

Translation

INTRODUCTION TO GENERATIVE AI IN SNOWFLAKE



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Why translate?

SQL ↴ as `cell5`

```
1 | SELECT
2 |   LANGUAGE ,
3 |   COUNT(*) AS num_reviews
4 | FROM HOTELS.REVIEWS
5 | GROUP BY LANGUAGE
6 | ORDER BY num_reviews DESC
7 | LIMIT 3
```

	LANGUAGE	NUM_REVIEWS
0	en	2,275
1	fr	221
2	es	205

- Executive Resorts receives thousands of reviews in multiple languages

Translating with Cortex

```
from snowflake.cortex import translate

translated_review = translate(
    text="El hotel fue excelente. Muy limpio y cómodo.",
    from_language="es",
    to_language="en"
)
```

Translated review

```
print(translated_review)
```

The hotel was excellent. Very clean and comfortable.

Chinese zh	Dutch nl	English en
French fr	German de	Hindi hi
Italian it	Japanese ja	Korean ko
Polish pl	Portuguese pt	Russian ru
Spanish es	Swedish sv	

¹ <https://docs.snowflake.com/en/sql-reference/functions/translate-snowflake-cortex>

Translations from the database

SQL ▾ as `cell2` •

0.4s ► ⏪ ⏴ ⋮

```
1 | SELECT DESCRIPTION
2 | FROM HOTELS.REVIEWS
3 | WHERE LANGUAGE = 'es'
4 | ORDER BY DATE DESC
5 | LIMIT 1;
```

	DESCRIPTION
0	Excelente hotel super limpieza y buena atencion

Python ▾ as `cell3`

```
1 | spanish_text = cell2.to_pandas()['DESCRIPTION'].iloc[0]
2 | translated = translate(
3 |     text=spanish_text,
4 |     from_language='es',
5 |     to_language='en'
6 | )
```

Translation

Python < as cell5

```
1 | print(spanish_text)
2 | print("-----")
3 | print(translated)
```

Excelente hotel super limpieza y buena atencion

Excellent hotel, super clean and good service

A word of caution

Original (Spanish):

"Nos trataron como reyes."

AI Translation:

"They treated us like kings."

Polished Version:

"They treated us like royalty."

Original (French):

"Le service laisse à désirer."

AI Translation:

"The service leaves to be desired."

Polished Version:

"The service was disappointing."

Quality assurance

- Require human reviews based on specific criteria



Let's practice!

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Answer extraction

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Why use answer extraction?

- Identifying complaints
- Extracting feedback about amenities
- Answering questions from long documents



A common business problem

```
review = """
```

The property needs updating and management needs to hire more staff.

The staff does everything they can but it is not enough for the number of guests.

The rooms look old as well as everything in the bathrooms.

Definitely better options in the hotel zone.

```
"""
```

- Snowflake Cortex to the rescue!

Extracting an answer

```
from snowflake.cortex import extract_answer

response = extract_answer(
    from_text=review,
    question="What did the guest complain about?"
)
```

Output

```
print(response)
```

```
[  
  {  
    "answer": "Management needs to hire more staff.",  
    "score": 0.8013839254  
  }  
]
```

- Scores ranging from 0 to 1

Building a workflow

```
SELECT DESCRIPTION  
FROM HOTELS.REVIEWS  
WHERE RATING < 6  
AND DATE = '2023-08-23';
```

SQL output

I will never book a vacation through Expedia not only did I pay over 5;000 dollars but they false advertise the resort; in my reservation It clearly stated that breakfast and dinner was included. When I got to the resort they informed me that these issues have happed before with Expedia because the resort does not offer an all exclusive. After flighting practically all day I called Expedia and they had me on hold for 45min and nothing got resolved. I ended up spending over 1000.00 more just on food. I am beyond me they are not only false advertising but refused to take any responsibility on their part for the issues they caused me and my family.

Asking a question

```
negative_review = cell1.to_pandas()['DESCRIPTION'].iloc[0]

response = extract_answer(
    from_text=negative_review,
    question="What was the primary issue that the guest mentioned?"
)

print(response)
```

Reviewing the response

```
[  
 {  
   "answer" : "Expedia falsely advertised that meals were included, but the  
             resort did not offer an all-inclusive package.",  
   "score": 0.75829312442  
 }  
 ]
```

Limitations

- May return **partial or vague phrases**
- Best used on paragraphs, not multi-topic documents
- Always review critical outputs



Let's practice!

