

Oracle Apex 21.2





Oracle APEX

Developing Database Web Applications

Course Objectives

After completing this course, you should be able to:

- Create and run a database web application
- Manage your database application pages and page components
- Develop, use, and customize different types of reports in your application
- Create, use and modify forms in your application
- Build and use different types of charts in your application
- Customize the look and feel of your application
- Implement security in your application
- Migrate your application between environments

Course Agenda

- Unit 1: Getting Started with Oracle Application Express
- Unit 2: Using SQL Workshop
- Unit 3: Creating a Database Application
- Unit 4: Managing Pages in Page Designer
- Unit 5: Developing Reports
- Unit 6: Managing and Customizing Interactive Reports
- Unit 7: Managing and Customizing Interactive Grids
- Unit 8: Creating and Using Forms

Course Agenda

- Unit 9: Creating Application Page Controls
- Unit 10: Adding Computations, Processes, and Validations
- Unit 11: Implementing Navigation in your Application
- Unit 12: Using Themes and Theme Styles
- Unit 13: Implementing Security in your Application
- Unit 14: Adding Additional Pages to your Application
- Unit 15: Creating and Using Dynamic Actions and Plug-ins
- Unit 16: Migrating Application Development Between Environments

What You Should Know Beforehand

- Basic knowledge of SQL
- Basic knowledge of PL/SQL, and HTML is beneficial
- Basic understanding of Web applications even as an end user

Learn More...

<https://apex.oracle.com>

The screenshot shows the Oracle APEX homepage and a preview of the application interface. The homepage features a dark background with a wavy pattern. At the top, there's a navigation bar with the APEX logo, a menu icon, and buttons for "Get Started for Free" and "Sign In". A prominent banner in the center says "Build scalable, secure enterprise apps. Fast." Below it, a message indicates "Oracle APEX 19.2 is now available!" with "NEW" in a green box. There are two buttons: "Get Started for Free" and "See What's New". The main content area shows a preview of the Oracle APEX interface, which includes tabs for "App Builder", "SQL Workshop", "Team Development", and "App Gallery". Each tab has a corresponding icon: a grid for App Builder, a database for SQL Workshop, a person icon for Team Development, and a download arrow for App Gallery. Below these tabs, there are sections for "Top Apps", "Top Users", and "News and Messages". On the right side of the interface, there's a sidebar with links for "About", "Dashboard", and statistics: "23" and "170". At the bottom, there's a Gartner Peer Insights logo with a 5-star rating and the text: "Oracle has been named a November 2019 Gartner Peer Insights Customer's Choice for Enterprise Low-Code Application Platforms for Oracle APEX!"

Get Started for Free

Sign In

Build scalable, secure enterprise apps. Fast.

NEW Oracle APEX 19.2 is now available!

Get Started for Free See What's New

Oracle APEX

ORACLE APEX App Builder SQL Workshop Team Development App Gallery User

About

Oracle APEX is the native application development framework of the Oracle Database.

Learn More ...

Dashboard

23 170

App Builder SQL Workshop Team Development App Gallery

Top Apps Top Users News and Messages + >

Gartner peerinsights™

"Oracle has been named a November 2019 Gartner Peer Insights Customer's Choice for Enterprise Low-Code Application Platforms for Oracle APEX!"

Oracle Cloud Infrastructure

—
New Free Tier

oracle.com/cloud/free



Always Free

Services you can use for unlimited time

+

30-Day Free Trial

Free credits you can use for more services





Unit 1: Getting Started with Oracle APEX

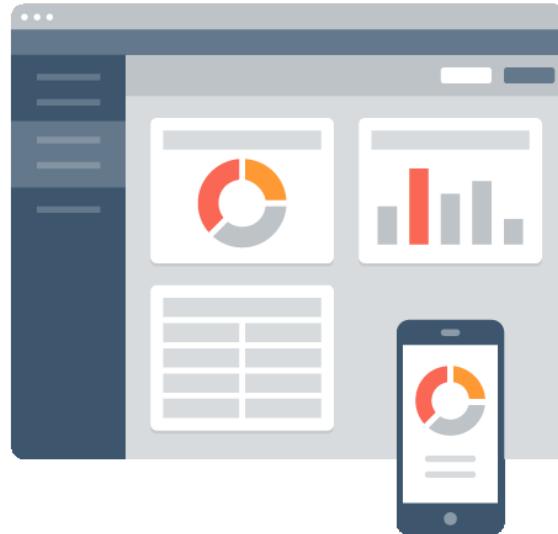
Lesson Objectives

After completing this lesson, you should be able to:

- Describe Oracle APEX
- Explain the key features of Oracle APEX
- Describe low code application development
- List and describe the components of Oracle APEX
- Describe Oracle APEX architecture
- Log in to Oracle APEX
- Install and run a packaged app

What is Oracle APEX?

Database-centric web application development framework



Develop desktop and
mobile web apps



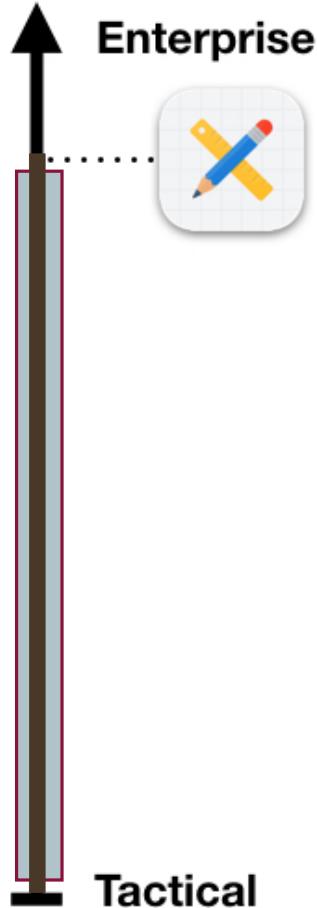
Visualize and maintain
database data



Leverage SQL Skills and
database capabilities

Oracle APEX

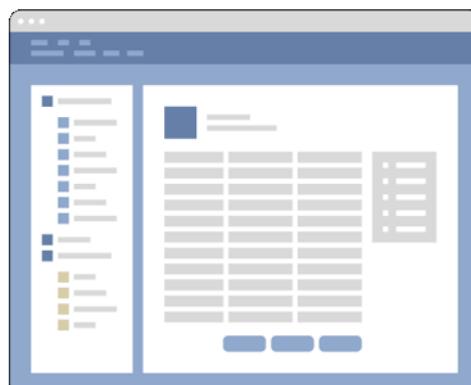
What sorts of apps is Oracle APEX suitable for?



- Large mission-critical apps for thousands of users
- Fill in gaps in corporate systems
- Streamline outdated business processes
- Modernization of legacy systems
- Self-service apps for all employees
- Customer / partner-facing portals
- Responsive apps that work on any device
- Proof of Concepts
- Quick-win apps (lifespan < a few months)
- Replacing spreadsheets

Oracle APEX: Use Cases

Spreadsheet Replacement



Features

- Drag and Drop an XLS, CSV, XML, or JSON file
- Create table in Autonomous Database
- Upload data into new table
- Create App based on new table



Solutions

- *Single source-of-truth*
- *Send out a URL not a file*
- *Secure, scalable, multi-user app*
- *Extend with Charts, Calendars, Validations, and more*

Oracle APEX: Use Cases

Extending Enterprise Systems



Features

- Extend ERPs and other enterprise software
- Provide organization-specific dashboards
- Improved workflows
- Fill gaps



Solutions

- *Meet non-standard requirements*
- *Optimize common business functions*
- *Enhance data capture*
- *Integrate disparate data sources*

See: Extend E-Business Suite using APEX - [Official white paper](#)

Oracle APEX: Use Cases

Modernizing Oracle Forms



Features

- APEX is the natural evolution of Forms
- Both based on SQL and PL / SQL
- Re-use DB packages, procedures, functions
- Easily train Forms Developers into developing with APEX

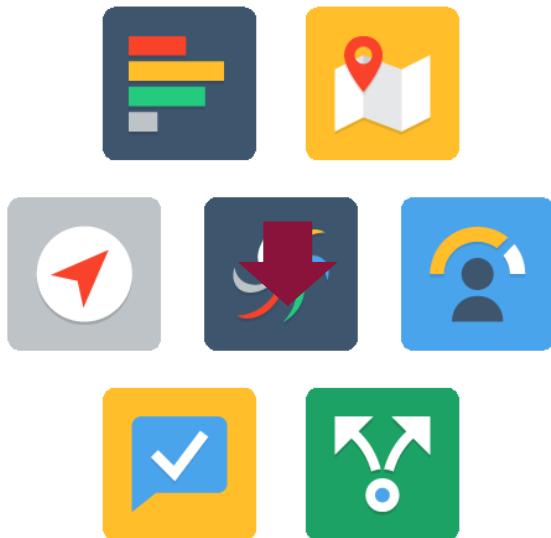


Solutions

- *Proof-of-concept using subset of Forms apps*
- *Organization-wide apps, rather than back-office*
- *External apps for customers / partners*
- *Mobile-first apps*
- *Net new requirements*

Oracle APEX: Use Cases

Rapid Application Development



Features

- Build apps in days / weeks not months / years
- Use powerful wizards to create fully featured apps
- Easily modify to meet changing requirements
- Rapidly iterate to production-ready app
- Low-code capabilities allow non-IT professionals to also build or help build apps



Solutions

- *Opportunistic*
- *Simplistic, tactical apps to meet immediate need*
- *Webify paper processes*
- *Generally developed by one or two people*

Oracle APEX: Use Cases

Build Large, Enterprise-scale Apps



Features

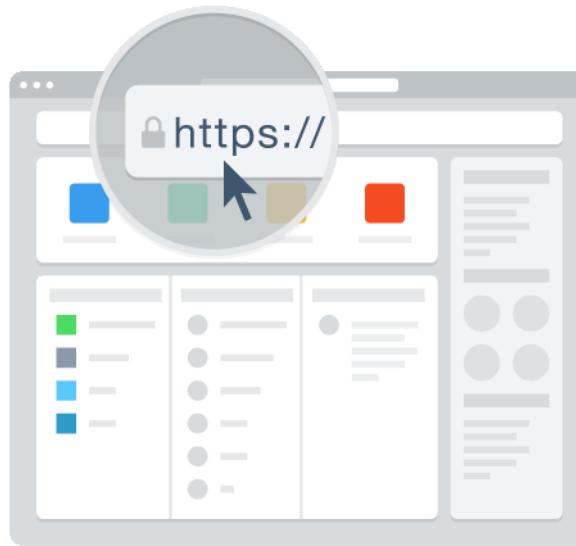
- Quickly build custom mission-critical apps
- Corporate data reporting and maintenance
- Merge separate data silos
- Build organization-wide self-reporting apps



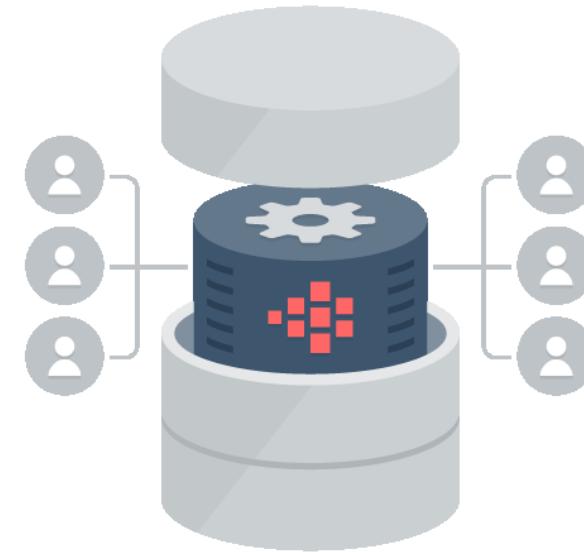
Solutions

- *Simple deployment*
- *Single installation runs any number of apps*
- *Scale to hundreds of thousands of users*
- *Leverages enterprise features of Oracle Autonomous*

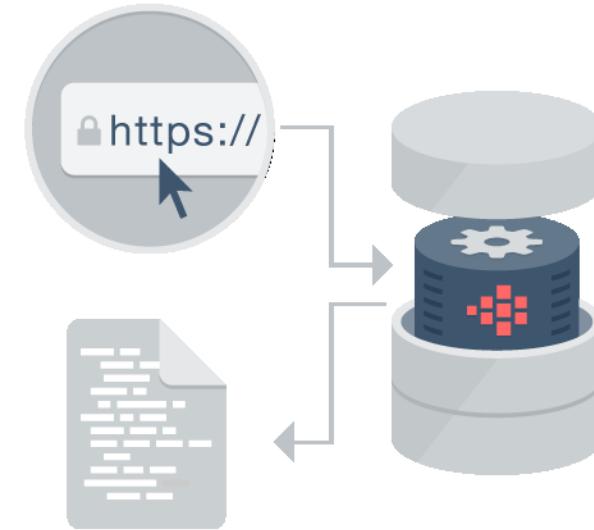
Oracle APEX: Distinguishing Characteristics



App Development IDE is
a web browser.
**No client software
needed**



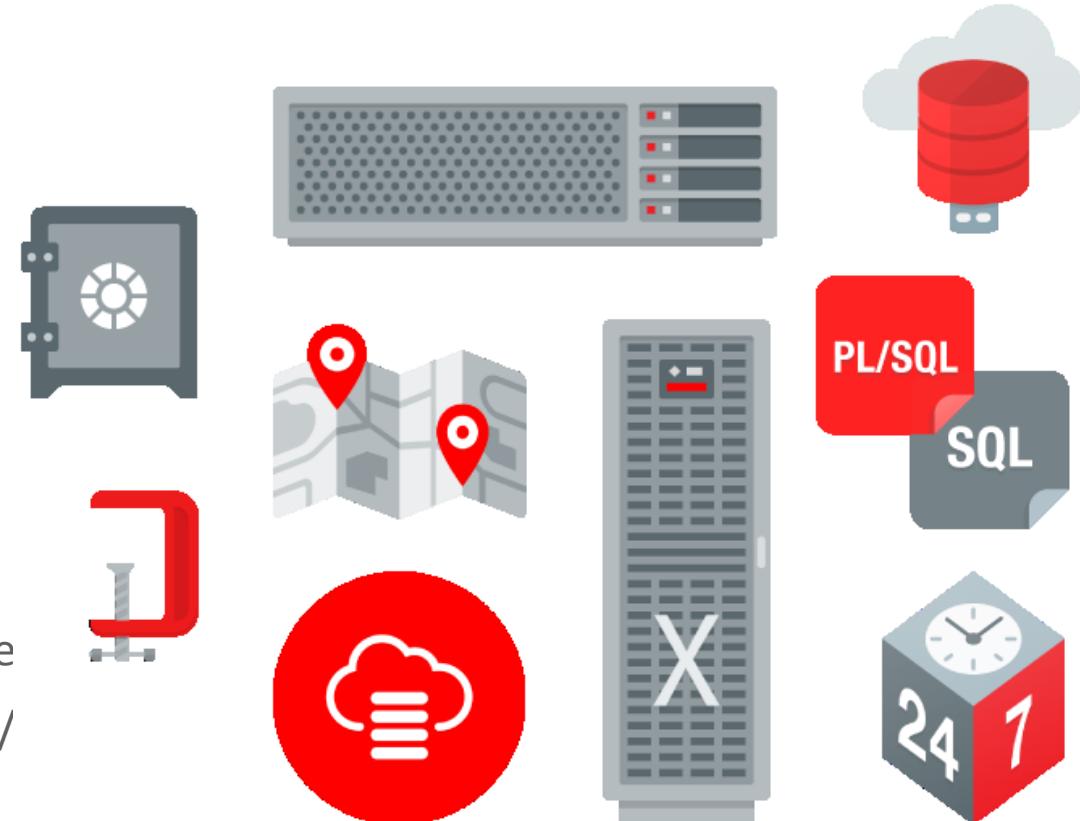
App definitions are stored in
the database as meta data.
**Declarative – No code
generation**



Page generation is efficient
with only one request and
one response.
**Data processing done in the
Database**

Oracle APEX: No Cost Feature of the Oracle Database

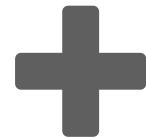
- No-cost fully supported feature
 - Any number of apps, developers & end-users
 - Specialized Oracle Support Team
 - 11gR2, 12c, 18c, 19c, 21c, 22c...
 - All DB editions: EE, SE, SE1, XE
- Included with Oracle Cloud Services
- No cost evaluation <https://apex.oracle.com>
- Easy to install
 - Included by default with all editions of Oracle database
 - Download latest release from <https://apex.oracle.com/>



Oracle APEX on Oracle Autonomous Database



Oracle
APEX



Oracle
Autonomous
Database

Oracle APEX: Rapidly Develop, Customize, and Deliver

Pre-built controls for security, authentication,
database interaction, validation, session management
and more...

Go from prototype to production in minutes



Develop



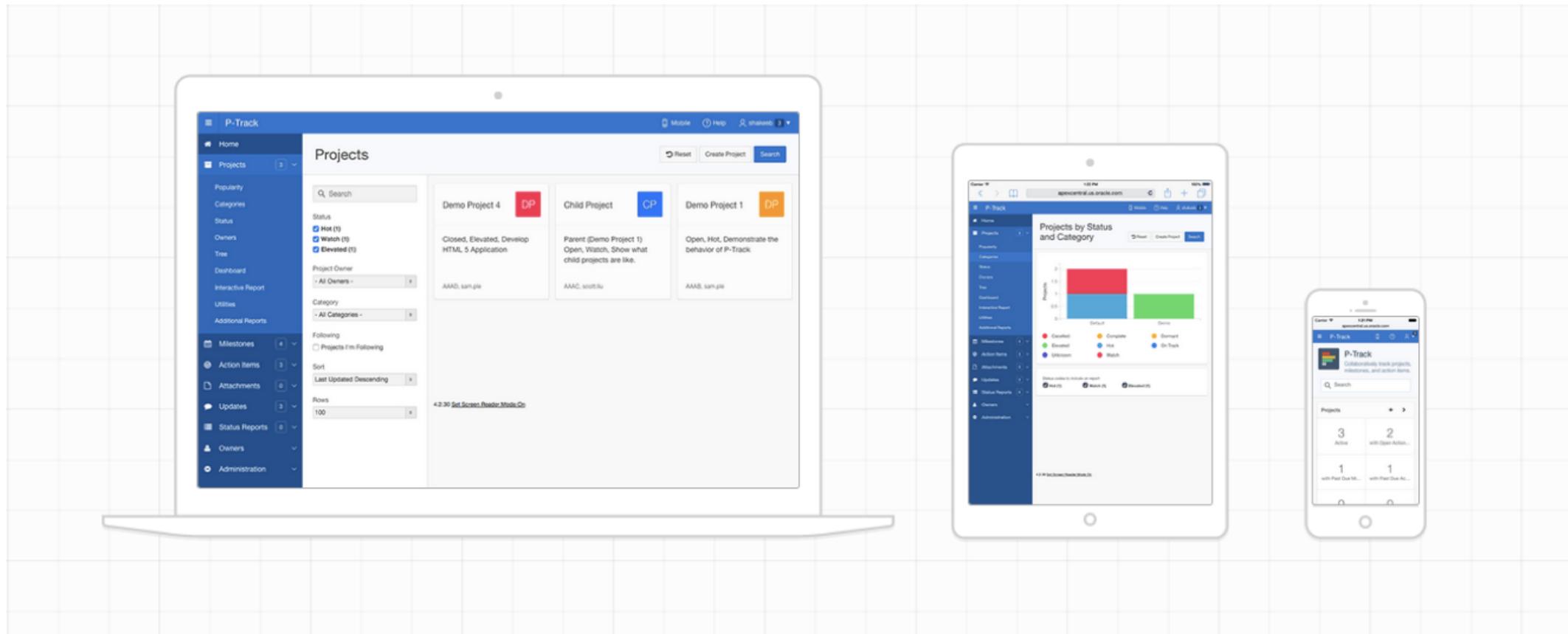
Customize



Deliver

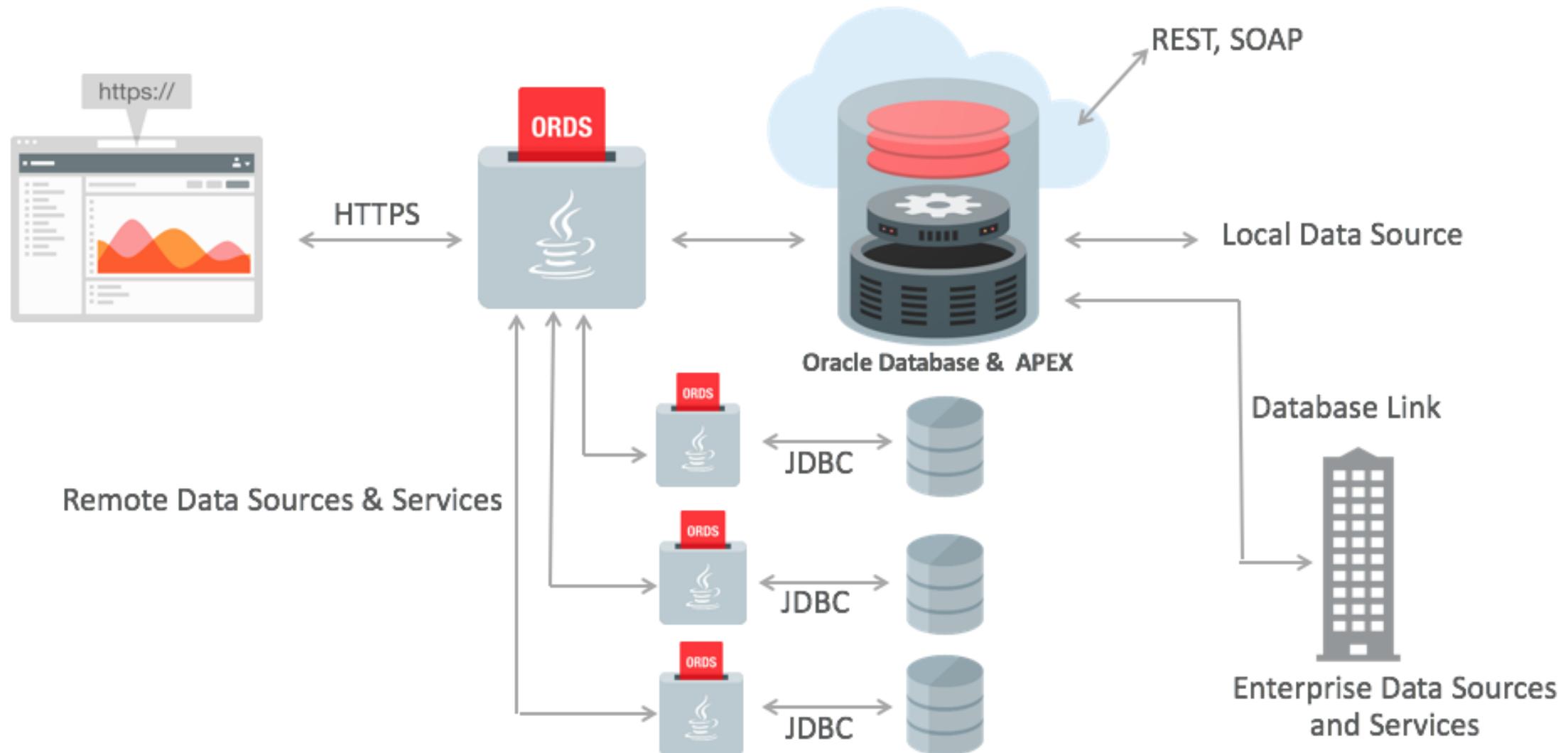


Oracle APEX: User Interface for Any Device

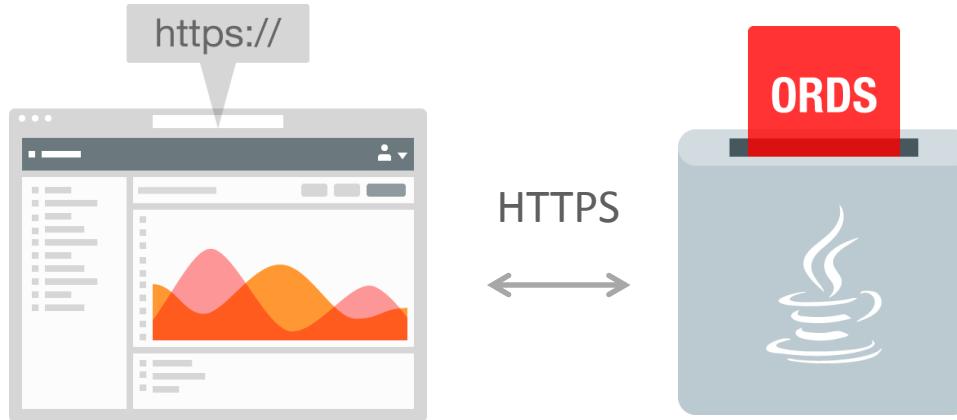


Modern, intuitive, accessible UI for any device
fully customizable and responsive apps

