



SACRAMENTO
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Oracle Apex Using Oracle Autonomous DB

Team 7

BY

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Agenda

1. Abstract
2. Oracle Autonomous DB
3. Key Features
4. Oracle Apex
5. E-commerce Website
6. Architecture
7. Database Schema
8. Data Visualizations
9. Conclusion

Abstract

Conventional cloud-based databases are expensive to maintain and challenging to scale for expanding businesses.

Concerns with Conventional cloud-based databases:

- Complexity: Administrating Conventional cloud-based databases can be expensive to manage and require a team of DBAs to secure, upgrade, recover, test, and troubleshoot them.
- Cost: Conventional cloud-based databases can be very expensive to manage, especially for large enterprises.
- Scalability: As businesses grow, scaling conventional cloud-based databases can become challenging.

What is Oracle Autonomous DB?

- Oracle Autonomous Database is a cloud-based service that provides a fully automated, self-managing database environment. It uses machine learning and artificial intelligence to automate all aspects of database management, including provisioning, patching, scaling, and security. This frees up database administrators (DBAs) to focus on more strategic tasks, such as data modeling and application development.
- Oracle Autonomous DB is based on the worlds best database platform **Exadata**.
- Autonomous DB eliminates the complexity of operating and securing Oracle DB, while giving the customers highest levels of performance, scalability, and availability.

- Available in both public and on-premises cloud
- Autonomous DB uses proven technologies like RAC, Data Guard, DB Vault, Parallel SQL, In-memory, multitenant, etc.
- Oracle autonomous Db is more reliable because it automatically recovers from any physical failures, whether at the physical server or data center level.
- Serverless and elastic architecture enables instant scaling online.
- Pay only for the resources used.
- All scaling operations occur while the applications continue to run.
- Cost reduced by 90%, by automating every aspect of the stack from infrastructure, to the DB, to ML Based Automation.

Key Features

- Provision
- Secure
- Manage
- Protect
- Scale
- Optimizes



Oracle Apex

- Oracle Application Express (APEX) is a low-code application development platform that enables developers to build scalable, secure web and mobile applications quickly and easily.
- It is a free and fully supported feature of Oracle Database, so organizations can start developing applications immediately without having to purchase any additional software.
- Oracle APEX is a popular choice for developers because it is easy to use and does not require a lot of coding experience.

Oracle APEX Key features:

- Low-code development
- Scalability
- Security
- Mobility
- Integration



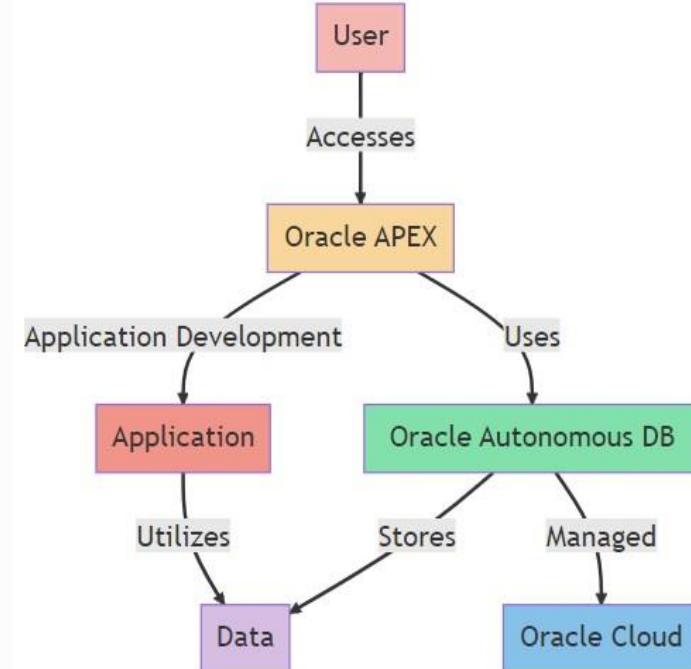
E-commerce Website

- In this project we are utilizing a real-world e-commerce dataset from Olist, the largest department store in Brazilian marketplaces, we aim to demonstrate the effectiveness of this integration in handling complex database operations and providing insightful data visualization.
- By leveraging the Oracle Apex for frontend and Oracle Autonomous DB for the backend database management, and performed the CRUD operations on the dataset and analyzed the data.
- We showcased the results through various visualization techniques using Oracle Apex.

