

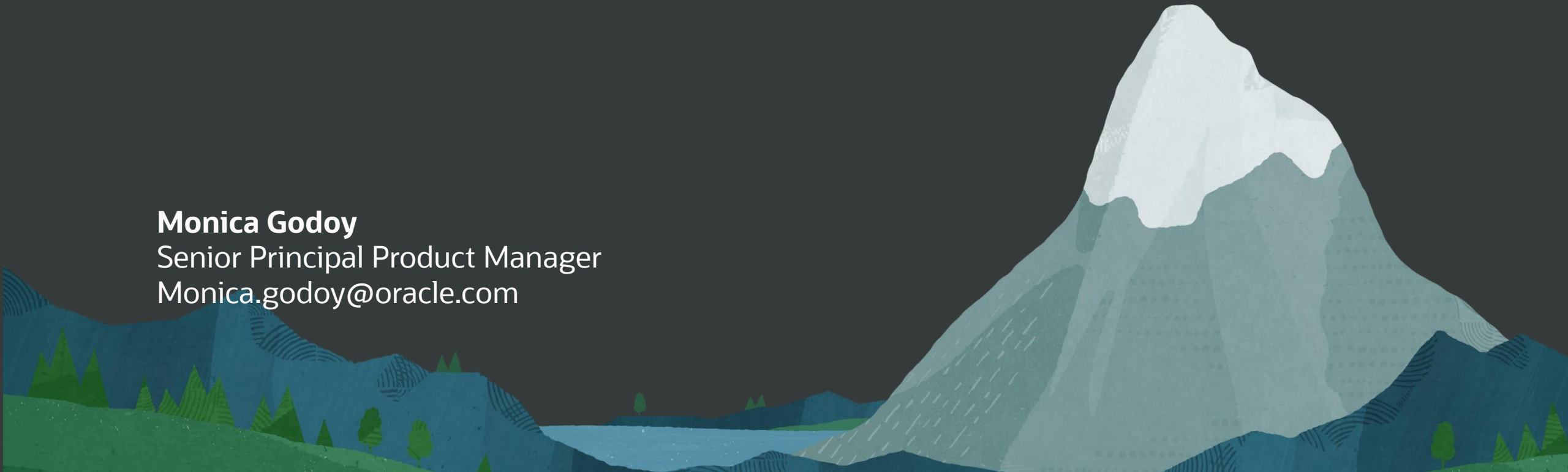


# Getting Started with GenDev in APEX

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# Agenda

- Basic Concepts: Prompt, GenAI, LLM, GenDev
- Prerequisites
- AI Capabilities in Oracle APEX
- Resources
- Summary

# What is a Prompt?

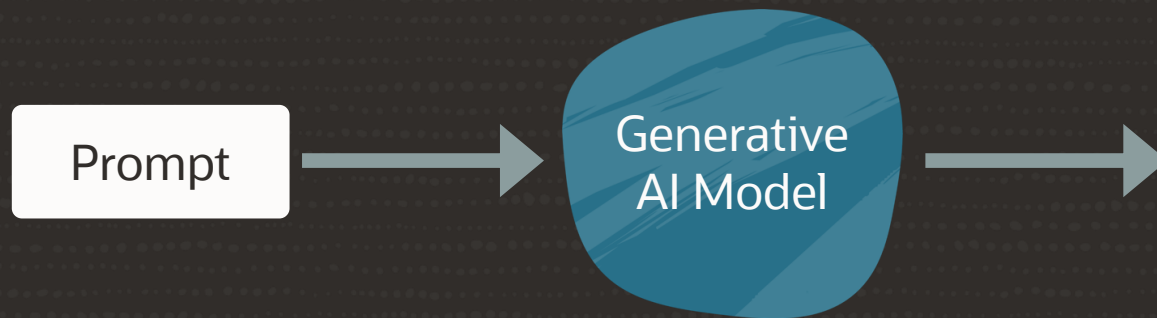
- Instructions or questions you give to a generative AI model.
- Good prompts are clear, specific, and context-rich, enabling the AI to generate more relevant and useful results.

*“Write a short story about a magical cat on one street of Stockholm.”*

*“Translate the following text to Swedish: ‘The sun is shining brightly today.’ ”*

# What is Generative AI?

- Requires minimal human input to create new content.
- **How it works?**
  - Training
  - Learning
  - Generation



Content creation

Entity Extraction

Copyediting (grammar, style)

Chat Interface (Q&A)

Semantic Search

Summarization

Toxicity detection

Sentiment analysis



# Are LLMs the same as GenAI?

- LLMs are a type of generative AI model.
- Not all generative AI is focused on language.

## Gen AI

**Text  
Generation**

LLM

**Image  
Generation**

DALL-E

**Music  
Generation**

MusicLM

**Video  
Generation**

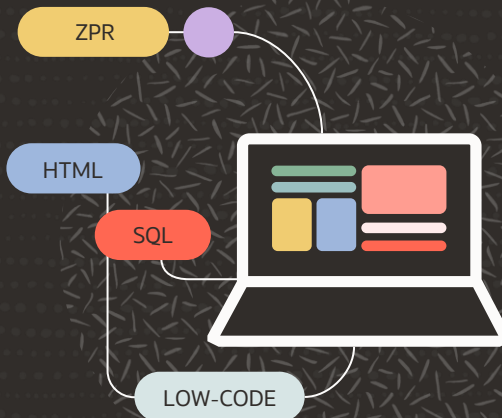
SORA

# GenDev Infrastructure that facilitates AI development



Independent,  
Evolvable, Trusted

**Oracle  
Database 23ai**



Declarative,  
Understandable, Editable

**Oracle APEX  
Oracle SQL Developer**



Automated,  
Mission Critical Platform

**Oracle  
Autonomous Database**

# GenDev in Oracle APEX

## What do You Need?

Oracle APEX 24.1 – June 2024  
**Brings Gen AI to Developers!**

Oracle APEX 24.2 – January 2025  
**Unlocks GenDev with new AI capabilities!**

- Requires an Oracle Database release 19c or later.
- Available on Oracle Cloud, On-Premises, or any other Cloud
- Access to a Generative AI Service. Choose between:
  - OCI Generative AI Service
  - Open AI
  - Cohere

[apex.oracle.com/download](https://apex.oracle.com/download)

# GenDev in Oracle APEX

- Oracle APEX Service
- Oracle Autonomous Database
- apex.oracle.com (Evaluation purposes)



**Ready to go!**

- Oracle Database Cloud Service (Oracle Cloud)
- Oracle Exadata Cloud Service (Oracle Cloud)
- On-Premises



Configure:

- ACL
- Web Proxy
- Wallet

Learn more:

**[apex.oracle.com/go/configure-acl](https://apex.oracle.com/go/configure-acl)**



# The Basic AI Capabilities

# 1. Configure your Gen AI Service

Abstracts to popular commercial  
**Generative AI products**

Authenticates using **Web  
Credentials** in Oracle APEX

Used by **App Builder, AI Assistant  
& APEX\_AI PL/SQL API**

Can be enabled/disabled on APEX  
**Instance** and **Workspace** levels

Workspace Utilities \ Generative AI Services \ Create/Edit

### Generative AI Service

Cancel Create

Show All Identification Settings Advanced

#### Identification

\* AI Provider OCI Generative AI Service ?