Data Sources: Local, Remote, and REST Access



Oracle APEX Architecture



Oracle REST Data Services

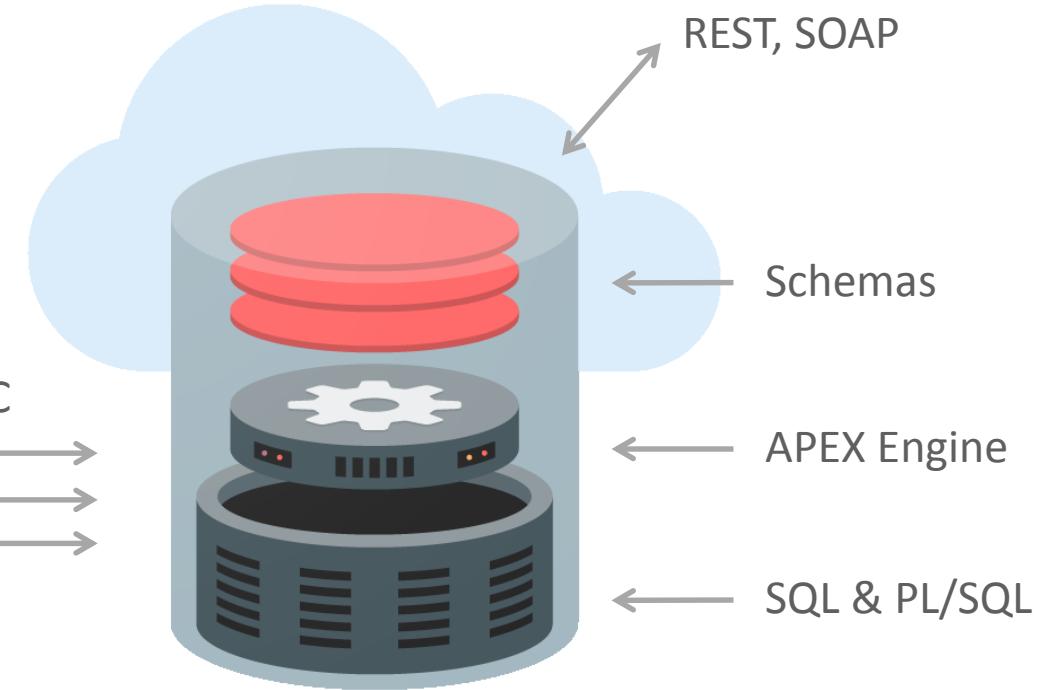
(Weblogic, Jetty, Tomcat)

No Application Logic

Converts HTTP to database API calls

Browser

Mid Tier



Oracle Database

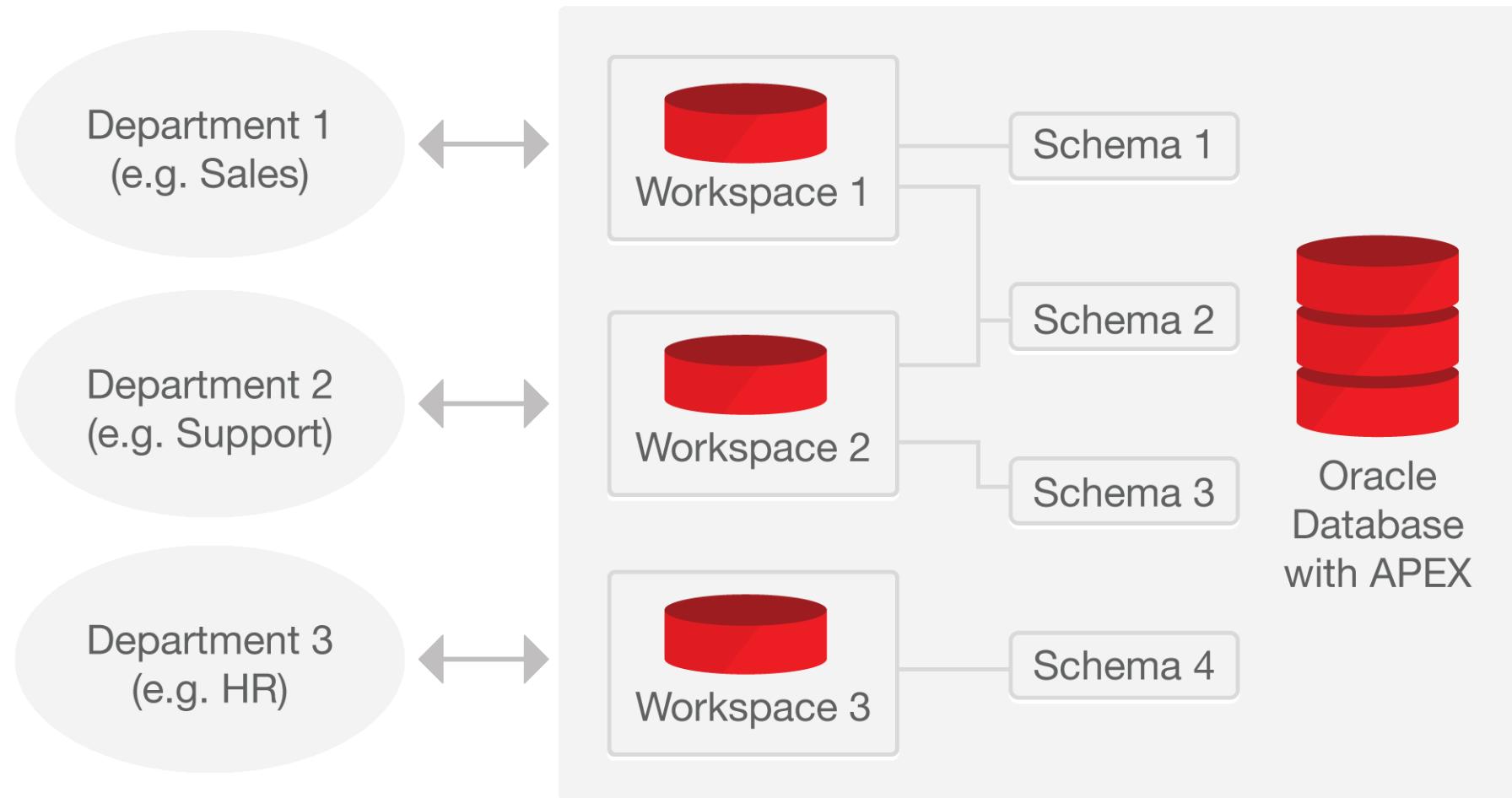
(Pluggable or Dedicated, 11g, 12c, 18c)

Zero latency database data access

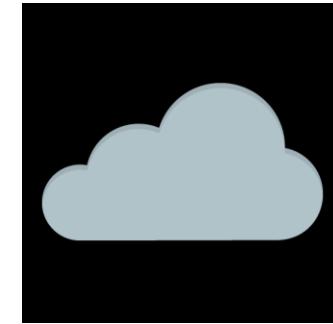
Dynamically driven by APEX metadata

Database Tier

Oracle APEX - Concepts



Development / Deployment Options



Local

- Install on stand-alone laptops using Oracle Express Edition (XE) or full database version
- Simply upgrade APEX to the required version
- Can work completely disconnected

On-Premise

- Typically run by the IT Department
- IT generally both production operations service, and a service provider
- Departments responsible for application development

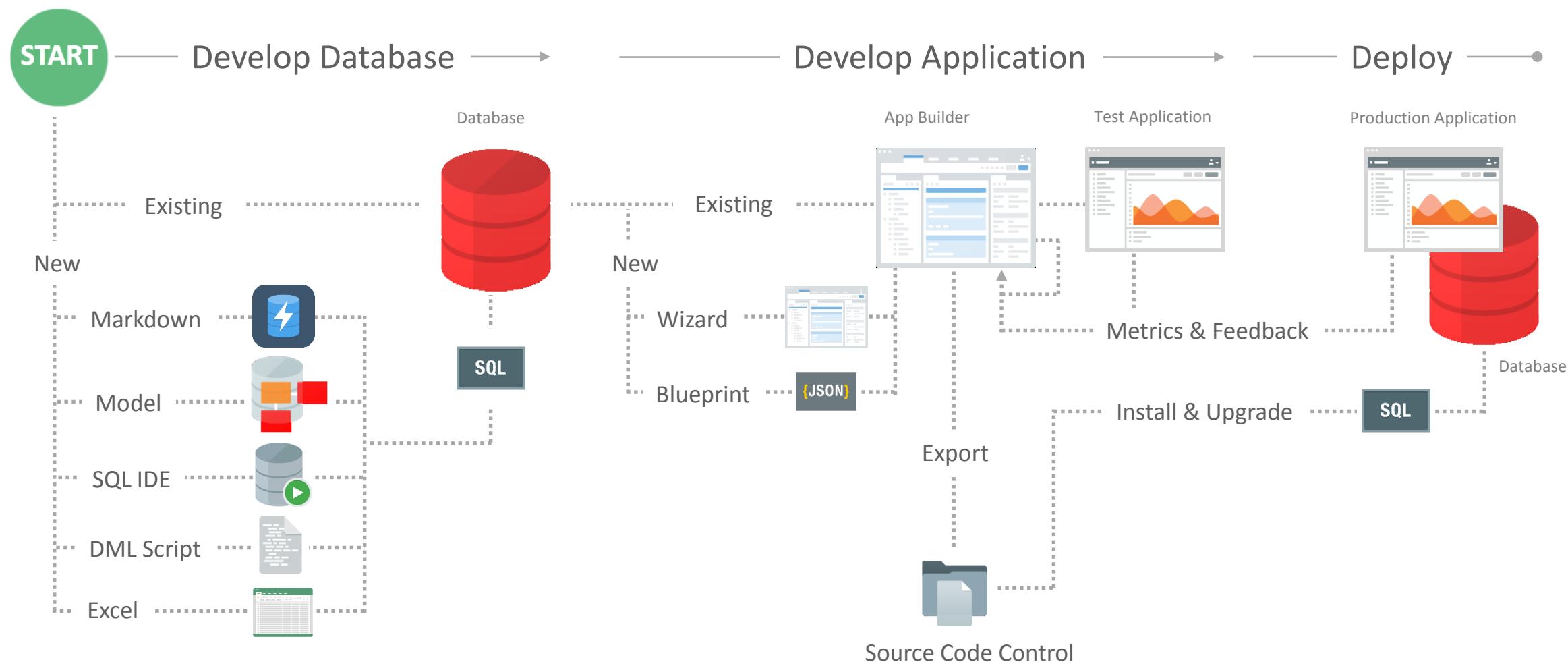
Cloud

- Deploy Internet applications
- Leveraged for fast application development, user acceptance and training.
- Prototyping & Proof-of-Concept
- Consulting companies develop for deployment on customer premise

Browser based application development framework enables efficient development & deployment

Shoot someone a URL – Check this out – Application Development

Oracle APEX: Low Code Data First App Development





Oracle APEX

Getting Started

Getting Started...

The screenshot shows the Oracle APEX homepage. At the top, there's a navigation bar with the APEX logo, a menu icon, a "Get Started for Free" button, and a "Sign In" link. The main heading is "Build scalable, secure enterprise apps. Fast." Below it, a "NEW" badge says "Oracle APEX 19.2 is now available!" with "Get Started for Free" and "See What's New" buttons. A large screenshot of the APEX application interface is displayed, featuring four main modules: App Builder, SQL Workshop, Team Development, and App Gallery, each with a corresponding icon. To the right of the interface is a sidebar with sections for "About" (describing APEX as the native application development framework of the Oracle Database) and "Dashboard" (showing statistics like 23 and 170). At the bottom left is the Gartner peer insights logo with three stars and the text "Gartner peerinsights™". A quote from Gartner is displayed: "Oracle has been named a November 2019 Gartner Peer Insights Customer's Choice for Enterprise Low-Code Application Platforms for Oracle APEX!"

Get Started for Free

Sign In

Build scalable, secure enterprise apps. Fast.

NEW Oracle APEX 19.2 is now available!

Get Started for Free See What's New

Oracle APEX

ORACLE APEX App Builder SQL Workshop Team Development App Gallery User

About

Oracle APEX is the native application development framework of the Oracle Database.

Learn More ...

Dashboard

App Builder SQL Workshop Team Development App Gallery

Top Apps Top Users News and Messages + > 23 170

Gartner peerinsights™

"Oracle has been named a November 2019 Gartner Peer Insights Customer's Choice for Enterprise Low-Code Application Platforms for Oracle APEX!"

Sign up for a free workspace on <https://apex.oracle.com>



Oracle APEX

Product Components

Logging In to a Workspace

Steps:

1. Enter the URL in your browser address bar.
2. Enter the workspace name.
3. Enter the username and password.
4. Click Sign In.



Oracle Application Express

lowcode

lowcode

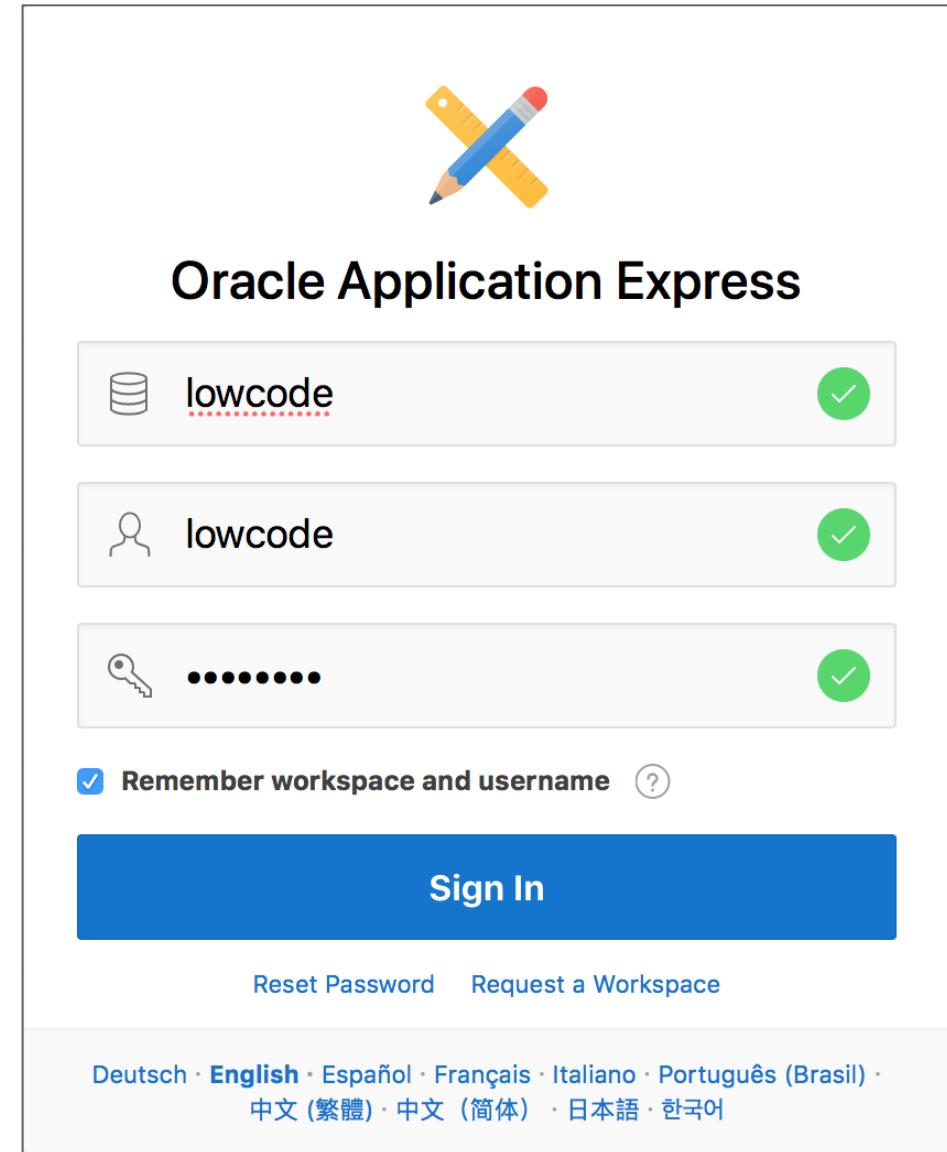
.....

Remember workspace and username [?](#)

Sign In

[Reset Password](#) [Request a Workspace](#)

Deutsch · **English** · Español · Français · Italiano · Português (Brasil) ·
中文 (繁體) · 中文 (简体) · 日本語 · 한국어



Oracle APEX - Major Components

The screenshot shows the Oracle APEX dashboard. At the top, there is a navigation bar with links for ORACLE APEX, App Builder, SQL Workshop, Team Development, App Gallery, and search functions. To the right of the dashboard, there is a sidebar titled "About" which provides a brief overview of Oracle APEX and a link to "Learn More ...". Below the navigation bar, there are four main components represented by icons: "App Builder" (blue icon with a wrench), "SQL Workshop" (green icon with a cloud), "Team Development" (orange icon with an exclamation mark), and "App Gallery" (red icon with a download arrow). The "Dashboard" section below these components displays statistics: 4 Applications, 15 Tables, 0 Productivity Apps, and 0 Features. It also shows a "Top Apps" section with a single entry for "lowcode" and a "Top Users" section with one user named "lowcode". A "News and Messages" section contains a "System Message".

Applications	Tables
4	15

Productivity Apps	Features
0	0

Comprehensive Development IDE, Web Application Development, and SQL Database Development

Oracle APEX - App Builder

The screenshot displays the Oracle APEX App Builder interface. At the top, there is a navigation bar with tabs: ORACLE APEX, App Builder (selected), SQL Workshop, Team Development, and App Gallery. To the right of the tabs are search, filter, help, and user profile icons.

The main content area contains four large buttons: Create (with a plus icon), Import (with an upward arrow icon), Dashboard (with a clock icon), and Workspace Utilities (with a wrench icon). Below these buttons is a search bar with a dropdown, a Go button, and other action buttons like Reset and Create >. A row of recent applications is shown, each with a thumbnail icon and details:

- Employees Mobile App (58942)
- Sample Database Application (94366)
- Employee Details App (135912)
- Tasks App (136944)

A page number indicator "1 - 4" is located near the bottom of this row. At the bottom of the main content area, there is a call-to-action section with a "Learn more about App Builder" button (containing a cursor icon) and a "Get Started" button.

The right side of the interface features a sidebar with the following sections and links:

- About**: Describes the App Builder's purpose and provides a "Learn More ..." link.
- Recent**: Lists recent projects: 136944 Tasks App, 94366 Sample Database Application, 58942 Employees Mobile App, and 135912 Employee Details App.
- Tasks**: Links to "Create Application from Spreadsheet", "Install Sample App", and "Install Productivity App".
- Migrations**: Link to "Oracle Forms Migrations".

Oracle APEX - SQL Workshop

The screenshot shows the Oracle APEX SQL Workshop interface. At the top, there is a navigation bar with tabs: ORACLE APEX, App Builder, SQL Workshop (selected), Team Development, and App Gallery. To the right of the tabs are search, help, and user icons. Below the navigation bar, there are five main tool icons: Object Browser, SQL Commands, SQL Scripts, Utilities, and RESTful Services. Each icon has a green square button with a white symbol on it. Below these icons are sections for Recently Created Tables and Recent SQL Commands. The Recently Created Tables section lists several tables with their creation times and names. The Recent SQL Commands section lists recent commands with their execution times and descriptions. On the right side, there is a sidebar titled "About" which provides a brief overview of the SQL Workshop and a "Learn More ..." link. Below the "About" section is a "Schema" section where users can select a default database schema. There is also a "LOWCODE" dropdown with a "Set" button. The sidebar continues with a "Create Object" section containing links for Table, View, Index, Sequence, Type, Package, Procedure, and Function.

