

# Oracle Autonomous Database Tools

## Autonomous Database Tools Overview

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# Oracle Autonomous Database

Using the Cloud to eliminate the complexity of data management



#### Autonomous Database

- Oracle Database reimagined for the Cloud
- Completely automating the full database management lifecycle
- Supporting mission-critical databases
- Enabling you to innovate more, pay less, and ensure data security

# Data Studio Tools

The screenshot shows the Oracle Database Actions | Launchpad interface. The top navigation bar includes the Oracle logo, a search bar, and a help icon. Below the navigation bar, the main menu has tabs: Pinned & Recently Visited, Development (selected), Data Studio, Administration, Downloads, Monitoring, and Related Services. On the left, a sidebar lists tools: SQL (selected), Data Modeler, REST, Liquibase, JSON, Charts, Scheduling, Oracle Machine Learning, and APEX. The central workspace is titled "SQL" and contains a script editor window showing the following SQL code:

```
drop table demo_emps;
drop materialized view demo_emps_mv;

create table demo_emps (
    id number primary key,
    name varchar2(255),
    sal number
);

insert into demo_emps values(1, 'martin', 100);
```

Below the script editor, there are tabs for "Query Result", "Script Output", "DBMS Output", "Dollar Sign", "Autocomplete", and "SQL History". The "Query Result" tab shows the output of the last query:

NAME	PHC_SAL.CNT
Martin	200

At the bottom of the workspace, it says "Elapsed: 00:00:00.004 2 rows selected."

At the bottom of the interface, there are standard browser controls (back, forward, search, etc.) and a zoom control.

# Autonomous as a Development Environment

## Developer Tools out of the box with Autonomous

SQL Developer Web



- Execute SQL and PL/SQL
- Build Data Models, generate DDL statements
- Monitor and manage the DB

APEX



- Web-based Function rich, low code development env
- No client software needed

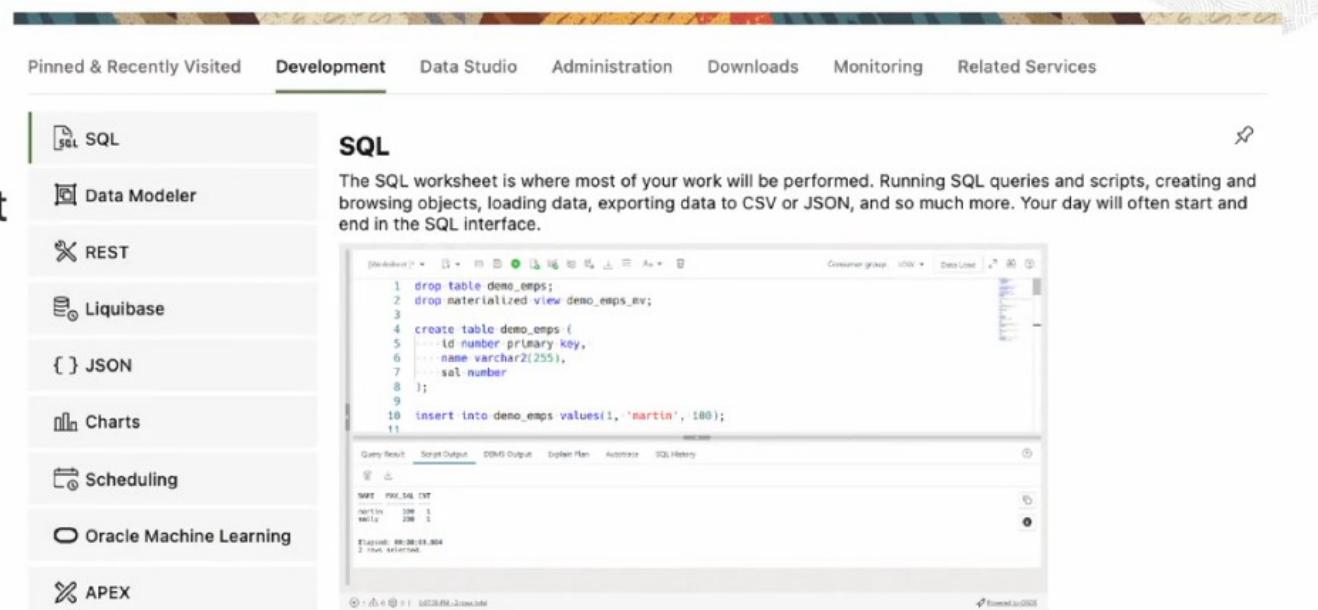
Oracle REST Data Services



- Ability to REST enable a schema and autogenerate REST endpoints for tables, views, and procedures