\* Name - Select - ?

Static ID Open AI ?

OCI Generative AI

\* Compartment ID ?

\* Region us-chicago-1 ?  
US Midwest (Chicago), US East (Ashburn), US West (Phoenix), Germany Central (Frankfurt), UK South (London)

\* Model ID cohere.command-r-08-2024 ?

#### Settings

Used by App Builder ?

\* Base URL https://inference.generativeai.us-chicago-1.oci.oraclecloud.com ?

#### Credentials

\* Credential - Create New - ?

Test Connection

## 2. Test your Gen AI Service

Test Connection



APEX

App Builder ▾

SQL Workshop ▾

Team Development ▾

Gallery

↑ Workspace Utilities \ Generative AI Services \ **Create/Edit**



**Connection Succeeded!**



APEX

App Builder ▾

SQL Workshop ▾

Team Development ▾

Gallery

↑ Workspace Utilities \ Generative AI Services \ **Create/Edit**



**1 error has occurred**

- **Connection Failed!**

**Please review the following error message that was returned:**

401: The required information to complete authentication was not provided or was incorrect.

### 3. Create a Data Model from a Prompt

Create your **new data model** from a Prompt

Generate scripts either in **Oracle SQL** or **Quick SQL** format

Build a **Data Model** and generate **Sample Data**

### APEX Assistant

Create a data model with the prefix PM to manage projects, milestones, tasks, task to-dos, task links, and comments, including multiple rows of data for each table. RT

Certainly! Here's an optimized data model for managing projects, milestones, tasks, task to-dos, task links, and comments, along with constraints, sequences, and trigger definitions. The multiple rows of data inserts will be added to provide sample data for each table.

```
sql
-- create projects table
create table pm_projects (
  id                number                generated by default on null as identity
                  constraint pm_projects_pk primary key,
  name              varchar2(255) not null,
  description       varchar2(4000),
  created_on        date                not null,
  created_by        varchar2(255) not null,
  updated_on        date                not null,
  updated_by        varchar2(255) not null,
  row_version       integer             not null )
/
```

I have created the tables with appropriate relationships, constraints, and triggers for the data model. Each table also has multiple rows of sample data inserted.

1. Do you need any additional attributes for any specific entity?
2. Any specific integrity constraints or business rules you want to implement in this data model?

Create SQL Script

Type your message here

SQL Format **Oracle SQL** Quick SQL



## 4. Create Apps

Generate **Application Blueprint** based on a Prompt

Leverages **APEX Dictionary Cache** to identify relevant tables

Further, **enhance the generated blueprint** with additional instructions



### Create App Using Generative AI

Enter a natural language prompt to create your application.

APEX Assistant

This assistant lets you use natural language to generate application pages based on database tables. Use it to jump-start the creation of an application with a key subset of the functionality available in Oracle APEX.

Let's create an app together. Describe the app you want to create, including the data or tables it will use.

create an app for parents who are looking for the perfect high schools to enroll their kids in new york city using the nyc\_schools table

MO

Sure, I can create an application called **NYC High Schools** with the following pages:

- High School Explorer ( Interactive Report on `NYC_SCHOOLS` )
- School Performance Insights ( Chart on `NYC_SCHOOLS` )
- School Dashboard ( Dashboard )
- School Search ( Faceted Search on `NYC_SCHOOLS` )
- School Details ( Form on `NYC_SCHOOLS` )

With the following features enabled: **Install Progressive Web App, Push Notifications**. Would you like to create the application now? Or, if you have any changes, just let me know below!

Create Application

Type your message here

# Create Apps - Troubleshooting

## APEX Assistant



This assistant lets you use natural language to generate application pages based on database tables. Use it to jump-start the creation of an application with a key subset of the functionality available in Oracle APEX.



Let's create an app together. Describe the app you want to create, including the data or tables it will use.

create an app for parents who are looking for the perfect high schools to enroll their kids in new york city

MO



I'm sorry, I couldn't process that. Could you please rephrase your question?

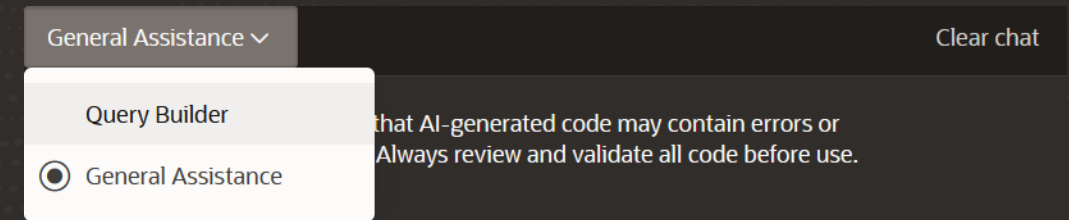
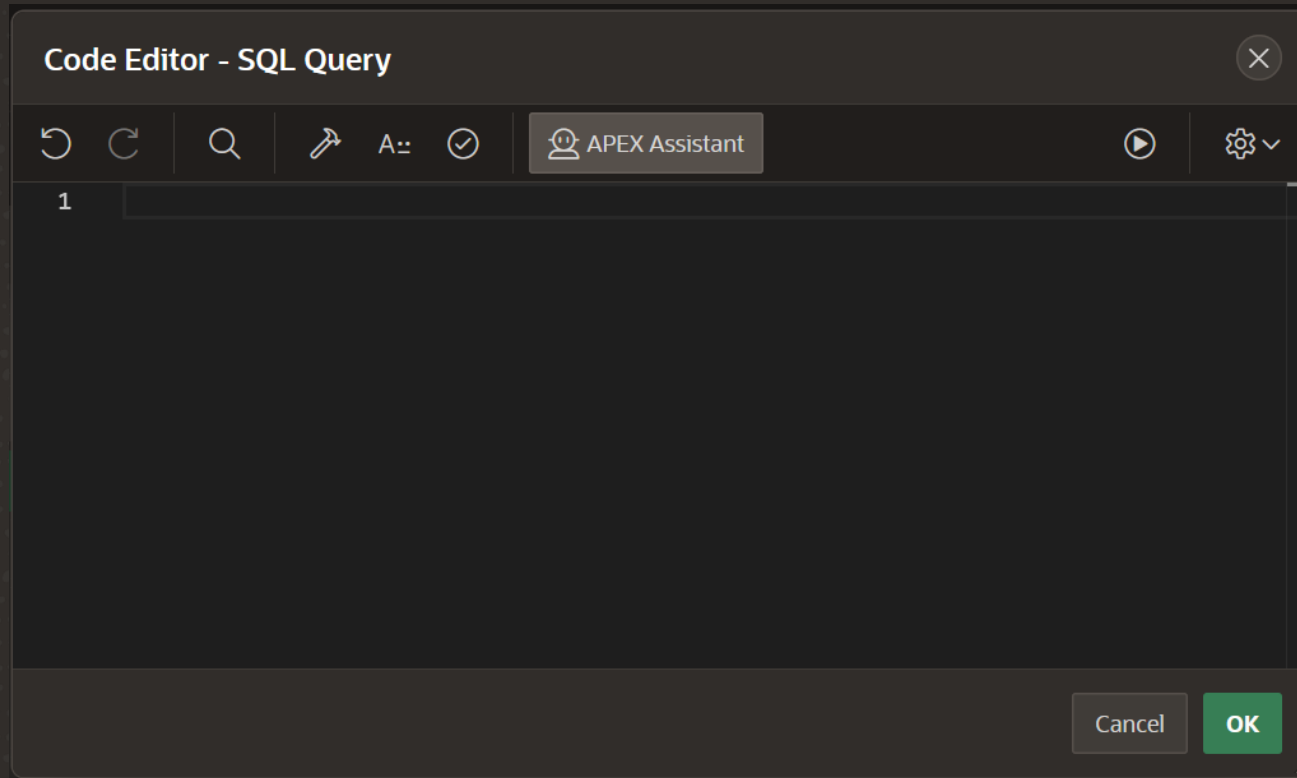
Refresh the **APEX Dictionary Cache**.