Recently Created Tables		Recent SQL Commands	
DEMO_CONSTRAINT_LOOKUP	29 hours ago	drop TABLE "HARDWARE" cascade cons...	8 days ago
DEMO_STATES	29 hours ago	drop TABLE "DEPARTMENT_LOOKUP" cas...	8 days ago
DEMO_ORDER_ITEMS	29 hours ago	drop TABLE "PROJECT_BUDGET" cascad...	8 days ago
DEMO_CUSTOMERS	29 hours ago	drop TABLE "AUDIT_DETAILS" cascade...	8 days ago
DEMO_TAGS_TYPE_SUM	29 hours ago	drop TABLE "DEPARTMENTS" cascade c...	2 weeks ago
DEMO_TAGS_SUM	29 hours ago	drop TABLE "EMPLOYEES" cascade con...	2 weeks ago
DEMO_ORDERS	29 hours ago	drop TABLE "SKILLS" cascade constr...	2 weeks ago

[Learn more about SQL Workshop](#) [Get Started](#)

Browser based maintenance of database objects and data
Designed to meet application developers' needs, especially in hosted environments

Oracle APEX - Team Development

- Use Team Development to track and manage issues in a conversational fashion.
- Create templates to provide users with starter text for issues and comments.
- Apply labels and label groups, assign issue owners, and set milestones.

The screenshot shows the Oracle APEX Team Development interface. At the top, there's a navigation bar with links for ORACLE, App Builder, SQL Workshop, Team Development (which is highlighted in yellow), App Gallery, and various search and help icons. Below the navigation is a breadcrumb trail "Issues \ Issue Details". The main content area displays an issue titled "Team Development in Oracle APEX 19.2!" with a green exclamation mark icon. It shows a comment from user "Joel Kallman" created 5 minutes ago, which reads: "Hi there! This is your very first issue! You can create issues to keep track of tasks, features, bugs, and feedback for all of your APEX projects! You can add labels to issues, add assignees, set milestones, and even apply formatting using Markdown shorthand! Below is a quick sample of what you can do with Markdown:". To the right of the main content are several sidebar panels: "About" (describing the feature), "Assignees" (listing "Joel Kallman"), "Labels" (with categories like Enhancement Request, Performance Issue, Training Issue, Security, Critical, Moderate Effort, Working On It), "Milestones" (with a "Code Freeze" entry for 11/16/2019), and "Notifications". A code block in the main content area contains the following Markdown sample:

```
device_intranet_cloud(page_disk);
if (81 >= scanner + realityHoneypot + intellectual_heuristic) {
    ataDataWeb -= fileWormCamera + hypertext;
    hdtv(-3 - 2);
    folder(controlHtml, model - 5);
}
```

Below the code block, there are two Latin quotations in bold:

**Orionis bellica Stygias partes
Solibus an rutilis cornu**

**Consortia dum mea aethere
Deionidenque vixque est**

Oracle APEX – App Gallery

ORACLE APEX | App Builder | SQL Workshop | Team Development | App Gallery |

All Productivity Sample Installed

APEX Application Archive Software Development	Application Standards Tracker Tracking, Knowledge Management	Brookstrut Sample Application Sample Application
Bug Tracking Software Development, Tracking	Checklist Manager Tracking, Team Productivity	Competitive Analysis Marketing
Customer Tracker Tracking, Marketing	Data Reporter Knowledge Management, Tracking, Project Management	Decision Manager Team Productivity, Tracking
Group Calendar Team Productivity	Incident Tracking Software Development, IT Management	Live Poll Marketing, Tracking
Meeting Minutes Tracking, Team Productivity	Opportunity Tracker Tracking, Team Productivity	P-Track Project Management, Team Productivity, Tracking
Sample Calendar Sample Application	Sample Charts Sample Application	Sample Collections Sample Application
Sample Data Loading Sample Application	Sample Database Application Sample Application Installed	Sample Dialog Sample Application

Installing a Packaged App

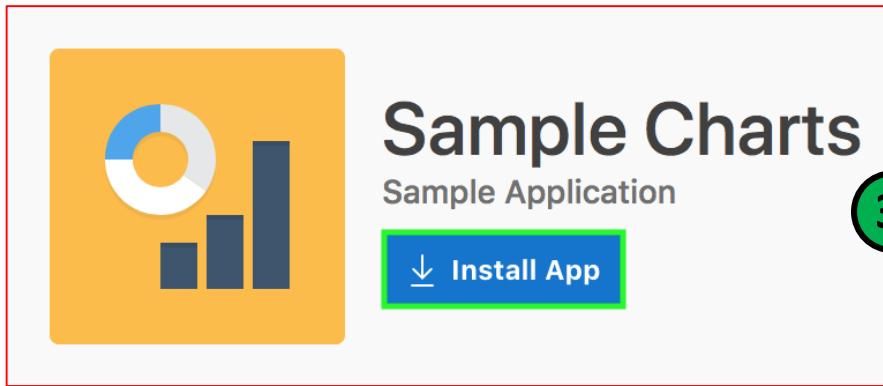
The screenshot shows the Oracle APEX interface with the following components:

- Top Navigation Bar:** Contains links for ORACLE APEX, App Builder, SQL Workshop, Team Development, and App Gallery. The App Gallery link is highlighted with a red border.
- App Builder:** Icon showing a dashboard with a blue edit tool.
- SQL Workshop:** Icon showing a dashboard with a green cloud icon.
- Team Development:** Icon showing a dashboard with an orange exclamation mark.
- App Gallery:** Icon showing a dashboard with a red download arrow. This icon is circled with a green circle labeled "1".

App Gallery View:

- Search Bar:** Contains the placeholder "Search Apps".
- Filter Buttons:** All, Productivity, Sample, Installed. The "All" button is highlighted.
- App Listings:**
 - Meeting Minutes:** Tracking, Team Productivity. Icon: Clock.
 - Sample Calendar:** Sample Application ✓ Installed. Icon: Calendar.
 - Opportunity Tracker:** Tracking, Team Productivity. Icon: Line graph.
 - Sample Charts:** Sample Application. Icon: Donut chart and bar chart. This icon is circled with a green circle labeled "2".

Installing a Packaged App



The screenshot shows the 'Install App' wizard step 1. It displays the following configuration:

- Application Name: **Sample Charts**
- Authentication: **Application Express Accounts**
- Workspace Name: **LOWCODE**
- Schema: **LOWCODE**

At the bottom are 'Cancel' and 'Next >' buttons, with 'Next >' highlighted with a red circle containing the number '4'.

The screenshot shows the 'Install App' wizard step 2. It displays the following configuration:

- Application Name: **Sample Charts**
- Authentication: **Application Express Accounts**
- Workspace Name: **LOWCODE**
- Schema: **LOWCODE**

At the bottom are '<', 'Cancel', and 'Install App' buttons, with 'Install App' highlighted with a red circle containing the number '5'.

Running the Packaged App

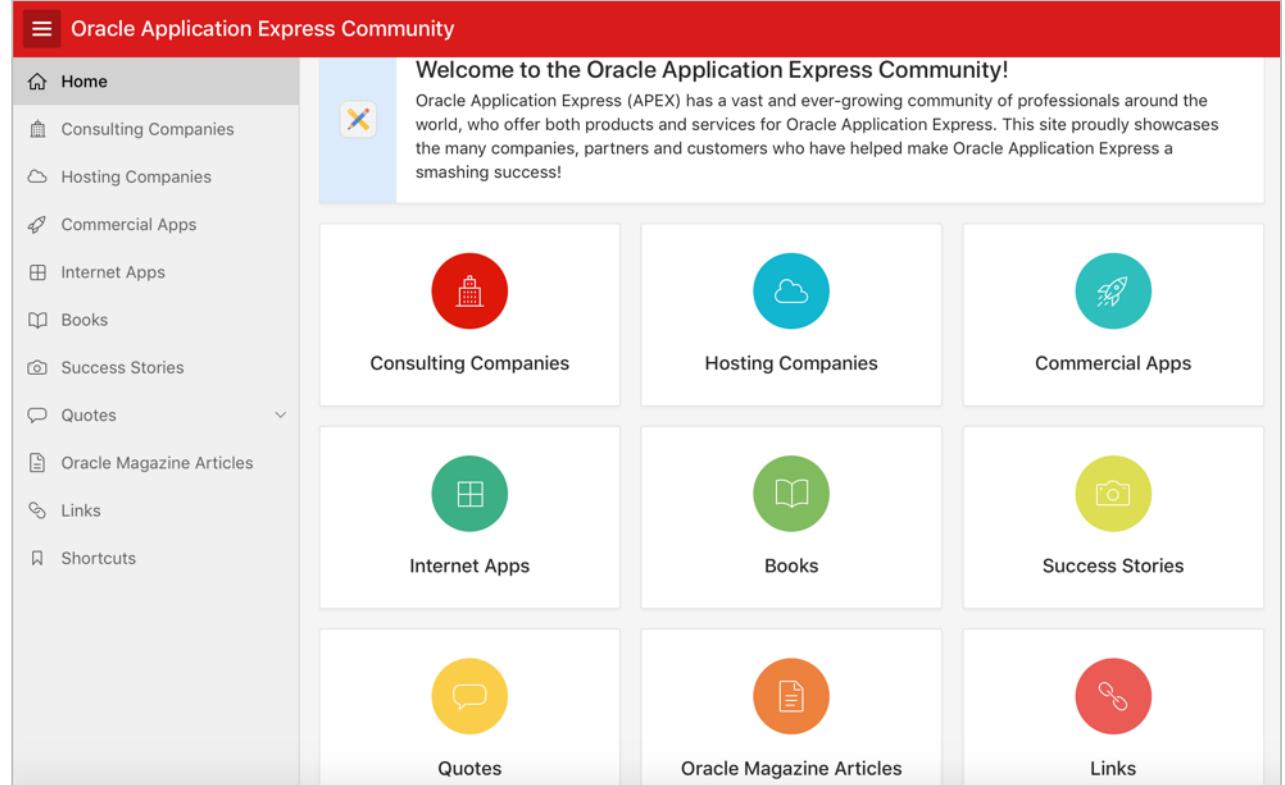
The image displays three views of the Sample Charts application:

- Installed Application View:** Shows the packaged application "Sample Charts" under "Sample Application". It indicates it is "Installed (Unlocked)" with a green checkmark, has a "Manage" button, and a blue play button. A red box highlights the application icon and title. A green circle labeled "1" points to the play button.
- Login Screen:** Shows the "Sign In" screen for the application. It includes a user input field with placeholder "lowcode", a password input field with placeholder ".....", and a "Sign In" button. A red box highlights the sign-in form. A green circle labeled "2" points to the "Sign In" button.
- Application Home Screen:** Shows the "Sample Charts" home page. It features a sidebar with navigation links like Home, Area, Bar, Box Plot, etc., and a main content area with the title "Sample Charts" and a brief description. Below this are sections for "About Sample Charts" and a grid of chart types with icons and names: Area, Bar, Box Plot, Bubble, Combination, Data Densification, Dashboard, Dashboard - Pies, Funnel, Gantt, Legend Plug-in, Line, Data, Dashboard, Dashboard -, Funnel, and Gantt.

Oracle APEX - Community

Community

- Over 500,00 developers worldwide
 - Estimated from support requests, downloads, conferences, discussion forum activity
- More than 100 active bloggers
<http://odtug.com/apex>
- <http://apex.oracle.com/community>
Consulting companies, books, success stories, quotes, commercial apps



The screenshot shows the Oracle Application Express Community homepage. The left sidebar contains a navigation menu with links to Home, Consulting Companies, Hosting Companies, Commercial Apps, Internet Apps, Books, Success Stories, Quotes, Oracle Magazine Articles, Links, and Shortcuts. The main content area features a red header bar with the text "Welcome to the Oracle Application Express Community!" and a brief description. Below the header, there are nine cards arranged in a 3x3 grid, each representing a category: Consulting Companies (red icon), Hosting Companies (blue icon), Commercial Apps (teal icon), Internet Apps (green icon), Books (light green icon), Success Stories (yellow-green icon), Quotes (yellow icon), Oracle Magazine Articles (orange icon), and Links (red-orange icon).

Oracle APEX - Community

Community site built by the community for the community

<http://apex.world>

Community-authored site providing:

- Plug-ins
- Slack discussion channels
- Twitter feeds
- News
- Jobs
- Conferences
- Meetups

The screenshot shows the homepage of apex.world. At the top, there's a navigation bar with links for Home, Beginners, Post Jobs & Find Developers, Meetings & Trainings, Plug-ins, and Community. Below the navigation, there are three main sections: 1) Slack, which includes a dropdown menu for '#_general' and a button to 'Get your Slack invite!'; 2) News, which features a search bar for 'Tags' and 'Title, Author,' and a list of news items with user profiles and links; 3) Tweets by @orclapexworld, which shows a follow button with 1,358 followers, a tweet button, and a list of tweets from the account.

Slack

#_general

Get your Slack invite!

@shabbin you could also post the job on the linkedin Apex group
05-Sep-2019 06:46:AM by: Sorin

Hi Guys, Is there any way to improve the performance of IR report search. It takes minutes to search for the reports having million of records, or is there any alternative design?
05-Sep-2019 05:00:AM by: ashwinrao

Are you using bind variables in the query by any chance? If you are that's why you're not seeing anything
05-Sep-2019 03:34:AM by: maxime_tremblay

we are running into issues where the attachment sent via IR subscriptions shows up blank even though the IR displays data when run interactively on the web page. can someone confirm that when a subscription is generated, say nightly, it is executed via the parsing schema? i can't imagine APEX can execute subscription offline via the user's

News

Tags

Title, Author,

Maxime Tremblay Other Newsletter #39 is out!
Newsletter Link
05-Sep-2019 15:03:42 by: Maxime Tremblay

Scott Wesley Other Member of the Month August: For another 3 Blc and continuous contributions Member of the Month Link
02-Sep-2019 16:02:23 by: Juergen Schuster

Caleb Curry Other Video Tutorial from YouTuber Caleb Curry Episode 12 Trainings, Videos Link
05-Sep-2019 05:04:00 by: Maxime Tremblay

Lino Schildenfeld AOP custom parameters while saving to the DB AOP Link

Tweets by @orclapexworld

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orclapexworld @orclapexworld
Newsletter #39 is out! mailchi.mp/510afdc64212/o...#orclapex #orclapexworld

orclapexworld Retweeted Joel R. Kallman @joelkallman
Did you know there is a regular, semi-weekly podcast called APEX Now? It's hosted by @OracleAPEX enthusiast Bruce Clark (@clark_b) from South Africa, and it covers the latest news and updates throughout the global APEX community.apexnow.news/allshows#orclapex



Oracle APEX

Examples of How Oracle Uses Oracle APEX

Oracle Ask Tom [Internet Application]

<https://asktom.oracle.com>

The screenshot shows the homepage of the Oracle Ask Tom website. At the top, there's a red header bar with the "ORACLE" logo and the text "Ask TOM". To the right are links for "Feedback" and "Sign In". Below the header, there are navigation links for "Questions", "Office Hours", "Resources", and "About". The main content area has a yellow background with a large red circular icon containing a white hand icon. The text "Ask The Oracle Masters" is displayed above a search bar with the placeholder "Search questions". Below this, there's a section titled "Recently Answered" with three entries. Each entry includes a small icon of a document with a question mark, the question title, and a brief description. An "All Questions" link is located to the right of the first entry.

Recently Answered

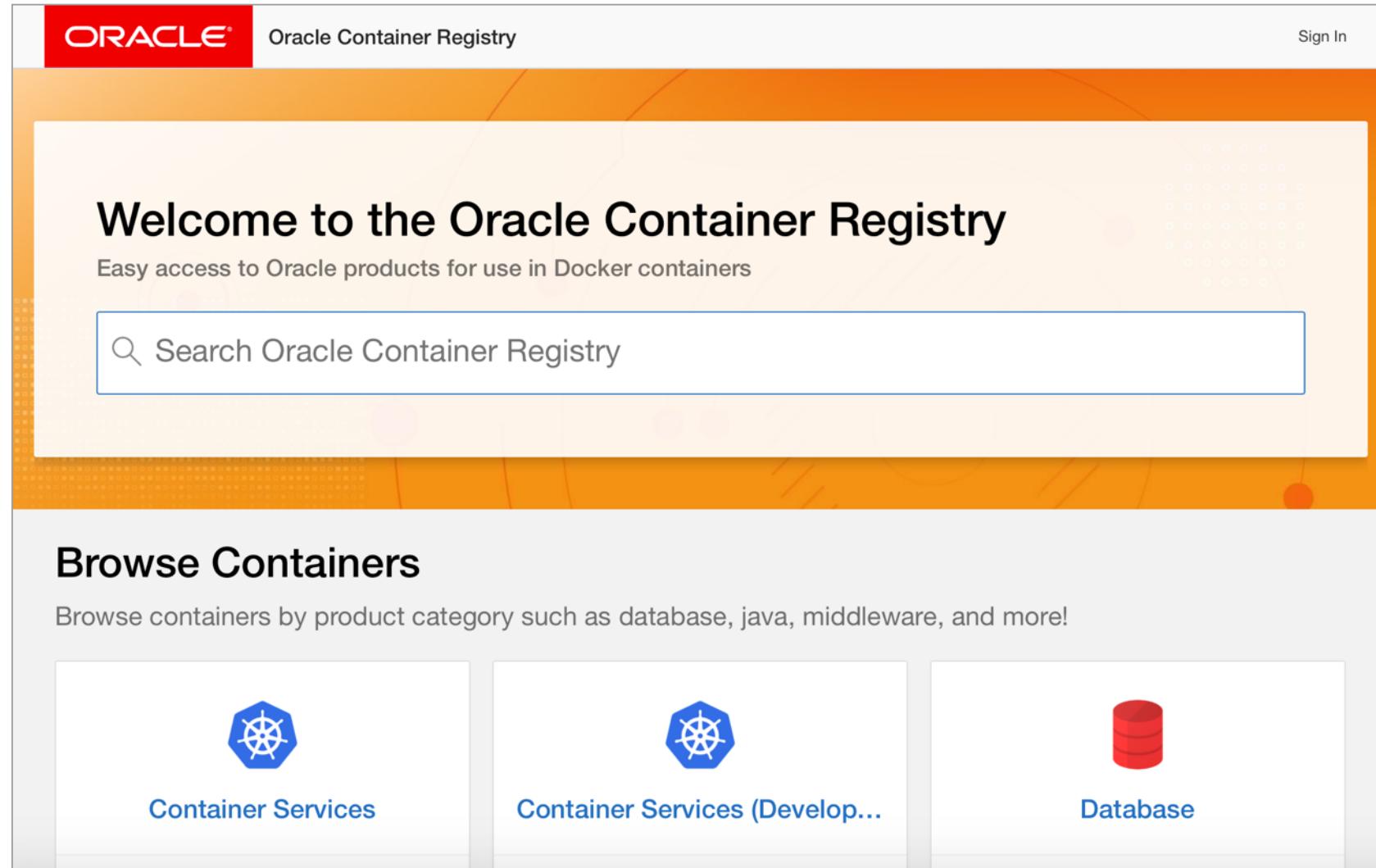
J2EE and Oracle's stored procedures
Dear Tom, I am a database developer/development DBA who ascribes to your development philosophy and approaches. I am also a Java certified programmer, although I do not claim Java as a primary skill. Recently, I have been tasked to serve as the lead archite...

ORA-29471: DBMS_SQL access denied
I have a problem in procedure:procedure ..begin v_c := dbms_sql.open_cursor; v_c2 := dbms_sql.open_cursor; dbms_sql.parse(v_c, v_sql, dbms_sql.native); dbms_sql.parse(v_c2, v_query, dbms_sql.native); v_stmt := dbms_sql.execute(v_c2); v_cursor := dbms_sql...

Comparison between Oracle and Others
Hi Tom, My question is something different. As an Oracle expert I always asked to provide strong reasons why to use Oracle Database and not to use for example SQL Server. Please, can you tell where to go in the Internet to search about any site provide de...

Oracle Container Registry [Internet Application]

<https://container-registry.oracle.com>



The screenshot shows the Oracle Container Registry homepage. At the top, there is a navigation bar with the ORACLE logo, the text "Oracle Container Registry", and a "Sign In" button. Below the header is a large orange banner with the text "Welcome to the Oracle Container Registry" and "Easy access to Oracle products for use in Docker containers". A search bar is located below the banner. The main content area is titled "Browse Containers" and includes a sub-instruction "Browse containers by product category such as database, java, middleware, and more!". There are three categories displayed: "Container Services" (represented by a blue hexagonal icon with a white steering wheel), "Container Services (Develop...)" (also represented by the same blue icon), and "Database" (represented by a red cylinder icon).

ORACLE Oracle Container Registry Sign In

Welcome to the Oracle Container Registry

Easy access to Oracle products for use in Docker containers

Search Oracle Container Registry

Browse Containers

Browse containers by product category such as database, java, middleware, and more!

Container Services

Container Services (Develop...)

Database

HR Directory [Internal Only – Intranet Application]

ARIA People

The screenshot shows a profile page for Joel Kallman. At the top, there's a navigation bar with links: Board of Directors > Lawrence Ellison > Andrew Mendelsohn > Michael Hichwa > **Joel Kallman** >. Below the navigation is a large banner image of a rocky cliffside. The main content area starts with a profile picture of Joel Kallman, followed by his name, title (Senior Director, Software Development), and location (Dublin OH, US). It includes contact links for Email, Work Phone, Mobile Phone, Calendar, and Permalink (@jkallman). Below this, there are tabs for Profile (which is selected), Organization, and Relate. The 'About' section contains a bio about Joel managing Oracle Application Express (APEX) and lists his responsible projects: Application Express (APEX), apex.oraclecorp.com (internal production), and apex.oracle.com (external customer evaluation). The 'Contributes to' section lists Autonomous Database. The 'Special Projects:' section is currently empty. To the right, there are two sidebar sections: 'Lists' with an 'Add to List' button, and 'Contact Information'.

- Nightly download of HR data
- Employees can update profile, upload picture, add links ...
- Used to contact employees, see Org. Chart, etc.
- Fully responsive, works just as well on smartphones as it does on tablets and notebooks.
- Average ~ 1.5 million page views / day (> 50 page views / sec for hours)
- Median execution time of 0.04 seconds

Useful Links

Collateral, Resources and Hosted Services

- Free APEX Service
- Oracle Technology Network
- APEX Community
- APEX & Low Code
- Quick SQL
- Database Cloud Services
- Oracle Learning Library
- Oracle APEX Education
- Oracle Cloud Free Tier

<https://apex.oracle.com>

<https://apex.oracle.com/otn>

<https://apex.oracle.com/community>

<https://apex.oracle.com/lowcode>

<https://apex.oracle.com/quicksql>

<https://cloud.oracle.com/database>

<https://www.oracle.com/oll>

<https://apex.oracle.com/education>

<https://www.oracle.com/cloud/free/>



Oracle Application Express Office Hours

The screenshot shows the Oracle Application Express Office Hours website. At the top, there's a red header bar with the ORACLE logo, an Ask TOM link, Feedback, and Sign In options. Below the header, a navigation menu includes Questions, Office Hours, Resources, and About. A large orange banner at the top features the text "Oracle Application Express Office Hours" and a "Sign In to Subscribe" button. It also mentions "Free tips and training every month! Subscribe for reminders and more from Office Hours." Below the banner, the date "September 18, 2019" is displayed in bold. Underneath, a row of links includes "14:00 - 15:00 UTC", "Start Times Around the World", "Add to Calendar", "All Sessions", "Your Experts", and "Resources". A section titled "Explore Application Express" provides a brief introduction to Oracle Application Express (APEX) and its capabilities. It includes a bookmark link to the session page and instructions for joining via Zoom or dialing in. The main content area contains the session details and a sidebar with various links.

