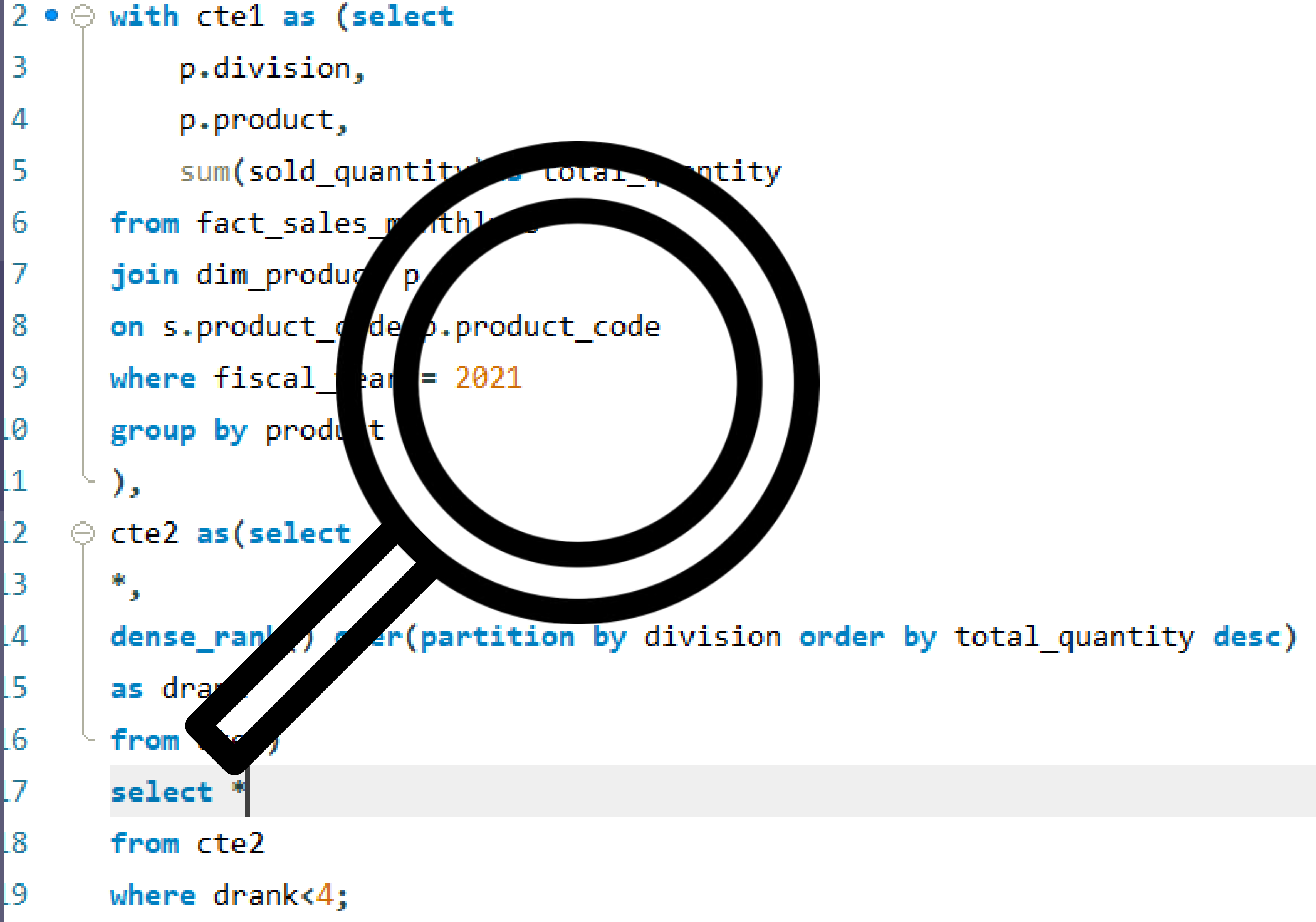
@out_badge
Gold

```
set @out_badge = '0';
call gdb0041.get_market_badge('USA', 2020, @out_badge);
select @out_badge;
```