**SQL Workshop > Utilities >  
Data Dictionary Cache**

# More AI Capabilities?

# APEX Assistant for Code Editor

APEX  
24.1





# Code Editor

APEX  
24.1

**Generate SQL Queries** for any region using the Query Builder mode.

Query Builder ▾

Clear chat

Please note that AI-generated code may contain errors or security risks. Always review and validate all code before use.

Help me create a query for the NYC\_SCHOOLS table filtering the schools located in Brooklyn

MO



sql Copy Insert

```
select *  
  from nyc_schools  
 where borough = 'Brooklyn'
```

Type your message here

# Code Editor

**Generate PL/SQL, JavaScript, HTML, and CSS Code** using the General Assistance mode.

General Assistance ▾

Clear chat

Please note that AI-generated code may contain errors or security risks. Always review and validate all code before use.

please help create a PL/SQL function that returns a CLOB that contains information about the NYC\_SCHOOLS

MO



sql

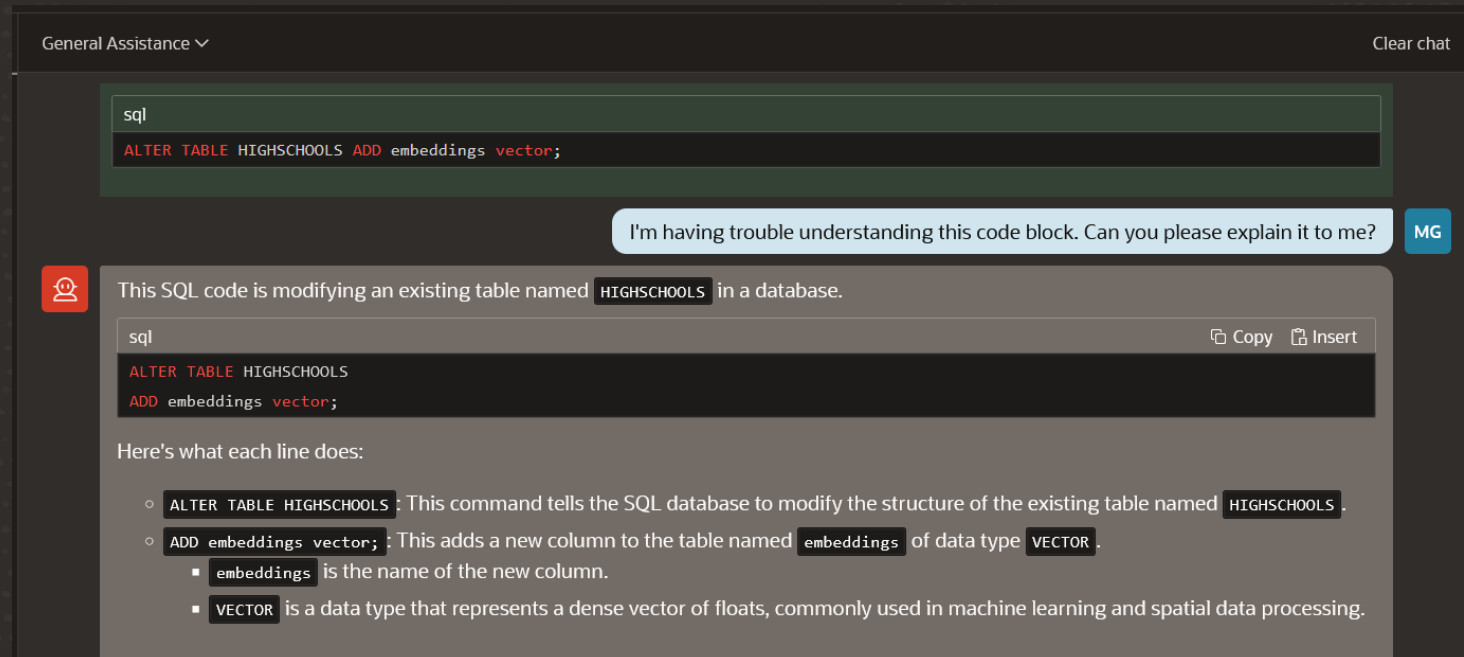
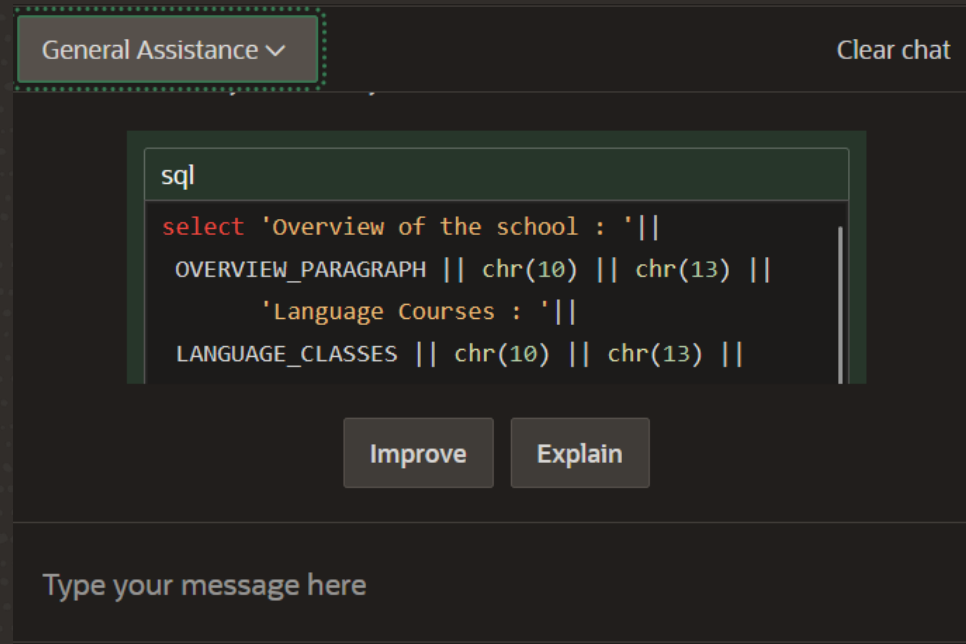
Copy Insert

```
create or replace function get_nyc_schools_info  
  v_clob clob;  
begin  
  select dbms_lob.substr(dbms_lob.to_clob(xmlt  
xmlseq(1, (select xmlagg(xmlforest(  
  school_id as "SchoolID",  
  school_name as "SchoolName",  
  borough as "Borough",
```

