

# Skill Up on Snowflake

In collaboration with DataCamp

## 3 Online Learning Tracks Available

Snowflake Foundations

Associate Data Engineer in Snowflake

Snowflake AI Fundamentals



**FREE for a Limited Time!**

Enroll at [datacamp.com/snowflake](https://datacamp.com/snowflake)





# [BUILD]

# The Dev Conference for AI & Apps

# CREATING DECLARATIVE DATA PIPELINES WITH DYNAMIC TABLES

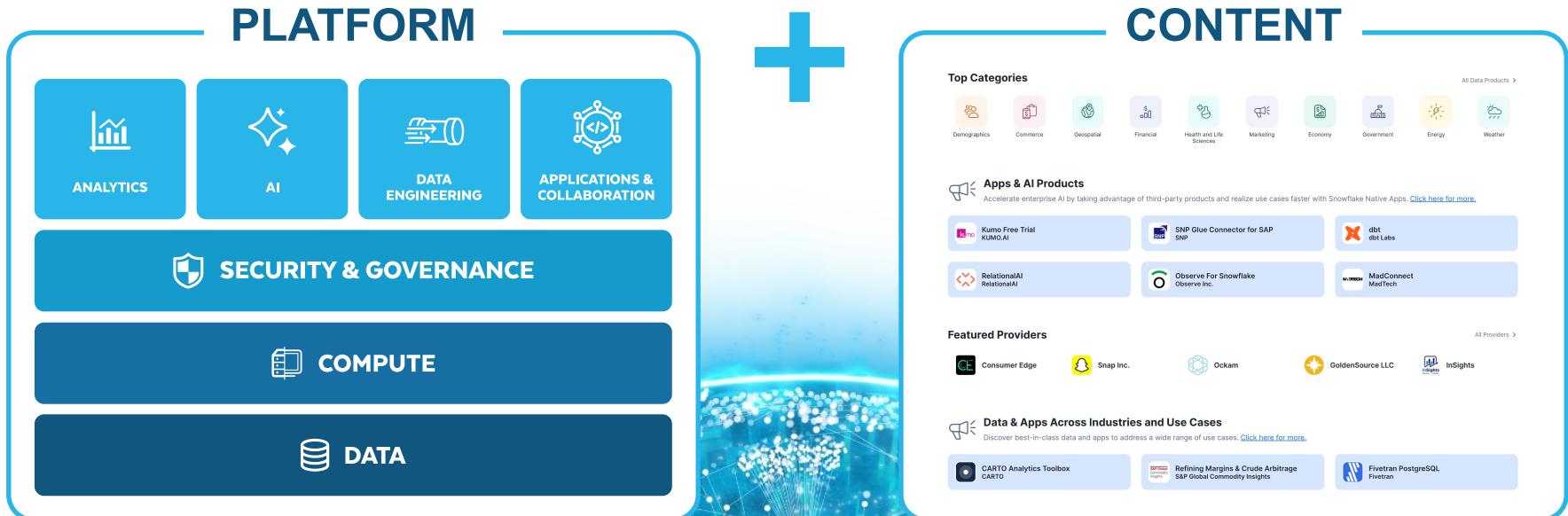


# Learning Objectives

- Explain the fundamentals and architecture of Snowflake.
- Learn how to create and configure Dynamic Tables.
- Build and visualize data flows and pipelines in Snowflake.
- Manage and monitor your data and pipeline health.
- Dynamic Tables as data foundation powering Snowflake Intelligence.



# Snowflake: The AI Data Cloud



# Streamlined Architecture with Snowflake



## TECHNICAL REQUIREMENTS

- Single platform with native support for different languages
- Automatic capacity management and resource sizing
- Interoperability with open formats and flexible architecture
- Workload isolation and high concurrency
- Consistent governance and security policies

