Name: Mrunali Katta

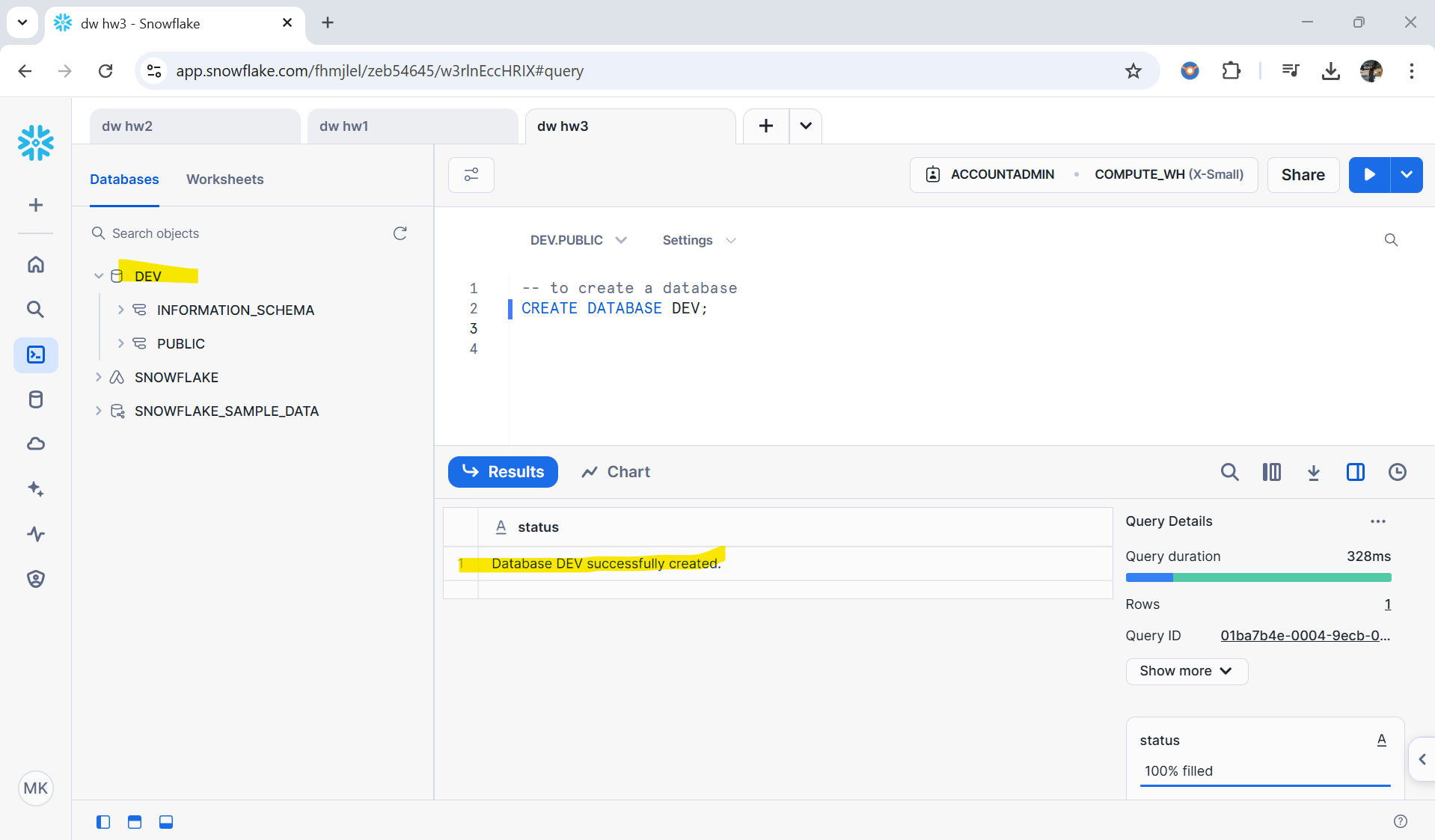
ID: 017516785

**DATA 226 Homework 03**

1. (+1) Create database DEV and schema ANALYTICS

