

# DATA 226 Homework 03

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

-- to create a database

CREATE DATABASE DEV;

The screenshot shows the Snowflake web interface. On the left, the 'Databases' tab is active, and the 'DEV' database is listed under the 'PUBLIC' schema. The main query editor shows the following SQL code:

```
1 -- to create a database
2 CREATE DATABASE DEV;
3
4
```

The 'Results' tab is selected, showing a single row with the status 'Database DEV successfully created.' The 'Query Details' panel on the right indicates a query duration of 328ms, 1 row, and a query ID of 01ba7b4e-0004-9ecb-0...

-- to create a schema

CREATE SCHEMA ANALYTICS;

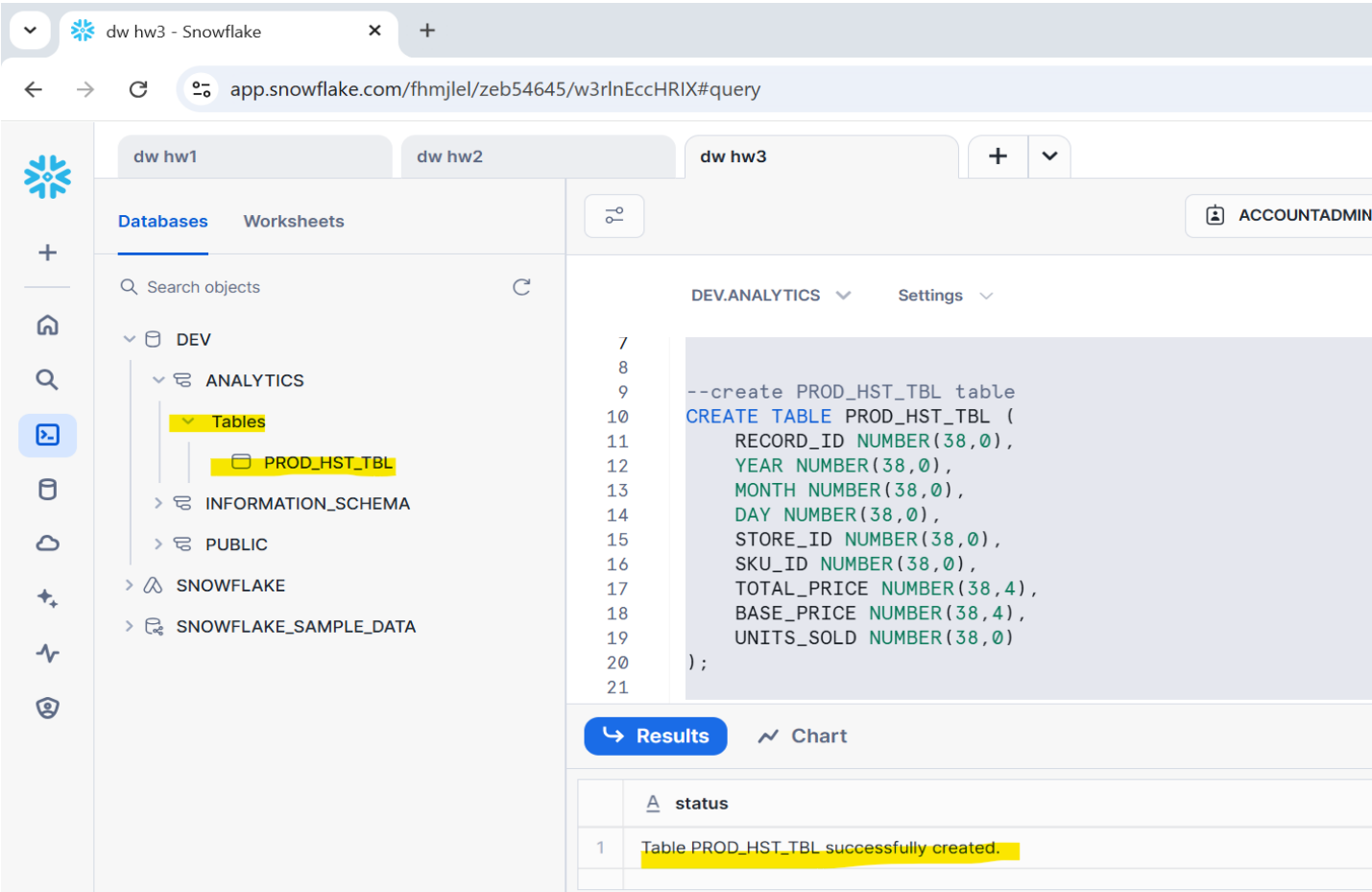
The screenshot shows the Snowflake web interface. On the left, the 'Databases' tab is active, and the 'ANALYTICS' schema is listed under the 'DEV' database. The main query editor shows the following SQL code:

```
1 -- to create a database
2 CREATE DATABASE DEV;
3
4 -- to create a schema
5 CREATE SCHEMA ANALYTICS;
6
7
```