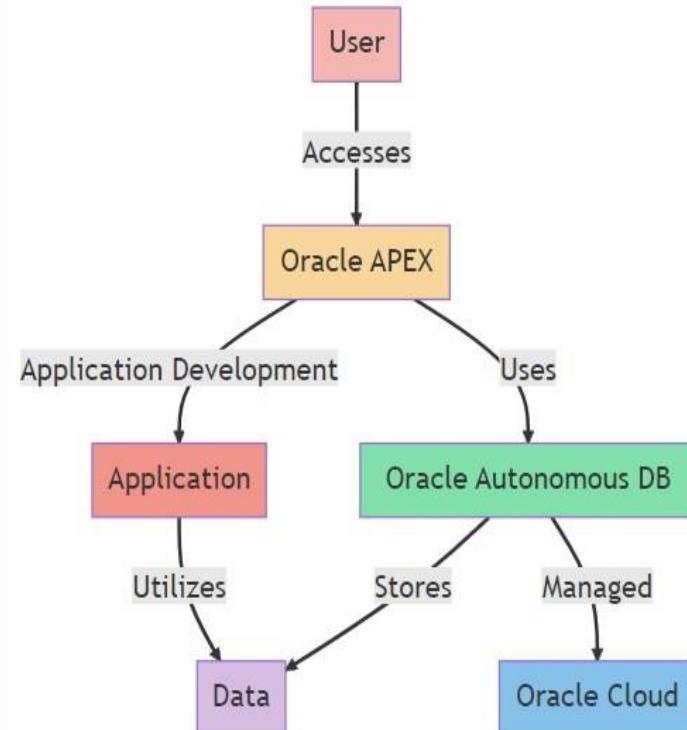


Architecture

- End-users' interaction with Oracle APEX,
the user interacts with an application that is
built using oracle APEX.
- When building or running applications,
APEX uses Oracle Autonomous Database
to store and retrieve data.



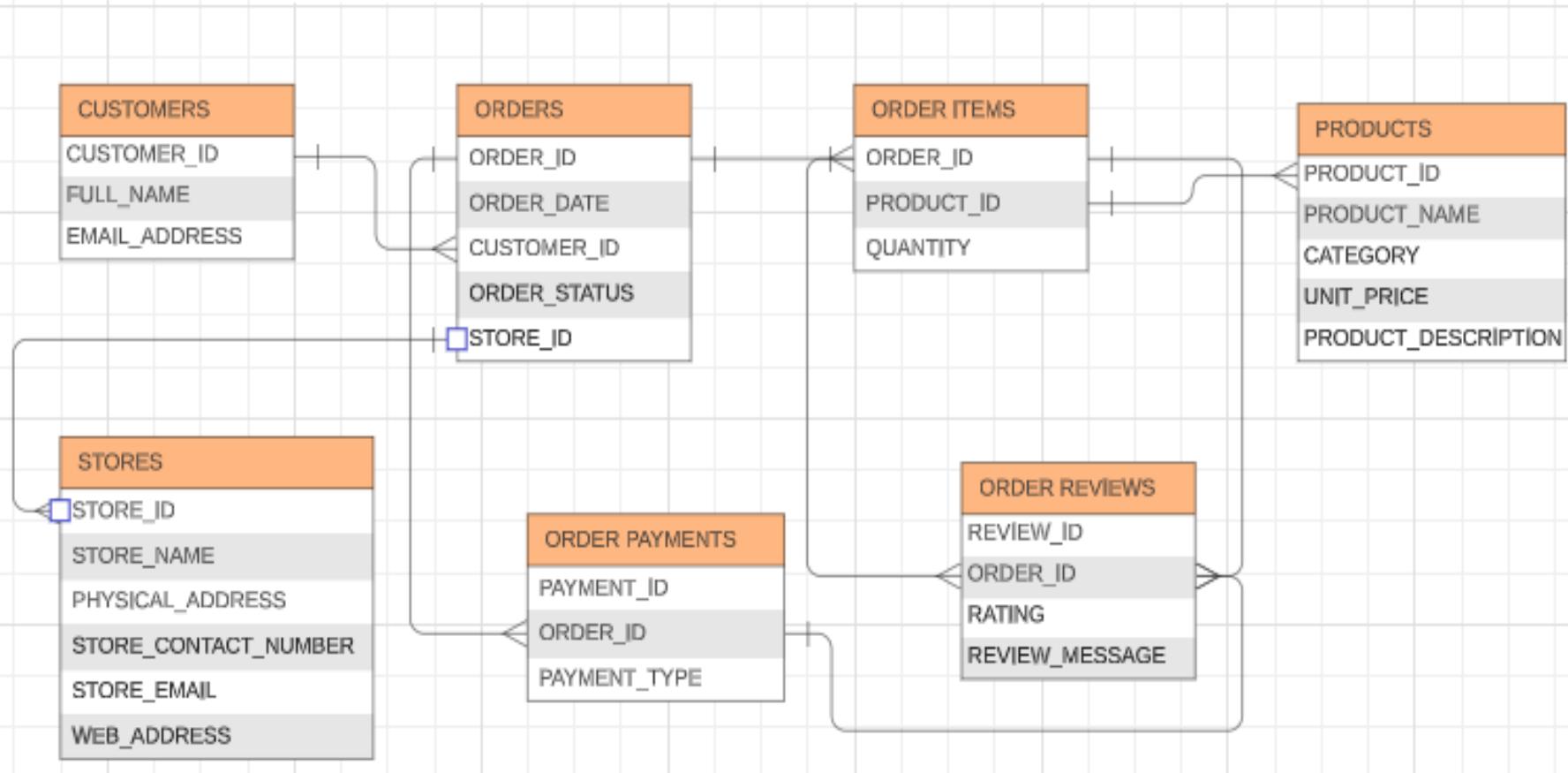
- Application represents the software or system being developed or operated; this application uses data from Oracle Autonomous DB to perform the functions.
- Data represents the raw information or records that the application and the database handle.
- Oracle Cloud provides servers, storages, and other functionalities that allows businesses to run their applications in the cloud