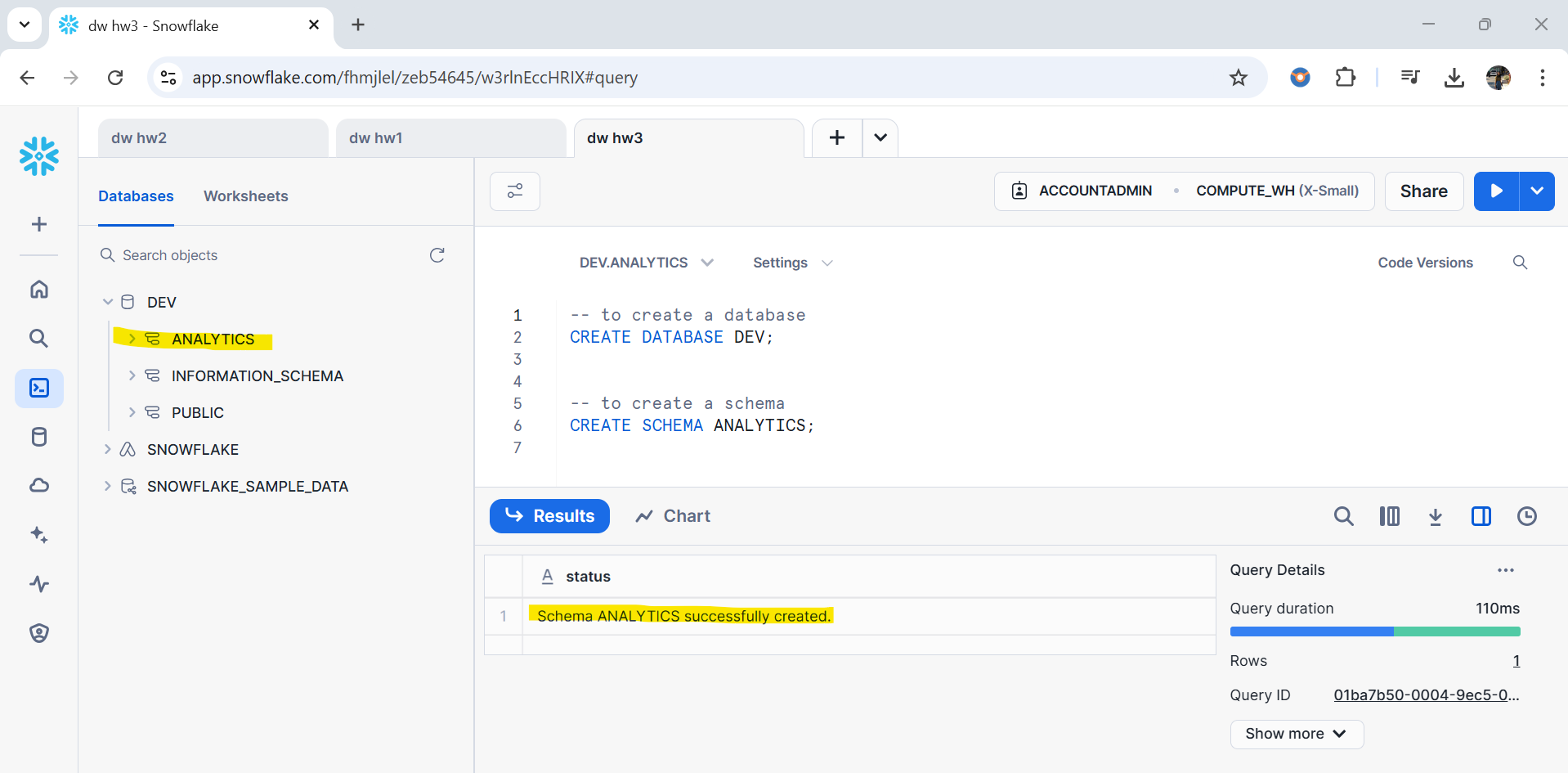
-- to create a database

CREATE DATABASE DEV;



-- to create a schema

CREATE SCHEMA ANALYTICS;