Type your message here

# Code Editor

**Improve & Explain** Quick Actions help improve and understand the selected code



## Code Editor – Assistance to fix your code

Code Editor - SQL Query

A::

APEX Assistant

ORA-20999: Failed to parse SQL query! ORA-06550: line 28, column 6: ORA-00923:  
FROM keyword not found where expected  
 Help me fix this

22ACADEMIC OPPORTUNITIES,

23ADVANCED PLACEMENT COURSES,

24DIA DETAILS,

25EXTRACURRICULAR ACTIVITIES,

26PSAL SPORTS BOYS,

27PSAL SPORTS GIRLS,

28FACILITIES

29HIGHSCHOOLS

General Assistance ▾Clear chat

Please note that AI-generated code may contain errors or security risks. Always review and validate all code before use.

Let me find out if I can help you with this problem...

Based on the provided SQL query, the error ORA-00923: FROM keyword not found where expected is caused by a missing keyword **from** being replaced with a table name directly.

sqlCopyInsert

Type your message here

CancelOK





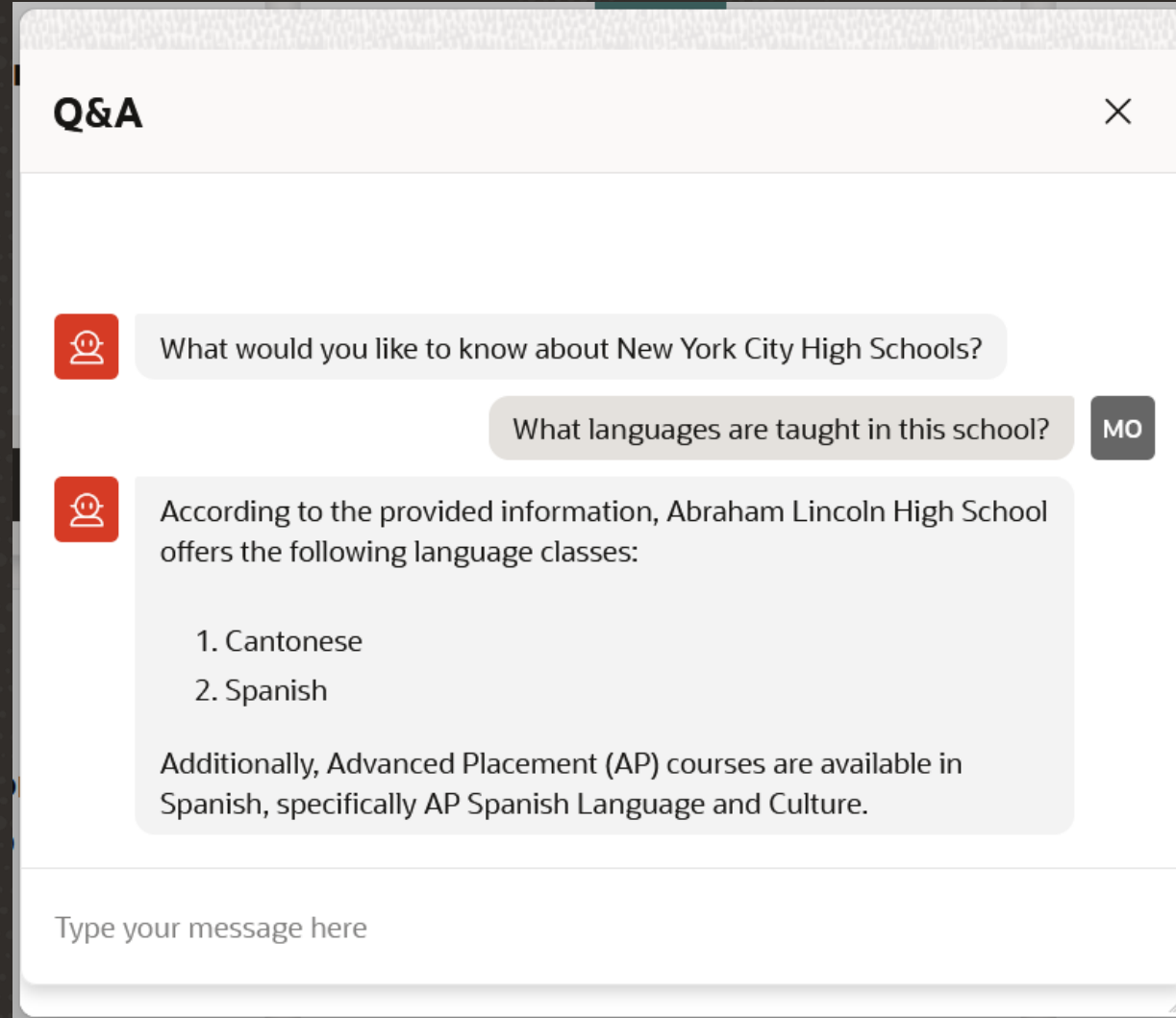
# AI Chat User Interface

## A Native Dynamic Action

Leverages **Generative AI Services** configured under Workspace Utilities

Rendered **Inline** or as a **Dialog**

Configurable **System Prompt** and **Welcome Message**





Please post your question, I'll try to answer it.

Where the APEX Nordic Tour 2025 is taking place?

MO



The APEX Nordic Tour is an international gliding competition. Unfortunately, I couldn't find information about the 2025 location for APEX Nordic Tour as my knowledge cut off is December 2023.