Database Schema

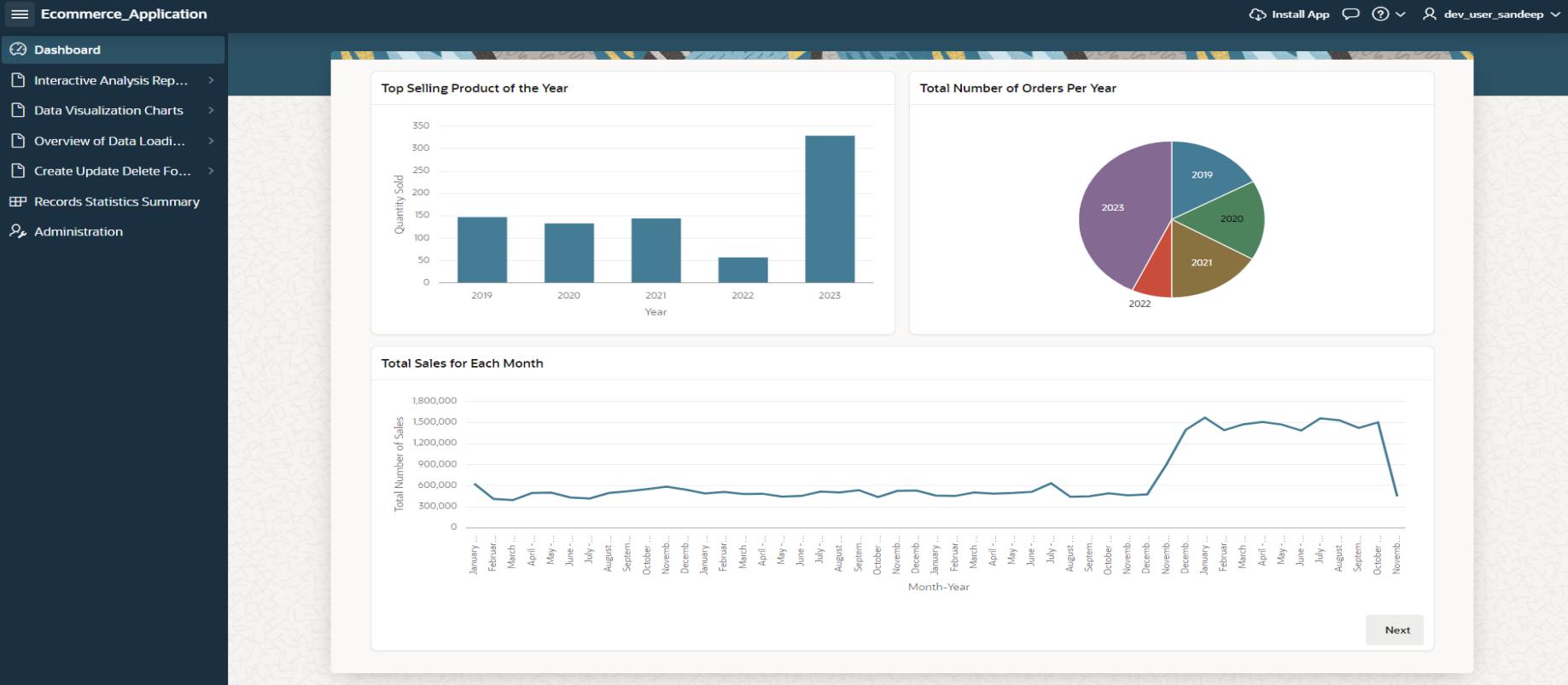
- **Customers** (Customer ID, Full Name, Email Address)
- **Stores** (Store ID, Store Name, Physical Address, Store Contact Number, Store Email, Web Address)
- **Products** (Product ID, Product Name, Category, Unit Price, Product Description)
- **Orders** (Order ID, Order Date, Customer ID, Order Status, Store ID)
- **Order Items** (Order ID, Product ID, Quantity)
- **Order Payments** (Payment ID, Order ID, Payment Type)
- **Order Reviews** (Review ID, Order ID, Rating, Review Message)

Oracle APEX Ecommerce Application ER diagram



The Dashboard of the application shows

1. Top Selling Product of the Year :
2. Total Number of Orders per Year:
3. Total Sales for Each Month:



Customer Order Product Details View: This report displays the customer details, order details, and the product details. We can customize this report by using aggregate functions.

Ecommerce_Application

- Dashboard
- Interactive Analysis Re...
- Customer Order Product Data...
- Customer Purchase Summary ...
- Monthly Stores Sales Summar...
- Data Visualization Charts >
- Overview of Data Loadi... >
- Create Update Delete Fo... >
- Records Statistics Summary
- Administration