2. (+2) Create a Table PROD\_HST\_TBL

--create PROD\_HST\_TBL table

CREATE TABLE PROD\_HST\_TBL (

RECORD\_ID NUMBER(38,0),

YEAR NUMBER(38,0),

MONTH NUMBER(38,0),

DAY NUMBER(38,0),

STORE\_ID NUMBER(38,0),

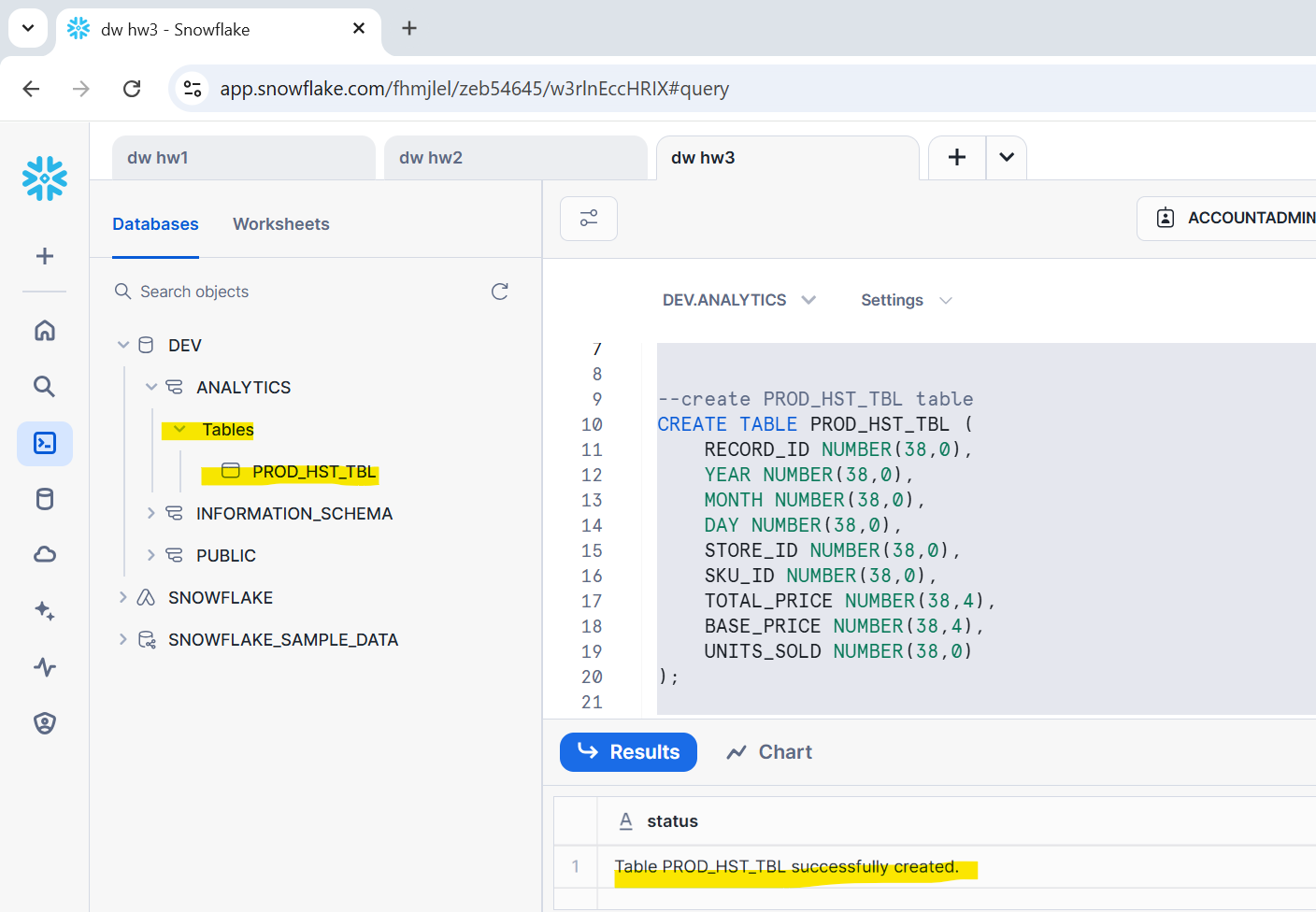
SKU\_ID NUMBER(38,0),

TOTAL\_PRICE NUMBER(38,4),

BASE\_PRICE NUMBER(38,4),

UNITS\_SOLD NUMBER(38,0)

);



3. (+3) Create a view to forecast SKU ‘219029’ of STORE ‘9490’

-- view creation script uses a CTE

-- Create a view to forecast SKU '219029' from STORE '9490'