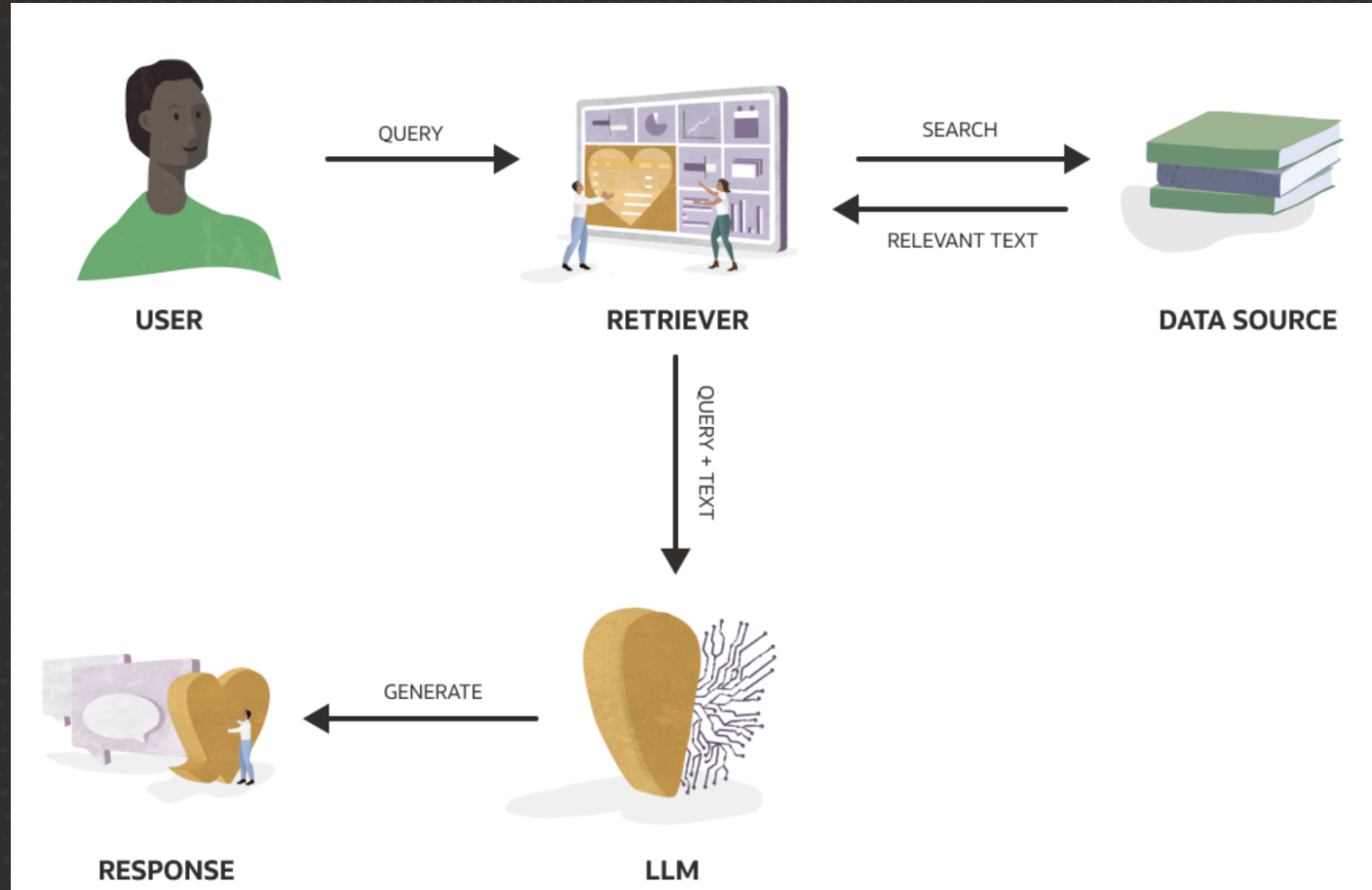
# What Is Retrieval-Augmented Generation (RAG)?

RAG provides a way to optimize the output of an LLM with targeted information without modifying the underlying model itself.

**Cost-effective**

**Access to up-to-date information**

**Domain-Specific Knowledge**



# AI Configurations

**AI Configurations** centralize key Generative AI settings.

Customizable **System Prompt**,  
**Welcome Message**, and **RAG Sources**.

Use it in both the **Show AI Assistant** and **Generate Text with AI** Dynamic Actions

**APEX\_AI PL/SQL API**

Generative AI Configuration

CancelDeleteApply Changes

Show AllIdentificationSubscriptionGenerative AIRAG SourcesAdvancedComments

Generative AI

ServiceOCI Gen AI?

System Prompt ?

↶↷🔍APEX Assistant⚙️

1 Use the Information provided about the school to answer all questions:

2

3 If the question cannot be answered based on the information provided, say "Sorry, I can't provide an answer to that question based o

Welcome Message ?

↶↷🔍APEX Assistant⚙️

1 Welcome! What would you like to know about this high school?

RAG SourcesCreate RAG Source

Name	Description	Type	Conditional	Updated	Updated By
School Info	Information about the school	SQL Query		6 days ago	MONICA
course		SQL Query	Yes	6 days ago	MONICA
facilities		SQL Query	Yes	6 days ago	MONICA
language		SQL Query	Yes	6 days ago	MONICA



# RAG Source

Show All Identification Description **Source** Advanced Server-Side Condition Security Configuration Comments

## Source

\* Type

SQL Query

SQL Query

Function Body

Static

?

\* SQL Query ?

↶ ↷ 🔍 🛠 ⌨️ ✓

1 select 'Overview of the school : ' || OVERVIEW\_PARAGRAPH || chr(10) || chr(13) ||

2 'Language Courses : ' || LANGUAGE\_CLASSES || chr(10) || chr(13) ||

3 'Advanced Placement Courses : ' || ADVANCED\_PLACEMENT\_COURSES || chr(10) || chr(13) ||

4 'Diversity in Admission Policy : ' || ADDTL\_INFO1 || chr(10) || chr(13) ||

5 'Extra curricular activities : ' || EXTRACURRICULAR\_ACTIVITIES || chr(10) || chr(13) ||

6 'Public Schools Athletic League (PSAL) sports for boys : ' || PSAL\_SPORTS\_BOYS || chr(10) || chr(13) ||

7 'Public Schools Athletic League (PSAL) sports for girls : ' || PSAL\_SPORTS\_GIRLS || chr(10) || chr(13) ||

8 'Facilities : ' || SCHOOL\_SPORTS || chr(10) || chr(13) ||

9 'Academic opportunities : ' || ACADEMIC\_OPPORTUNITIES || chr(10) || chr(13) ||

10 'Attendance rate : ' || ATTENDANCE\_RATE || chr(10) || chr(13) ||

11 'Graduation rate : ' || GRADUATION\_RATE

12 as prompt\_context

13 from nyc\_schools

14 where id = :p6\_id

26

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# RAG Sources in AI Configurations

## RAG Source

Cancel

Delete

Apply Changes

Show All

Identification

Description

Source

Server-Side Condition

Security

Configuration

Comments

Source

\* Type

Static



\* Text



APEX Assistant



1 Last year, the Oracle APEX Nordic Tour 2024 was a great success. We want to continue this positive trend and make it even more incr  
2 Attendees from Oracle APEX Nordic Tour 2024  
3 Fig 1. Attendees from Oracle APEX Nordic Tour 2024  
4 Schedule  
5  
6 This conference is organized by the Oracle User Groups in Finland, Denmark, and Sweden:  
7  
8 May 5: Helsinki, Finland  
9 May 7: Copenhagen, Denmark  
10 May 9: Stockholm, Sweden  
11  
12 APEX Sessions from the APEX Team  
13



What would you like to know about the APEX Nordic Tour?