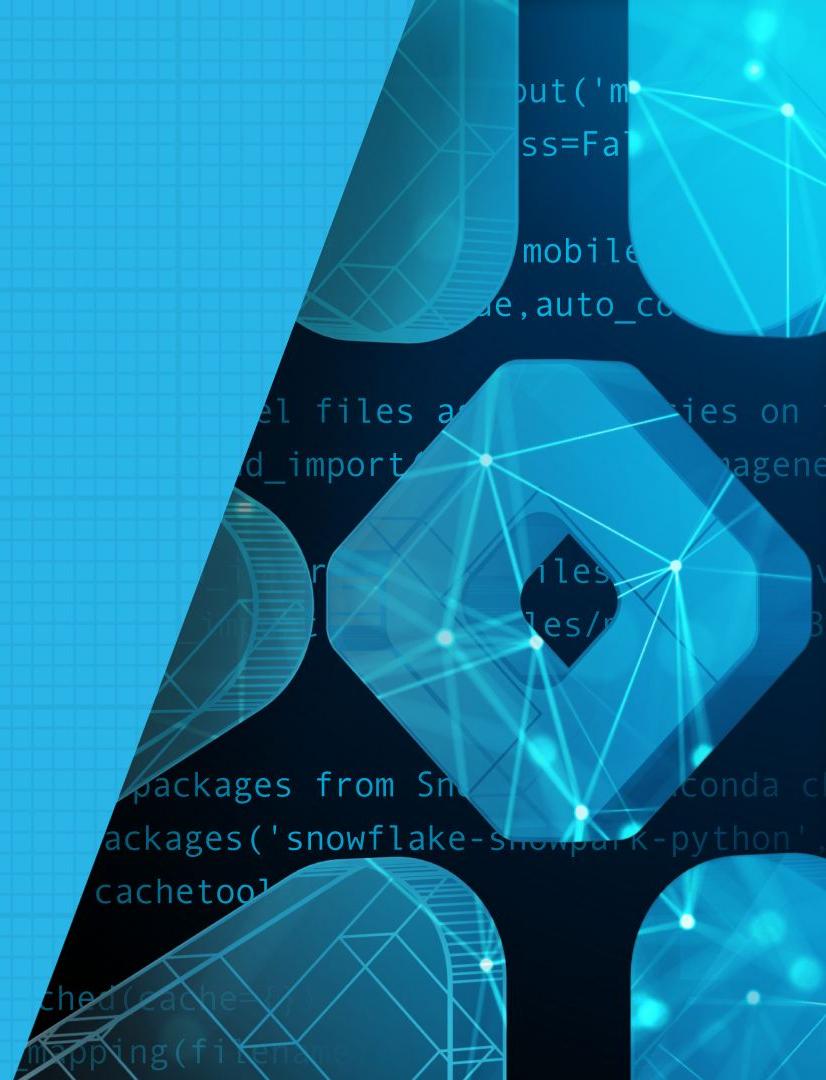


# MODULE 1: SETTING UP

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# Snowflake Account

- Snowflake offers a free 30-day trial
  - \$400 worth of free usage
    - Select AWS and US West
  - Including access to new features like Snowflake Intelligence
- 
- Claim Snowflake's free trial by:
    - Scanning this QR Code
    - Visiting [mlh.link/snowflake-de-trial](https://mlh.link/snowflake-de-trial)



# Checkpoint: Account Created

The screenshot shows the Snowflake Home page. On the left, there's a sidebar with navigation links like 'Work with data', 'Projects', 'Ingestion', 'Transformation', 'AI & ML', 'Monitoring', 'Marketplace', 'Horizon Catalog', 'Catalog', 'Data sharing', 'Governance & security', 'Manage', 'Compute', and 'Admin'. A trial message at the bottom says '\$400 credits left' and 'Trial ends in 30 days' with an 'Upgrade' button.

The main area is titled 'Welcome to Snowflake! How do you want to start?'. It features two main options:

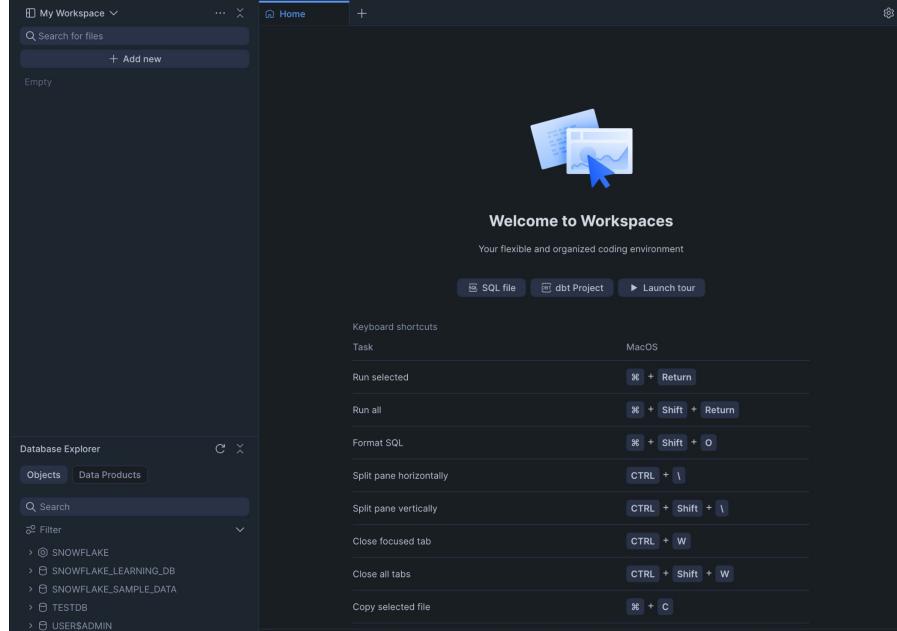
- Explore a sample data set**: This option shows a preview of 'TastyBytes', a fictional global food truck business. It includes a 'Start' button.
- Load data into Snowflake**: This option lists ways to load data: 'Local files', 'External cloud providers', and '3rd party connectors (20+ providers)'. It also includes a 'Start' button.

Below these options, there's an 'OR' separator and a 'Skip for now' button. At the bottom, there are three cards: 'Load sample data from AWS S3 with SQL', 'Analyze sentiment in unstructured data', and 'Overview of Snowpark DataFrames'.



# Snowflake Workspace

- Development environment
- Unified editor
  - Creating
  - Organizing
  - Managing code
- Private to you



# Setup Scripts & Sample Data

- Simple setup script
  - Create warehouse (compute/storage)
  - Create databases
    - Raw\_DB for raw data
    - Analytics\_DB for transformed data
- Get our setup script by:
  - Scanning this QR Code
  - Visiting [mlh.link/snowflake-de-data](https://mlh.link/snowflake-de-data)



# Checkpoint: Setup Completed and Data Loaded

The screenshot shows the Snowflake Database Explorer interface. On the left, the sidebar includes sections for Work with data (Projects, Ingestion, Transformation, AI & ML, Monitoring, Marketplace), Horizon Catalog, Catalog (selected), Data sharing, Governance & security, Manage (Compute, Admin), and a trial credit summary (\$277 credits left, Trial ends in 16 days, Upgrade button). The main area, titled "Database Explorer HORIZON CATALOG", shows the "Databases" tree with ANALYTICS\_DB, RAW\_DB (selected), INFORMATION\_SCHEMA, PUBLIC, and UTIL\_DB. Under RAW\_DB, it lists ORDERS and PRODUCTS. The CUSTOMERS table is selected and highlighted in blue. The top right of the main area shows "RAW\_DB / PUBLIC / CUSTOMERS", "Table", "ACCOUNTADMIN", "57 minutes ago", "1K", "127.0KB", and buttons for "Describe Table", "...", and "Load Data". Below this, the "Data Preview" tab is active, showing 100 of 1K Rows updated just now. The preview table has columns CUSTID, CNAME, and SPENDLIMIT. The data is as follows:

CUSTID	CNAME	SPENDLIMIT
1313	Anthony Webb	5375.82
1314	Karen Bowman	5859.37
1315	Michelle Evans	6588.51
1316	Kevin Cain	3467.97
1317	Jennifer Jones	8023.87
1318	Louis Warren	1789.20
1319	Stephen Jordan	8805.75
1320	James Carroll	8878.74
1321	Brian Castro	4940.93
1322	Amber George	9199.26
1323	David Jones	4030.52
1324	Ricky Watson	3563.99
1325	Gary Aguilar	1848.84
1326	Katelyn Hood	1967.68
1327	Alexander Swanson	9632.73
1328	Marcus Glenn	7380.01
1297	Sarah Daniels	3332.44
1298	Jacob Willis	3253.47
1299	Patrick Glenn	2479.21
1300	David Torres	5284.96
1301	Joseph Gilbert	3343.08
1302	Nicole King	9479.56
1303	Maureen Watson	7633.52
1304	Belinda Nelson	9206.19