The 'Results' tab is selected, showing a single row with the status 'Schema ANALYTICS successfully created.' The 'Query Details' panel on the right indicates a query duration of 110ms, 1 row, and a query ID of 01ba7b50-0004-9ec5-0...

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;
```

dw hw3 - Snowflake

app.snowflake.com/fhmjlel/zeb54645/w3rlnEccHRIX#query

dw hw1dw hw2dw hw3

DatabasesWorksheets

Search objects

DEV

ANALYTICS

Tables

PROD\_HST\_TBL

Views

BOOKS\_ST\_VW

INFORMATION\_SCHEMA

PUBLIC

SNOWFLAKE

SNOWFLAKE\_SAMPLE\_DATA

DEV.ANALYTICS

Settings

Code Versions

ACCOUNTADMIN

COMPUTE\_WH (X-Small)

Share

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-- 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;

Results

Chart

status

1 View BOOKS\_ST\_VW successfully created.

Query Details

Query duration

193ms

Rows

1

dw hw3 - Snowflake

app.snowflake.com/fhmjlel/zeb54645/w3rlnEccHRIX#query

dw hw1dw hw2dw hw3

DatabasesWorksheets

Search objects

DEV

ANALYTICS

Tables

PROD\_HST\_TBL

Views

BOOKS\_ST\_VW

INFORMATION\_SCHEMA

PUBLIC

SNOWFLAKE

SNOWFLAKE\_SAMPLE\_DATA

DEV.ANALYTICS

Settings

ACCOUNTADMIN

COMI

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ORDER BY SALE\_TS;

SELECT \* FROM BOOKS\_ST\_VW;

Results

Chart

SALE\_TS

UNITS\_SOLD

1 2023-01-17 00:00:00.000 9

2 2023-01-24 00:00:00.000 4

3 2023-01-31 00:00:00.000 7

4 2023-02-07 00:00:00.000 16

5 2023-02-14 00:00:00.000 107

6 2023-02-21 00:00:00.000 66

7 2023-02-28 00:00:00.000 12

8 2023-03-07 00:00:00.000 23

9 2023-03-14 00:00:00.000 23

BOOKS\_ST\_VW

SALE\_TS

UNITS\_SOLD

TIMESTAMP\_NTZ(9)

NUMBER(38,0)

4. (+3) Create a forecast model 'books\_md1'

--to create a forecast model 'books\_md1'