September 18, 2019

14:00 - 15:00 UTC [Start Times Around the World](#) [Add to Calendar](#) [All Sessions](#) [Your Experts](#) [Resources](#)

Explore Application Express

Oracle Application Express (APEX) is a low-code development platform that enables you to build stunning, scalable, secure apps, with world-class features, that can be deployed anywhere. Join APEX developers and product managers for trainings and how-to's, so you can make the most of this amazing tool!

Bookmark this link: <https://asktom.oracle.com/pls/apex/asktom.search?office=744>

Join us for guidance from experts, answers to your questions, and to network with like-minded members of the community. That URL is the only one you'll ever need for this Office Hours, taking you back to this page to join the next Q&A session, review upcoming sessions, and check out past sessions.

Visit [Zoom](#) in advance of the session to make sure your browser is properly configured. But note that we will not be sending you the Zoom URL. Instead, you will come back to the AskTOM Office Hours page (URL above) to join the session. We will take questions via chat (all audio lines will be muted). We will record sessions for later study. For an audio-only connection, follow these instructions:

Dial (for higher quality, dial a number based on your current location):
US: +1 669 900 6833 or +1 646 558 8656

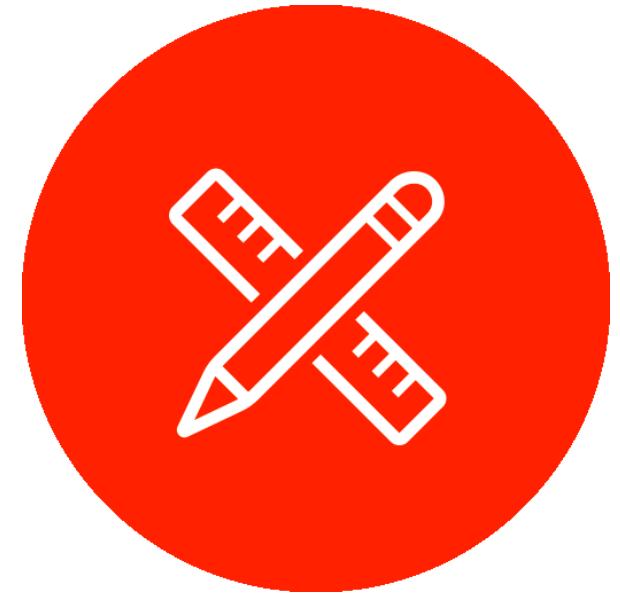
<https://apex.oracle.com/en/officehours/>

Summary

In this lesson, you learned how to:

- Log in to Oracle Application Express development environment
- Navigate through the major components of Oracle Application Express
- Install and run a packaged application





Hands-on Lab

Integrated Cloud Applications & Platform Services



Oracle **APEX**



Unit 2: Using SQL Workshop

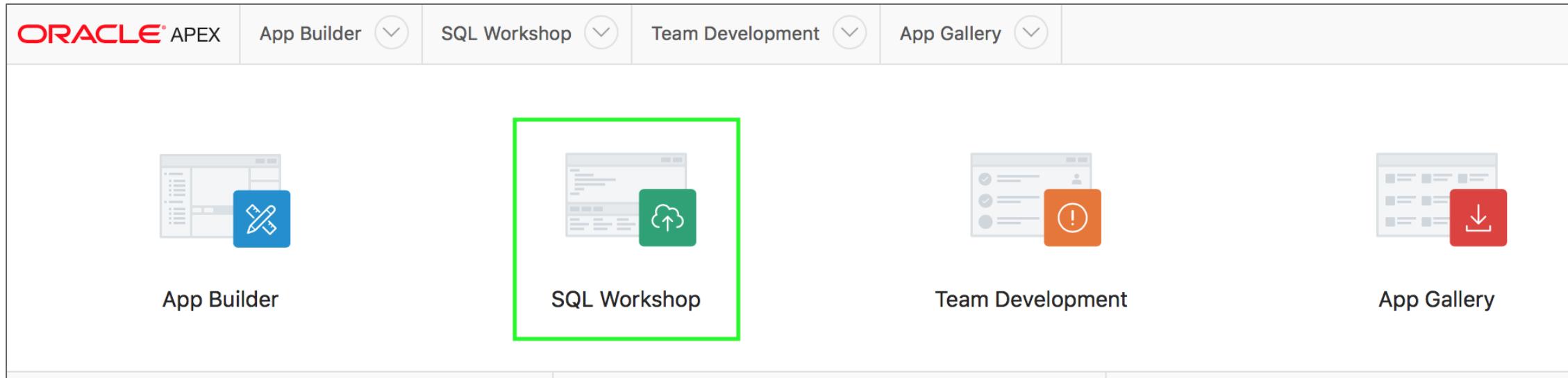
Lesson Objectives

After completing this lesson, you should be able to:

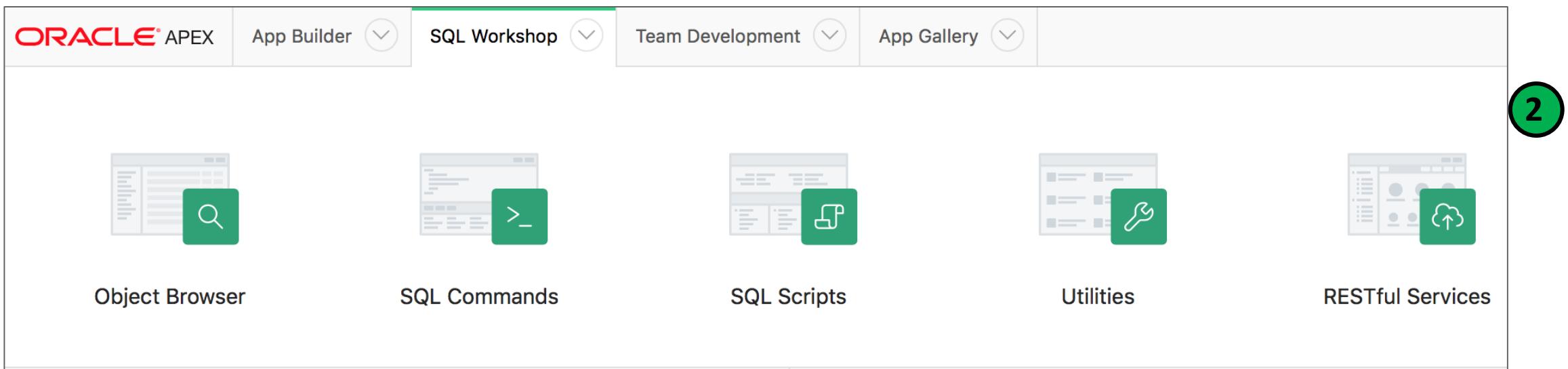
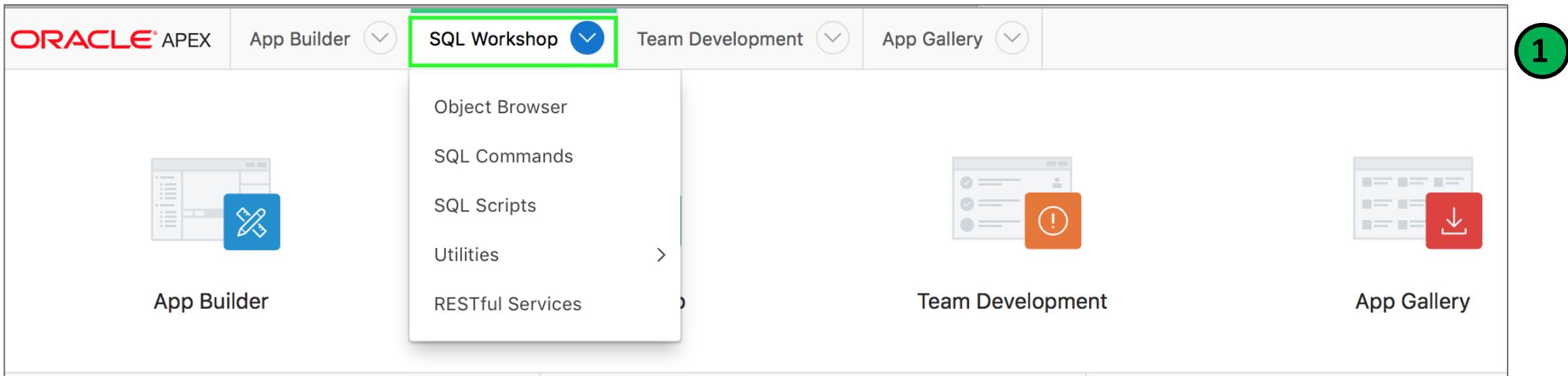
- Describe SQL Workshop and list its components
- Browse through database objects using the Object Browser
- Create and modify database objects
- Create a lookup table
- Run SQL commands and SQL scripts
- Load and unload data using Data Workshop utility
- Build a SQL query using Query Builder
- Generate SQL using Quick SQL
- Generate DDL statements

What is SQL Workshop?

SQL Workshop provides tools to view and manage database objects



Accessing SQL Workshop Components



Using SQL Workshop Components

The screenshot shows the Oracle APEX interface with the SQL Workshop tab selected. The main area displays five main components:

- Object Browser**: Create database objects and view database object properties.
- SQL Commands**: Enter and run SQL.
- SQL Scripts**: Store and run scripts.
- Utilities**: Load and unload data, generate DDL.
- RESTful Services**: Declaratively specify RESTful services.

Below these components, there are two sections:

- Recently Created Tables**: Lists recently created tables with their names and creation times.
- Recent SQL Commands**: Lists recent SQL commands with their descriptions and execution times.

On the right side, there is a sidebar with the following sections:

- About**: Describes the SQL Workshop as a collection of tools to manage database objects.
- Schema**: Allows selecting the default database schema for the session.
- Create Object**: Sub-sections include Table, View, Index, Sequence, Type, Package, and Procedure.

At the bottom, there are two buttons: "Learn more about SQL Workshop" and "Get Started".

Component	Description
Object Browser	Create database objects and view database object properties
SQL Commands	Enter and run SQL
SQL Scripts	Store and run scripts
Utilities	Load and unload data, generate DDL
RESTful Services	Declaratively specify RESTful services

Recently Created Tables

Table Name	Created Ago
EBA_DEMO_CHART_GRADES	13 hours ago
EBA_DEMO_CHART_STATS	13 hours ago
EBA_DEMO_CHART_SAMPLE_NAMES	13 hours ago
EBA_DEMO_CHART_SAMPLE_DATA	13 hours ago
EBA_DEMO_CHART_SAMPLES	13 hours ago
EBA_DEMO_CHART_BBALL	13 hours ago
EBA_DEMO_CHART_TASKS	13 hours ago

Recent SQL Commands

Command Description	Executed Ago
drop TABLE "HARDWARE" cascade cons...	8 days ago
drop TABLE "DEPARTMENT_LOOKUP" cas...	8 days ago
drop TABLE "PROJECT_BUDGET" cascad...	8 days ago
drop TABLE "AUDIT_DETAILS" cascade...	8 days ago
drop TABLE "DEPARTMENTS" cascade c...	2 weeks ago
drop TABLE "EMPLOYEES" cascade con...	2 weeks ago
drop TABLE "SKILLS" cascade constr...	2 weeks ago

Learn more about SQL Workshop Get Started

Managing Database Objects with Object Browser

Object Selection Pane

The screenshot shows the Oracle SQL Developer Object Browser interface. The left sidebar is the Object Selection pane, listing various database objects like DEMO_PROJECTS, DEMO_PROJ_COMMENTS, etc. A red arrow points from the title "Object Selection Pane" to the search bar in the Object Selection pane. The main area is the Detail pane, which displays the structure of the EBA_DEMO_IR_EMP table. A red arrow points from the title "Detail pane" to the bottom right corner of the Detail pane window.

Object Browser

Tables

Search icon

Schema: LOWCODE

EBA_DEMO_IR_EMP

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

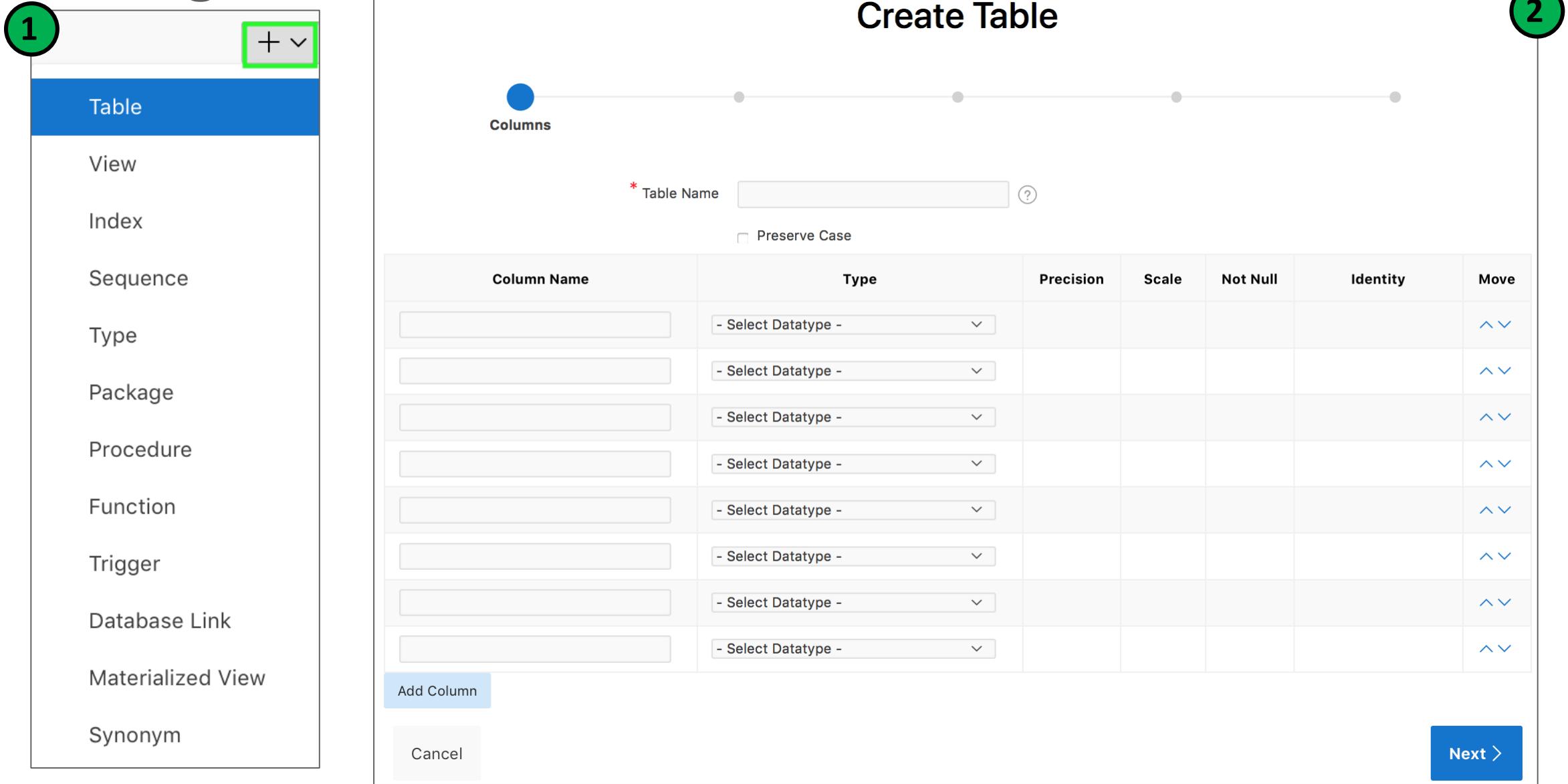
Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table Create App

Column Name	Data Type	Nullable	Default	Primary Key
EMPNO	NUMBER(4,0)	No	-	1
ENAME	VARCHAR2(10)	Yes	-	-
JOB	VARCHAR2(9)	Yes	-	-
MGR	NUMBER(4,0)	Yes	-	-
HIREDATE	DATE	Yes	-	-
SAL	NUMBER(7,0)	Yes	-	-
COMM	NUMBER(7,0)	Yes	-	-
DEPTNO	NUMBER(2,0)	Yes	-	-

Download | Print

Detail pane

Creating a Database Object



Creating a Lookup Table

EBA_DEMO_IR_PROJECTS

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

Query Count Rows Insert Row

Data

EDIT	ID	ROW_VERSION_NUMBER	PROJECT	TASK_NAME	START_DATE	END_DATE	ASSIGNED_TO	COST	BUDGET	STATUS_ID
									500	4
									500	4
									200	4

STATUS_LOOKUP

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

Query Count Rows Insert Row

Data

EDIT	STATUS_ID	STATUS
	1	Open
	2	Pending
	3	On-Hold
	4	Closed

STATUS column is extracted from EBA_DEMO_IR_PROJECTS table

Lookup table

The diagram illustrates the creation of a lookup table. The main table, EBA_DEMO_IR_PROJECTS, contains a STATUS column with values 4, 4, and 4. A red box highlights this column. A green box encloses the STATUS_ID column in a separate table, STATUS_LOOKUP, which contains four rows: Open (STATUS_ID 1), Pending (STATUS_ID 2), On-Hold (STATUS_ID 3), and Closed (STATUS_ID 4). A dashed red arrow points from the STATUS_ID column in the main table to the STATUS column in the lookup table, indicating that the STATUS_ID values in the main table are mapped to the corresponding STATUS values in the lookup table.

Creating a Lookup Table: Steps

EBA_DEMO_IR_PROJECTS

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table Create App

1

Column Name	Data Type	Nullable	Default	Primary Key
ID	EBA_DEMO_IR_PROJECTS			
ROW_VERSION_NUMBER	Create Lookup Table			
PROJECT	Select the column you would like to create a lookup table for. The selected column will become a foreign key to the lookup table.			
TASK_NAME	Schema: LOWCODE ?			
START_DATE	Table Name: EBA_DEMO_IR_PROJECTS ?			
END_DATE	Show: <input type="radio"/> All Column Types ?			
STATUS	<input checked="" type="radio"/> VARCHAR Column Types ?			
ASSIGNED_TO	* Column: <input type="radio"/> PROJECT - varchar2 ? <input type="radio"/> TASK_NAME - varchar2 ? <input checked="" type="radio"/> STATUS - varchar2 ? <input type="radio"/> ASSIGNED_TO - varchar2 ?			
COST	Cancel			
BUDGET	Next >			

2

Creating a Lookup Table: Steps

The screenshot illustrates the process of creating a lookup table in a database interface. It shows two main windows: a primary window for defining the new table and a secondary confirmation dialog.

Primary Window (Left): Create Lookup Table

- Schema:** LOWCODE
- Table Name:** EBA_DEMO_IR_PROJECTS
- Column to Normalize:** STATUS
- New Table Name:** STATUS_LOOKUP (circled with a green '3')
- New Sequence:** STATUS_LOOKUP_SEQ
- Preserve Case:**

Buttons: < (Back), Cancel

Secondary Window (Right): Confirmation Dialog

Confirming this request, creates a new table and adjusts your current table structure.

- Schema:** LOWCODE
- Lookup table:** STATUS_LOOKUP
- Table:** EBA_DEMO_IR_PROJECTS
- Lookup table primary key:** STATUS_ID
- Lookup based on Column:** STATUS
- Lookup table sequence:** STATUS_LOOKUP_SEQ

Buttons: < (Back), Cancel, Create Lookup Table (circled with a green '4')

SQL: SQL icon

Executing SQL Commands

The screenshot shows the Oracle APEX interface with the SQL Workshop module selected. The top navigation bar includes links for ORACLE® APEX, App Builder, SQL Workshop (highlighted in green), Team Development, and App Gallery. The Schema dropdown is set to LOWCODE. The main area is titled "SQL Commands" and contains a command editor with the following SQL query:

```
select * from emp where sal > (select avg(sal) from emp);
```

The "Run" button is highlighted with a green box. Below the command editor is a results pane with tabs for Results, Explain, Describe, Saved SQL, and History. The Results tab displays the output of the query as a table:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT	-	11/17/1981	5000	-	10
7698	BLAKE	MANAGER	7839	05/01/1981	2850	-	30
7782	CLARK	MANAGER	7839	06/09/1981	2450	-	10
7566	JONES	MANAGER	7839	04/02/1981	2975	-	20
7788	SCOTT	ANALYST	7566	12/09/1982	3000	-	20
7902	FORD	ANALYST	7566	12/03/1981	3000	-	20

The results indicate that 6 rows were returned in 0.04 seconds. A red arrow points from a callout labeled "Command editor" to the SQL command in the editor. Another red arrow points from a callout labeled "Display Pane" to the results table.

Creating and Running SQL Scripts

The screenshot illustrates the process of creating and running an SQL script in Oracle APEX SQL Workshop.

- Step 1:** The user is in the **SQL Workshop** tab of the Oracle APEX interface. A green circle labeled **1** highlights the **Create >** button in the top right corner of the toolbar.
- Step 2:** The user has opened the **Script Editor** for a new script named **Employee Salaries**. A green circle labeled **2** highlights the **Create** button in the top right corner of the editor. The SQL query is:

```
1 SELECT ename, job, sal
2 FROM emp
3 WHERE sal < 2500;
```

- Step 3:** The user has saved the script and returned to the **SQL Scripts** list. A green circle labeled **3** highlights the **Run** button in the last row of the table. The table shows the following data for the saved script:

	Edit	Owner	Name	Created	Updated By	Updated	Bytes	Results	Run
<input type="checkbox"/>		LOWCODE	Employee Salaries	1 seconds ago	-	1 seconds ago	51	0	

Viewing SQL Scripts Results

SQL Scripts \ Results

Script: Employee Salaries Status: Complete

View: Detail Summary Show: Statement Results Feedback Go

Create App from Script Edit Script

```
SELECT ename, job, sal FROM emp WHERE sal < 2500
```

ENAME	JOB	SAL
CLARK	MANAGER	2450
SMITH	CLERK	800
ALLEN	SALESMAN	1600
WARD	SALESMAN	1250
MARTIN	SALESMAN	1250
TURNER	SALESMAN	1500
ADAMS	CLERK	1100
JAMES	CLERK	950
MILLER	CLERK	1300

9 rows selected. 0.03 seconds

3

SQL Scripts \ Run Script Schema LOWCODE

Run Script

You have requested to run the following script. Please confirm your request.