Customer Order Product Details View

Store Name	Full Name	Email Address	Order Date	Order Status	Product Name	Unit Price	Quantity	Payment Type	Review Message	Rating
Acosta-Quinn	Shane Ramsey	shane.ramsey@example.com	7/9/2023	Shipped	Dining Set	1,417	2	Debit Card	Unfortunately, this product was a letdown. It didn't perform as advertised and I had to return it.	3
Acosta-Quinn	Lance Brock	lance.brock@example.com	5/1/2020	Shipped	Peacoat	122	2	Credit Card	Regret buying this. It malfunctioned shortly after purchase, and customer service was unhelpful in resolving the issue.	3
Acosta-Quinn	Matthew Hughes	matthew.hughes@example.com	5/11/2021	On Hold	DVDs	13	2	Cash	Pretty disappointed. The product didn't live up to the hype and broke down after a few uses. Not worth the investment.	1
Acosta-Quinn	Matthew Hughes	matthew.hughes@example.com	5/11/2021	On Hold	DVDs	13	2	Credit Card	Pretty disappointed. The product didn't live up to the hype and broke down after a few uses. Not worth the investment.	1
Acosta-Quinn	Lance Brock	lance.brock@example.com	5/1/2020	Shipped	Comics and Graphic Novels	22	1	Credit Card	This is an okay product. It meets basic needs but doesn't stand out in terms of features or quality.	2
Acosta-Quinn	Lance Brock	lance.brock@example.com	5/1/2020	Shipped	Outdoor Lounge Chairs	668	2	Credit Card	This is an okay product. It meets basic needs but doesn't stand out in terms of features or quality.	2
Acosta-Quinn	Lance Brock	lance.brock@example.com	5/1/2020	Shipped	Peacoat	122	2	Credit Card	This is an okay product. It meets basic needs but doesn't stand out in terms of features or quality.	2
Acosta-Quinn	Amanda Kerr	amanda.kerr@example.com	4/19/2023	On Hold	HDMI Adapter	226	3	Cash	It's a decent product, though it didn't quite meet my expectations based on the description and reviews.	2
Acosta-Quinn	Amanda Kerr	amanda.kerr@example.com	4/19/2023	On Hold	HDMI Adapter	226	3	Cash	It's a decent product, though it didn't quite meet my expectations based on the description and reviews.	2
Acosta-Quinn	Amanda Kerr	amanda.kerr@example.com	4/19/2023	On Hold	HDMI Adapter	226	3	Cash	It's a decent product, though it didn't quite meet my expectations based on the description and reviews.	2

Customer Purchase Summary Report: This report displays the details of each customer and the total amount spent over the years.

Ecommerce_Application

Dashboard

Interactive Analysis Re...

Customer Order Product Deta...

Customer Purchase Summary...

Monthly Stores Sales Summar...

Data Visualization Charts >

Overview of Data Loadi... >

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Customer Purchase Summary Report

Customer Id	Full Name	Email Address	Total Products Purchased	Total Amount Spent
2755	Larry Williams	larry.williams@example.com	13	21491.45
5785	Jacqueline James	jacqueline.james@example.com	6	20401.87
3099	John Hawkins	john.hawkins@example.com	7	20291.78
10733	Anthony Cook	anthony.cook@example.com	9	20094.22
7622	Tanya Cameron	tanya.cameron@example.com	9	19431.99
15002	Matthew Manning	matthew.manning@example.com	12	19140.48
19127	Derrick Friedman	derrick.friedman@example.com	8	18769.21
7252	Derek Tucker	derek.tucker@example.com	7	18686.42
19569	Jamie Moran	jamie.moran@example.com	9	18569.74
16219	Tina Hunter	tina.hunter@example.com	7	18317.43
13231	Ms. Rebecca Warren	ms.rebecca.warren@example.com	5	18235.22
18813	Brian Thomas	brian.thomas@example.com	4	18205.39
18407	Joseph Howard	joseph.howard@example.com	5	17461.75
12814	Samantha Curry	samantha.curry@example.com	5	17413.91
12487	Connie Melton	connie.melton@example.com	10	17413.67
12985	Nicole Ingram	nicole.ingram@example.com	8	17192.83
1506	Terri Jackson	terri.jackson@example.com	7	17127.25
7245	Michael Mills	michael.mills@example.com	7	17081.59
				Total 14315

Monthly Stores Sales Summary Report: This report displays the monthly sales of each store.

Ecommerce_Application

Dashboard

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Customer Order Product Deta...

Customer Purchase Summary ...

Monthly Stores Sales Summa...

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dev_user_sandeep

Monthly Stores Sales Summary Report

Store Name	Store Address	Order Month	Monthly Sales
Acosta-Quinn	90135 Andrew Burgs Port Jessicafort, DE 66131	2019-01	149.66
Adams and Sons	37783 Baker Valleys Lake David, SC 32802	2019-01	842.55
Adkins-Baker	6405 Victor Forest Suite 380 North Diamondville, NE 03480	2019-01	568.78
Alexander, Franklin and Olson	9510 Amanda Mount Apt. 425 Duskinland, WV 79479	2019-01	6417.03
Alvarado-Thompson	62321 Bowman Corners New Leahland, MT 25871	2019-01	3850.72
Anderson Ltd	693 John Garden Apt. 969 Phillipsmouth, OK 99852	2019-01	620.78
Andrews Group	26269 Gutierrez Keys Lowemouth, SC 74134	2019-01	3318.29
Andrews and Sons	5689 Jordan Highway Armstrongport, AL 69917	2019-01	223.66
Anthony Group	88736 Gonzalez Dam Apt. 508 New Cassandraborough, MS 11673	2019-01	330.6
Anthony and Sons	Unit 1815 Box 1637 DPO AA 88875	2019-01	3023.21
Arnold-Huang	557 Tiffany Pass Apt. 335 Charlestown, AK 63326	2019-01	3719.04
Bailey LLC	5402 Rice Cliff Suite 162 Blackville, NE 06285	2019-01	89.07
Bailey, Thomas and Roberts	8242 Lauren Corners Apt. 713 South Jennifermouth, AS 58395	2019-01	91.8
Barber-Powell	85769 David Locks Melissaburgh, MD 45445	2019-01	5452.86
Barnes PLC	Unit 8144 Box 7989 DPO AA 71784	2019-01	90.24
Bennett, Aguirre and Walker	922 Daniel Parkways East Territown, ND 31611	2019-01	4140.72
Benson PLC	5807 Chavez Pines Trevinohaven, MD 68066	2019-01	1830.03
Bentley-Walker	7929 Stacie Squares Suite 165 East Sabrina, AZ 76439	2019-01	2029.23
Blackwell Morrison		2019-01	527.26