# SQL Developer

- Run SQL statements
  - Load data
  - Database development
  - Monitor and manage



# APEX

- Access APEX Applications
- Manage workspaces
- APEX Development

The screenshot shows the Oracle APEX developer interface. At the top, there is a navigation bar with tabs: Pinned & Recently Visited, Development (which is selected), Data Studio, Administration, Downloads, Monitoring, and Related Services. Below the navigation bar is a sidebar on the left containing icons for various tools: SQL, Data Modeler, REST, Liquibase, JSON, Charts, Scheduling, Oracle Machine Learning, APEX, and Graph Studio. The main content area is titled "APEX" and contains the message "Login to APEX, develop and run rich, low-code web applications." It features four cards: App Builder, SQL Workshop, Team Development, and Gallery. Below these cards is a "Summary" section showing 0 Applications, 0 Tables, and 1 Developers. A "Workspace Message" section indicates "No Workspace Message". On the right side, there is an "About" section with a brief description of APEX, links to "Learn More" (APEX Website, Blog, Tutorials, Videos), "Educational Resources" (Study & Feature Requests, apexpedia.world), and "Social" links for LinkedIn, GitHub, and Facebook. At the bottom of the main content area, there are links for "Documentation", "Get started", and "Create APEX Developer Accounts". A large "Open" button is located at the bottom right. The bottom of the screen shows a standard browser toolbar with icons for back, forward, search, and zoom.

## REST

- Define via PL/SQL API, SQL Dev or APEX
  - Auto REST enable tables and views
  - Create custom REST services
  - Document Store (SODA for REST)
  - Database Management REST APIs
  - REST Enabled SQL

Pinned & Recently Visited	Development	Data Studio	Administration	Downloads	Monitoring	Related Services
 SQL	<h2>REST</h2> <p>Develop, test, secure, and document REST APIs for your Oracle Database. Automatically REST enable access for your database objects, including:</p> <ul style="list-style-type: none"><li>Tables</li><li>Views</li><li>PL/SQL Functions, Procedures, Packages</li></ul>					
 Data Modeler						
 REST						
 Liquibase	Build your own REST APIs using SQL and PL/SQL, secure endpoints with OAuth2 Clients or JSON Web Tokens, quickly share or test an API.					
{ } JSON	Developer resources include:					
 Charts	<ul style="list-style-type: none"><li>OpenAPI document generation</li><li>Single-click API exports</li><li>cURL command generation for shell and 3rd-party API testing tools</li></ul>					
 Scheduling	Documentation					
 Oracle Machine Learning	<a href="#">Creating REST APIs</a> <a href="#">Securing REST APIs</a>				<a href="#">Walk through</a>	<a href="#">Open</a>
 APEX						
 Graph Studio						

# JSON

- Create collection
- Load and edit JSON
- Browse documents
- Create views

The screenshot shows the Oracle Database Development interface. The top navigation bar includes links for Pinned & Recently Visited, Development (which is selected), Data Studio, Administration, Downloads, Monitoring, and Related Services. On the left, a sidebar lists various tools: SQL, Data Modeler, REST, Liquibase, JSON (which is selected and highlighted in blue), Charts, Scheduling, Oracle Machine Learning, APEX, and Graph Studio. The main content area has a heading "JSON" and a sub-section titled "The Oracle Database is more than a relational system for:" which lists Tables, Rows, Columns, and SQL. Below this, another section states "It also supports your JSON documents! This interface allows you to create a collection, load, edit, and browse documents, generate diagrams, and create relational Views and Indexes for your JSON for faster and easier queries." To the right of the text are two small screenshots: one showing a diagram editor and another showing the "JSON Document Content" pane displaying a large JSON document.

# SQLcl

- Modern command-line interface
- Auto complete SQL syntax
- Command history
- Output json, csv, html, inserts, xml...
- Liquibase schema lifecycle integration
- Scripting friendly
- No Oracle Home required
- OCI & OSS Integration

```
"manager_id" : 101,  
"department_id" : 110,  
"column1" : ""  
},  
{  
    "employee_id" : 206,  
    "first_name" : "William",  
    "last_name" : "Gietz",  
    "email" : "WGIETZ",  
    "phone_number" : "515.123.8181",  
    "hire_date" : "07-JUN-94",  
    "job_id" : "AC_ACCOUNT",  
    "salary" : 17046.49,  
    "commission_pct" : "",  
    "manager_id" : 205,  
    "department_id" : 110,  
    "column1" : ""  
}  
]  
]  
]  
]  
107 rows selected.  
  
DEPARTMENT_ID DEPARTMENT_NAME EXTRA_COLUMN LOCATION_ID MANAGER_ID  
SQL> select * from departments  
2* where
```

SQL Command Line

# Data Studio Tools

The screenshot shows the Oracle Data Studio Overview page. The left sidebar includes links for Overview, Data Load, Analysis, Insights, Catalog, and Data Share. The main content area features a "Get Started" section with five cards: Data Load, Data Analysis, Insights, Catalog, and Data Share. Below this is a "Recent Objects" section listing various database tables and insight requests.