# MODULE 2: DYNAMIC TABLES

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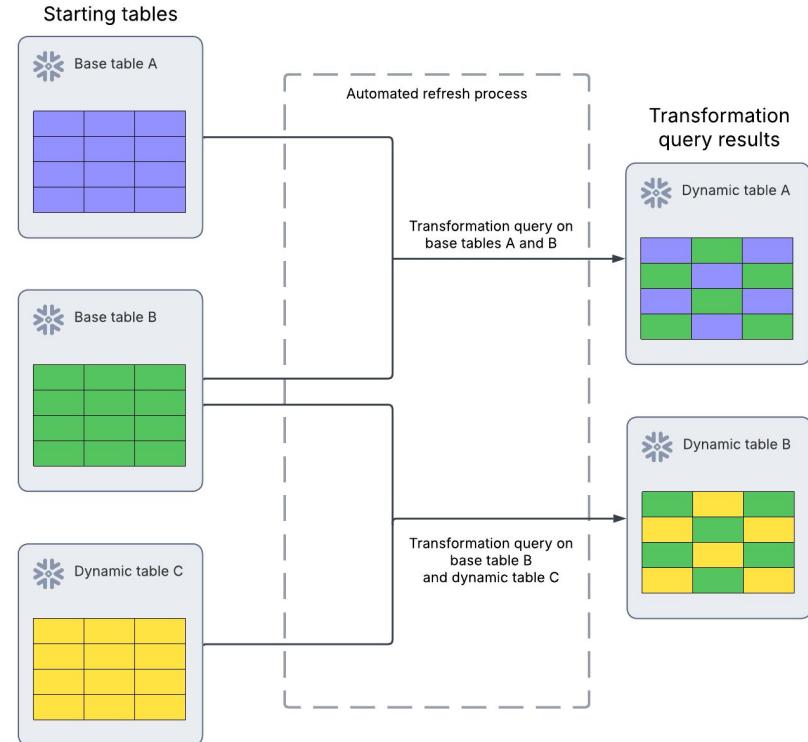
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# Dynamic Tables

## Declarative Pipelines

- Tables that automatically refresh
  - Defined query
  - Target freshness
- Process data for downstream use
- Simplifies
  - Data transformation
  - Pipeline management
- No manual updates needed



# Dynamic Tables: Key Highlights



## DECLARATIVE DATA PIPELINES

Continuous data pipelines as easy as SELECT. Complex pipelines with hundreds of branches. Dynamic Tables manage the scheduling and orchestration



## LOW LATENCY FRESHNESS

Controlled by a target lag for each table or full pipeline. Data freshness as low as 1 minute, single-digit seconds in the near future



## SQL & PYTHON SUPPORT

Use any core SQL syntax to define transformations or snowpark data frames and UDFs. Python and REST API also available



## AUTOMATIC EFFICIENT REFRESHES

Automatic query analysis with refresh mode recommendations. Detailed performance guide for tinkerers.



## PIPELINE CONTROLS

Ability to suspend refreshes for quiet periods, manually refresh a single DT or full DAG, enforce refresh mode and more