CREATE VIEW BOOKS\_ST\_VW

AS

WITH feature\_engineering AS (

SELECT

TO\_TIMESTAMP\_NTZ(TO\_DATE(YEAR || '-' || MONTH || '-' || DAY)) AS SALE\_TS, UNITS\_SOLD

FROM prod\_hst\_tbl

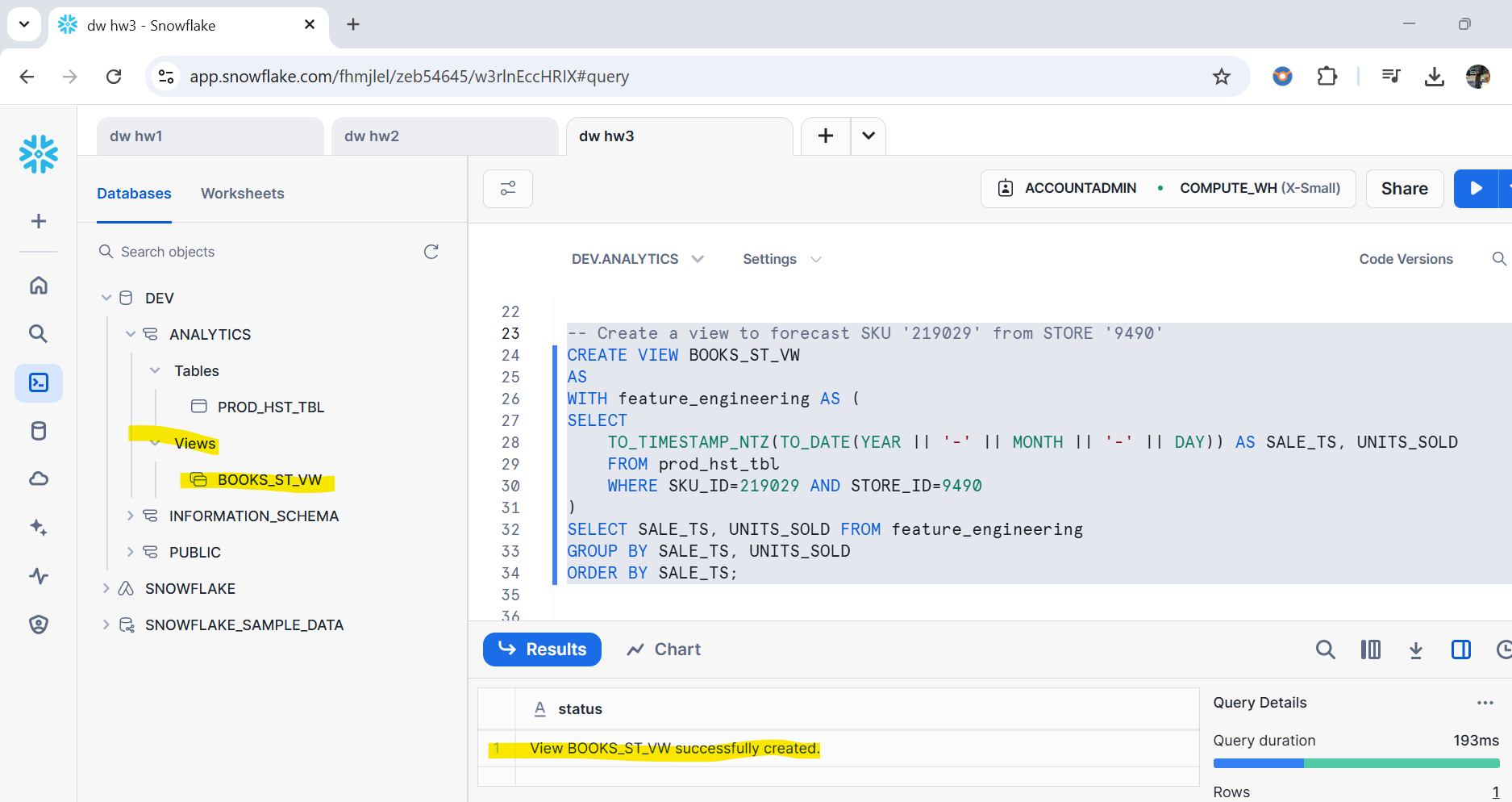
WHERE SKU\_ID=219029 AND STORE\_ID=9490