Script Name	Employee Salaries
Created	on 08/14/2019 11:17:51 AM by LOWCODE
Updated	-
Number of Statements	1
Script Size in Bytes	51

Run Script

1

Run Now

SQL Scripts \ Results

Script: Employee Salaries Status: Complete

View: Detail Summary Rows 15 Go

Create App from Script Edit Script

Number ↑	Elapsed	Statement	Feedback	Rows
1	0.03	SELECT ename, job, sal FROM emp WHERE sal < 2500	9 rows selected.	9

Download

2

Exporting and Importing SQL Scripts

Tasks

- [Manage Results >](#)
- [Show Quotas >](#)
- [Export >](#)
- [Import >](#)

SQL Scripts \ Export SQL Scripts

Export SQL Scripts

Owner: LOWCODE Find Rows: 10 Go

Cancel Add To Export

Scripts

Use this page to export one or more scripts for importing into another workspace.

	Owner	Name	Updated	Bytes
No scripts found				

Scripts to Export

File Name: lowcode_script.sql

Remove Name Owner

<input type="checkbox"/>	Employee Salaries	LOWCODE
<input type="checkbox"/>	drop_objects.sql	LOWCODE

Remove Checked Export All

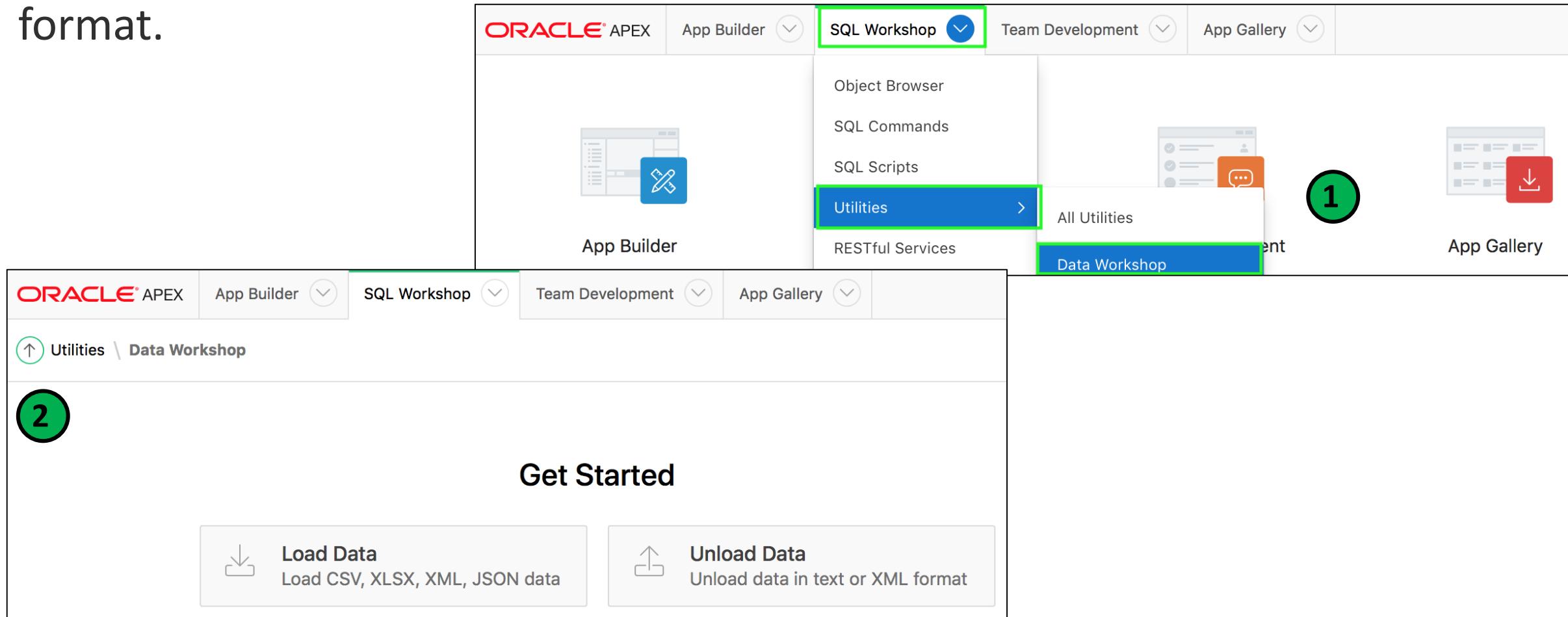
Using Oracle Application Express Utilities

The screenshot shows the Oracle Application Express (APEX) interface. At the top, there are several navigation tabs: ORACLE APEX, App Builder, SQL Workshop, Team Development, and App Gallery. Below these tabs is a horizontal menu bar with four items: Object Browser, SQL Commands, SQL Scripts, and Utilities. The Utilities item is highlighted with a green box and a large green circle containing the number '1'. To the right of this menu is a detailed view of the Utilities section, which is also circled with a green circle containing the number '2'. This view lists nine utility tools, each with an icon and a brief description:

Utility	Description
Data Workshop	Load and unload data using CSV, XLSX, XML or JSON files.
Query Builder	Build queries graphically by adding tables into a panel, and selecting columns to return.
Quick SQL	Generate SQL using shorthand syntax
Sample Datasets	Install, refresh, or remove sample datasets.
Generate DDL	Generate scripts for all or selected database objects within a schema.
User Interface Defaults	Specify layout properties to consistently generate items / columns across pages and applications.
Schema Comparison	Show differences between database objects in two different schemas.
Methods on Tables	Generate API scripts for DML operations on specified tables.
Recycle Bin	Restore database objects that have been dropped.
Object Reports	Access numerous reports on tables, exceptions, security, objects and PL/SQL code.
About Database	Review database details. Note: A Database account granted the DBA role is required.
Database Monitor	Run database activity reports. Note: A Database account granted the DBA role is required.

Loading and Unloading Data Using Data Workshop

Use the Load Data Wizard to load from various files formats into your workspace and Unload Data Wizard to export your data in text or XML format.



Using the Load Data and Unload Data Wizards

- Upload or Drag and drop delimited files (CSV, tab-delimited), XLSX files (Excel workbooks), JSON, or XML files to load data into a new table
- Copy and paste delimited data (CSV, tab-delimited), or select a sample data set to load data into a new table
- The wizards only load and unload table data. They do not load or unload other kinds of schema objects
- You can load and unload to and from your own schema only
- You can load or unload only a single table at a time
- Supported unload formats include:
 - Text such as comma-delimited or tab-delimited data in dialog page
 - XML documents

Loading Data Using the Load Data Wizard

The screenshot shows the Data Workshop interface with the following components:

- Header:** Utilities \ Data Workshop
- Main Area:** Get Started
- Load Data Panel:** Contains "Load Data" (CSV, XLSX, XML, JSON) and "Unload Data" (text or XML format).
- Load Data Sub-panel:** Shows "Upload a File" and "Copy and Paste". A dashed blue box highlights the "Drag and drop file here or" area and the "Choose File" button.
- Load Data Wizard:** Shows "Load Data" with "Upload a File" and "Copy and Paste" options. An info icon says "You can copy and paste CSV data, or select a sample data set." A green box highlights the "Copy and Paste" button. A dropdown menu titled "- Select Sample -" lists various datasets: Academic, Classic Departments and Employees, Formula 1, JSON and Structured Test Data, Movies, Project and Tasks, Sales, Tennis, Vehicle Speed, World Cup, and World Population. The "Select Sample -" option is highlighted with a green box.

- Upload or drag and drop a file: CSV, XLSX, TXT, XML or JSON
- Copy and paste CSV data
- Select a sample data set

Loading Data: Steps

Upload a File

1. Navigate to **SQL Workshop > Utilities**.
2. Click **Data Workshop** and then click **Load Data**.
3. Under **Upload a File**, Click **Choose File**.
4. Select the appropriate file (CSV, XLSX, TXT, XML or JSON)
5. Follow the on-screen instructions

Copy and Paste

1. Navigate to **SQL Workshop > Utilities**.
2. Click **Data Workshop** and then click **Load Data**.
3. Click **Copy and Paste**.
4. Under **Copy and Paste**, you can either copy and paste CSV data or select a sample data set from the drop down menu.
5. Follow the on-screen instructions

Loading Data: Example

Load Data

 Upload a File

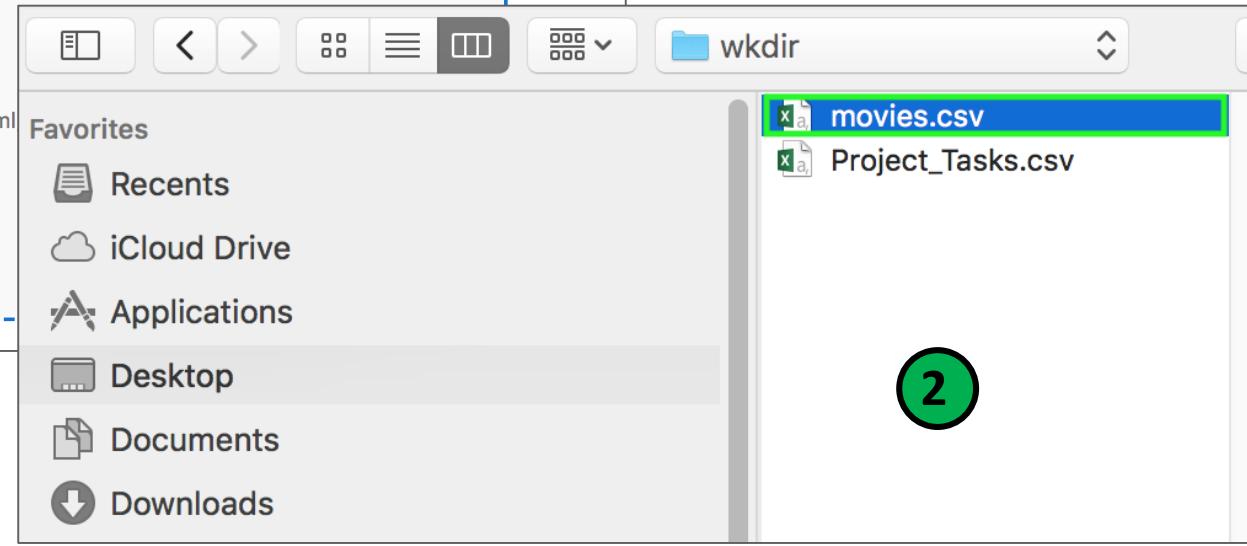
 Copy and Paste

1

Drag and drop file here or

Choose File

Supported formats csv, xlsx, txt, xml



2

Loading Data: Example

Load Data

 movies.csv

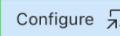
Where do you want to load this data?

Load To: **New Table** Existing Table

* Table Owner: LOWCODE

* Table Name: **MOVIES**

Please select the columns to load.

Configure 

* Error Table Name: MOVIES_ERR\$

Primary Keys: SYS_GUID Identity Column 

Use Column Data Types 

3

4

Configure

Column Headers  First line contains headers  Column Delimiter  Enclosed By  File Encoding 
None " " Unicode UTF-8

Preview 

	Title	Year	Released	Runtime	Genre	Director	Language	Country	Rating	Production
1	The Shawshank Redemption	1994	14-Oct-94	142	Crime, Drama	Frank Darabont	English	USA	9.3	Columbia Pictures
2	The Godfather	1972	24-Mar-72	175	Crime, Drama	Francis Ford Coppola	English	USA	9.2	Paramount Pictures
4	The Godfather: Part II	1974	20-Dec-74	202	Crime, Drama	Francis Ford Coppola	English	USA	9	Paramount Pictures
5	The Dark Knight	2008	18-Jul-08	152	Action, Crime, Drama	Christopher Nolan	English	USA	9	Warner Bros. Pictures/Legendary
6	12 Angry Men	1957	1-Apr-57	96	Crime, Drama	Sidney Lumet	English	USA	8.9	Criterion Collection
7	Schindler's List	1993	4-Feb-94	195	Biography, Drama, History	Steven Spielberg	English	USA	8.9	Universal Pictures
8	Pulp Fiction	1994	14-Oct-94	154	Crime, Drama	Quentin Tarantino	English	USA	8.9	Miramax Films

Close Dialog

Column types are based on a sample of the first 200 rows.
Showing 10 columns and a maximum of 100 rows.

Save Changes

Loading Data: Example

Load Data

✓

Table MOVIES created with 250 rows!

200 rows to sample the column types. The preview below only displays the first 10 columns and 5 rows. To view the full preview and data load settings, please click **Preview** button.

	Year	Released	Runtime	Genre	Director	Language	Country	Rating	Production
1	1994	14-Oct-94	142	Crime, Drama	Frank Darabont	English	USA	9.3	Columbia Pictures
2	1972	24-Mar-72	175	Crime, Drama	Francis Ford Coppola	English	USA	9.2	Paramount Pictures
3	Part II	1974	20-Dec-74	202	Crime, Drama	Francis Ford Coppola	English	9	Paramount Pictures
4									

Load Data

6

View Table  Continue to Create Application Wizard >

5

Loading Data: Example

Object Browser

7

MOVIES

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

Add Column Modify Column Rename Column Drop Column Rename Copy Drop Truncate Create Lookup Table Create App

Column Name	Data Type
ID	NUMBER
TITLE	VARCHAR2(255)
YEAR	NUMBER
RELEASED	DATE
RUNTIME	NUMBER
GENRE	VARCHAR2(50)
DIRECTOR	VARCHAR2(255)
LANGUAGE	VARCHAR2(50)
COUNTRY	VARCHAR2(50)
RATING	NUMBER
PRODUCTION	VARCHAR2(255)

MOVIES

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST Sample Queries

Query Count Rows Insert Row

Data

EDIT	ID	TITLE	YEAR	RELEASED	RUNTIME	GENRE	DIRECTOR	LANGUAGE	COUNTRY	RATING	PRODUCTION
	1	The Shawshank Redemption	1994	10/14/1994	142	Crime, Drama	Frank Darabont	English	USA	9.3	Columbia Pictures
	2	The Godfather	1972	03/24/1972	175	Crime, Drama	Francis Ford Coppola	English	USA	9.2	Paramount Pictures
	3	The Godfather: Part II	1974	12/20/1974	202	Crime, Drama	Francis Ford Coppola	English	USA	9	Paramount Pictures
	4	The Dark Knight	2008	07/18/2008	152	Action, Crime, Drama	Christopher Nolan	English	USA	9	Warner Bros. Pictures/Legendary

12 Angry Men Crime Sidney Lumet

8

Loading XLSX Data: Example

Load Data X

 demo.xlsx

Where do you want to load this data?

Load To New Table Existing Table

* Table Owner LOWCODE ?

* Table Name RESOURCES ?

Please select the columns to load. Configure 

* Error Table Name RESOURCES_ERR\$?

Primary Keys SYS_GUID Identity Column ?

Use Column Data Types ?

Settings

Column Headers ? Select Sheet  File Encoding ?

First line contains headers ✓ Quarter1
Quarter2

Quarter1
 Quarter2

Cancel Load Data

Selecting a Sample Data Set: Example

Load Data

Upload a File Copy and Paste

1

Drag and drop file here or

Choose File

Supported formats csv, xlsx, txt, xml, json

Load Data

Upload a File Copy and Paste

2

You can copy and paste CSV data, or select a sample data set.

- ✓ - Select Sample -
- Academic
- Classic Departments and Employees
- Formula 1
- JSON and Structured Test Data
- Movies
- Project and Tasks
- Sales
- Tennis
- Vehicle Speed
- World Cup
- World Population

Selecting a Sample Data Set: Example

Load Data

Pasted Data

Where do you want to load this data?

Load Data

Upload a File Copy and Paste

You can copy and paste CSV data, or select a sample data set. **Movies**

Title	Year	Released	Runtime	Genre	Director	Language	Country	Rating
The Shawshank Redemption		1994	14-Oct-1994	142	Crime, Drama	Frank Darabont	USA	9.3
English USA	9.3	Columbia Pictures						
The Godfather	1972	24-Mar-1972	175	Crime, Drama	Francis Ford Coppola			
English USA	9.2	Paramount Pictures						
The Godfather: Part II	1974	20-Dec-1974	202	Crime, Drama	Francis Ford Coppola			
English USA	9	Paramount Pictures						
The Dark Knight	2008	18-Jul-2008	152	Action, Crime, Drama	Christopher Nolan			
English USA	9	Warner Bros. Pictures/Legendary						
12 Angry Men	1957	1-Apr-1957	96	Crime, Drama	Sidney Lumet	English USA		
8.9	Criterion Collection							
Schindler's List	1993	4-Feb-1994	195	Biography, Drama, History	Steven Spielberg	USA	8.9	
English USA	8.9	Universal Pictures						
Pulp Fiction	1994	14-Oct-1994	154	Crime, Drama	Quentin Tarantino			
English USA	8.9	Miramax Films						
The Lord of the Rings: The Return of the King	2003	17-Dec-2003	201	Adventure, Drama, Fantasy	Peter Jackson	English USA	8.9	
English USA	8.9	New Line Cinema						
The Good, the Bad and the Ugly	1966	29-Dec-1967	178	Western	Sergio Leone			
Italian Italy	8.9	United Artists						
Fight Club	1999	15-Oct-1999	139	Drama	David Fincher	English USA	8.8	
20th Century Fox								

Load To: **New Table** Existing Table

* Table Owner: LOWCODE

* Table Name: **MOVIES**

Please select the columns to load.

Configure

* Error Table Name: MOVIES_ERR\$

Primary Keys: SYS_GUID Identity Column

Use Column Data Types

Column Delimiter: , ; | # tab

Enclosed By: None " '

File Encoding: Unicode UTF-8

Load Data

Cancel

Next >

3

4

Unloading Data Using Data Workshop: Example

The screenshot shows the Oracle Data Workshop interface. On the left, the 'Get Started' screen has two main buttons: 'Load Data' and 'Unload Data'. The 'Unload Data' button is highlighted with a green box and a large number '1' above it. On the right, a modal dialog titled 'Unload Data' is open, prompting the user to 'Please select the format to use for data unload.' It offers two options: 'Text Format' and 'XML Format', with 'XML Format' being selected and highlighted with a green box and a large number '2' above it. At the bottom of the dialog are 'Cancel' and 'Next >' buttons.

Use the Unload Data page to export the contents of a table to a text file or XML document.

Get Started

1

Load Data
Load CSV, XLSX, XML, JSON data

Unload Data
Unload data in text or XML format

2

Unload Data

Please select the format to use for data unload.

Text Format

XML Format

Cancel

Next >

Unloading Data Using Data Workshop: Example

3 **Unload to XML - Columns**

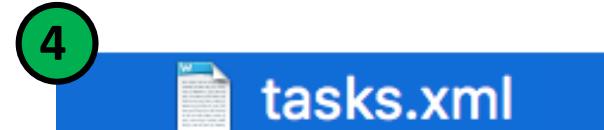
You can export the contents of a table to an XML document. Select the database schema, table and associated columns that you would like export to an XML document.

* Table Owner: LOWCODE

* Table: **TASKS**

* Columns: STATUS, ASSIGNED_TO, COST, BUDGET, ID, PROJECT, TASK_NAME, START_DATE, END_DATE

* Where Clause: STATUS = 'Pending'



5

```
<?xml version="1.0"?>
<ROWSET>
<ROW>
<STATUS>Pending</STATUS>
<ASSIGNED_TO>James Cassidy</ASSIGNED_TO>
<COST>0</COST>
<BUDGET>500</BUDGET>
<ID>52</ID>
<PROJECT>Migrate from Legacy Server</PROJECT>
<TASK_NAME>Obtain credentials</TASK_NAME>
<START_DATE>2019-07-21T00:00:00.000</START_DATE>
<END_DATE>2019-07-24T00:00:00.000</END_DATE>
</ROW>
<ROW>
<STATUS>Pending</STATUS>
<ASSIGNED_TO>Scott Spencer</ASSIGNED_TO>
<COST>0</COST>
<BUDGET>100</BUDGET>
<ID>53</ID>
<PROJECT>Migrate from Legacy Server</PROJECT>
<TASK_NAME>Create new database connection</TASK_NAME>
<START_DATE>2019-07-26T00:00:00.000</START_DATE>
<END_DATE>2019-07-26T00:00:00.000</END_DATE>
</ROW>
<ROW>
<STATUS>Pending</STATUS>
<ASSIGNED_TO>Mark Nile</ASSIGNED_TO>
<COST>0</COST>
<BUDGET>2000</BUDGET>
<ID>54</ID>
<PROJECT>Migrate from Legacy Server</PROJECT>
<TASK_NAME>Identify integration points</TASK_NAME>
<START_DATE>2019-07-26T00:00:00.000</START_DATE>
<END_DATE>2019-08-15T00:00:00.000</END_DATE>
</ROW>
```

Building a Query Using Query Builder

The screenshot shows the Oracle APEX Query Builder interface. The top navigation bar includes links for ORACLE® APEX, App Builder, SQL Workshop (selected), Team Development, App Gallery, and various search and user icons.

Object selection pane: On the left, a sidebar lists database objects. The 'DEMO_ORDER_ITEMS' object is selected (highlighted with a green box and circled with a green circle labeled '1'). Other listed objects include DEMO_CONSTRAINT_LOOKUP, DEMO_CUSTOMERS, DEMO_ORDERS, DEMO_PRODUCT_INFO, DEMO_STATES, DEMO_TAGS, DEMO_TAGS_SUM, DEMO_TAGS_TYPE_SUM, DEPT, EBA_DEMO_CHART_BBALL, EBA_DEMO_CHART_DEPT, EBA_DEMO_CHART_EMP, EBA_DEMO_CHART_GRADES, EBA_DEMO_CHART_ORDERS, EBA_DEMO_CHART_POPULATION, EBA_DEMO_CHART_PRODUCTS, EBA_DEMO_CHART_PROJECTS, EBA_DEMO_CHART_SAMPLES, and EBA_DEMO_CHART_SAMPLE_DATA.