@out_badge
Silver

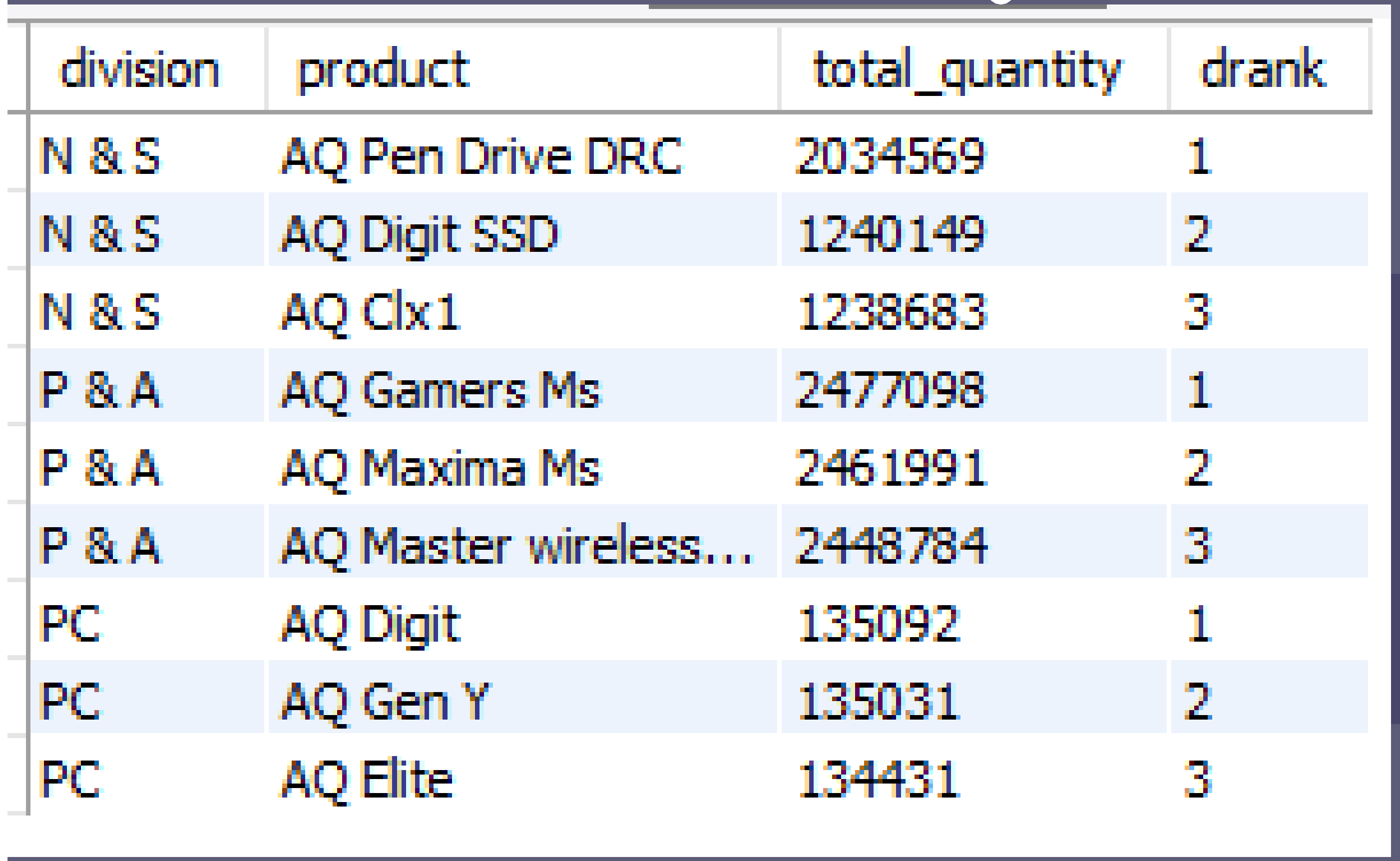
TOP 3 PRODUCTS - DIVISION WISE

(Using Common Table Expression and Window function)



```
with cte1 as (select
    p.division,
    p.product,
    sum(sold_quantity) as total_quantity
from fact_sales_monthly s
join dim_product p
on s.product_code=p.product_code
where fiscal_year = 2021
group by product
),
cte2 as(select
*,
dense_rank() over(partition by division order by total_quantity desc)
as drank
from cte1)
select *
from cte2
where drank<4;
```