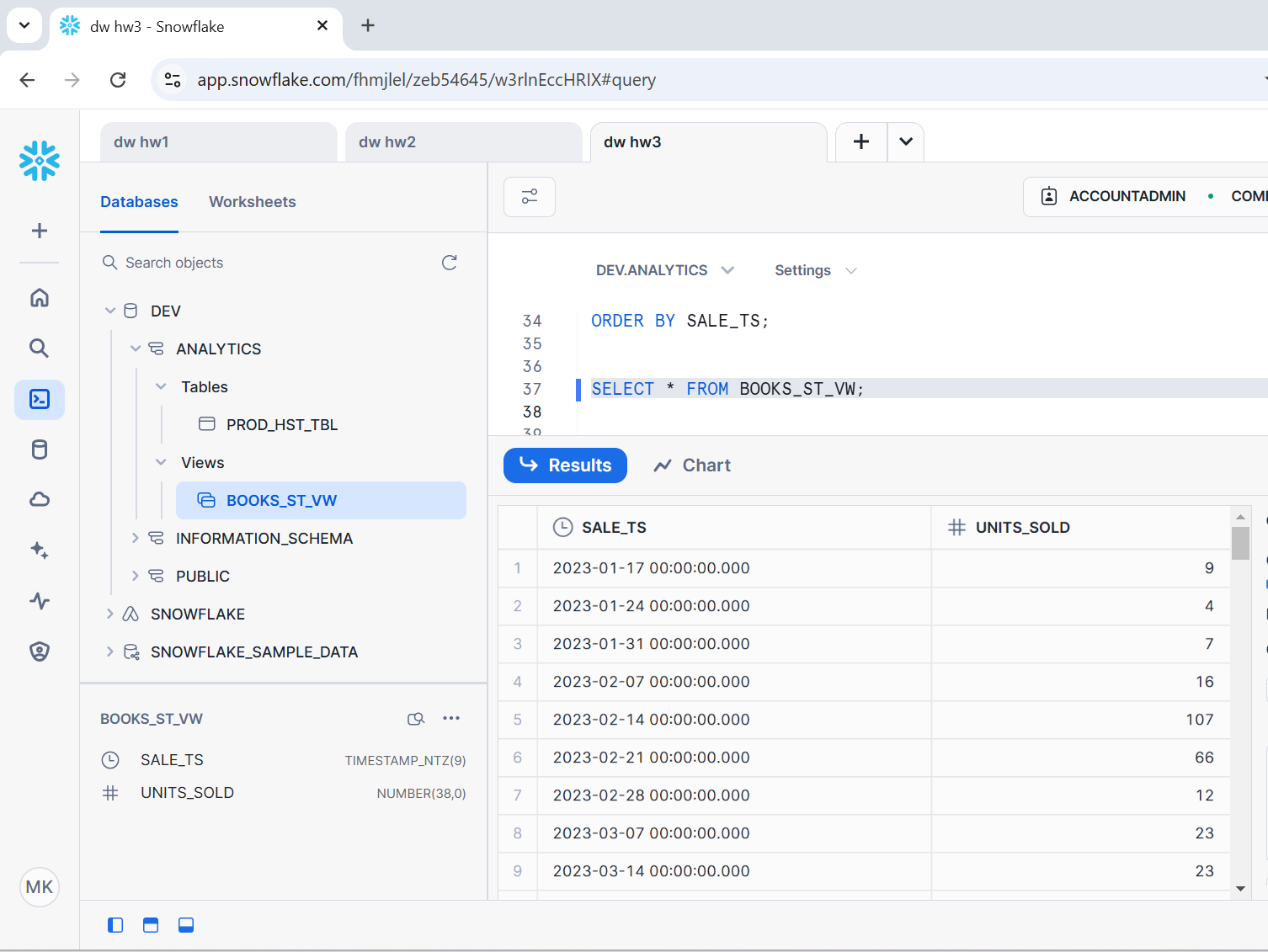
)

SELECT SALE\_TS, UNITS\_SOLD FROM feature\_engineering

GROUP BY SALE\_TS, UNITS\_SOLD

ORDER BY SALE\_TS;





4. (+3) Create a forecast model ‘books\_mdl’

--to create a forecast model ‘books\_mdl’