Design pane: The main area contains two tables. The first table, 'DEMO_ORDER_ITEMS', has columns: ORDER_ITEM_ID, ORDER_ID, PRODUCT_ID, UNIT_PRICE, and QUANTITY. The second table, 'DEMO_PRODUCT_INFO', has columns: PRODUCT_ID, PRODUCT_NAME, PRODUCT_DESCRIPTION, CATEGORY, PRODUCT_AVAIL, LIST_PRICE, and PRODUCT_IMAGE. In the 'DEMO_ORDER_ITEMS' table, the 'UNIT_PRICE' and 'QUANTITY' columns are selected (highlighted with green boxes and circled with green circles labeled '2'). In the 'DEMO_PRODUCT_INFO' table, the 'PRODUCT_NAME' column is selected (highlighted with a green box and circled with a green circle labeled '3').

Output pane: At the bottom, a table displays the results of the query. The columns are PRODUCT_NAME, UNIT_PRICE, and QUANTITY. The data is as follows:

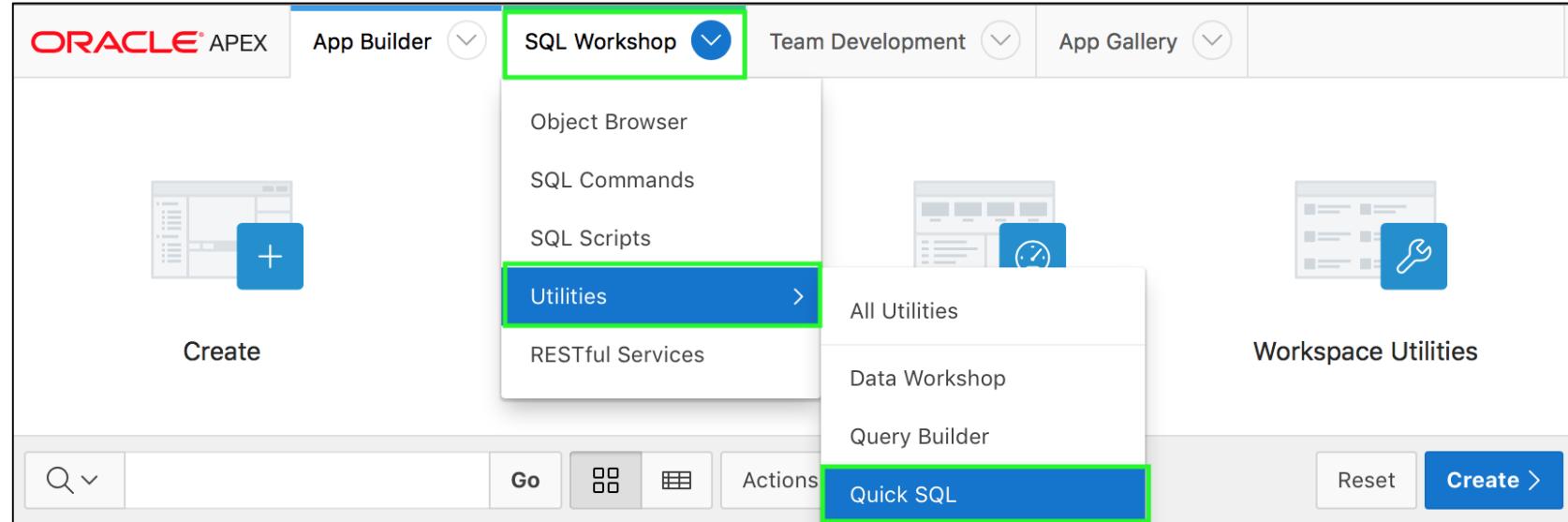
PRODUCT_NAME	UNIT_PRICE	QUANTITY
Business Shirt	50	10
Trousers	80	8
Jacket	150	5
Business Shirt	50	3
Trousers	80	3

Run button: In the top right corner of the main area, there are 'Save' and 'Run' buttons. The 'Run' button is highlighted with a green box and circled with a green circle labeled '4'.

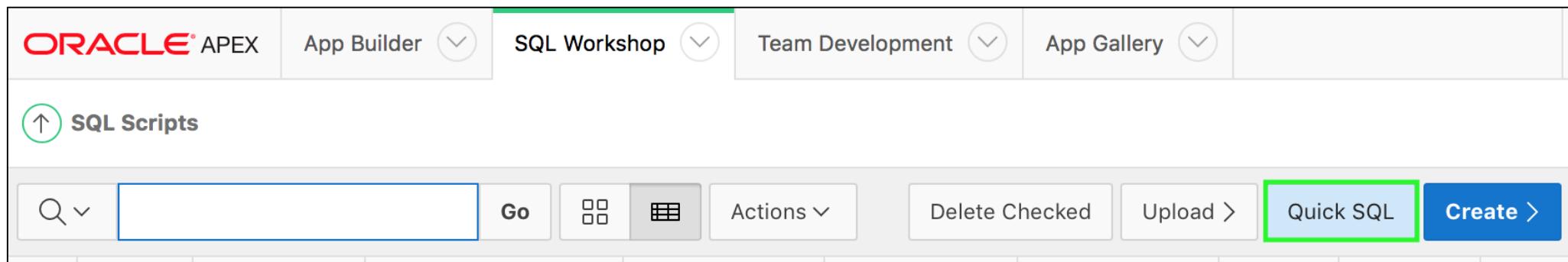
Using Quick SQL

Quick SQL provides a quick way to generate the SQL required to create a relational data model from an indented text document.

SQL Workshop > Utilities



SQL Workshop > SQL Scripts



Generating SQL Using Quick SQL: Example

The screenshot shows the Oracle APEX Utilities Quick SQL interface. On the left, under the 'Quick SQL' tab, there is a list of table names and their columns:

```
1 department
2   name
3   location varchar2(255)
4   country varchar2(255)
5 employees
6   name
7   email
8   job varchar2(255)
9   hiredate
10 skills
11   skill varchar2(255)
12   proficiency number
```

Three specific sections of this list are highlighted with green boxes:

- department (lines 1-4)
- employees (lines 5-9)
- skills (lines 10-12)

The 'Generate SQL' button is highlighted with a green box at the top of the interface.

The main area displays the generated SQL code:

```
1 -- create tables
2 create table department (
3   id number not null constraint department_id_pk primary key,
4   name varchar2(255),
5   location varchar2(255),
6   country varchar2(255)
7 )
8 ;
9
10 create table employees (
11   id number not null constraint employees_id_pk primary key,
12   department_id number
13     constraint employees_department_id_fk references department on delete cascade,
14   name varchar2(255),
15   email varchar2(255),
16   job varchar2(255),
17   hiredate date
18 )
19 ;
20
21 create table skills (
22   id number not null constraint skills_id_pk primary key,
23   employee_id number
24     constraint skills_employee_id_fk references employees on delete cascade,
25   skill varchar2(255),
26   proficiency number
27 )
28 ;
29 .
30 .
```

A large green circle with the number '1' is positioned on the far left of the interface.

Generating SQL Using Quick SQL: Example

Quick SQL

Clear Samples Help Generate SQL

```
1 departments /insert 10
2   name
3   location vc255
4   country vc255
5 employees /insert 20
6   name
7   email
8   job vc255
9   hiredate
10  skills /insert 10
11    skill vc255
12    proficiency num
```

2

Quick SQL

Clear Samples Help Generate SQL

```
1 departments /insert 10
2   name
3   location vc255
4   country vc255
5 employees /insert 20
6   name
7   email
8   job vc255
9   hiredate
10  skills /insert 10
11    skill vc255 /values C++, Java, APEX, JSON, Javascript, Python, CSS
12    proficiency num /check 1, 2, 3, 4, 5 [with 1 being a novice and 5 being a guru]
```

3

Generating SQL Using Quick SQL: Example

The screenshot shows the Quick SQL application interface. At the top, there is a navigation bar with 'Utilities \ Quick SQL' and tabs for 'Quick SQL', 'Clear', 'Samples', 'Help', 'Generate SQL' (which is highlighted in blue), 'SQL' (which is also highlighted in blue), 'Settings' (which is highlighted with a green box and has a green circle with the number 4 above it), 'Download', 'Save SQL Script', and 'Review and Run'. Below the navigation bar is a large central area titled 'Settings' with a sub-section titled 'Table'. The 'Object Prefix' field contains 'LC' and has a green box around it and a green circle with the number 5 above it. There are also fields for 'Schema', 'On Delete' (with options 'Cascade', 'Restrict', and 'Set Null'), 'Compression' (with options 'Yes' and 'No'), and 'Generate Inserts' (with options 'Yes' and 'No'). Each of these fields has a help icon (a question mark inside a circle) to its right.

Utilities \ Quick SQL

Quick SQL Clear Samples Help Generate SQL SQL Settings Download Save SQL Script Review and Run

Table

Object Prefix LC

Schema

On Delete Cascade Restrict Set Null

Compression Yes No

Generate Inserts Yes No

Generating SQL Using Quick SQL: Example

Settings

x

Additional Columns

Include	<input checked="" type="checkbox"/> Audit Columns
	<input type="checkbox"/> Row Version Number
	<input type="checkbox"/> Row Key
	<input type="checkbox"/> Security Group ID

Options

Data Language	English	?
PL/SQL API	Yes	No
Include Drops	<input checked="" type="checkbox"/> Yes	No
History Tables	Yes	No
Auto Primary Key	Yes	No

Cancel Reset Save Changes

6

Generating SQL Using Quick SQL: Example

Utilities \ Quick SQL 7

✓ Settings Saved! X

Quick SQL Clear Samples Help Generate SQL SQL Settings Download Save SQL Script Review and Run

```
departments /insert 10
  name
  location vc255
  country vc255
employees /insert 20
  name
  email
  job vc255
  hiredate
skills /insert 10
  skill vc255 /values C++, Java, APEX, JSON, Javascript, Python, CSS
  proficiency num /check 1, 2, 3, 4, 5 [with 1 being a novice and 5 being a
```

```
-- drop objects
drop table lc_departments cascade constraints;
drop table lc_employees cascade constraints;
drop table lc_skills cascade constraints;

-- create tables
create table lc_departments (
  id number not null constraint lc_departments_id_pk
    primary key,
  name varchar2(255),
  location varchar2(255),
  country varchar2(255),
  created date not null,
  created_by varchar2(255) not null,
  updated date not null,
  updated_by varchar2(255) not null
);
```

Generating SQL Using Quick SQL: Example

The screenshot shows a SQL editor interface with a floating 'Save Script' dialog and the main workspace below it.

Main Workspace (Bottom Left):

- SQL** tab selected.
- Code area:

```
1 -- drop objects
2 drop table lc_departments cascade constraints;
3 drop table lc_employees cascade constraints;
4 drop table lc_skills cascade constraints;
5
6 -- create tables
7 create table lc_departments (
8     id                      number not null constraint lc_departments_id_pk
9     name                     varchar2(255),
10    location                 varchar2(255),
11    country                  varchar2(255),
12    created                  date not null,
13    created_by                varchar2(255) not null,
14    updated                  date not null,
15    updated_by                varchar2(255) not null
16 )
17 ;
```
- Toolbar buttons: Settings, Download, Save SQL Script, Review and Run.

Save Script Dialog (Top Right):

- * Script Name: Employees
- Buttons: Save Script (highlighted with a green box and circled with a green number 8), Review and Run (highlighted with a green box and circled with a green number 9).

Generating SQL Using Quick SQL: Example

SQL Scripts \ Script Editor

Script Name Employees

Cancel Download Delete Save Run

10

Run Script

You have requested to run the following script. Please confirm your request.

Script Name	Employees
Created	on 08/16/2019 12:12:38 PM by LOWCODE
Updated	on 08/16/2019 12:14:26 PM by LOWCODE
Number of Statements	55
Script Size in Bytes	14,514

Cancel Run Now

11

```
1 -- drop objects
2 drop table lc_departments cascade constraint
3 drop table lc_employees cascade constraints;
4 drop table lc_skills cascade constraints;
5
6 -- create tables
7 create table lc_departments (
8     id          number not null
9     name        varchar2(100)
10    location    varchar2(100)
11    country    varchar2(100)
12    created     date not null
13    created_by  varchar2(100)
14    updated     date not null
15    updated_by  varchar2(100)
16 )
17 ;
```

Generating SQL Using Quick SQL: Example

The screenshot shows the Quick SQL interface. At the top, it displays "Script: Employees" and "Status: Complete". Below this, there are two tabs: "Detail" (selected) and "Summary". A green box highlights the "Detail" tab. To the right of the tabs are "Rows" set to 15 and a "Go" button. A large green circle with the number "12" is overlaid on the "Go" button. In the top right corner are "Create App from Script" and "Edit Script" buttons.

The screenshot shows the generated SQL code and its execution results. The code includes:

```
drop table lc_departments cascade constraints

ORA-00942: table or view does not exist ORA-06512: at "SYS.WWV_DBMS_SQL_APEX_190100", line 592 ORA-06512: at "SYS.DBMS_SYS_SQL", line 1658 ORA-06512: at "SYS.WWV_DBMS_SQL_APEX_190100", line 578 ORA-06512: at "APEX_190100.WWV_FLOW_DYNAMIC_EXEC", line 2033

drop table lc_employees cascade constraints

ORA-00942: table or view does not exist ORA-06512: at "SYS.WWV_DBMS_SQL_APEX_190100", line 592 ORA-06512: at "SYS.DBMS_SYS_SQL", line 1658 ORA-06512: at "SYS.WWV_DBMS_SQL_APEX_190100", line 578 ORA-06512: at "APEX_190100.WWV_FLOW_DYNAMIC_EXEC", line 2033

drop table lc_skills cascade constraints

ORA-00942: table or view does not exist ORA-06512: at "SYS.WWV_DBMS_SQL_APEX_190100", line 592 ORA-06512: at "SYS.DBMS_SYS_SQL", line 1658 ORA-06512: at "SYS.WWV_DBMS_SQL_APEX_190100", line 578 ORA-06512: at "APEX_190100.WWV_FLOW_DYNAMIC_EXEC", line 2033

create table lc_departments (
    id          number not null constraint lc_departments_id_pk primary key,
    name        varchar2(255),
    created     date not null,
    updated     date not null,
    location    varchar2(255),
    created_by  varchar2(255) not null,
    updated_by  varchar2(255) not null
)

Table created. 0.11 seconds
```

Generating DDL Statements

Utilities

Data Workshop
Load and unload data using CSV, XLSX, XML or JSON files.

Quick SQL
Generate SQL using shorthand syntax

1

Generate DDL
Generate scripts for all or selected database objects within a schema.

Generate DDL - Schema

Schema

Select the database schema which owns the database objects for which you would like to generate a data definition language (DDL) script.

* Schema LOWCODE

3

Cancel

Next >

Utilities \ Generate DDL

Actions

2

Create Script >

Generating DDL Statements

Generate DDL - Object Type

Select the object types for which you would like to generate DDL. Clicking **Generate DDL** generates DDL for the selected object types. To select object names for selected object types, click **Next**.

Output: **Display Inline** Save As Script File [?](#)

Check All [?](#)

Object Type:

<input type="checkbox"/> Function	<input type="checkbox"/> Index	<input type="checkbox"/> Package
<input type="checkbox"/> Procedure	<input type="checkbox"/> Sequence	<input type="checkbox"/> Synonym
<input checked="" type="checkbox"/> Table	<input type="checkbox"/> Trigger	<input type="checkbox"/> View
<input type="checkbox"/> Database Link	<input type="checkbox"/> Type	<input type="checkbox"/> Materialized View

File Character Set **Unicode UTF-8** [?](#)

[<](#) [Cancel](#) [Generate DDL](#) **Next >**

4

Generate DDL - Object Name

Select the object(s) for which you would like to generate DDL.

Output: **Display Inline** Save As Script File [?](#)

File Character Set **Unicode UTF-8** [?](#)

Check All [?](#)

Type		Name
Table	<input checked="" type="checkbox"/>	DEMO_CONSTRAINT_LOOKUP
	<input checked="" type="checkbox"/>	DEMO_CUSTOMERS
	<input checked="" type="checkbox"/>	DEMO_ORDERS

Generate DDL

[<](#) [Cancel](#) [Script](#) **Generate DDL**

5

```
CREATE TABLE "LC_DEPARTMENTS"
(
    "ID" NUMBER NOT NULL ENABLE,
    "NAME" VARCHAR2(255),
    "LOCATION" VARCHAR2(255),
    "COUNTRY" VARCHAR2(255),
    "CREATED" DATE NOT NULL ENABLE,
    "CREATED_BY" VARCHAR2(255) NOT NULL ENABLE,
    "UPDATED" DATE NOT NULL ENABLE,
    "UPDATED_BY" VARCHAR2(255) NOT NULL ENABLE,
    CONSTRAINT "LC_DEPARTMENTS_ID_PK" PRIMARY KEY ("ID")
    USING INDEX ENABLE
)
/
CREATE TABLE "LC_EMPLOYEES"
(
    "ID" NUMBER NOT NULL ENABLE,
```

Summary

In this lesson, you learned how to:

- Navigate to SQL Workshop and review its components
- Browse through database objects using the Object Browser
- Create a lookup table
- Run SQL commands and SQL scripts
- Load and unload data using the Data Workshop utility
- Build a SQL query using Query Builder
- Generate SQL using Quick SQL
- Generate DDL statements





Hands-on Lab



Oracle **APEX**



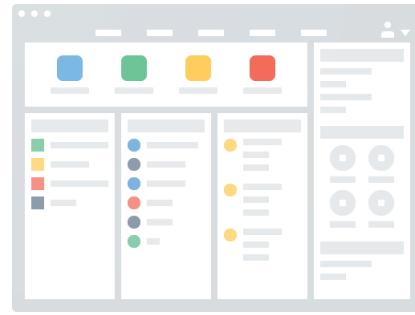
Unit 3: Creating a Database Application

Lesson Objectives

After completing this lesson, you should be able to:

- Explain App Builder concepts
- Describe the types of applications you can build using Application Express
- List the components of a database application
- Create a database application based on existing tables
- Create a database application from a file
- Create a mobile web application

Understanding App Builder Concepts



Application Express Application



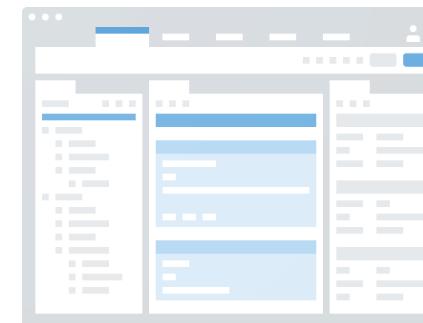
Application Page



Application User Interface



Session State



Page Processing and Page Rendering



Application URL Syntax

Understanding Database Web Applications

Sample Database Application

Home Customers (7) Products (10) Orders (10) Reports > Administration

Sample Database Application
Track and Manage Customers, Orders and Products

Dashboard >

\$1,600 Monthly Sales

10 Total Products

2 Monthly Orders

7 Total Customers

Top Customers + >

Bradley, Eugene	2,760
Windsor Locks, CT · 1,000	
Logan, Edward	2,420
East Boston, MA · 1,000	

Top Products + >

Jacket - 18 x \$150	\$2,700
Bag - 16 x \$125	\$2,000
Trousers - 21 x \$80	\$1,680
Ladies Shoes - 12 x \$120	\$1,440

App Builder Home Page

The screenshot shows the Oracle APEX App Builder Home Page. At the top, there is a navigation bar with the following items:

- ORACLE APEX
- App Builder (with a dropdown arrow)
- SQL Workshop (with a dropdown arrow)
- Team Development (with a dropdown arrow)
- App Gallery (with a dropdown arrow)

The main content area features a grid of icons representing different application management tasks:

- App Builder (highlighted with a green box and a red arrow pointing to it)
- Cloud (green icon)
- Dashboard (orange icon)
- Download (red icon)

Below this grid, there is a larger section titled "App Builder" with the following sub-options:

- Create (with a plus sign icon)
- Import (with an upward arrow icon)
- Dashboard (with a clock icon)
- Workspace Utilities (with a key icon)

At the bottom of this section, there is a search bar with the placeholder "Sample Database Application" and a "Create >" button.

On the right side of the page, there is a sidebar with the following sections:

- About: "The App Builder enables you to design, develop and deploy applications which are beautiful and responsive." and a "Learn More ..." link.
- Recent: "56093 Sample Database Application"
- Tasks: "Create Application from Spreadsheet", "Install Sample App", "Install Productivity App", and "Migrations".

At the bottom of the main content area, there is a "Learn more about App Builder" button and a "Get Started" button.

Creating a Database Application

ORACLE APEX App Builder SQL Workshop Team Development App Gallery Q ? About

Create Import Dashboard Workspace Utilities

Recent No Applications found.

Tasks

Create Application from Spreadsheet >

Install Sample App >

Install Productivity App >

Migrations

Oracle Forms Migrations >

Get Started Now

Create a New App Start building your first application in Application Express.

Install a Productivity or Sample App Choose from over 30 sample and productivity apps.

Learn more about App Builder Get Started

The screenshot shows the Oracle APEX App Builder interface. At the top, there's a navigation bar with tabs for 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery'. To the right of the tabs are search and user profile icons. Below the navigation bar, there are four main buttons: 'Create' (with a plus sign icon), 'Import' (with an upward arrow icon), 'Dashboard' (with a clock icon), and 'Workspace Utilities' (with a wrench icon). On the left side, there's a 'Get Started Now' section containing two boxes: one for 'Create a New App' (with a checkmark icon) and another for 'Install a Productivity or Sample App' (with a download icon). Both boxes have descriptive text below them. At the bottom, there's a link 'Learn more about App Builder' with a cursor icon, and a 'Get Started' button.

Using the Create Application Wizard

The screenshot shows the Oracle APEX App Builder interface. At the top, there is a navigation bar with tabs: ORACLE APEX, App Builder, SQL Workshop, Team Development, and App Gallery. Below the navigation bar, there are two main options: "Create" (highlighted with a green box) and "Import".

The main content area is titled "Create an Application". It features four cards:

- New Application**: Adds pages on existing data, selects application features, sets theme, and configures options.
- From a File**: Uploads CSV, XLSX, XML, or JSON files and creates the application.
- Productivity App**: Installs sample and productivity apps from the App Gallery.

At the bottom of the page, there are links for Websheet, Quick SQL, Copy Application, and Help.

Get Started

1 Create a New App
Start building your first application in Application Express.

2 New Application
Add pages on existing data, select application features, set your theme, and configure other options.

From a File
Upload a CSV, XLSX, XML or JSON file, or copy and paste data, then create your application.

Productivity App
Install one of many included Sample and Productivity Apps from the App Gallery.

Websheet · Quick SQL · Copy Application · Help

Creating an Application Based on Existing Tables

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for ORACLE APEX, App Builder, SQL Workshop, Team Development, and App Gallery. Below the navigation is a 'Get Started' section with two main options: 'Create' (highlighted with a green box and circled 1) and 'Import'.