Data Visualization Charts

Ecommerce_Application

Dashboard

Interactive Analysis Rep...

Data Visualization Charts

- Count of Completed, Cancelled...
- Total Quantity of Items Sold by...
- Sales Growth Over the Years
- Daily Sales Summary Calender

Overview of Data Loadi...

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Data Visualization Charts

Overview of Charts

Count of Completed, Cancelled and Refunded Orders:

This is a Combination Chart. With the help of this chart, two or more bar graphs are combined into a single chart and can be displayed. In this chart, we show different the total count of Completed, Cancelled and Refunded Orders by the customers over the years. The X-axis depicts different years and the Y-axis depicts the total count of orders.

Total Quantity of Items Sold by Product Category:

This is a Donut Chart. It is a variation of a pie chart with a round hole in the center, resembling a doughnut. It displays data in a series of concentric rings, where each ring represents a data category. Using this chart, we have shown/displayed the Total Quantity of items/products sold by their category.

Sales Growth Over the Years:

This is a line chart. With the help of this chart, we have shown/displayed the Total Sales per year by category wise. The X-axis depicts the Years and the Y-axis depicts the Total Number of Sales Per Year by Product Category Wise.

Daily Sales Summary Calender:

This is a Calender Page. Using this page, we have displayed the Total Number of sales/purchases made by the customers on a particular calender day. On the calender, for each day, the value of total sales happened for that day is displayed.