Result



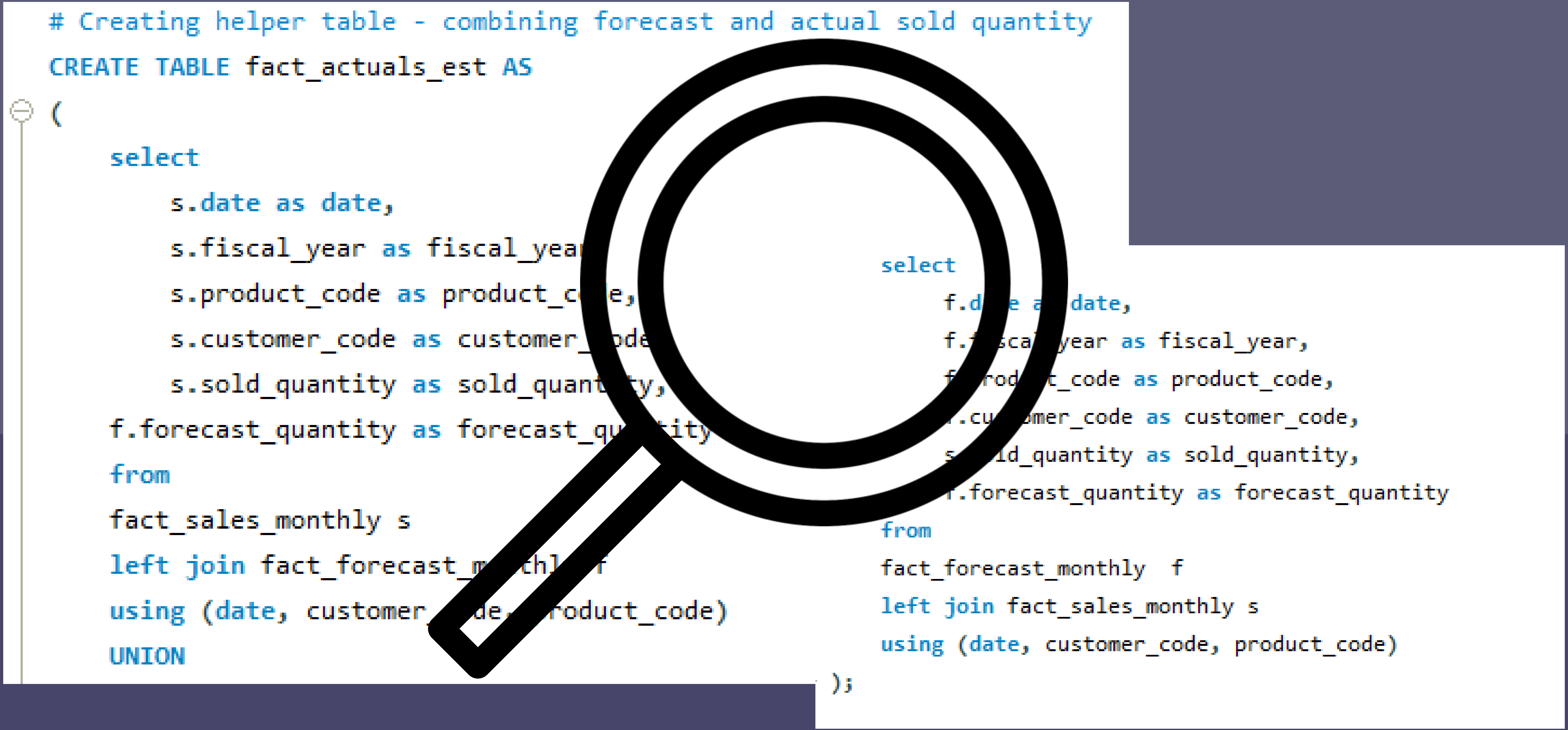
division	product	total_quantity	drank
N & S	AQ Pen Drive DRC	2034569	1
N & S	AQ Digit SSD	1240149	2
N & S	AQ Clx1	1238683	3
P & A	AQ Gamers Ms	2477098	1
P & A	AQ Maxima Ms	2461991	2
P & A	AQ Master wireless...	2448784	3
PC	AQ Digit	135092	1
PC	AQ Gen Y	135031	2
PC	AQ Elite	134431	3

SUPPLY CHAIN ANALYTICS

Data-driven insights will enhance forecast accuracy, mitigate risks, and optimize operations. In the long run, this results in cost savings, increased efficiency, and heightened competitiveness in the market.