The 'Create' section contains a callout box with the text: 'Create a New App. Start building your first application in Application Express.' Below this is a large 'Create an Application' button. To its right is a sub-section titled 'New Application' with the sub-options 'From a File' and 'Productivity App'. The 'From a File' option is highlighted with a green box and circled 2.

A modal window titled 'Create an Application' is open, showing the following details:

- Name:** Employee Details App
- Appearance:** Vita, Side Menu
- Pages:** Home, Blank
- Add Page:** +

Three numbered circles (1, 2, 3) are overlaid on the interface to indicate the steps:

- 1: Click the 'Create' button in the Get Started section.
- 2: Select the 'From a File' option in the New Application sub-section.
- 3: Fill in the 'Name' field in the 'Create an Application' modal.

Creating an Application Based on Existing Tables

The screenshot shows the Oracle APEX App Builder interface. At the top, there's a navigation bar with links for ORACLE APEX, App Builder, SQL Workshop, Team Development, App Gallery, and user icons. Below the navigation bar, there are buttons for View Blueprint and Load Blueprint.

The main area is titled "Create an Application". It has fields for "Name" (Employee Details App) and "Appearance" (Vita - Red, Side Menu). There's also a "Pages" section with a "Add Page" button highlighted with a green circle (step 5).

On the left side, there's a "Appearance" section with "Theme Style" options: Vita (selected), Vita - Red (highlighted with a green circle 4), and Vita - Slate. Below that is a "Navigation" section with Side Menu (selected) and Top Menu options. There's also an "Application Icon" section with a cloud icon and a "Choose New Icon" button.

At the bottom, there are buttons for Cancel, Use Custom Theme, and Save Changes (highlighted with a green circle 5).

Creating an Application Based on Existing Tables

Add Page

6

Blank

Calendar

Cards

Dashboard

Form

Interactive Grid

Report

Timeline

Wizard

Add Report Page

Page Name

Employees Report

Set Icon

Table or View

SQL Query

Interactive Report

Classic Report

Table or View

EMP

Include Form

Lookup Columns

Lookup Key 1

DEPTNO

Display Column 1

DEPT.DNAME

Lookup Key 2

- Select Column -

Display Column 2

- Select Column -

Lookup Key 3

- Select Column -

Display Column 3

- Select Column -

Lookup Key 4

- Select Column -

Display Column 4

- Select Column -

<

?

Add Page

Creating an Application Based on Existing Tables

The screenshot shows the Oracle Application Express (APEX) application creation interface. At the top, there's a navigation bar with a back arrow, a search bar containing 'Employees Report', and a user icon. Below the navigation is a green circular badge with the number '7'. The main content area has a title 'Interactive Report with Form (emp)' and a 'Edit' button.

Features (7)

Check All (highlighted with a green box)

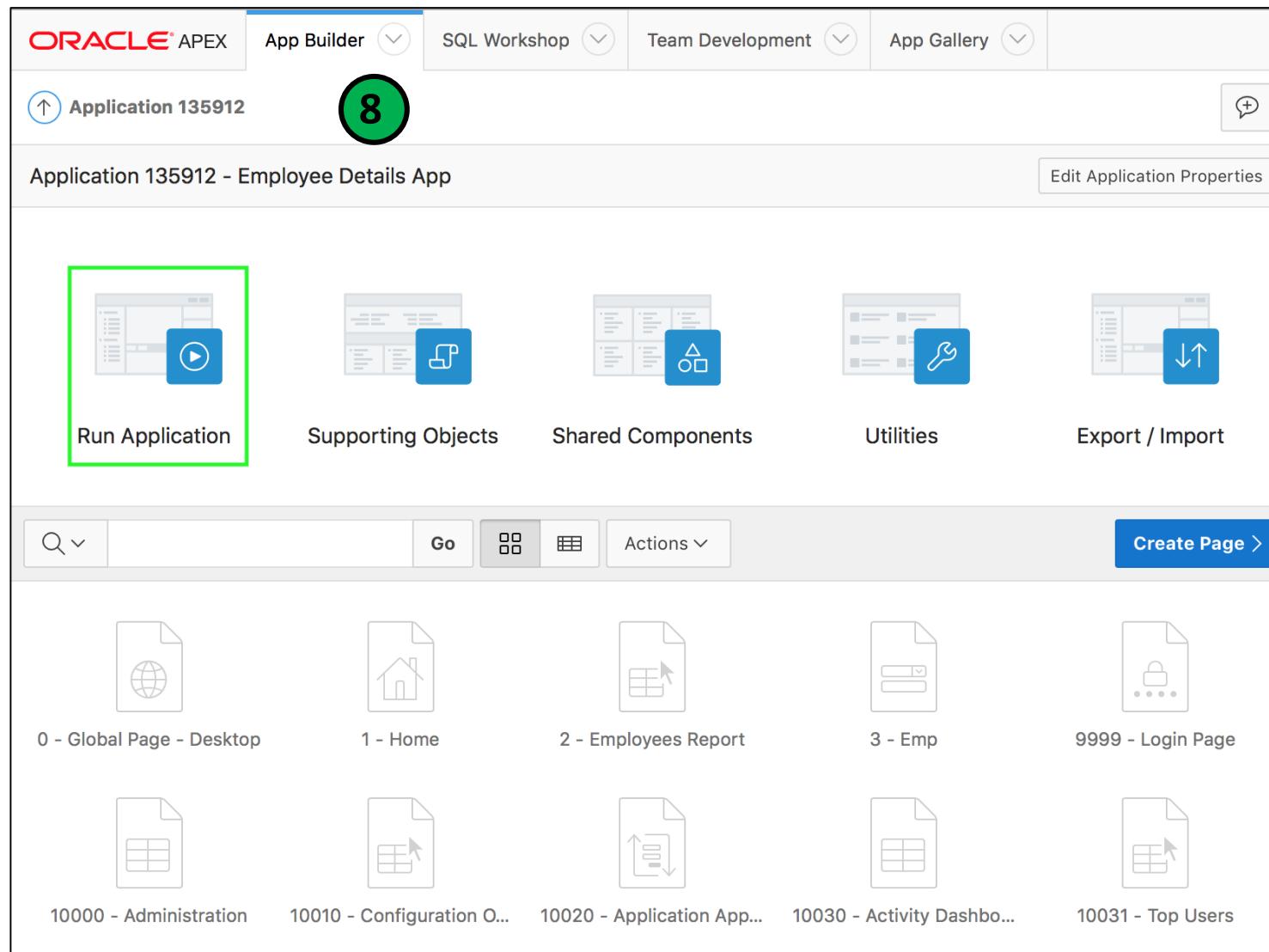
- About Page**: Add about this application page
- Access Control**: Enable role-based user authorization
- Activity Reporting**: Include user activity and error reports
- Configuration Options**: Enable or disable application features
- Feedback**: Allow users to provide feedback
- Theme Style Selection**: Update default application look and feel

Settings

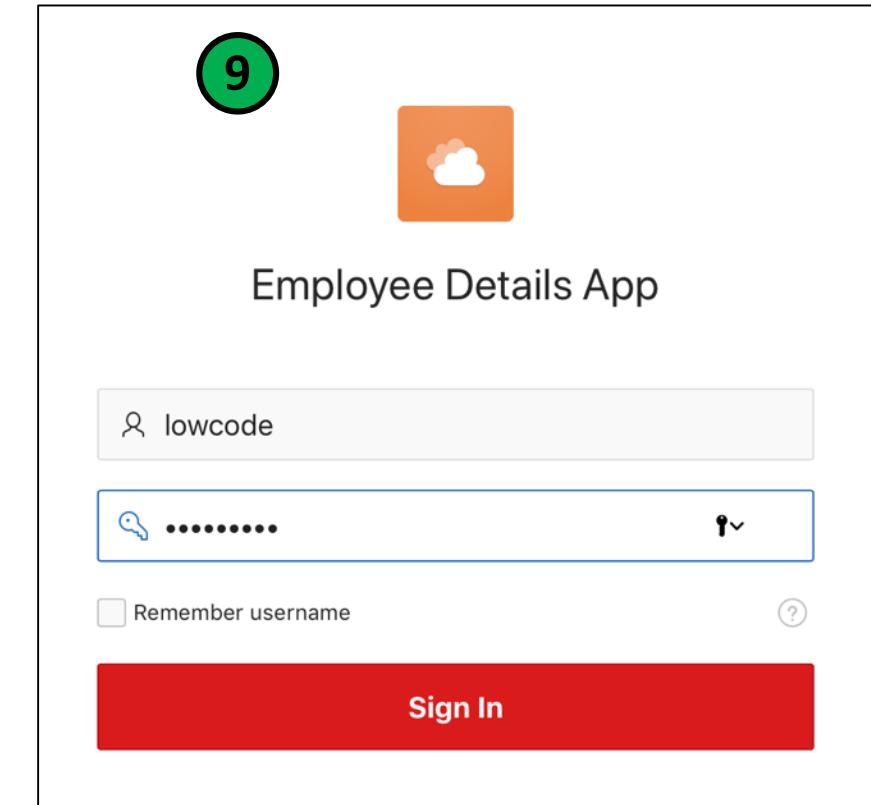
Application ID 135912	Schema LOWCODE	Authentication Application Express Accounts
Language English (en)	Advanced Settings	User Interface Defaults

Create Application (highlighted with a green box)

Creating an Application Based on Existing Tables



The screenshot shows the Oracle APEX App Builder interface. At the top, there are tabs for ORACLE APEX, App Builder (highlighted with a green circle containing the number 8), SQL Workshop, Team Development, and App Gallery. Below the tabs, the application name "Application 135912" is displayed, along with a "Edit Application Properties" button. The main area contains several buttons: "Run Application" (highlighted with a green box), "Supporting Objects", "Shared Components", "Utilities", and "Export / Import". Below these buttons is a search bar with a "Go" button and an "Actions" dropdown. To the right of the search bar is a "Create Page >" button. The bottom section displays a grid of page icons with their names: "0 - Global Page - Desktop", "1 - Home", "2 - Employees Report", "3 - Emp", "9999 - Login Page", "10000 - Administration", "10010 - Configuration O...", "10020 - Application App...", "10030 - Activity Dashbo...", and "10031 - Top Users".



The screenshot shows the login screen for the "Employee Details App". It features a logo icon (orange cloud with a person silhouette) and the application name "Employee Details App". Below the logo is a search bar with the placeholder "lowcode". There is also a password field with a masked password and a "Sign In" button. A checkbox for "Remember username" is present, and a help icon is located in the top right corner.

Creating an Application Based on Existing Tables

The screenshot displays two pages of an Oracle Application Express (APEX) application titled "Employee Details App".

Left Page (Home):

- Header: Employee Details App
- Top navigation: Home, Employees Report, Administration.
- Icon: Cloud icon.
- Section: Employees Report (red background with grid icon).
- Text: Employees Report.
- Footer: Release 1.0, Home, Application 135912, Edit Page 1, Session.

Right Page (Employees Report):

- Header: Employee Details App
- Section: Employees Report
- Table:
| | Ename ↑ | Job | Hiredate | Sal | Comm | Deptno |
| --- | --- | --- | --- | --- | --- | --- |
| | ADAMS | CLERK | 12-JAN-83 | 1,100 | - | RESEARCH |
| | ALLEN | SALESMAN | 20-FEB-81 | 1,600 | 300 | SALES |
| | BLAKE | MANAGER | 01-MAY-81 | 2,850 | - | SALES |
| | CLARK | MANAGER | 09-JUN-81 | 2,450 | - | ACCOUNTING |
| | FORD | ANALYST | 03-DEC-81 | 3,000 | - | RESEARCH |
| | JAMES | CLERK | 03-DEC-81 | 950 | - | SALES |
| | JONES | MANAGER | 02-APR-81 | 2,975 | - | RESEARCH |
| | KING | PRESIDENT | 17-NOV-81 | 5,000 | - | ACCOUNTING |
| | MARTIN | SALESMAN | 28-SEP-81 | 1,250 | 1,400 | SALES |
| | MILLER | CLERK | 23-JAN-82 | 1,300 | - | ACCOUNTING |
| | SCOTT | ANALYST | 09-DEC-82 | 3,000 | - | RESEARCH |
| | SMITH | CLERK | 17-DEC-80 | 800 | - | RESEARCH |
- Buttons: Reset, Create.

Creating an Application From a File

The image consists of three screenshots of the Oracle APEX interface, each with a green circle containing a number indicating the step:

- Step 1:** Shows the App Builder home page. A green box highlights the "Create" button under the "Get Started Now" section. A green circle with the number "1" is positioned above the "Create" button.
- Step 2:** Shows the "Create an Application" screen. A green box highlights the "From a File" option. A green circle with the number "2" is positioned above the "From a File" option.
- Step 3:** Shows the SQL Workshop Utilities menu. A green box highlights the "Utilities" item in the "All Utilities" dropdown. A green circle with the number "3" is positioned above the "Utilities" item.

Or

Navigate to **SQL Workshop > Utilities** and select **Data Workshop**.

Creating an Application From a File

The image shows a Mac OS X Finder window on the left and a 'Load Data' application window on the right.

Finder Window (Left):

- Title bar: wkdir
- Back/Forward buttons
- View menu: View, Arrange, Action, Share, Edit Tags
- Favorites sidebar:
 - AirDrop
 - Recents
 - iCloud Drive
 - Applications
 - Desktop
 - Documents
 - Downloads
- Content area:
 - Name column: Project_Tasks.csv
 - Date Modified column: 21-Feb-2019

A red arrow points from the 'Project_Tasks.csv' file in the Finder to the 'Load Data' window.

Load Data Application (Right):

- Title bar: Load Data
- Buttons: Upload a File, Copy and Paste
- Text: Drag and drop file here or
- Choose File button
- Text: Supported formats csv, xlsx, txt, xml, json

A green box highlights the 'Load Data' window's interface, and a blue dashed box highlights the 'Drag and drop file here or' area. A red arrow points from the 'Project_Tasks.csv' file in the Finder to this area.

Creating an Application From a File

Load Data X

Where do you want to load this data?

Load To New Table Existing Table

* Table Owner ?

* Table Name ?

Please select the columns to load. Configure

* Error Table Name ?

Primary Keys SYS_GUID Identity Column ?

Use Column Data Types ?

4

Creating an Application From a File

Configure

5

Column Headers ? Column Delimiter ? Enclosed By ? File Encoding ?

First line contains headers , ; | # tab None " ' Unicode UTF-8

Preview Columns to Load

1	PROJECT	TASK_NAME	START_DATE	END_DATE	STATUS	ASSIGNED_TO	COST	BUDGET
2	ACME Web Configuration	Identify server requirements	05/17/2019	05/18/2019	Closed	John Watson	100	200
3	Maintain Support Systems	HR software upgrades						
4	Maintain Support Systems	Apply Billing System upda						
5	ACME Web Configuration	Determine Web listener configuration(s)						
6	ACME Web Configuration	Specify security authenti						
7	ACME Web Configuration	Select servers for Develop						
8	Email Integration	Complete plan						

[Close Dialog](#) [Column Sh](#)

6

Settings

Column Headers ? Column Delimiter ? Enclosed By ? File Encoding ?

First line contains headers , ; | # tab None " ' Unicode UTF-8

Preview

i Parsed first 74 rows to sample the column types. The preview below only displays the first 8 columns and 5 rows. To view the full preview and configure data load settings, please click **Preview** button.

[Preview](#)

1	PROJECT	TASK_NAME	START_DATE	END_DATE	STATUS	ASSIGNED_TO	COST	BUDGET
2	ACME Web Configuration	Identify server requirements	05/17/2019	05/18/2019	Closed	John Watson	100	200
3	Maintain Support Systems	HR software upgrades	05/17/2019	07/14/2019	On-Hold	Pam King	8000	7000
4	Maintain Support Systems	Apply Billing System updates	05/17/2019	07/18/2019	On-Hold	Russ Sanders	9500	7000
5	ACME Web Configuration	Determine Web listener configuration(s)	05/18/2019	05/18/2019	Closed	James Cassidy	100	100

[Load Data](#)

< Cancel

Creating an Application From a File

View Blueprint | Load Blueprint

8

Create an Application

Name
Tasks App

Appearance
Vita, Side Menu

Pages

Add Page

	Home	Blank	Edit
	Dashboard	Dashboard	Edit
	Tasks Search	Faceted Search (tasks)	Edit
	Tasks Report	Interactive Report with Form (tasks)	Edit
	Calendar	Calendar (tasks; project ...)	Edit

Load Data

✓

Table TASKS created with 73 rows!

7

[View Table](#) [Continue to Create Application Wizard >](#)

Creating an Application From a File

9

Features  

<input checked="" type="checkbox"/>  About Page Add about this application page	<input checked="" type="checkbox"/>  Access Control Enable role-based user authorization	<input checked="" type="checkbox"/>  Activity Reporting Include user activity and error reports
<input checked="" type="checkbox"/>  Configuration Options Enable or disable application features	<input checked="" type="checkbox"/>  Feedback Allow users to provide feedback	<input checked="" type="checkbox"/>  Theme Style Selection Update default application look and feel

Settings 

Application ID 136944	Schema LOWCODE	Authentication Application Express Accounts
Language English (en)	Advanced Settings	User Interface Defaults

Creating an Application From a File

The screenshot shows the Oracle APEX App Builder interface. At the top, there are tabs for ORACLE® APEX, App Builder, SQL Workshop, Team Development, and App Gallery. Below the tabs, the application ID "Application 136944" is displayed, with a green circle containing the number "10" overlaid on the "Run Application" button.

The main area shows the "Tasks App" application. A green circle containing the number "11" is overlaid on the chart icon in the center of the page. The page title is "Tasks App". On the left, there is a sidebar with a search bar, a "Run Application" button highlighted with a green box, and a "Global Page" link. The main content area displays four cards: "Dashboard", "Tasks Search", "Tasks Report", and "Calendar".

At the bottom, there is a sign-in form with fields for "Username" (containing "lowcode") and "Password", a "Remember username" checkbox, and a "Sign In" button. The footer includes a search bar, a "Release 1.0" message, and various navigation links: Home, Application 30466, Edit Page 1, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a gear icon.

Creating an Application From a File

Home

Dashboard

Tasks Search

Tasks Report

Calendar

Dashboard

Project

Task	Count
Migrate from Legacy Server	10
Client Server Conversion	9
Migrate Desktop App...	7
ACME Web Configuration	7
Bug Tracker	5
Public Website	5
Packaged Ap...	5
Email Integration	4
Maintain Support Sys...	4
Software Projects Tra...	4
Convert Spreadsheet	4
Employee Satisfaction ...	3
Discussion Forum	3
Train Developers	3

Status

Status	Count
Closed	14
Pending	10
Open	5
On-Hold	2

Task Name

Task Name	Count
Check software compatibility	2
Post-migration review	2
User acceptance testing	2
Plan rollout schedule	2
Plan migration strategy	2
End-user training	2
Identify server requirements	1
Determine Web listener configuration(s)	1
Specify security authentication scheme(s)	1
Select servers for Development, Test, Production	1
Configure Workspace provisioning	1
Create pilot workspace	1
Run installation	1
Implement bug tracking software	1
Review automated testing tools	1
Document quality assurance procedures	1
Train developers on tracking bugs	1
Measure effectiveness of improved QA	1
Identify pilot client server applications	1
Migrate pilot client server to web	1
Post-migration review	1
Plan migration schedule	1
Migrate client server apps	1
Test migrated applications	1

Tasks Search

Search... Go

Project ↑:

Project	Description	Start Date	End Date	Status	Assigned To	Cost	Budget
ACME Web Configuration	Identify server requirements	5/17/2019	5/18/2019	Closed	John Watson	100	200
ACME Web Configuration	Determine Web listener configuration(s)	5/18/2019	5/18/2019	Closed	James Cassidy	100	100
ACME Web Configuration	Specify security authentication scheme(s)	5/19/2019	5/21/2019	Closed	John Watson	200	300
ACME Web Configuration	Select servers for Development, Test, Production	5/19/2019	5/24/2019	Closed	James Cassidy	200	600
ACME Web Configuration	Configure Workspace provisioning	5/26/2019	5/26/2019	Closed	John Watson	200	100
ACME Web Configuration	Create pilot workspace	5/26/2019	5/26/2019	Closed	John Watson	100	100
ACME Web Configuration	Run installation	5/27/2019	5/27/2019	Closed	James Cassidy	100	100
Bug Tracker	Implement bug tracking software	5/31/2019	5/31/2019	Closed	Myra Sutcliff	100	100
Bug Tracker	Review automated testing tools	6/1/2019	7/2/2019	On-Hold	Myra Sutcliff	2,750	1,500
Bug Tracker	Document quality assurance procedures	7/3/2019	8/6/2019	Open	Myra Sutcliff	3,500	4,000
Bug Tracker	Train developers on tracking bugs	8/7/2019	9/27/2019	On-Hold	Myra Sutcliff	0	2,000
Bug Tracker	Measure effectiveness of improved QA	8/19/2019	9/19/2019	Pending	Myra Sutcliff	0	1,500
Client Server Conversion	Identify pilot client server applications	6/20/2019	6/21/2019	Closed	Scott Spencer	200	200
Client Server Conversion	Migrate pilot client server to web	6/22/2019	7/7/2019	Closed	Scott Spencer	400	500
Client Server Conversion	Post-migration review	7/8/2019	7/8/2019	Closed	Pam King	100	100
Client Server Conversion	Plan migration schedule	7/9/2019	7/9/2019	Closed	Pam King	100	100
Client Server Conversion	Migrate client server apps	7/13/2019	11/21/2019	Open	Pam King	300	12,000
Client Server Conversion	Test migrated applications	8/19/2019	12/11/2019	Pending	Russ Saunders	0	6,000

Project ↑:

Assigned To:

Assigned To	Count
John Watson (14)	14
Mark Nile (14)	14
Pam King (12)	12
Myra Sutcliff (6)	6
James Cassidy (5)	5

Show More

Assigned To:

Assigned To	Count
John Watson (14)	14
Mark Nile (14)	14
Pam King (12)	12
Myra Sutcliff (6)	6
James Cassidy (5)	5

Show More

Budget:

Budget Range	Count
<120 (15)	15
120 - 300 (7)	7

Creating a Mobile Web Application

- Mobile apps built with Oracle APEX are browser-based apps that run inside the browser on the mobile device
- Build apps for mobile devices with mobile-specific design patterns that can provide an optimal user experience for small screens
- Universal Theme is optimized to work on mobile devices and enables you to build modern and responsive web apps
- Steps to create a mobile Web app:
 1. Create a new app by running the Create Application Wizard
 2. Run the Create Page Wizard and add the mobile pages

Creating a Mobile Web Application: Report Types

Employees Mobile App

Departments

- ACCOUNTING >
- RESEARCH >
- SALES >
- OPERATIONS >

Create

List View

Employees

Columns...