When the APEX Nordic Tour 2025 is taking place?

MO



The Oracle APEX Nordic Tour 2025 is taking place on the following dates and locations:

1. May 5: Helsinki, Finland
2. May 7: Copenhagen, Denmark
3. May 9: Stockholm, Sweden

# Generate Text with AI

Generate a **one-time response** based on user content

Leverages **Generative AI services**

Configurable **System Prompt, Input Value, and Use Response** attributes

Filter

Identification

Name

Action

Generate Text With AI

Generative AI

Configuration

- Select -

Service

Open AI

System Prompt

Write a short song that includes all the fruits from the given JSON array. Print only the song, nothing else.

Input Value

Type

Item

Item

P13\_FRUITS

Use Response

Type

Item

Item

P13\_GENERATED\_EMAIL

Fruits

Apple, Mango, Banana, Cherry

4

Generate Song

Generated Email

Sure, here's your song:

(Verse 1)

Apple, Mango, Banana, Cherry,  
Fruits that make our spirits merry,  
In my basket, they're all so bright,  
Each one a color to delight.

(Chorus)

Apple so crisp, Mango so sweet,  
Banana gives us energy, it can't be beat,  
Cherry on top, oh what a treat,  
Together they make life complete.

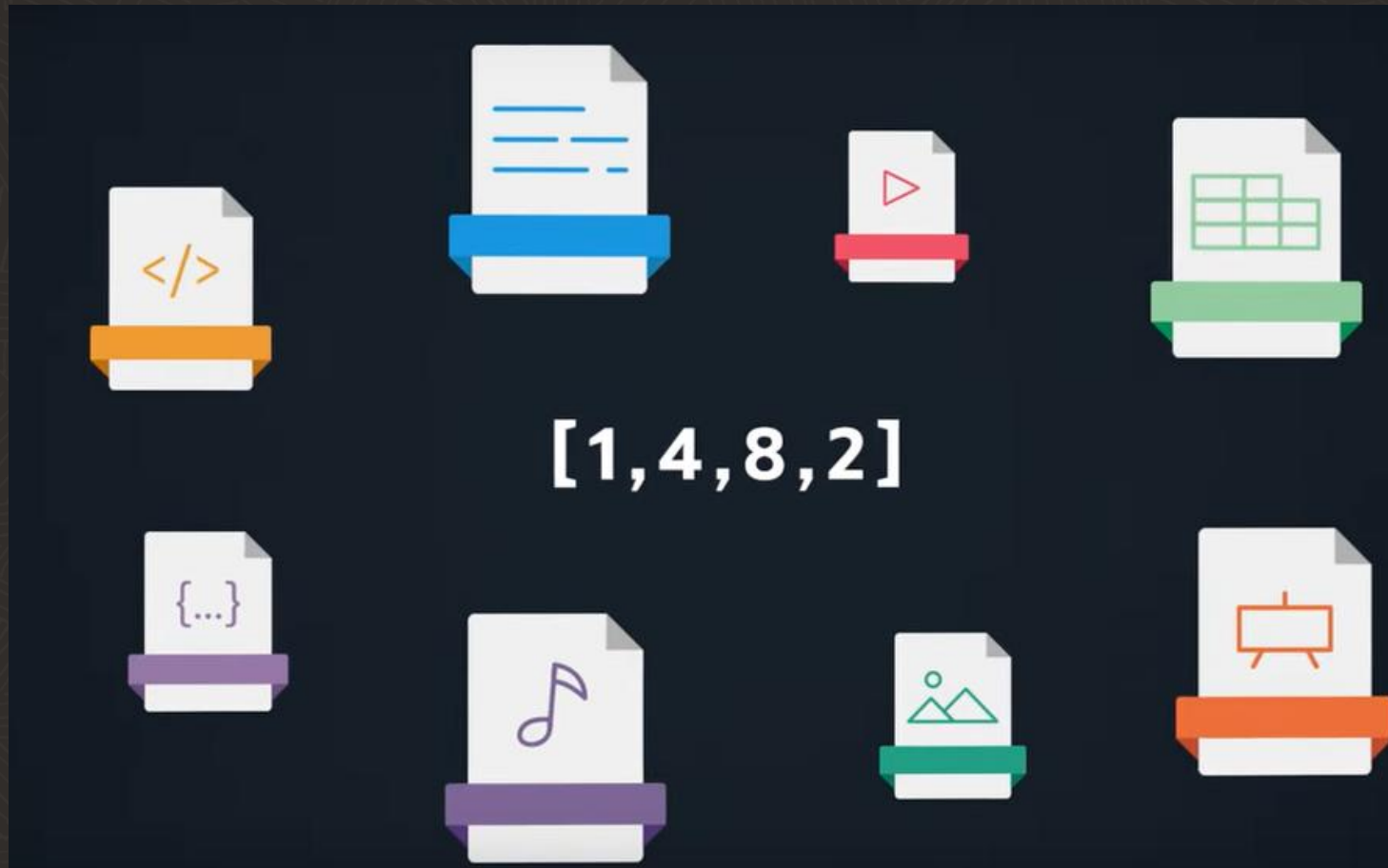
(Verse 2)

Apple juice to start the day,  
Mango smoothies on the way,  
Banana bread when skies are gray,