Forecast Accuracy Report - All customers for a FY

Step 1: Combining forecast and actual sales

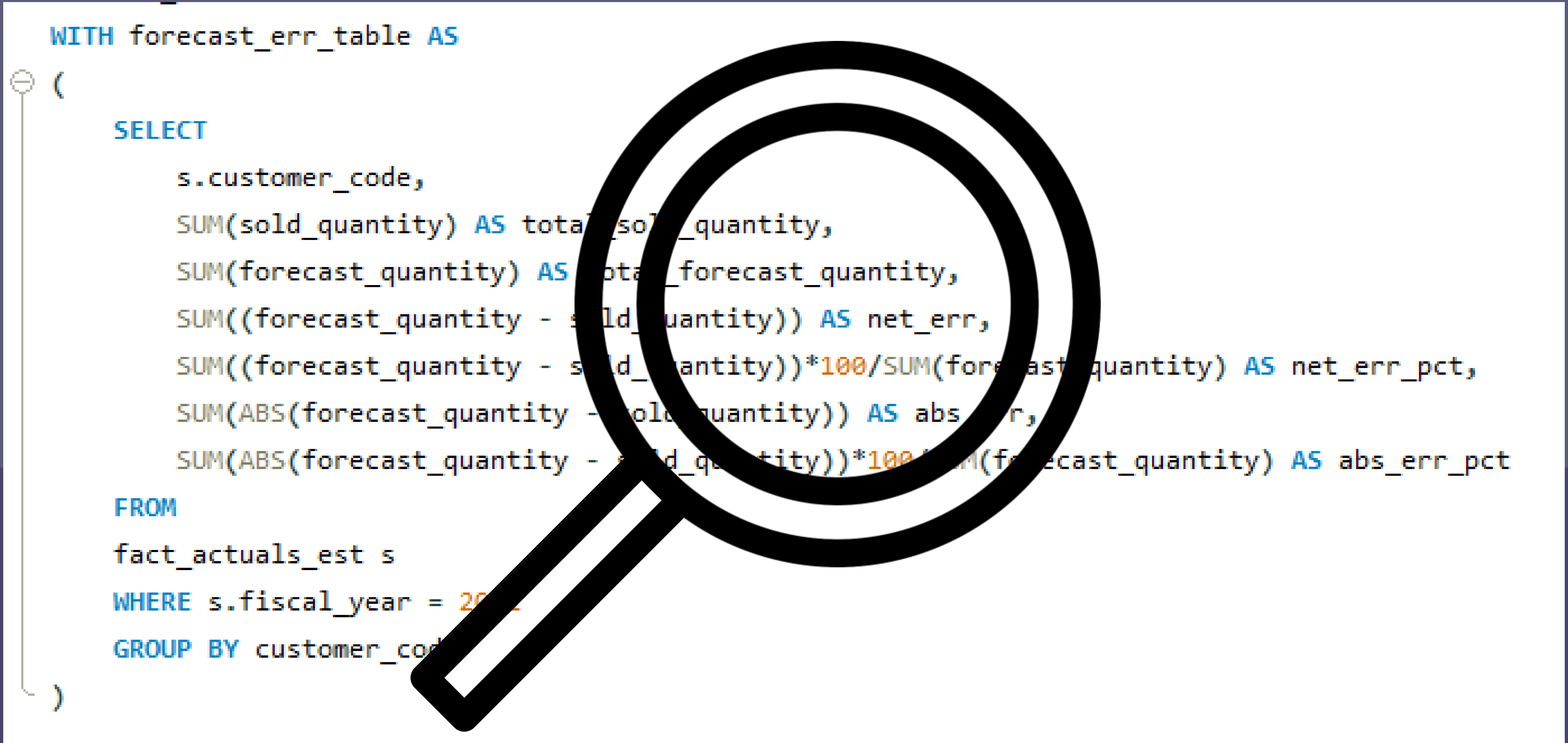


```
# Creating helper table - combining forecast and actual sold quantity
CREATE TABLE fact_actuals_est AS
(
    select
        s.date as date,
        s.fiscal_year as fiscal_year,
        s.product_code as product_code,
        s.customer_code as customer_code,
        s.sold_quantity as sold_quantity,
    f.forecast_quantity as forecast_quantity
    from
    fact_sales_monthly s
    left join fact_forecast_monthly f
    using (date, customer_code, product_code)
    UNION
```

```
    select
        f.date as date,
        f.fiscal_year as fiscal_year,
        f.product_code as product_code,
        f.customer_code as customer_code,
        s.sold_quantity as sold_quantity,
        f.forecast_quantity as forecast_quantity
    from
    fact_forecast_monthly  f
    left join fact_sales_monthly s
    using (date, customer_code, product_code)
);
```