```
CREATE SNOWFLAKE.ML.FORECAST books_md1(  
  INPUT_DATA => TABLE(BOOKS_ST_VW),  
  TIMESTAMP_COLNAME => 'SALE_TS',  
  TARGET_COLNAME => 'UNITS_SOLD',  
  CONFIG_OBJECT => {'ON_ERROR' : 'SKIP'}  
);
```

dw hw3 - Snowflake

app.snowflake.com/fhmjlel/zeb54645/w3rlnEccHRIX#query

dw hw1dw hw2dw hw3

DatabasesWorksheets

Search objects

DEV<div>ANALYTICS<div>Tables<div>PROD\_HST\_TBL<div>Views<div>BOOKS\_ST\_VW<div>INFORMATION\_SCHEMA<div>PUBLIC<div>SNOWFLAKE<div>SNOWFLAKE\_SAMPLE\_DATA

BOOKS\_ST\_VW<div>SALE\_TS<div>UNITS\_SOLD<div>TIMESTAMP\_NTZ(9)<div>NUMBER(38,0)

DEV.ANALYTICSSettings

373839404142434445464748495051

SELECT \* FROM BOOKS\_ST\_VW;  
  
--to create a forecast model 'books\_md<br>CREATE SNOWFLAKE.ML.FORECAST books\_md<br>INPUT\_DATA => TABLE(BOOKS\_ST\_VW),<br>TIMESTAMP\_COLNAME => 'SALE\_TS',<br>TARGET\_COLNAME => 'UNITS\_SOLD',<br>CONFIG\_OBJECT => {'ON\_ERROR' : 'SKIP'}<br>);

ResultsChart

status

1Instance BOOKS\_MDL successfully created.

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

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

dw hw3 - Snowflake

app.snowflake.com/fhmjlel/zeb54645/w3rlnEccHRIX#query

dw hw1dw hw2dw hw3

DatabasesWorksheets

Search objects

DEV<div>SNOWFLAKE<div>SNOWFLAKE\_SAMPLE\_DATA

BOOKS\_ST\_VW<div>SALE\_TS<div>UNITS\_SOLD<div>TIMESTAMP\_NTZ(9)<div>NUMBER(38,0)

DEV.ANALYTICSSettings

47484950515253545556575859

);  
  
CALL books\_md!!FORECAST(FORECASTING\_PERIODS => 4);  
  
select TS,<br>ROUND(FORECAST)<br>AS<br>UNITS\_SOLD\_ROUNDED<br>FROM TABLE(books\_md!!FORECAST(FORECASTING\_PERIODS => 4));

ResultsChart

	[ ] SERIES	TS	# FORECAST	# LOWER_BOUND	# UPPER_BOUND
1	null	2025-02-18 00:00:00.000	20.13104669	-3.079256761	43.341349661
2	null	2025-02-25 00:00:00.000	20.111599442	-6.546269478	46.769467888
3	null	2025-03-04 00:00:00.000	19.192697567	-10.462921876	48.84831815
4	null	2025-03-11 00:00:00.000	19.185690643	-13.267076132	51.638458548

Query Details<div>Query duration30s<div>Rows4<div>Query ID01ba7b81-0004-9ec7-0...<div>Show more

-- ROUNDED THE VALUE  
SELECT TS ,  
ROUND(FORECAST) AS UNITS\_SOLD\_ROUNDED  
FROM TABLE(books\_md!!FORECAST(FORECASTING\_PERIODS => 4));

dw hw3 - Snowflake

app.snowflake.com/fhmjlel/zeb54645/w3rlnEccHRIX#query

dw hw1dw hw2dw hw3

DatabasesWorksheets

Search objects

DEV

SNOWFLAKE

SNOWFLAKE\_SAMPLE\_DATA

BOOKS\_ST\_VW

SALE\_TS

UNITS\_SOLD

TIMESTAMP\_NTZ(9)

NUMBER(38,0)

DEV.ANALYTICS

Settings

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SELECT

TS ,

ROUND(FORECAST) AS UNITS\_SOLD\_ROUNDED

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

ResultsChart

	TS	# UNITS_SOLD_ROUNDED
1	2025-02-18 00:00:00.000	20
2	2025-02-25 00:00:00.000	20
3	2025-03-04 00:00:00.000	19
4	2025-03-11 00:00:00.000	19

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:

- Creating a Database and Schema:** First we are creating a **DEV** database and an **ANALYTICS** schema in Snowflake for query efficiency.
- 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.
- 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.
- 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
- Forecasting:** The model predicts sales for 4 future weeks. Lastly the **ROUND()** function is used to round off the results are integers.
- 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 3<sup>rd</sup> and 4<sup>th</sup> 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.