## OBSERVABILITY

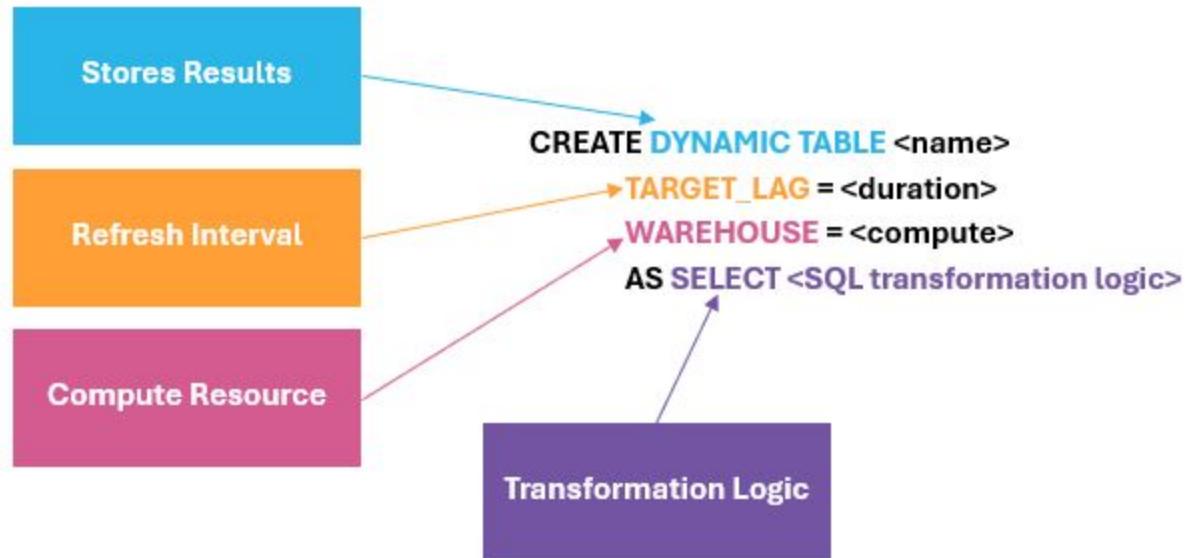
Deeply observable pipelines with DAG visualization, status monitoring, refresh history information



# Creating Dynamic Tables

- Made up of four components

- DYNAMIC TABLE
- TARGET\_LAG
- WAREHOUSE
- AS SELECT...



# Checkpoint: Created Dynamic Tables

The screenshot shows the Snowflake Database Explorer interface. On the left, the sidebar includes options like Work with data, Projects, Ingestion, Transformation, AI & ML, Monitoring, Marketplace, and Catalog. The Catalog option is highlighted. The main area displays the Database Explorer with the HORIZON CATALOG selected. It shows databases such as ANALYTICS\_DB and RAW\_DB, their schemas (INFORMATION\_SCHEMA, PUBLIC), and various objects like tables (CUSTOMERS, ORDERS, PRODUCTS) and functions. A specific section for Dynamic Tables is shown under ANALYTICS\_DB/PUBLIC, listing two tables: STG\_CUSTOMERS\_DT and STG\_ORDERS\_DT, both in Active state with Succeeded last refresh status.

**ANALYTICS\_DB / PUBLIC**

Schema Details    Dynamic Tables

2 Dynamic Tables

NAME	STATE	LAST REFRESH STATUS	CURRENT LAG	TARGET LAG	ROWS
STG_CUSTOMERS_DT	Active	Succeeded	3m 42s	(downstream)	1K
STG_ORDERS_DT	Active	Succeeded	2m 29s	(downstream)	10K



# MODULE 3: CHAINING DYNAMIC TABLES

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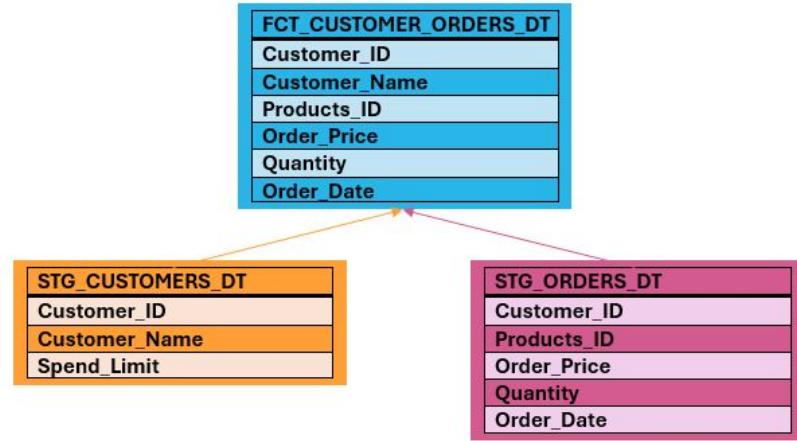
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# Fact Model

- Central component that stores quantitative business data
- Contains metrics like sales amounts, transaction counts, inventory levels
- Captures measurable events from business processes
- Typically the largest table in the schema



# Checkpoint: Fact Model & Visualize Pipelines

The screenshot illustrates the Snowflake Data Explorer interface, specifically focusing on the Database Explorer, Table details, and a Pipeline Graph.