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Designing multi-step AI workflows

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Cortex review workflow

Goal: Build an automated system for international guest feedback

- Translate each review to English
- Summarize the main point
- Categorize it for routing to the right team
- Generate a response
- Translate it back to the original language



Extracting reviews

```
-- SQL cell  
SELECT DESCRIPTION  
FROM HOTELS.REVIEWS  
WHERE LANGUAGE = 'es'  
LIMIT 1;
```

```
# Python cell  
df = cell1.to_pandas()  
review_text = df["DESCRIPTION"].iloc[0]
```

Spanish review

```
print(review_text)
```

Buen hotel y bien situado pero desafortunadamente no me toco buena suerte con el servicio; el aire no servía; pedí la cama extra tres veces; la cafetera estaba dañada; y me sacaron las maletas fuera porque argumentaron que no hice Check out; siendo que era un día despues; pero su sistema lo marco antes; una total descortesía hecharme del cuarto y cancelar mis llaves; regresar de caminar y darse cuenta que han tomado tus cosas fuera es increíble y mas aun sin ninguna disculpa; yo no volvería ahí aunque la vrd el hotel es bueno y su jubilación el trato me decepciono

Translation

```
translated = translate(  
    text=review_text,  
    from_language="es",  
    to_language="en"  
)  
  
print(translated)
```

Good hotel and well located, but unfortunately, I didn't have good luck with the service; the air conditioning didn't work; I asked for the extra bed three times; the coffee maker was broken; and they took my bags out because they argued that I hadn't checked out; even though it was a day later; but their system marked it as checked out; a total courtesy to throw me out of the room and cancel my keys; returning from a walk and realizing they've taken your things out is incredible and even more so without any apology; I wouldn't go back there even though the hotel itself is good and their treatment the treatment disappoints me.

Summarization

```
summary = summarize(text=translated)
```

```
print(summary)
```

The hotel was well-located, but the service was disappointing. The air conditioning didn't work, an extra bed was not provided despite multiple requests, and the coffee maker was broken. The hotel staff took the complainant's bags and canceled their keys despite a later checkout date, which was discourteous and left the complainant feeling disappointed.

Classification

```
topic = classify_text(  
    text=summary,  
    labels=["staff", "cleanliness", "pricing", "room", "food"]  
)  
  
print(topic)
```

```
{  
    "label": "staff"  
}
```

Text generation

```
response = complete(  
    prompt=f"Write a brief and professional response to this review: {summary}",  
    model='llama3.1-8b',  
    options={'temperature':0.3, 'max_tokens':120})  
  
print(response)
```