CREATE SNOWFLAKE.ML.FORECAST books\_mdl(

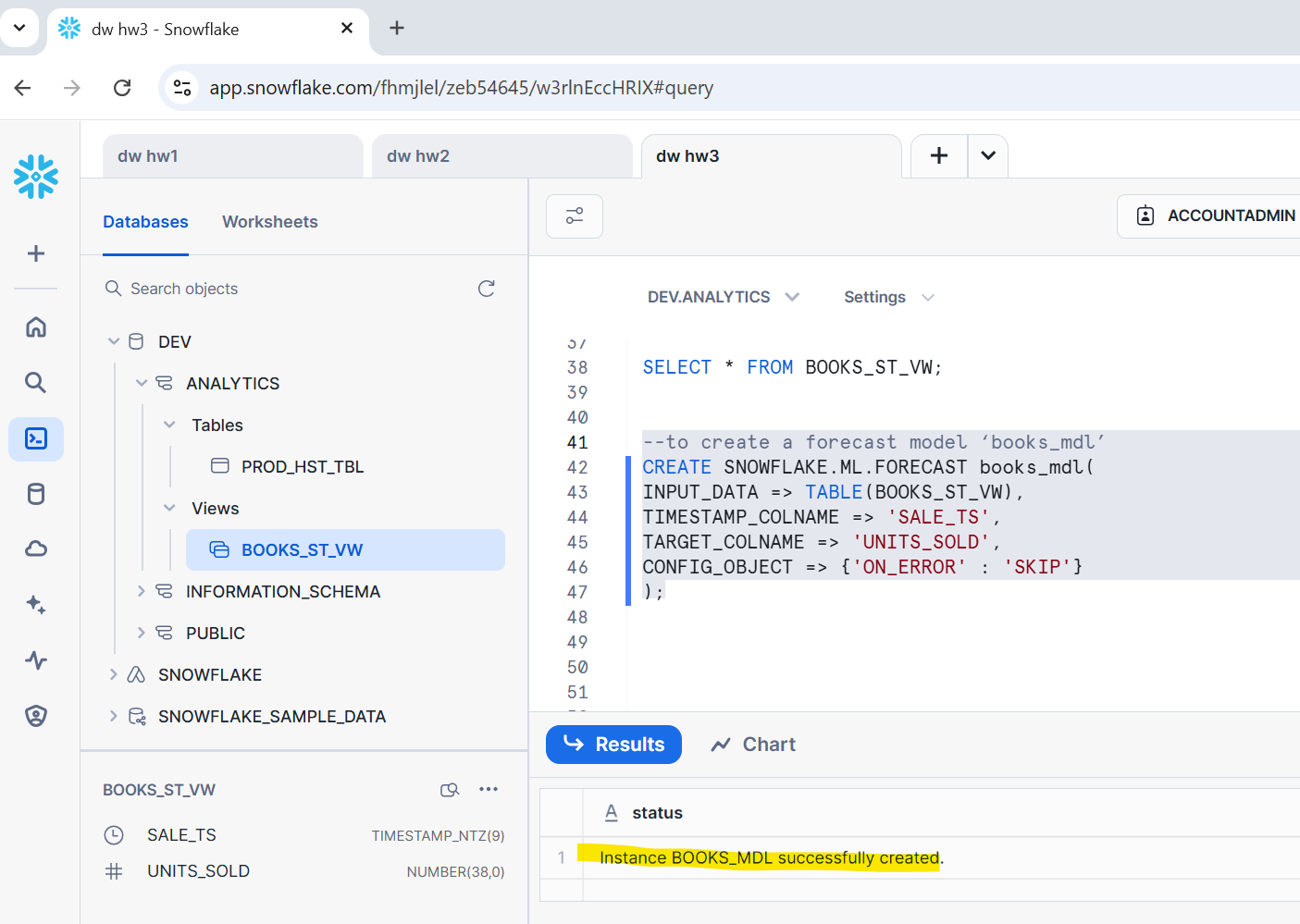
INPUT\_DATA => TABLE(BOOKS\_ST\_VW),

TIMESTAMP\_COLNAME => 'SALE\_TS',

TARGET\_COLNAME => 'UNITS\_SOLD',