**Database Explorer (Horizon Catalog):** Shows the structure of the ANALYTICS\_DB database, including INFORMATION\_SCHEMA, PUBLIC, and Dynamic Tables (FCT\_CUSTOMER\_ORDERS\_DT, STG\_CUSTOMERS\_DT, STG\_ORDERS\_DT). Other databases listed include RAW\_DB, SNOWFLAKE, SNOWFLAKE\_LEARNING\_DB, SNOWFLAKE\_SAMPLE\_DATA, TESTDB, USER\$ADMIN, and UTILDB.

**Table Details:** For the FCT\_CUSTOMER\_ORDERS\_DT table in ANALYTICS\_DB/PUBLIC, details include:

- Dynamic Table
- ACCOUNTADMIN
- 4 minutes ago
- 10.0K Rows
- COMPUTE\_WH Warehouse
- Incremental Refresh Mode

**Pipeline Graph:** A visual representation of the data flow for generating the fact table. It shows two source tables, CUSTOMERS and ORDERS, both from the RAW\_DB.PUBLIC schema. Arrows point from each source table to their respective staging tables, STG\_CUSTOMERS\_DT and STG\_ORDERS\_DT, also in RAW\_DB.PUBLIC. Both of these staging tables then feed into the final fact table, FCT\_CUSTOMER\_ORDERS..., located in ANALYTICS\_DB.PUBLIC. Each step in the pipeline is marked as "Succeeded".

**FCT\_CUSTOMER\_ORDERS\_DT Table Details:**

- ANALYTICS\_DB.PUBLIC**
- Details**: Last Refresh Succeeded, Time Window —, Current Lag 3m 11s, Target Lag (downstream), Max Lag —.
- Configuration**: State Active, Refresh Mode Incremental, Object Type Dynamic Table, Rows 10.0K, Warehouse COMPUTE\_WH, Owner ACCOUNTAD...