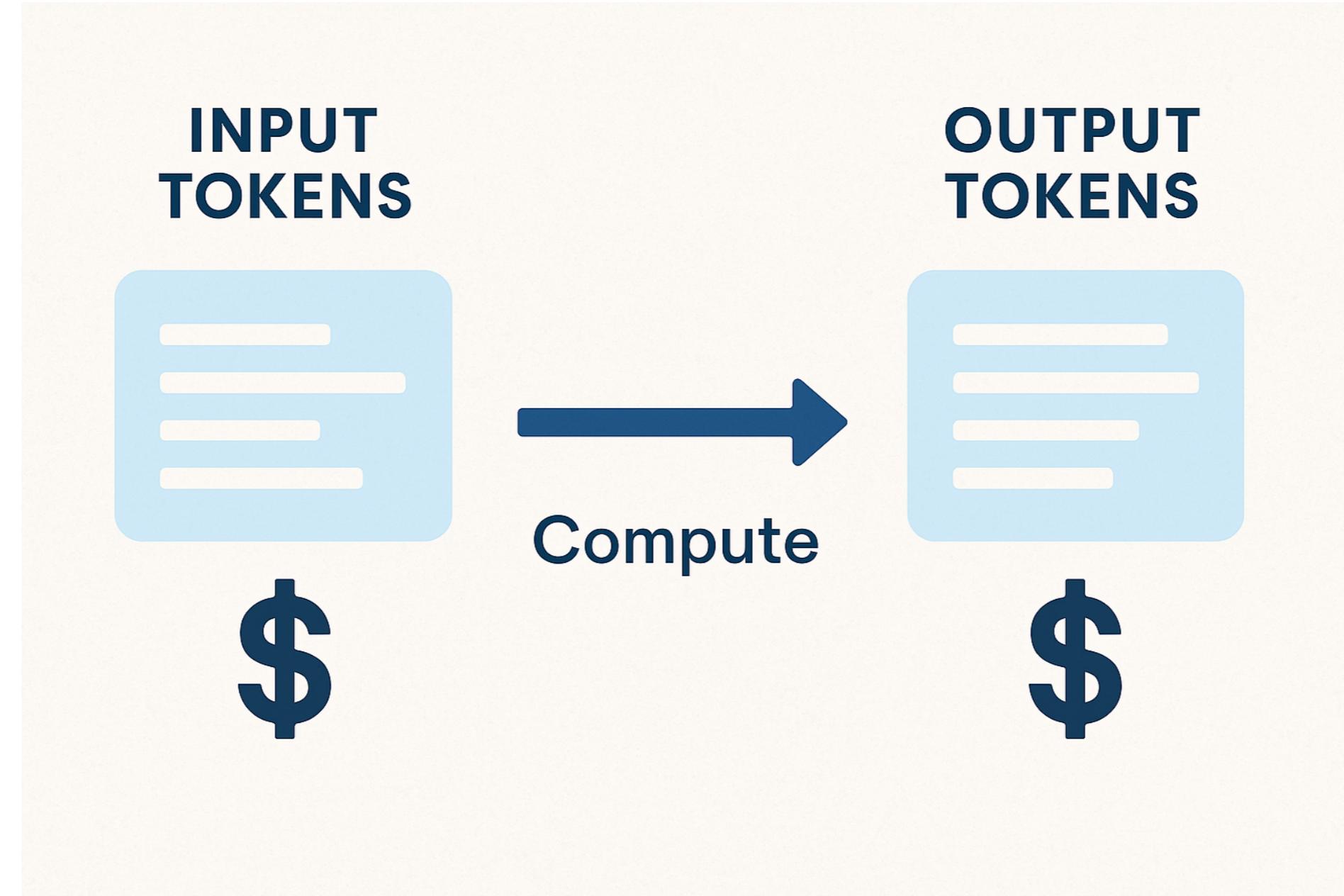
Thank you for sharing your feedback. While we're glad you found the location convenient, we're truly sorry to hear about the service issues you experienced. We understand how frustrating it must have been to face multiple inconveniences during your stay. Your comments have been shared with the team to ensure these concerns are addressed and do not recur.

Response translation

```
translated_response = translate(  
    text=response,  
    from_language="en",  
    to_language="es"  
)  
  
print(translated_response)
```

Gracias por compartir sus comentarios. Si bien nos alegra saber que encontró conveniente la ubicación, lamentamos sinceramente los inconvenientes que experimentó con el servicio. Entendemos lo frustrante que debió haber sido enfrentar múltiples inconvenientes durante su estadía. Sus comentarios han sido compartidos con el equipo para asegurarnos de que estas situaciones se aborden y no vuelvan a ocurrir.

Cortex cost model



¹ Image generated by ChatGPT-4o

Limiting cost

- Trim inputs, process only relevant text
- Limit output size
- Lower temperature

```
# Limit cost of complete
complete(prompt=prompt,
         model='llama3.1-8b',
         options={
             'max_tokens':120,
             'temperature':0})
```

Cortex best practices

- Effectively chain models

```
# Summarize first if calling multiple downstream functions  
summarize()  
text_classify()  
complete()  
translate()
```

- Logging
- Caching
- Batch pipelines

Let's practice!