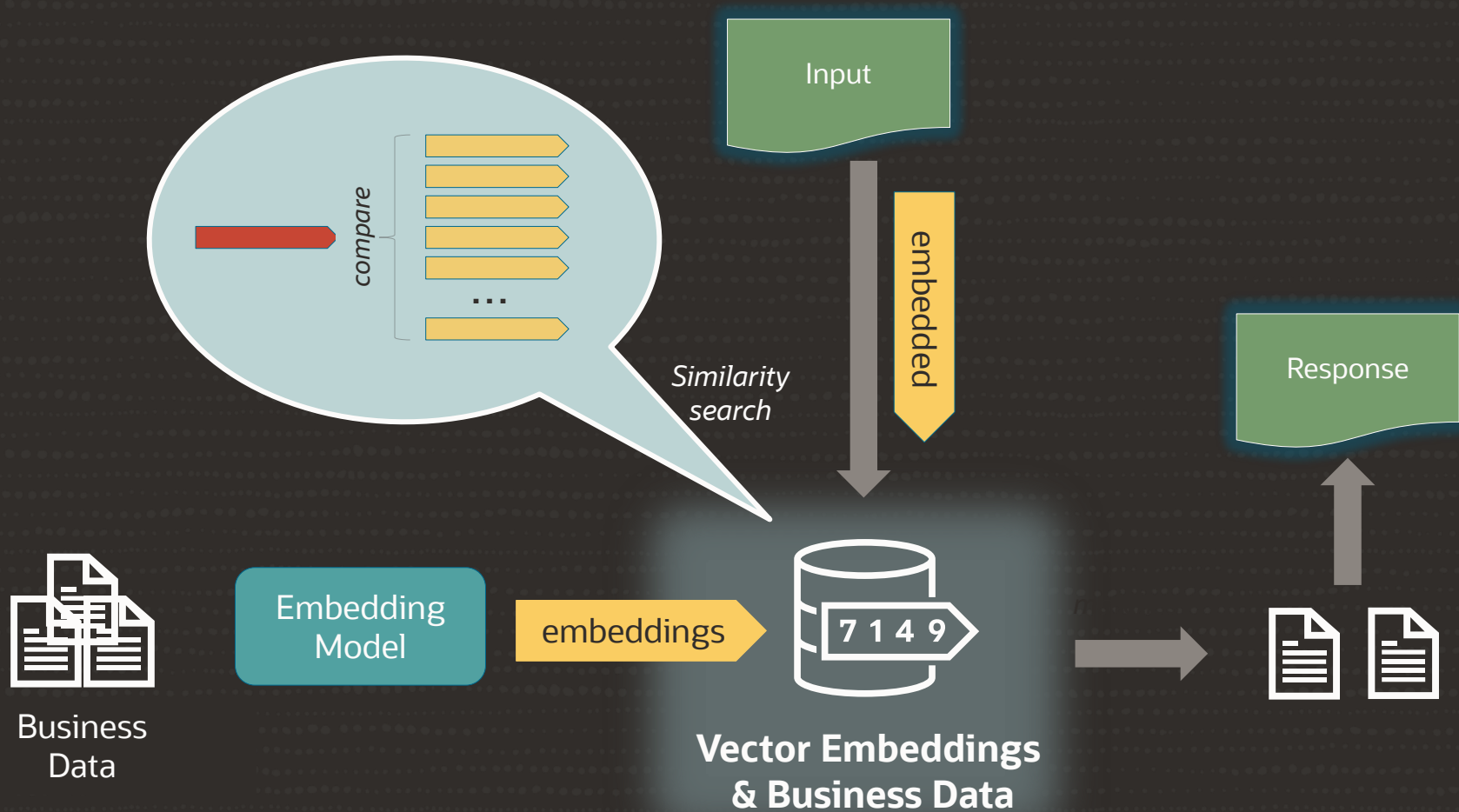
# Advanced

# What is a Vector?



# AI Vector Search

Search across your unstructured data





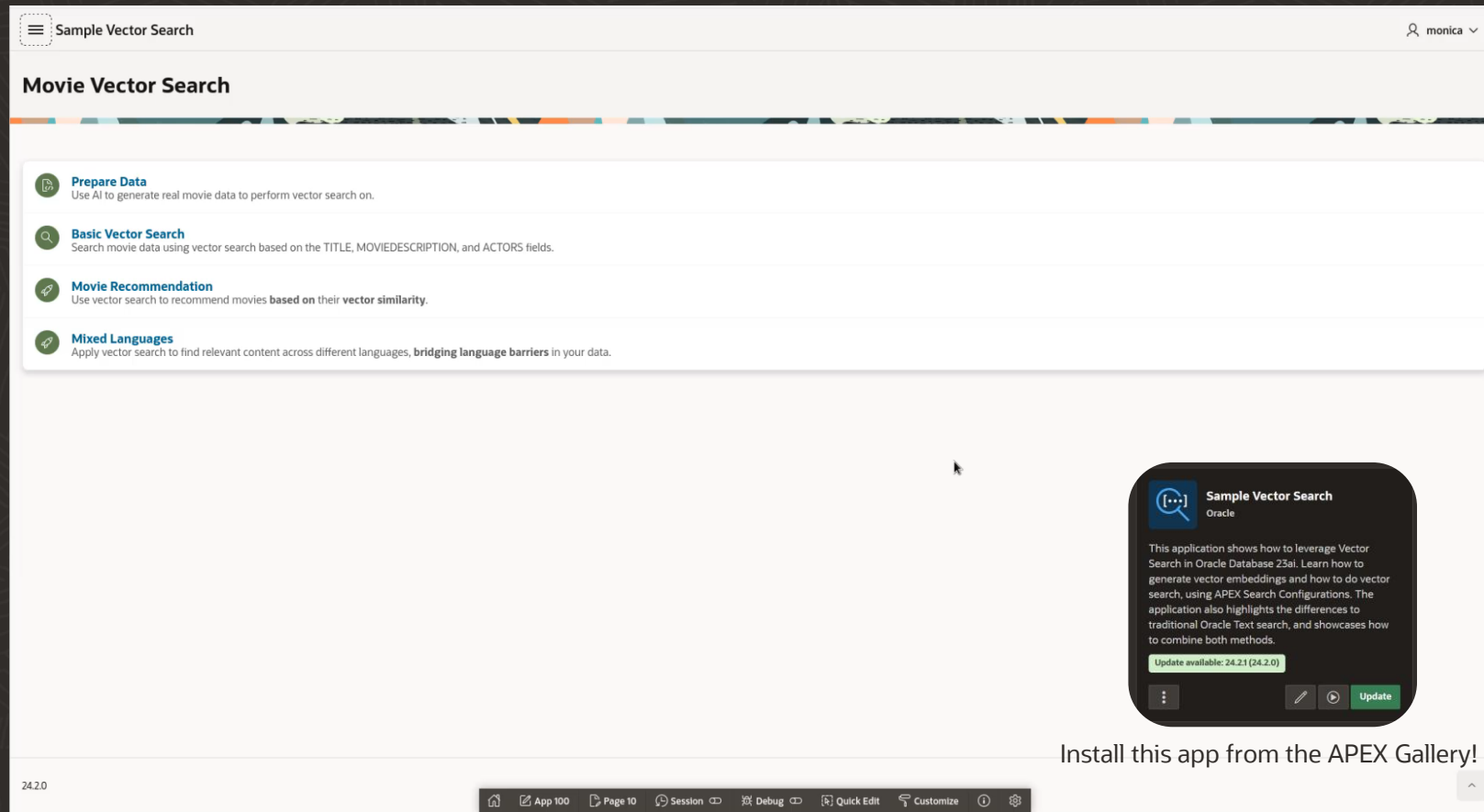
# What are Vector Providers?