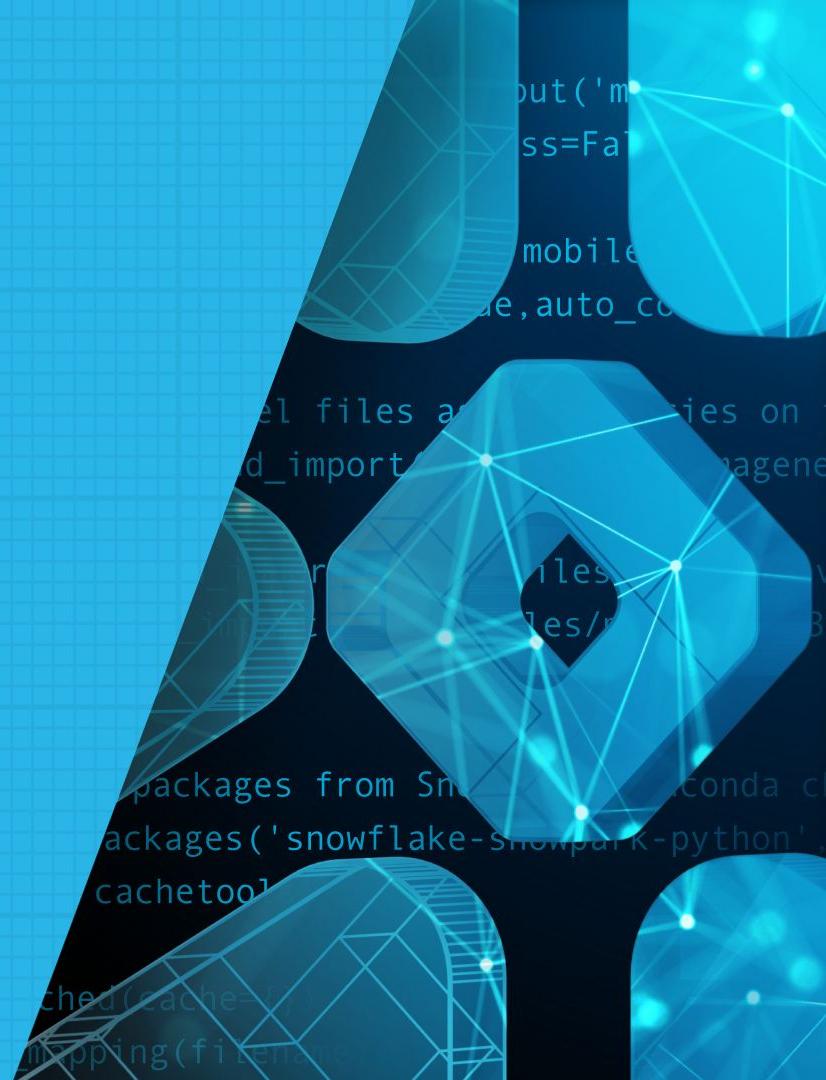


# MODULE 4: PIPELINE MONITORING

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# Managing Pipelines

- Adjusting freshness
  - Modify TARGET\_LAG on-the-fly without recreating tables
- Monitoring pipeline health
  - View refresh status in Snowsight's Monitoring tab
  - Query refresh history programmatically
- Integrated data quality
  - Filter bad data with WHERE clauses in your Dynamic Table query



# Checkpoint: Pipeline Management

The screenshot shows the Snowflake Database Explorer interface. On the left, the sidebar includes sections for Work with data (Projects, Ingestion, Transformation, AI & ML, Monitoring, Marketplace), Horizon Catalog (Catalog selected), Data sharing, Governance & security, Manage (Compute, Admin), and a trial credit summary (\$277 credits left, Trial ends in 16 days, Upgrade button). The main area displays the Database Explorer for the HORIZON CATALOG. It shows the ANALYTICS\_DB schema with its INFORMATION\_SCHEMA, PUBLIC, and Dynamic Tables (FCT\_CUSTOMER\_ORDERS\_DT, STG\_CUSTOMERS\_DT, STG\_ORDERS\_DT). The FCT\_CUSTOMER\_ORDERS\_DT table is selected. The table details page shows the following information:

**ANALYTICS\_DB / PUBLIC / FCT\_CUSTOMER\_ORDERS\_DT**

Dynamic Table, ACCOUNTADMIN, 7 minutes ago, 10.0K, COMPUTE\_WH, Incremental

Table Details, Columns, Data Preview, Graph, Refresh History (selected)

**Lag Metrics**

Time Within Target Lag	Target Lag	Current Lag	Maximum Lag
7m 10s			

Last day, Refresh Status All, 8 Refreshes, Warehouse used only

SOURCE DATA TIMESTAMP	REFRESH STATUS	REFRESH DURATION	REFRESH LAG	ROWS CHANGED
Oct 27, 2025, 7:12:51 AM	Succeeded	1.0s	—	+10.0K -0
Oct 27, 2025, 5:56:51 AM	Succeeded	861ms	—	+10K -0
Oct 27, 2025, 5:23:15 AM	Succeeded	983ms	—	+10K -0
Oct 27, 2025, 5:23:15 AM	Succeeded	899ms	—	+10.0K -0
Oct 27, 2025, 5:21:39 AM	Succeeded	907ms	—	+10.0K -0
Oct 27, 2025, 5:20:51 AM	Succeeded	952ms	—	+10K -0
Oct 27, 2025, 5:13:39 AM	Succeeded	1.1s	—	+10.0K -0
Oct 27, 2025, 3:58:27 AM	Succeeded	1.3s	—	+10.0K -0

Dynamic Table was (re-)created. Lag metrics have been reset.



# MODULE 5: SNOWFLAKE INTELLIGENCE

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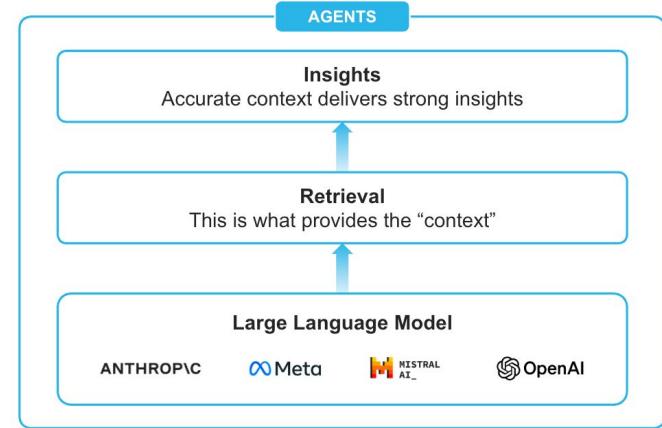
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# Snowflake Intelligence