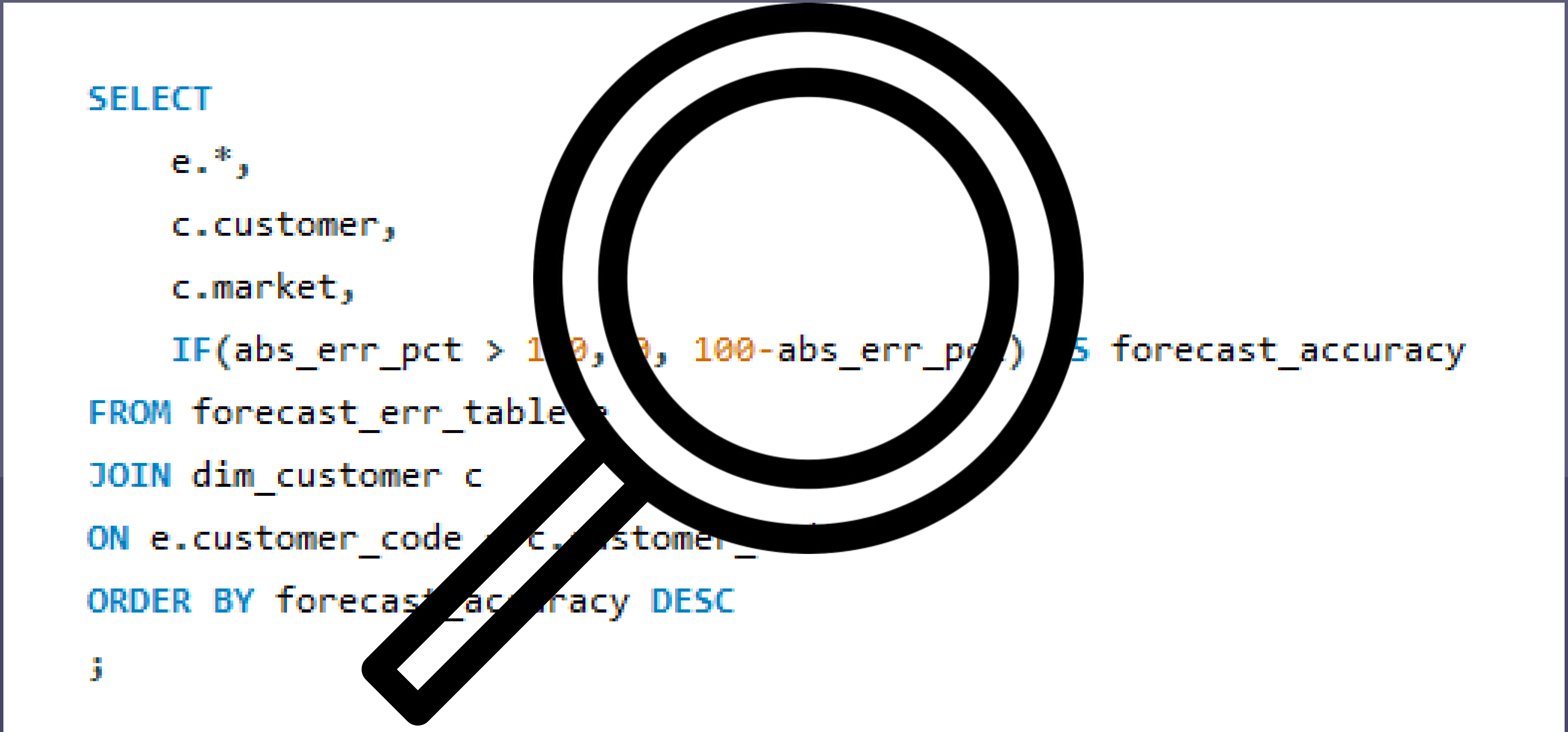
Forecast Accuracy Report - All customers for a FY

Step 2: Query with CTE



```
WITH forecast_err_table AS
(
    SELECT
        s.customer_code,
        SUM(sold_quantity) AS total_sold_quantity,
        SUM(forecast_quantity) AS total_forecast_quantity,
        SUM((forecast_quantity - sold_quantity)) AS net_err,
        SUM((forecast_quantity - sold_quantity))*100/SUM(forecast_quantity) AS net_err_pct,
        SUM(ABS(forecast_quantity - sold_quantity)) AS abs_err,
        SUM(ABS(forecast_quantity - sold_quantity))*100/SUM(forecast_quantity) AS abs_err_pct
    FROM
    fact_actuals_est s
    WHERE s.fiscal_year = 2021
    GROUP BY customer_code
)
```