The screenshot shows the 'Vector Provider DB ONNX Model' configuration page in APEX. The breadcrumb trail is 'Workspace Utilities \ Vector Providers \ Vector Provider Details'. The page has three tabs: 'Show All', 'Identification', and 'Local Embedding'. The 'Identification' tab is active. It contains three fields: 'Provider Type' (a dropdown menu with 'Database ONNX Model' selected), 'Name' (an empty text field), and 'Static ID' (a text field containing 'db\_onnx\_model'). Below these is the 'Local Embedding' section with two dropdown fields: 'ONNX Model Owner' (containing 'ROOPESH') and 'ONNX Model Name' (containing 'DOC\_MODEL'). At the top right of the form are 'Cancel', 'Delete', and 'Apply Changes' buttons.

- A **Vector Provider** enables you to convert text into an embedding
- Available **Provider Types**: Database ONNX Model, Generative AI Service, Custom PL/SQL
- Vector Providers are stored at the **Workspace level**
- Use **APEX\_AI.GET\_VECTOR\_EMBEDDINGS** PL/SQL API to generate embeddings



# Vector Search Support in Search Configurations - Overview



Available exclusively on **Oracle Database 23ai**

Create **Search Configurations** on the table with Vector Data type columns

Results are returned based on **Vector Similarity**

# Steps for Vector Search Support

1. Add a Vector Column to your table
2. Generate Vector Embeddings for your Vector Column

## **APEX\_AI.GET\_VECTOR\_EMBEDDINGS Function**

3. Create a Vector Provider

# Steps for Vector Search Support

## 4. Create a Search Configuration in Shared Components

### Create Search Configuration

Detail

A **Search Configuration** contains information about the searchable *Data Source*, the functionality used for search, as well as display properties.

Name

Search Type

☒ Standard

☐ Oracle Vector Search

☐ Oracle Text

☐ Oracle Ubiquitous Search

☐ List

Cancel

Next >

#### Source

Source Type

Table

SQL Query

Table / View Owner

- Parsing Schema -

Table / View Name

EBA\_VECTOR\_DATATABLE

Where Clause

#### Vector Attributes

Provider

OCI Vector Service

Column Name

EMBEDDING\_VECTOR (Vector)

Search Type

Exact

Distance Metric

Dot

# Steps for Vector Search Support

## 5. Create a Search Page using the Wizard

Create Search Page

Page Definition

\*

Page Number

2

?

\*

Name

?

Page Mode

Normal

Modal Dialog

Drawer

?

Search Configurations

	Label	Search Type
<input type="checkbox"/>	OCI-BASIC-VECTOR-SEARCH-DATATABLE	Oracle Vector Search
<input type="checkbox"/>	OCI-BASIC-VECTOR-SEARCH-MOVEDATA	Oracle Vector Search
<input type="checkbox"/>	OCI-MOVIE-RECOMMENDATION	Oracle Vector Search
<input type="checkbox"/>	OPENAI-BASIC-VECTOR-SEARCH-DATATABLE	Oracle Vector Search
<input type="checkbox"/>	OPENAI-BASIC-VECTOR-SEARCH-MOVEDATA	Oracle Vector Search
<input type="checkbox"/>	OPENAI-MOVIE-RECOMMENDATION	Oracle Vector Search

<

Cancel

Create Page



## Resources

- Lab: Innovative Q&A Interface Powered by Generative AI  
[apex.oracle.com/go/nyc-genai](https://apex.oracle.com/go/nyc-genai)
- Office Hours: What's New in Oracle APEX 24.2  
[apex.oracle.com/go/playlist-242](https://apex.oracle.com/go/playlist-242)
- Oracle APEX Blog: [apex.oracle.com/blog](https://apex.oracle.com/blog)
- Demo Apps for JSON Sources:
  - [apex.oracle.com/go/json-app-23ai](https://apex.oracle.com/go/json-app-23ai)
  - [apex.oracle.com/go/json-app-19c](https://apex.oracle.com/go/json-app-19c)

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Claim your Free Certification until May 15, 2025



[apex.oracle.com/go/professional-ai-lp](https://apex.oracle.com/go/professional-ai-lp)



# Oracle APEX Events

[apex.oracle.com/go/events](https://apex.oracle.com/go/events)

May 2025							Month	List
Sun	Mon	Tue	Wed	Thu	Fri	Sat		
27	28	29	30	1	2	3		
		<b>Webinar:</b> Oracle Forms Modernization: Discover your modernization options 10:30 AM - 11:30 AM 🌐 English						
4	5	6	7	8	9	10		
	<b>Conference:</b> Oracle APEX Nordic Tour 2025 - Finland 8:00 AM - 6:00 PM 🌐 English	<b>Conference:</b> Build with Data and AI in Berlin 4:15 PM - 5:00 PM 🌐 English	<b>Conference:</b> Oracle APEX Nordic Tour 2025 - Denmark 8:00 AM - 6:00 PM 🌐 English <b>Event:</b> Oracle DatabaseWorld 2025 8:00 AM - 5:00 PM 🌐 English		<b>Conference:</b> Oracle APEX Nordic Tour 2025 - Sweden 8:00 AM - 6:00 PM 🌐 English			
11	12	13	14	15	16	17		
		<b>Conference:</b> APEX connect 2025 8:00 AM - 4:30 PM 🌐 German						
			<b>Conference:</b> Oracle Dev Tour, Bengaluru 9:00 AM - 5:30 PM 🌐 English	<b>Office Hours:</b> Telemetry and Accessibility Updates 10:00 AM - 11:00 AM 🌐 English <b>Office Hours:</b> Preguntas y Respuestas sobre la modernización de Oracle Forms a Oracle APEX! 11:00 AM - 12:00 PM				



# Summary

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# Oracle APEX

## Summary

- Oracle APEX is a strategic platform for the generative development of enterprise apps.
- Everyone can collaborate to quickly describe, iterate, and deliver sophisticated, data-centric enterprise solutions with AI assistance.
- Using both natural language and declarative builders, you capture the intent of your business solutions and the data they require, staying focused on the **WHAT** instead of the **HOW**.

# Learn More...

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Primary site

[apex.oracle.com](https://apex.oracle.com)

APEX Shortcuts

[apex.oracle.com/shortcuts](https://apex.oracle.com/shortcuts)

APEX on Autonomous

[apex.oracle.com/autonomous](https://apex.oracle.com/autonomous)

Database Cloud Services

[cloud.oracle.com/database](https://cloud.oracle.com/database)

Oracle APEX Education

[apex.oracle.com/education](https://apex.oracle.com/education)

Oracle APEX + AI

[apex.oracle.com/go/ai](https://apex.oracle.com/go/ai)



# Thank You

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**Monica Godoy**

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# ORACLE

Learn more at [apex.oracle.com](https://apex.oracle.com)





Our mission is to help people see  
data in new ways, discover insights,  
unlock endless possibilities.