- Agentic AI platform with autonomous data agents
- Conversational interface for business insights
- Empowers non-technical users
- Natural language querying
  - No SQL required
- Built on enterprise LLMs (GPT-4, Claude, Arctic)
- Pre-built agents for immediate deployment

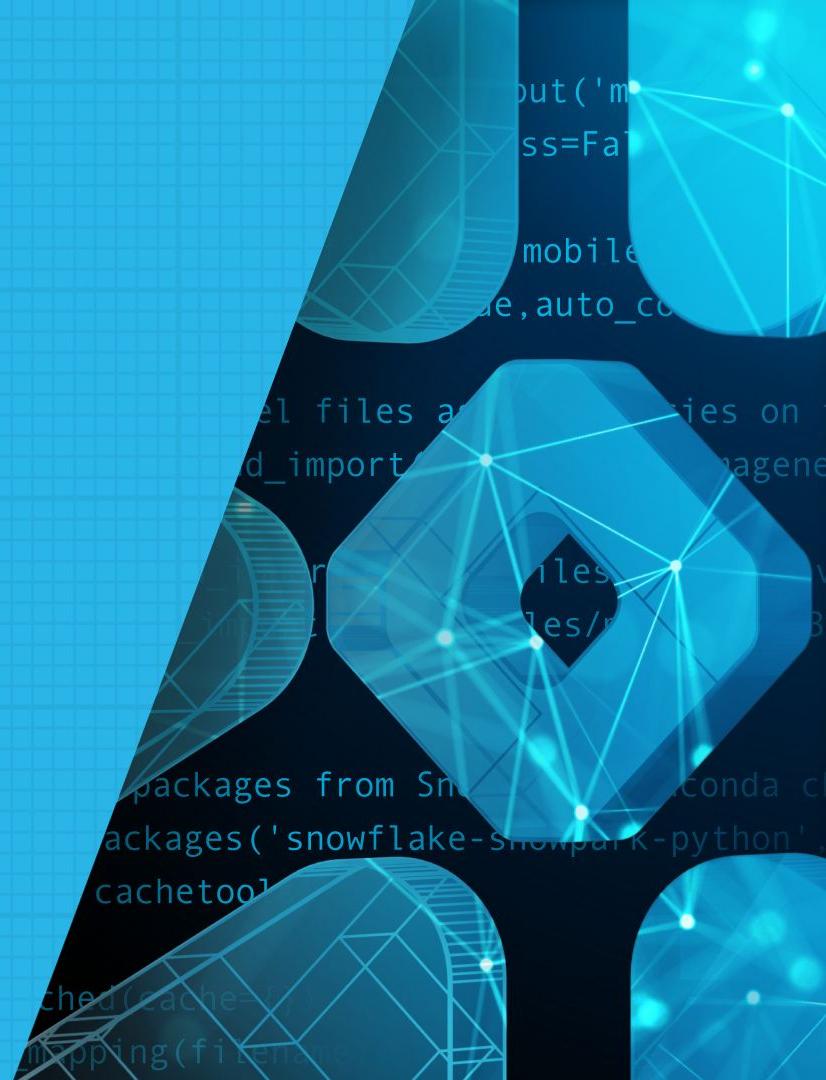


# MODULE 6: SNOWFLAKE BADGE

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# Earn a Snowflake Badge!



## Criteria:

1. Make sure you have registered/checked-in with the Snowflake team
2. Successfully complete the hands-on lab!

**NOTE:** Badges will be sent via email **within 7 business days** of completing the workshop



# Ready for your Snowflake Badge?

- Run setup script for the Autograder
- Update the autograding script
- Run the autograding scripts
- Get your Snowflake Badge

When setting up the autograder,  
**use the SAME email** you used to  
register for the event.

For help, reach out to  
[developer-badges-DL@snowflake.com](mailto:developer-badges-DL@snowflake.com)



# Run the Autograder

Autograder Setup



[mlh.link/snowflake-autograder](https://mlh.link/snowflake-autograder)

Autograder Scripts



[mlh.link/snowflake-autograding-scripts](https://mlh.link/snowflake-autograding-scripts)



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# THANK YOU



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