Previous

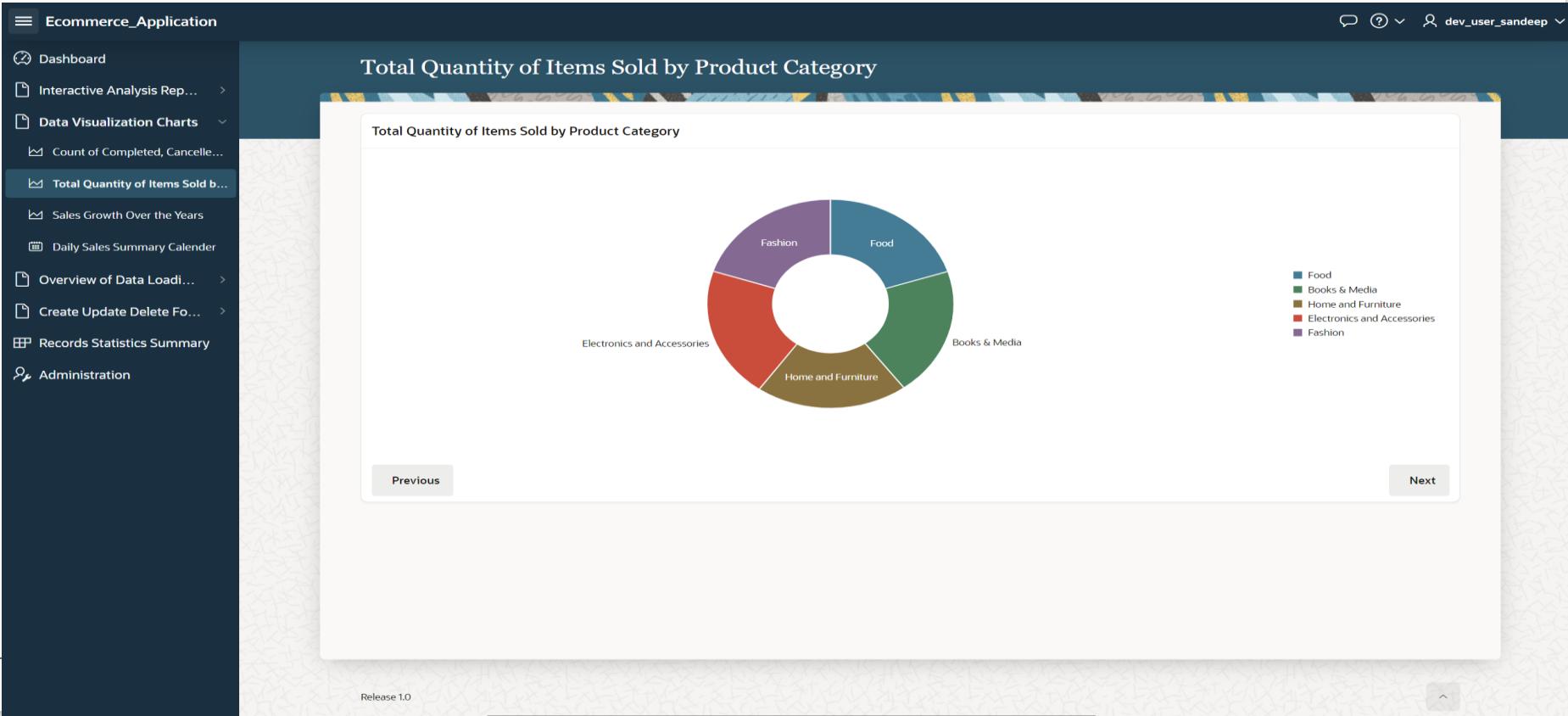
Next

Release 1.0

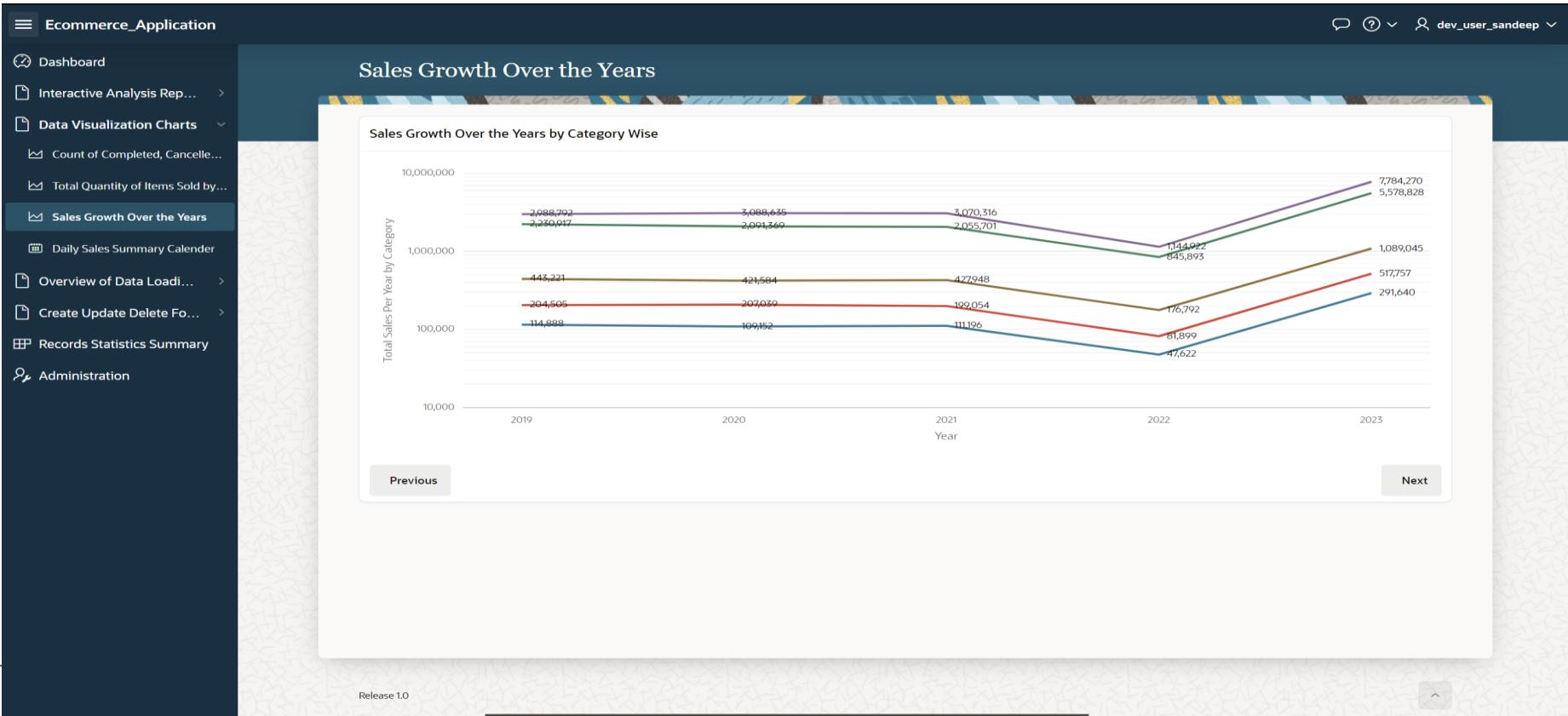
This is a combination chart which displays the total count of Completed, Cancelled and Refunded Orders over the years.



Total Quantity of Items Sold by Product Category: It displays the total quantity of items sold according to product category



Sales Growth Over the Years: It displays the every year sales growth by category wise.



Daily Sales Summary Calendar: This page displays the total sales per day by all the stores.

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- Count of Completed, Cancelle...
- Total Quantity of Items Sold by...
- Sales Growth Over the Years

Daily Sales Summary Calender

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Daily Sales Summary Calender

Daily Sales Summary Calender

< > today November 2023 month list

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
60622.32	46953.74	52162.79	52461.61	47288.9	38621.91	38659.74
5	6	7	8	9	10	11
49524.26	36107.02	34466.81	51143.64	49461.89	49161.98	
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

Previous Next

Overview of Loading Pages: The user can upload the dataset files.