**Get Started**

- Data Load**: Load data from CSV, Excel, Parquet and other files on your local computer or cloud store into Autonomous Database.
- Data Analysis**: Quickly layer a dimensional model over your data using Analytic Views and view data using reports and charts.
- Insights**: Let the Database automatically search your data for outliers and anomalies. Find that needle in the haystack.
- Catalog**: Find data and understand dependencies between objects in the database. Know where your data comes from and where it is going.
- Data Share**: Quickly and securely share tables in your Autonomous Database with other users and Databases.

**Recent Objects**

DEVICES TABLE	MONTHS TABLE
ORDERS TABLE	DAYS TABLE
CUSTOMER_INTERACTIONS TABLE	COUNTRIES TABLE
CUSTOMER_CONTACT TABLE	REQUEST_INSIGHT_5 INSIGHT_REQUEST
REQUEST_INSIGHT_4 INSIGHT_REQUEST	REQUEST_INSIGHT_3 INSIGHT_REQUEST

**Getting Started**  
Use Data Studio to understand your data better

**Need Help?**

- Data Load Documentation
- Analysis Documentation
- Catalog Documentation
- Insights Documentation
- Database Actions Documentation
- Data Warehouse Insider Blog

# Catalog

The screenshot shows the Oracle Database Actions Catalog interface. The main panel displays a table named **SALES\_2020Q2** with columns: **RY**, **MER\_SEGMENT**, and **ASES**. A detailed view of the **MOVIE\_SALES\_2020Q2\_MODEL** table is shown on the right, containing rows for **PURCHASES** and **SALES**. A blue callout box highlights the **DEPTH** attribute, which is defined as follows:

**Depth**

- Name: **MEMBER\_CAPTION**
- Application: **DATABASE**
- Type: **ATTRIBUTE**
- Path: **"DB"."MOVIE\_SALES\_2020Q2\_MODEL".  
"GENRE\_HIER"."ATTRIBUTE"."MEMBER\_CAPTION"**
- Schema: **QTEAM**

The interface includes a sidebar with filters for Data Load, Recent Objects, Status (Valid, Invalid), Partitioned, External, and Sharded. The bottom status bar shows the time as 3:15 / 4:14.