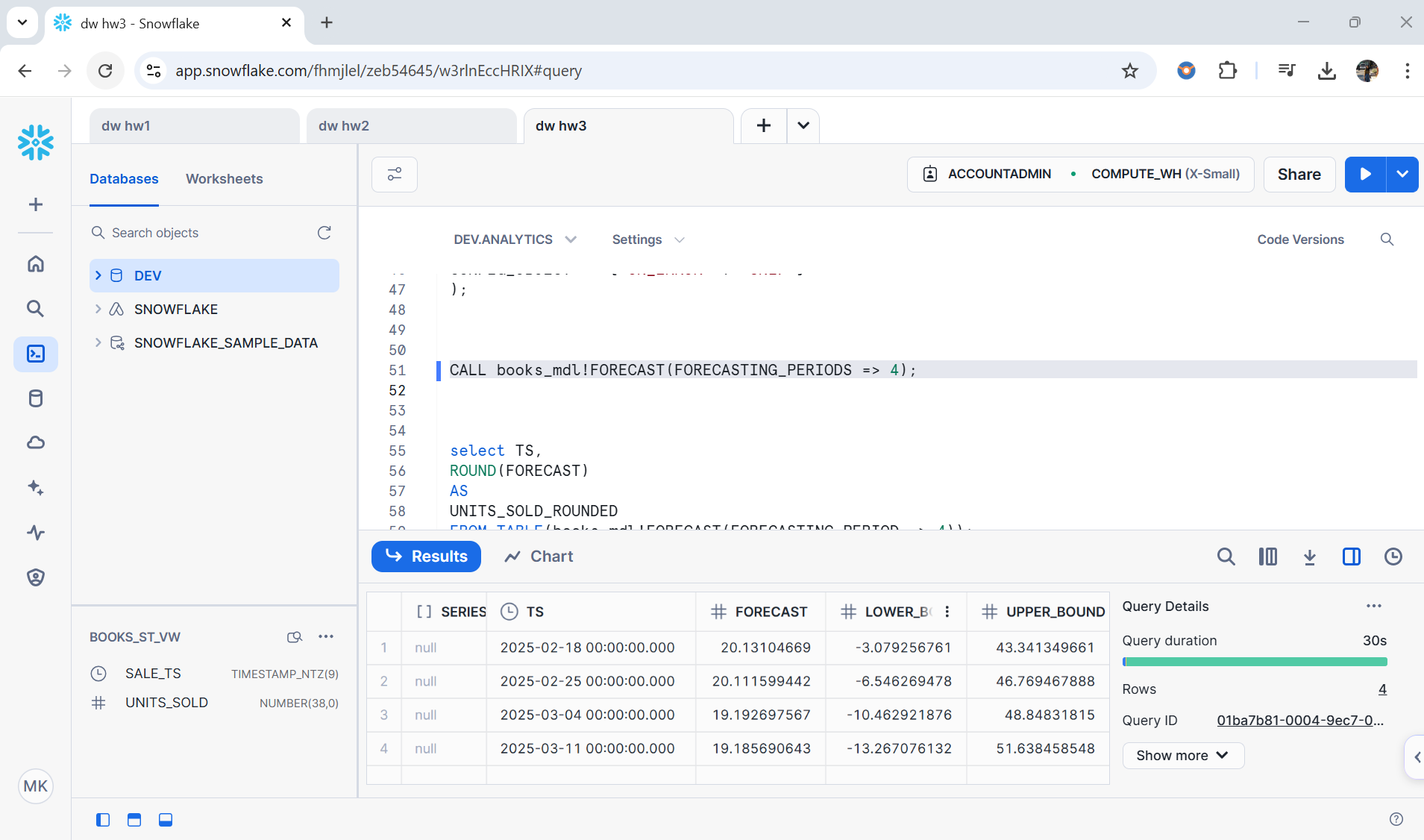
CONFIG\_OBJECT => {'ON\_ERROR' : 'SKIP'}

);



5. (+1) Display the Results to predict next 4 weeks.

CALL books\_mdl!FORECAST(FORECASTING\_PERIODS => 4);