The screenshot shows the Ecommerce Application interface. The left sidebar contains a navigation menu with items like Dashboard, Interactive Analysis Rep..., Data Visualization Charts, Overview of Data Load..., CUSTOMERS DATA LOAD, Stores Data Load, Orders Data Load, Products Data Load, Order Items Data Load, Order Payments Data Load, Order Reviews Data Load, Create Update Delete Fo..., Records Statistics Summary, and Administration. The main content area is titled "Overview of Data Loading Pages". It contains sections for Customers Data Load Page, Stores Data Load Page, Orders Data Load Page, Products Data Load Page, Order Items Data Load Page, Order Payments Data Load Page, and Order Reviews Data Load Page, each with a brief description. At the bottom are "Previous" and "Next" buttons, and a small release note at the bottom left.

Ecommerce_Application

Dashboard

Interactive Analysis Rep... >

Data Visualization Charts >

Overview of Data Load... >

CUSTOMERS DATA LOAD

Stores Data Load

Orders Data Load

Products Data Load

Order Items Data Load

Order Payments Data Load

Order Reviews Data Load

Create Update Delete Fo... >

Records Statistics Summary

Administration

Overview of Data Loading Pages

Overview of Data Loading Pages

Customers Data Load Page:

This is a Customers Data Load page. Using this page, users can import the customers data into a table within the Oracle database from various external sources. This feature is particularly useful for users who need to bulk insert data from spreadsheets, CSV files, or other structured text files without writing complex SQL import scripts.

Stores Data Load Page:

This is a Stores Data Load page. If any store data is missing/newly added, with the help of this page, users can import the stores data into a table within the Oracle database from various external sources like Spreadsheets, CSV, txt etc.

Orders Data Load Page:

This is a Orders Data Load page. Using this page, users can import the Customers orders data into a table within the Oracle database from various external sources.

Products Data Load Page:

This is a Products Data Load page. If new products are added into the market/store, using this page, users can import the Products data into a table within the Oracle database from various external sources.

Order Items Data Load Page:

This is a Order Items Data Load page. Using this page, users can import the order items data into a table within the Oracle database from various external sources.

Order Payments Data Load Page:

This is an Order Payments Data Load page. Using this page, users can import the Payments data into a table within the Oracle database from various external sources.

Order Reviews Data Load Page:

This is an Order Reviews Data Load page. Using this page, users can import the Order reviews data into a table within the Oracle database from various external sources.

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Release 1.0

Create Update Delete Forms:

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- Create Update Delete F...**
- Customer Edit Report
- Store Edit Report
- Orders Edit Report
- Product Edit Report
- Order Items Edit Report
- Payments Edit Report
- Records Statistics Summary
- Administration

Create Update Delete Forms

Create, Update, Delete Report Forms

Customer Edit Report:
This report consists of customer details. In this page, we can update, insert or delete customer table records.

Store Edit Report:
This report consists of Store details. In this page, we can update, insert or delete Store table records.

Orders Edit Report:
This report consists of Orders details. In this page, we can update, insert or delete Orders table records.

Products Edit Report:
This report consists of Product details. In this page, we can update, insert or delete Product table records.

Order Items Edit Report:
This report consists of Order Items details. In this page, we can update, insert or delete Order Items table records.

Payments Edit Report:
This report consists of Payments details. In this page, we can update, insert or delete Payments records.

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Release 1.0

Customer Edit Report: User can edit the customer report like name and email address.

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- Customer Edit Report
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Customer Edit Report

Customer ID	Full Name	Email Address
1	Sabrina Joseph	sabrina.joseph@example.com
2	Brenda Welch	brendawelch@example.com
3	Caleb Dean	caleb.dean@example.com
4	Daniel Hall	daniel.hall@example.com
5	Bryan Ward	bryan.ward@example.com
6	Donald Hanson	donald.hanson@example.com
7	John Baird	john.baird@example.com
8	Joseph Obrien	joseph.obrien@example.com
9	Keith Lewis	keith.lewis@example.com
10	Dalton Stewart	dalton.stewart@example.com
11	Kathryn Zuniga	kathryn.zuniga@example.com
12	Denise Rogers	denise.rogers@example.com
13	Elizabeth Lamb	elizabeth.lamb@example.com
14	Robert Carlson	robert.carlson@example.com

Go Actions ▾ Create

Store Edit Report: User can edit the store details like Store name, Location, phone number, email address, website.

Ecommerce_Application

Dashboard

Interactive Analysis Rep...

Data Visualization Charts

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Customer Edit Report

Store Edit Report

Orders Edit Report

Product Edit Report

Order Items Edit Report

Payments Edit Report

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Store Edit Report

Store ID	Store Name	Location	Phone Number	Email	Website	Latitude	Longitude
1	Castillo PLC	73269 Allen Extension Apt. 688 South Rebeccamouth, CT 99547	6273327631	castillo_plc@example.com	http://castillo-plc.com	-79.84	88.43
2	Thomas Group	1042 Melissa Pass Jacksonborough, HI 33141	2443018047	thomas_group@example.com	http://thomas-group.com	25.78	108.65
3	Kennedy, Roberson and Scott	77483 Darryl Expressway Lake Monique, IL 97333	6410675715	kennedy_roberson_and_scott@example.com	http://kennedy-roberson-and-scott.com	30.62	5.02
4	Gonzalez Inc	50512 Scott Drive Suite 491 South Stacey, TX 91354	8152672099	gonzalez_inc@example.com	http://gonzalez-inc.com	-28.56	-95.85
5	Blackwell-Morrison	3658 James Burg Suite 491 Nguyenland, VI 58614	4328141521	blackwell-morrison@example.com	http://blackwell-morrison.com	-33.69	-113.26
6	Murphy-Williamson	69262 Caldwell Trafficway Suite 104 North Markburgh, MO 07116	6438260971	murphy-williamson@example.com	http://murphy-williamson.com	19.93	-85.15
7	Rhodes-Nguyen	758 Charles Shoals Apt. 155 Manuelberg, VI 96038	6550500002	rhodes-nguyen@example.com	http://rhodes-nguyen.com	21.29	-28.26
8	Estrada-Leblanc	1973 Ewing Drives Hicksborough, FM 07468	4368105587	estrada-leblanc@example.com	http://estrada-leblanc.com	-65.75	29.00
		02898 Porter Canyon Apt					