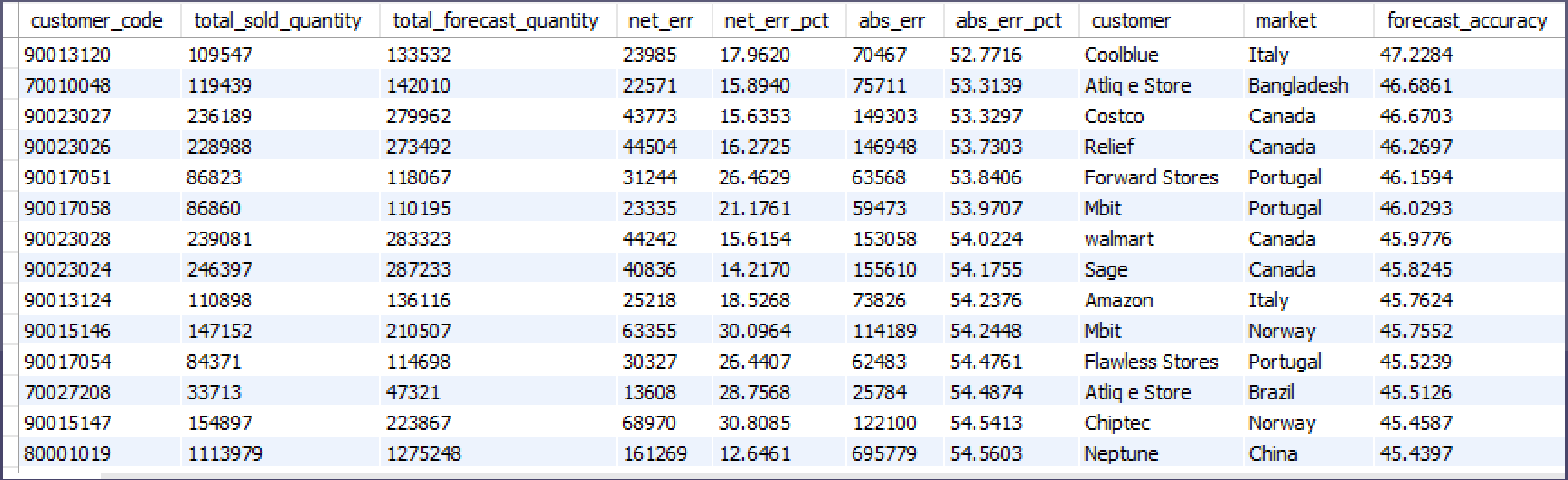
Forecast Accuracy Report - All customers for a FY



```sql
SELECT
    e.*,
    c.customer,
    c.market,
    IF(abs_err_pct > 100, 0, 100-abs_err_pct) AS forecast_accuracy
FROM forecast_err_table e
JOIN dim_customer c
ON e.customer_code = c.customer_code
ORDER BY forecast_accuracy DESC
;
```

Forecast Accuracy Report - All customers for a FY

Result



customer_code	total_sold_quantity	total_forecast_quantity	net_err	net_err_pct	abs_err	abs_err_pct	customer	market	forecast_accuracy
90013120	109547	133532	23985	17.9620	70467	52.7716	Coolblue	Italy	47.2284
70010048	119439	142010	22571	15.8940	75711	53.3139	Atliq e Store	Bangladesh	46.6861
90023027	236189	279962	43773	15.6353	149303	53.3297	Costco	Canada	46.6703
90023026	228988	273492	44504	16.2725	146948	53.7303	Relief	Canada	46.2697
90017051	86823	118067	31244	26.4629	63568	53.8406	Forward Stores	Portugal	46.1594
90017058	86860	110195	23335	21.1761	59473	53.9707	Mbit	Portugal	46.0293
90023028	239081	283323	44242	15.6154	153058	54.0224	walmart	Canada	45.9776
90023024	246397	287233	40836	14.2170	155610	54.1755	Sage	Canada	45.8245
90013124	110898	136116	25218	18.5268	73826	54.2376	Amazon	Italy	45.7624
90015146	147152	210507	63355	30.0964	114189	54.2448	Mbit	Norway	45.7552
90017054	84371	114698	30327	26.4407	62483	54.4761	Flawless Stores	Portugal	45.5239
70027208	33713	47321	13608	28.7568	25784	54.4874	Atliq e Store	Brazil	45.5126
90015147	154897	223867	68970	30.8085	122100	54.5413	Chiptec	Norway	45.4587
80001019	1113979	1275248	161269	12.6461	695779	54.5603	Neptune	China	45.4397

THANK YOU