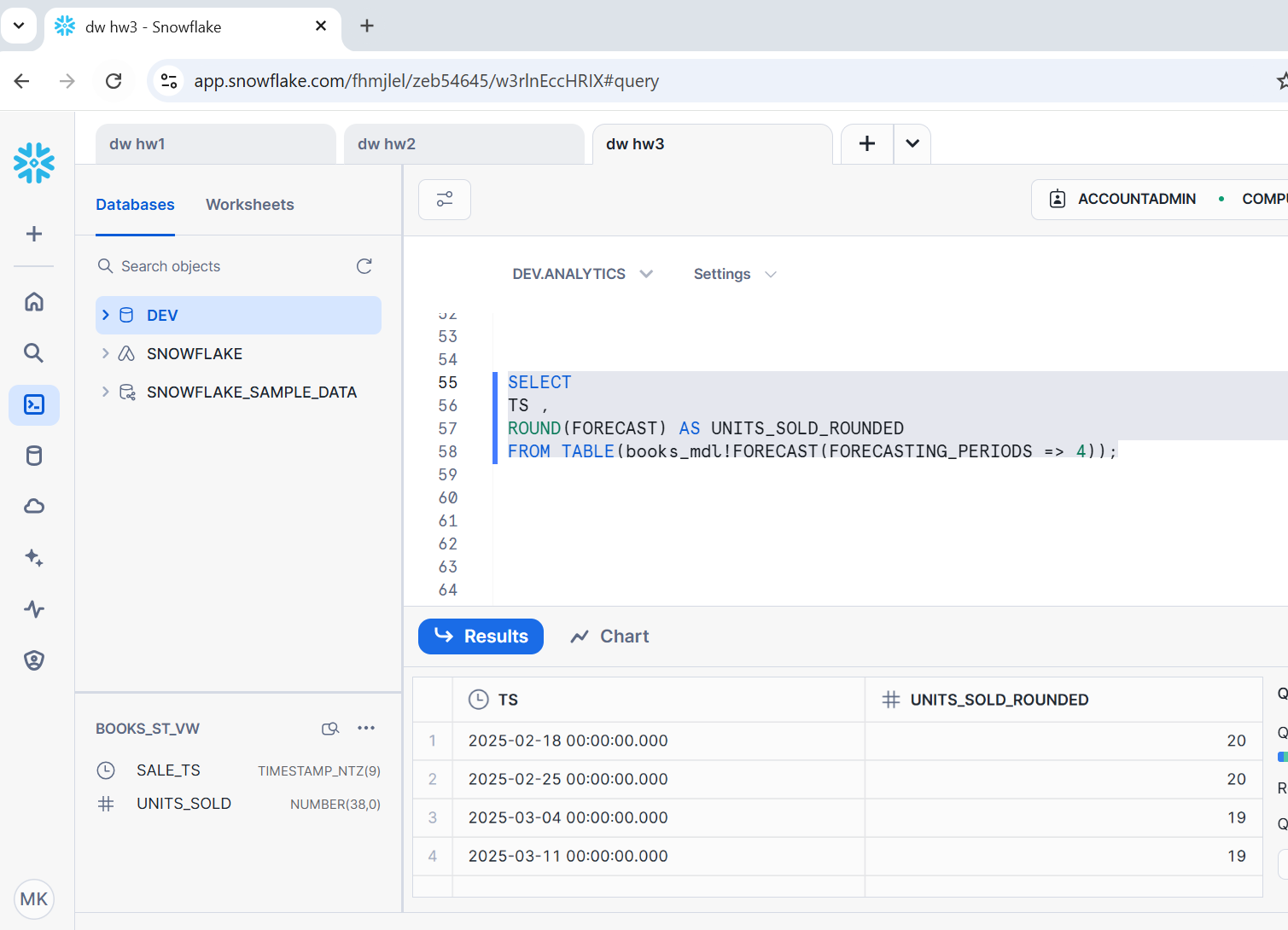


-- ROUNDED THE VALUE

SELECT TS ,

ROUND(FORECAST) AS UNITS\_SOLD\_ROUNDED

FROM TABLE(books\_mdl!FORECAST(FORECASTING\_PERIODS => 4));

****

6. (+3) Explain your understanding about the Forecasting Process.

→ What is forecasting?

Forecasting is a method which makes informed predictions by using historical data as the main input for determining the course of future trends. Usually, companies use forecasting for many different purposes, such as predicting future expenses and determining how to allocate their budget etc.

Below is a detailed explanation of the forecasting:

1. **Creating a Database and Schema**: First we are creating a **DEV** database and an **ANALYTICS** schema in Snowflake for query efficiency.
2. **Creating a table for Historical Data**: Then created a table named **PROD\_HST\_TBL** to store daily sales transactions like the year, month, day, store id (SKU IDs) , units sold, total\_price and base\_price. To retrieve data to analyze patterns.
3. **Creating a View**: After table creation we have created a **BOOKS\_ST\_VW** view, using query to filter results based on SKU with ID = ‘219029’ and STORE with ID= ‘9490’. The basically here filters data and then converts date fields into a timestamp (SALE\_TS), and aggregates units sold by timestamp.
4. **Creating a Forecast Model**: Then created a forecast model called **‘books\_mdl’** to predict future sales based on patterns. Here we have used Snowflake’s built-in ML.FORECAST model to train using the BOOKS\_ST\_VW where the model uses SALE\_TS (timestamp) as the time and UNITS\_SOLD as the target variable
5. **Forecasting:** The model predicts sales for 4 future weeks. Lastly the **ROUND()** function is used to round off the results are integers.
6. **Final Result :** The final result of forecasting displays a uniform sales of 20 units for the first two weeks,. Then it drops to 19 in 3rd and 4th week. This tells that a stable demand initially with a light dip following weeks which might be because of price hikes, poor product quality, low demand etc reasons.