Order Items Edit Report: User can search for the order and edit the order.

Ecommerce_Application

Dashboard

Interactive Analysis Rep...

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Customer Edit Report

Store Edit Report

Orders Edit Report

Product Edit Report

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Records Statistics Summary

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Order Items Edit Report

Actions ▾

	Order Status	Product	Quantity
Edit	Refunded	Computer Desk	1.0
Edit	Canceled	Wired Gaming Keyboard	3.0
Edit	Shipped	Portable Generator	1.0
Edit	Canceled	Fruits	4.0
Edit	Refunded	Wireless Smart Card Reader	5.0
Edit	Canceled	Storage Bench	4.0
Edit	Refunded	Patio Furniture	2.0
Edit	Canceled	Podcasts	5.0
Edit	Shipped	Waffles	1.0
Edit	Complete	Snow Blower	3.0
Edit	Refunded	USB LED Light Strip	1.0
Edit	Shipped	Art Exhibitions	1.0
Edit	Complete	Deck Railing Planters	4.0
Edit	Canceled	Jeans	2.0

Product Edit Report: User can search for the available Products and edit the details if needed.

Ecommerce Application

Dashboard

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Customer Edit Report

Store Edit Report

Orders Edit Report

Product Edit Report

Order Items Edit Report

Payments Edit Report

Records Statistics Summary

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Product Edit Report

Product ID	Product Name	Category	Unit Price	Product Description
1	Wireless Barcode Scanner	Electronics and Accessories	144.43	Wireless Barcode Scanner Wireless Barcode Scanner Wireless Barcode Scanner.
2	Monitor Arm Mount	Electronics and Accessories	583.99	Monitor Arm Mount Monitor Arm Mount.
3	USB LED Light Strip	Electronics and Accessories	472.17	Usb Led Light Strip USB LED Light Strip.
4	Keyboard Cover	Electronics and Accessories	870.88	Keyboard Cover Keyboard Cover Keyboard Cover.
5	Monitor Stand	Electronics and Accessories	50.42	Monitor Stand Monitor Stand Monitor Stand Monitor Stand Monitor Stand Monitor Stand.
6	Wireless Office Scanner	Electronics and Accessories	317.22	Wireless Office Scanner Wireless Office Scanner Wireless Office Scanner Wireless Office Scanner.
7	Wireless VoIP Phone	Electronics and Accessories	873.36	Wireless Voip Phone Wireless VoIP Phone Wireless VoIP Phone Wireless VoIP Phone Wireless VoIP Phone.
8	Wireless Presenter	Electronics and Accessories	705.18	Wireless Presenter Wireless Presenter Wireless Presenter.
9	Wireless Cash Register	Electronics and Accessories	288.24	Wireless Cash Register Wireless Cash Register Wireless Cash Register Wireless Cash Register.
10	USB Vacuum	Electronics and Accessories	119.99	Ucb Vacuum Cleaner USB Vacuum Cleaner USB Vacuum Cleaner USB Vacuum Cleaner USB Vacuum.

Payments Edit Report: User can search the payment details and edit them.

Ecommerce_Application

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- Product Edit Report
- Order Items Edit Report
- Payments Edit Report

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Administration

Payments Edit Report

	Payment ID	Order Status	Payment Type	Action
	1	Complete	Cash	
	2	Complete	Gift Card/Voucher	
	3	Complete	Cash	
	4	Complete	Debit Card	
	5	Refunded	Gift Card/Voucher	
	6	Complete	Cash	
	7	Shipped	Credit Card	
	8	Refunded	Credit Card	
	9	On Hold	Cash	
	10	On Hold	Debit Card	
	11	Shipped	Debit Card	
	12	Refunded	Credit Card	
	13	Refunded	Credit Card	
	14	Canceled	Debit Card	

Conclusion

- This project underscores the effectiveness of Oracle Application Express (APEX) in conjunction with Oracle Autonomous Database in creating a sophisticated e-commerce application.
- By harnessing the real-world Olist dataset, the project vividly demonstrates the practical application of these robust Oracle tools in managing and visualizing complex data.
- Apex seamless execution of CRUD operations and the implementation of dynamic data visualization techniques illustrate the capabilities of Oracle APEX and the Oracle Autonomous Database to work in harmony.
- The project not only achieves its initial objectives but also sets the stage for future enhancement, such as the integration of advanced analytics for deeper business insights. It stands as a prime example of leveraging modern technology solutions to build efficient, responsive, and data-driven applications in today's competitive e-commerce landscape.

Any Questions??

Thank You !!!