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Wrap-up

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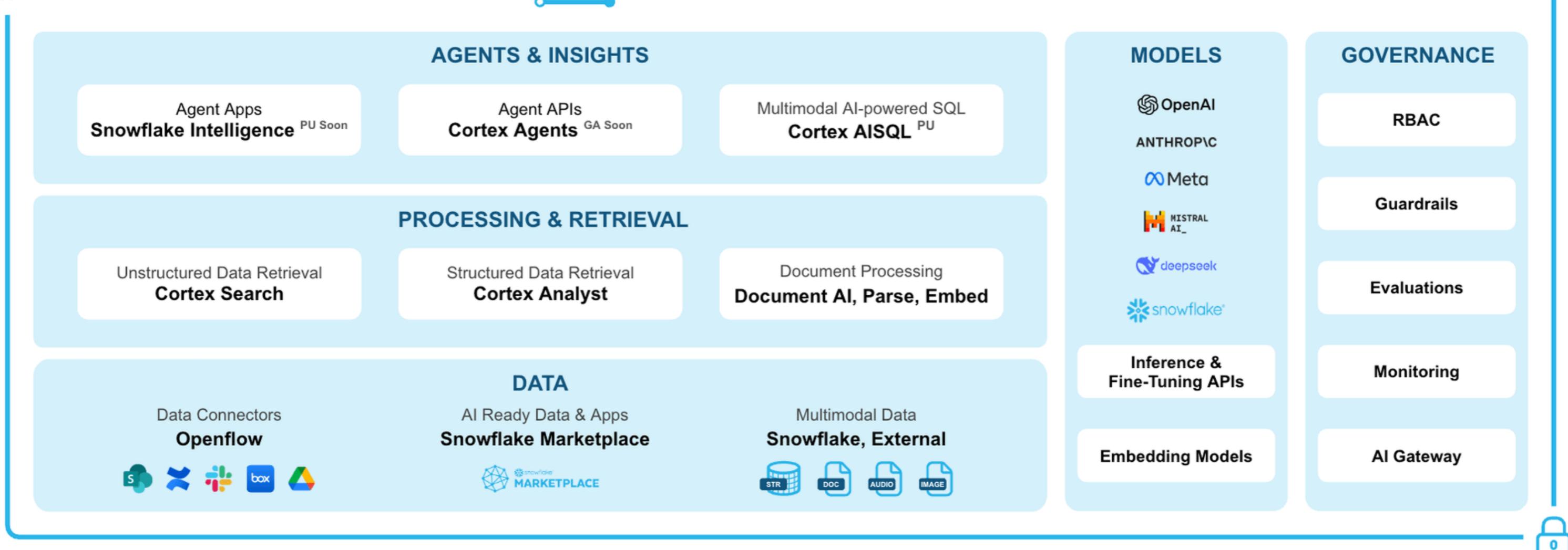
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Snowflake Cortex



Snowflake Cortex AI



Snowflake Notebooks

The screenshot shows the Snowflake Notebook interface. On the left is a sidebar with various icons for navigation and management. The main area has a header with "Notebooks" and the notebook name "USER.Course_43648_DB_8B9D3E974...". It includes tabs for "Files" and "Databases", and buttons for "Connect Gi...", "Search", and a dropdown for "USER_CO...". The top right has buttons for "Packages", "Active", and "Run all".

The notebook content consists of two code cells:

- Python as cell2:**

```
1 target_location = 'Cancun'
```
- SQL as query:**

```
1 SELECT *
2 FROM HOTELS.REVIEWS
3 WHERE city = '{{target_location}}'
```

Below the code cells is a table with the following data:

	DATE	RATING	DESCRIPTION	HOTEL_NAM
20	2023-09-12	10	Will return	Grand Fiesta
21	2023-09-12	10	Very friendly staff and great food. Hotel needs some work; though.	Grand Fiesta
22	2023-09-12	10	Best beach in Cancun	InterContine
23	2023-09-11	10	Nice and clean	Grand Fiesta
24	2023-09-11	10	Great service; location and delicious food.	Grand Fiesta
25	2023-09-10	10	Excellent service	Grand Fiesta

Recap

Chapter 1

- `summarize()`
- `complete()`
- `AI_COMPLETE()`
- `classify_text()`
- `AI_SENTIMENT()`

Chapter 2

- `translate()`
- `extract_answer()`

Next steps

- [Introduction to AI Agents](#)
- [Responsible AI Data Management](#)
- [Build a PDF chatbot with Cortex Search](#)



Let's practice!

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