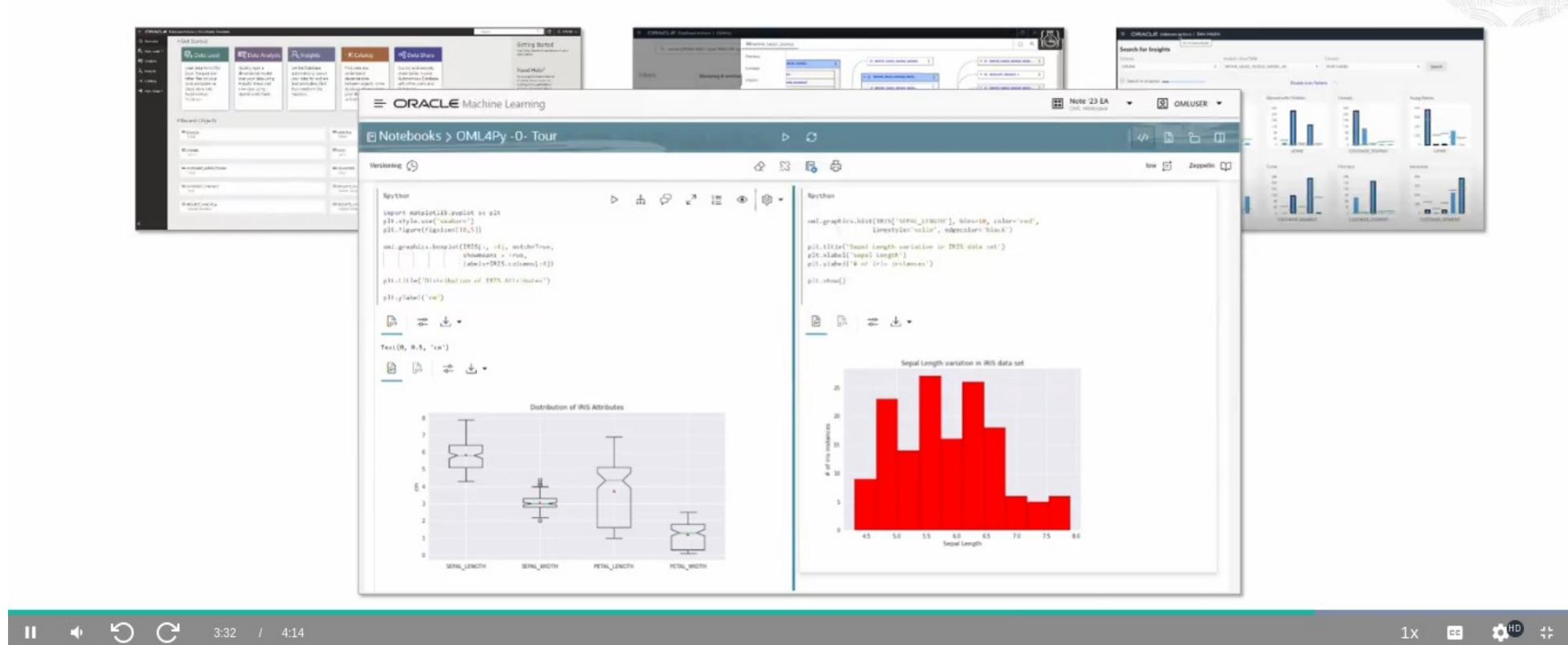
# Insights

The screenshot displays the Oracle Database Actions | Data Insights interface. On the left, a sidebar shows recent objects: DEVICE, ORDER, CUSTOMER\_INTERACTIONS, CUSTOMER\_CONTACT, and REQUEST\_INSIGHT\_A. The main area is titled "Search for Insights" with filters: Schema (QTEAM), Analytic View/Table (MOVIE\_SALES\_2020Q2\_MODEL\_AV), and Column (PURCHASES). A "Search" button is present. Below the filters, a message says "Search in progress". The results are presented in a grid of 10 bar charts:

- Drama: CUSTOMER\_SEGMENT vs PURCHASES
- Midage Female: GENRE vs PURCHASES
- Married with Children: GENRE vs PURCHASES
- Comedy: CUSTOMER\_SEGMENT vs PURCHASES
- Young People: GENRE vs PURCHASES
- Single Male: GENRE vs PURCHASES
- Single Female: GENRE vs PURCHASES
- Crime: CUSTOMER\_SEGMENT vs PURCHASES
- Film-Noir: CUSTOMER\_SEGMENT vs PURCHASES
- Adventure: CUSTOMER\_SEGMENT vs PURCHASES

On the right side of the interface, a detailed "Lineage" panel is open for the MOVIE\_SALES\_2020Q2 table. It shows the flow from raw data sources like MOVIE, SALES, and PURCHASES through various stages of processing, including MEMBER\_CAPTION, MEMBER\_ATTRIBUTES, MEMBER\_HIER, MEMBER\_CARRIER, MEMBER\_DATE, MEMBER\_NAME, MEMBER\_UNIQUE\_NAME, MEMBER\_LEVEL\_NAME, and MEMBER\_CARRIER\_NAME, all originating from the CSTEAM source.

# Machine Learning Notebooks



# Graph Studio

The screenshot displays the Oracle Graph Studio interface, which integrates multiple tools for graph analysis and visualization.

**Top Left:** A code editor window titled "pgql-pgx" contains the following query:

```
%pgql-pgx
/* Find movies that both customers are connecting to */
select c1, e1, m.title, e2, c2
from match (c1)-[e1]->(m)<-[e2]-(c2)
on MOVIE_RECOMMENDATIONS
where c1.FIRST_NAME = 'Floyd' and c1.LAST_NAME = 'Bryant' and
c2.FIRST_NAME = 'Emilio' and c2.LAST_NAME = 'Welch'
limit 20
```

**Top Right:** A dashboard titled "Connections between Vertices - Emilio and Floyd's common movies" shows various metrics and visualizations related to the query results.

**Bottom Left:** A notebook titled "ORACLE Machine Learning" is open, showing a section of code related to "MOVIE RECOMMENDATIONS".

**Bottom Center:** The main workspace displays a graph visualization. Two nodes are highlighted: "Emilio" (red) and "Floyd" (green). Numerous edges connect them to other nodes, forming a complex network structure.

# Graph Studio