Ename	Hiredate	Sal	Comm
KING	17-NOV-81	5000	
BLAKE	01-MAY-81	2850	
CLARK	09-JUN-81	2450	
JONES	02-APR-81	2975	
SCOTT	09-DEC-82	3000	
FORD	03-DEC-81	3000	
SMITH	17-DEC-80	800	
ALLEN	20-FEB-81	1600	300
WARD	22-FEB-81	1250	500
MARTIN	28-SEP-81	1250	1400
TURNER	08-SEP-81	1500	0
ADAMS	12-JAN-83	1100	
JAMES	03-DEC-81	950	
MILLER	23-JAN-82	1300	

Column Toggle Report

Employees Report

Empno	7839
Ename	KING
Job	PRESIDENT
Mgr	
Hiredate	17-NOV-81
Sal	5000
Comm	
Deptno	10
Empno	7698
Ename	BLAKE
Job	MANAGER
Mgr	7839
Hiredate	01-MAY-81
Sal	2850
Comm	
Deptno	30

Reflow Report

Summary

In this lesson, you learned how to:

- Create a database web application based on existing tables
- Create a database web application from a file
- Convert a spreadsheet in to a database web application
- Create a mobile web application





Hands-on Lab



Oracle **APEX**



Unit 4: Managing Pages in Page Designer

Lesson Objectives

After completing this lesson, you should be able to:

- Explain application page components
- Create an application page and view its definition
- Manage pages in page designer
- Describe page designer UI elements
- Add page components

Understanding Application Page Components

The screenshot illustrates a low-code application interface with several components highlighted by orange annotations:

- Navigation Bar:** Located at the top right, it includes links for Help, a search bar (lowcode), and user profile.
- Navigation Menu:** A sidebar on the left titled "Sample Database Application" containing links: Home, Customers (7), Products (10), Orders (10), Reports, and Administration.
- Region:** A large central panel titled "Products" showing a grid of product images. One product in the grid is highlighted with a green border.
- Form:** A modal dialog titled "Sample Database Application - Product Details" for editing a product named "Bag". It contains fields for Product Name (Bag), Product Description (Unisex bag suitable for carrying laptops with room for many additional items), Category (Accessories), Product Available (Yes/No), List Price (\$125.00), Product Image (Choose file, Download), and Tags.
- Item:** The "List Price" input field is highlighted with a green border.
- Button:** Several buttons are annotated:
 - A blue "Add Product" button in the top right of the main panel.
 - A red "Delete" button in the bottom right of the modal dialog.
 - A blue "Apply Changes" button in the bottom right of the modal dialog.
 - A red "Cancel" button in the bottom left of the modal dialog.
 - A red "Button" label points to the "Edit Page 6" button in the footer toolbar.
 - A red "Button" label points to the "Theme Roller" button in the footer toolbar.
- Developer Toolbar:** A toolbar at the bottom with buttons for Home, Application 94366, Edit Page 6, Session, View Debug, Debug, Page Info, Quick Edit, Theme Roller, and a gear icon.

Understanding Page Modes

The image displays three screenshots of a 'Tasks App' interface to illustrate different page modes:

- Normal**: The top-left screenshot shows a standard view of a task card for 'Identify server requirements'. The card includes fields for Project (ACME Web Configuration), Task Name, Start Date (17-MAY-19), End Date (18-MAY-19), Status (Closed), Assigned To (John Watson), Cost (100), and Budget (200). A red arrow points from the text 'Normal' to the top-left corner of this card.
- Modal Dialog**: The top-right screenshot shows a modal dialog box titled 'Task' overlying the main interface. It contains the same task details as the normal view. A red arrow points from the text 'Modal Dialog' to the top-right corner of this dialog.
- Non-Modal Dialog**: The bottom screenshot shows a non-modal dialog box titled 'Task' integrated into the main interface. It has a semi-transparent background and contains the same task details. A red arrow points from the text 'Non-Modal Dialog' to the bottom center of this dialog.

Creating a Page

Application 136944

Application 136944 - Tasks App

Edit Application Properties

Page Type

Component Feature

Blank Page Report Form Master Detail Plug-ins Chart

Dashboard Calendar Tree Wizard Data Loading Legacy Page

Components Utilities Export / Import

Create Page >

Cancel Help Next >

1

2

The screenshot shows the 'Create a Page' dialog box for an application named 'Application 136944 - Tasks App'. The dialog has a header bar with the application name and a 'Edit Application Properties' button. The main area is titled 'Create a Page' and contains a 'Page Type' section. A green circle with the number '2' highlights the 'Blank Page' icon, which is highlighted with a blue border. Below it is a 'Component Feature' section with tabs for 'Component' (selected) and 'Feature'. Other page types shown include Report, Form, Master Detail, Plug-ins, Chart, Dashboard, Calendar, Tree, Wizard, Data Loading, and Legacy Page. To the right of the main dialog are three sections: 'Components' (with icons for hierarchy, report, and chart), 'Utilities' (with icons for report, chart, and export/import), and 'Export / Import' (with an icon showing up and down arrows). A large green box highlights the 'Create Page >' button at the bottom right. At the very bottom of the dialog are 'Cancel' and 'Help' buttons, and a 'Next >' button.

Creating a Page

3

Create a Blank Page

Page Attributes

* Page Number: 6

* Name: New Projects

* Page Mode: Normal

Page Group: - Select Page Group -

Breadcrumb: Breadcrumb

Parent Entry: Home (Page 1)

Entry Name: New Projects

> Optional Static Content Regions

< Cancel

4

Create a Blank Page

Navigation Menu

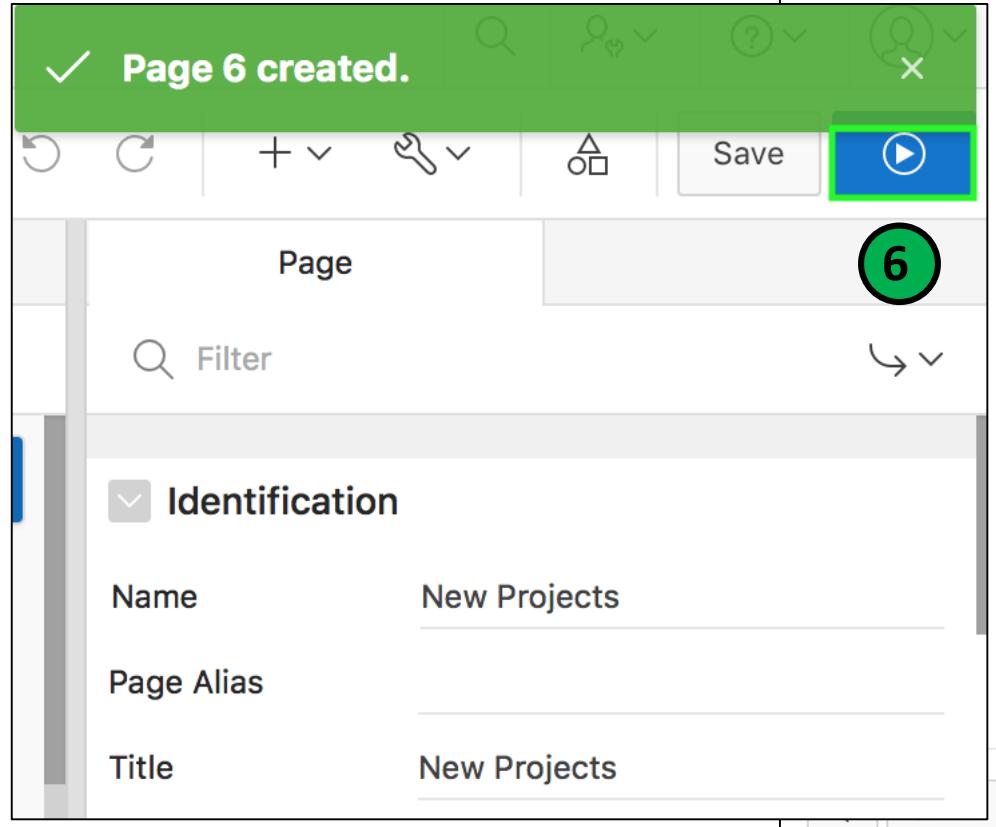
Navigation Preference: Create a new navigation menu entry

* New Navigation Menu Entry: New Projects

Parent Navigation Menu Entry: - No parent selected -

- Home
- Tasks
- Dashboard
- Administration

Creating a Page



Create a Blank Page

You have requested to create a page with the following attributes. Please confirm your selections.

Application	136944
Page	6
Page Name	New Projects
Page Title	New Projects

Confirm

Finish

A green circle with the number 5 is positioned in the bottom right corner of the confirmation dialog.

Navigating to Page Definition

The image shows a composite screenshot of the Oracle APEX interface. On the left, a sidebar displays the 'Sample Database Application' (Application 94366) with three pages listed: 'Page Zero', 'Sample Database Application', and 'Customers'. The 'Customers' page is highlighted with a green border and circled with a green number '2'. The main content area shows the 'Page Designer' for 'Page 2: Customers'. The top navigation bar has a green circle with the number '3' over the 'Page Designer' tab. The left sidebar lists regions like 'Pre-Rendering', 'Regions', 'Content Body', and 'Post-Rendering'. The central workspace shows the 'Customers' region with various components like 'Breadcrumb [Global Page]', 'Region Buttons', and 'Content Body'. The right panel contains configuration tabs for 'Identification', 'Appearance', and 'Navigation Menu', with specific settings for the 'Customers' page.

Sample Database Application
94366

1

ORACLE® APEX App Builder SQL Workshop Team

Application 94366

Application 94366 - Sample Database Application

Run Application Supporting Objects Shared Components

2

Page	Name	Updated By	Actions
0	Page Zero	1.1 years ago	-
1	Sample Database Application	1.1 years ago	-
2	Customers	7 months ago	-

3

Application 94366 \ Page Designer

Page 2: Customers

Pre-Rendering

Regions

Page Navigation

Breadcrumb Bar

Breadcrumb [Global Page]

Region Buttons

UPLOAD_DATA

NEW

Content Body

Customers

Columns

Attributes

Region Buttons

RESET

Dynamic Actions

Post-Rendering

PAGE HEADER

PAGE NAVIGATION

BREADCRUMB BAR

BEFORE CONTENT BODY

CONTENT BODY

Customers

PREVIOUS

ITEMS

Regions Items Buttons

Badge List [Plug-In] Breadcrumb Calendar

Chart Classic Report Column Toggle Report

Identification

Name: Customers

Page Alias:

Title: &APP_NAME. - Customers

Page Group: Desktop

Appearance

User Interface: Desktop

Page Mode: Normal

Page Template: Theme Default

Template Options: Use Template Defaults

CSS Classes:

Media Type:

Navigation Menu

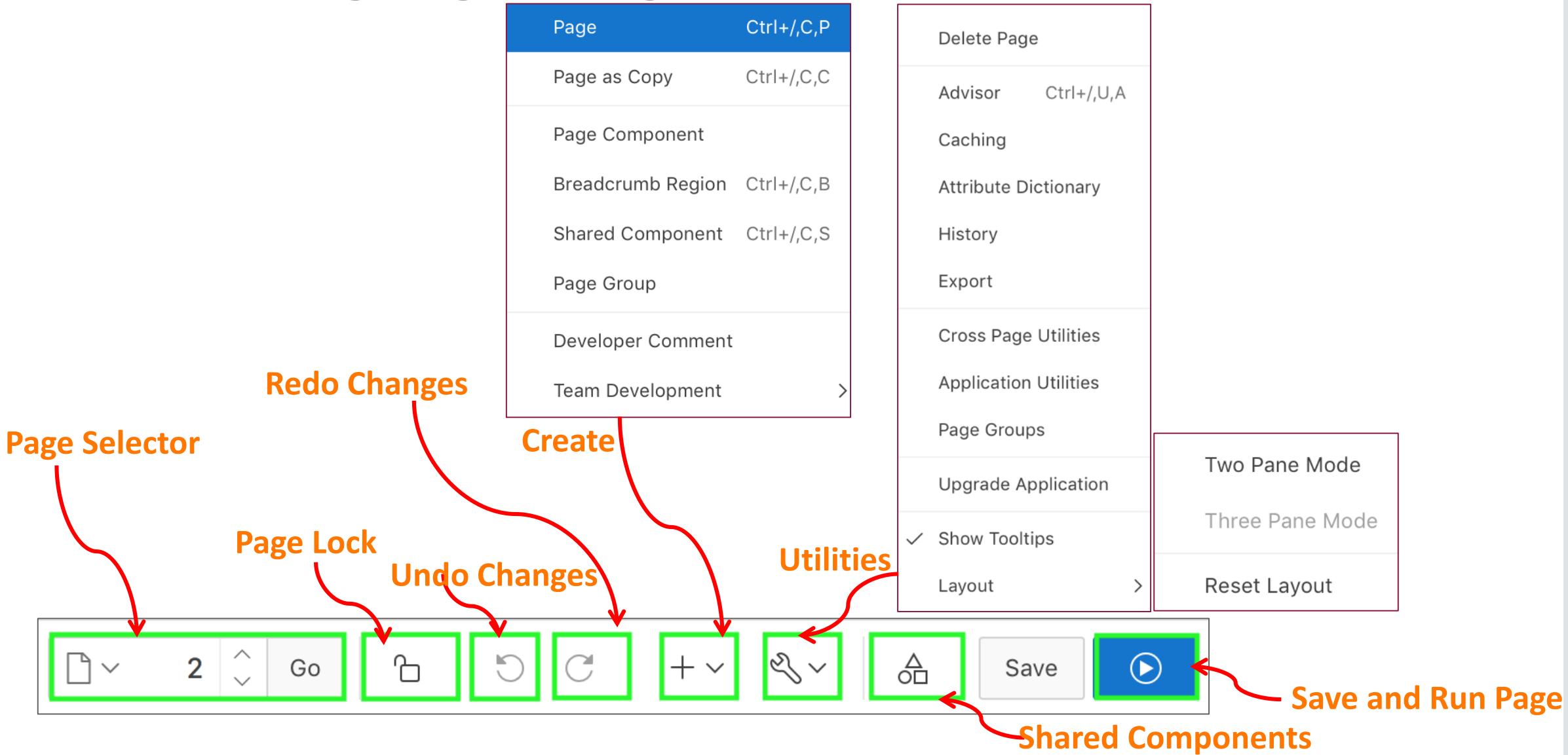
What is Page Designer?

The screenshot illustrates the Oracle Page Designer interface, divided into three main panes:

- Left Pane**: Contains the page navigation tree and region configuration. It includes sections for Pre-Rendering, Regions (Page Navigation, Breadcrumb Bar), Content Body (Customers), and Post-Rendering.
- Central Pane**: Displays the current page structure for "Customers". It shows the PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and CONTENT BODY. A "Breadcrumb [Global Page]" item is selected in the Content Body section.
- Right Pane**: Provides detailed settings for the page. It includes fields for Name (Customers), Page Alias (&APP_NAME. - Customers), Title, Page Group (Desktop), Appearance (User Interface: Desktop, Page Mode: Normal, Page Template: Theme Default), Template Options (Use Template Defaults), CSS Classes, Media Type, and Navigation Menu.

Red boxes and labels highlight specific areas: "Left Pane" covers the navigation tree; "Central Pane" covers the page structure; and "Right Pane" covers the detailed settings. A red arrow labeled "Toolbar" points to the top right corner of the interface.

Understanding Page Designer UI Elements: Toolbar



Understanding Page Designer UI Elements: Left Pane

The screenshot shows the Oracle Page Designer interface with the left pane highlighted by a red box. The left pane displays a hierarchical tree structure for 'Page 3: Products' under the 'Rendering' tab.

Rendering Tab:

- Pre-Rendering
 - Regions
 - Page Navigation
 - Breadcrumb Bar
 - Breadcrumb [Global Page]
 - Region Buttons
 - CREATE
 - Content Body
 - Products
 - Columns
 - Attributes
 - Region Buttons
 - RESET
 - Dynamic Actions
 - Post-Rendering
 - After Regions
 - Before Footer

Understanding Page Designer UI Elements: Central Pane

The screenshot shows the Oracle Page Designer interface with the central pane highlighted by a red box.

Central Pane Elements:

- Toolbar:** Layout, Component View, Messages, Page Search, Help.
- Search Bar:** Filter.
- Content Area:** Products page structure with sections: PAGE HEADER, PAGE NAVIGATION, BREADCRUMB BAR, BEFORE CONTENT BODY, and CONTENT BODY.
- Regions Tab:** Regions, Items, Buttons.
- Component Gallery:** A grid of components including Badge List [Plug-In], Breadcrumb, Calendar, Chart, Classic Report, Column Toggle Report, Form, Help Text, HTML 5 Bar Chart [Plug-In], Interactive Grid, Interactive Report, and List.
- Text Overlay:** "Gallery" centered over the component gallery grid.

Left Sidebar: Application 94366 \ Page Designer. Contains sections: Pre-Rendering, Regions, Content Body, Post-Rendering, and After Footer.

Right Sidebar: Identification (Name: Products, Page Alias), Title (&APP_NAME. - Products), Page Group (Desktop), Appearance (User Interface: Desktop, Page Mode: Normal, Page Template: Standard).

Page Designer UI Elements: Central Pane - Layout

The screenshot shows the Oracle Page Designer interface with the "Layout" tab selected (highlighted by a green box). The central pane displays a "Product Details" wizard with sections for "WIZARD PROGRESS BAR" and "WIZARD BODY". In the "WIZARD BODY", there is a "Product Details" section containing "ITEMS" with fields: P6_PRODUCT_NAME, P6_PRODUCT_DESCRIPTION, P6_CATEGORY, and P6_PRODUCT_AVAIL. Below this is a toolbar with tabs for "Regions", "Items", and "Buttons", and icons for "Badge List [Plug-In]", "Breadcrumb", "Calendar", "Chart", "Classic Report", and "Column Toggle Report". A context menu is open at the top right, with a red box highlighting its options. The menu includes:

- Display From Page Ctrl+/,D,T
- Display From Here Ctrl+,D,H
- Expand Alt+F11
- Delete Del
- Move To >
- Copy To >
- Hide Empty Legacy Positions
- Hide Empty Positions Ctrl+,D,E
- Hide Global Page Components
- Hide Buttons
- Hide Items

At the bottom right, there are additional options: "MIME Type Column", "MIMETYPE", and "File Name Column".

Adding Components from the Gallery

The image consists of two side-by-side screenshots of the Oracle APEX Component View interface.

Left Screenshot: The title bar says "Component View". The top navigation bar includes "Layout", "Component View", "Messages", "Page Search", and "Help". Below the navigation is a toolbar with search, zoom, and orientation icons. A red box highlights the text "Drag and drop from the Gallery" in the top right corner. The main area shows a list of items under the heading "ITEMS": P6_PRODUCT_NAME, P6_PRODUCT_DESCRIPTION, P6_CATEGORY, P6_PRODUCT_AVAIL, P6_LIST_PRICE, and P6_PRODUCT_IMAGE. The "P6_PRODUCT_IMAGE" item is highlighted with a blue background. Below the list are tabs for "Regions", "Items" (which is selected and highlighted with a green border), and "Buttons". A toolbar below these tabs includes icons for Checkbox, Color Picker, Date Picker, Display Image, Hidden, List Manager, Number Field, Password, and Percent. A red arrow points from the "Items" tab on the left to the "Items" tab on the right of the second screenshot.

Right Screenshot: The title bar says "Component View". The top navigation bar includes "Layout", "Component View", "Messages", "Page Search", and "Help". To the right of the navigation is a "Page Item" section with a search bar and a "Filter" dropdown. A red box highlights the text "Using the Context Menu" in the top right corner. The main area shows the same list of items as the left screenshot. The "P6_PRODUCT_IMAGE" item is highlighted with a blue background. Below the list are tabs for "Regions", "Items" (selected and highlighted with a green border), and "Buttons". A toolbar below these tabs includes icons for Checkbox, Color Picker, Date Picker, Display Image, Display Only, File Browser, Hidden, List Manager, Number Field, Password, and Percent. A context menu is open over the "P6_LIST_PRICE" item, with "Add To" selected. The submenu "Product Details" is expanded, showing "Items" (selected and highlighted with a green border). A dropdown menu on the right lists various insertion options: "Before" (highlighted with a blue background), "After", "Row before", "Row after", "Column before", and "Column after".

Understanding Page Designer UI Elements: Property Editor

The screenshot shows the Oracle Page Designer interface with a red box highlighting the 'Property Editor' panel on the right.

Application 94366 \ Page Designer

Page Item

Filter

Identification

- Name: P6_PRODUCT_NAME
- Type: Text Field

Label

- Label: Product Name

Settings

- Subtype: Text
- Trim Spaces: None
- Submit when Enter pressed: Yes (button)
- Disabled: Yes (button)

Layout

Page Item

Identification

Label

Settings

Layout

Regions **Items** **Buttons**

Checklist Color Picker Date Picker

Using the Code Editor

The screenshot illustrates the Oracle APEX interface for creating an interactive report titled "Products". The "Source" tab is selected in the left sidebar. A red arrow points from the "SQL Query" section of the sidebar to the corresponding code in the main "Code Editor - SQL Query" window.

Code Editor - SQL Query

```
1 select p.product_id,
2       p.product_name,
3       p.product_description,
4       p.category,
5       decode(p.product_avail, 'Y', 'Yes', 'N', 'No') product_avail,
6       p.list_price,
7       (select sum(quantity) from demo_order_items where product_id = p.product_id) units,
8       (select sum(quantity * p.list_price) from demo_order_items where product_id = p.product_id) sales,
9       (select count(o.customer_id) from demo_orders o, demo_order_items t where o.order_id = t.order_id and t.product_id = p.product_id) detail_count,
10      (select max(o.order_timestamp) od from demo_orders o, demo_order_items i where o.order_id = i.order_id and t.product_id = p.product_id) detail_timestamp,
11      apex_util.prepare_url(p_url=>'f?p'||:app_id||:6'||:app_session||'::::P6_PRODUCT_ID,P6_BRANCH:'||p.product_id),
12      decode(nvl(dbms_lob.getlength(p.product_image),0),0,null,
13             '<img alt=""||apex_escape.html_attribute(p.product_name)||" title=""||apex_escape.html_attribute(p.product_name)||"" style="border: 4px solid #CCC; -moz-border-radius: 4px; -webkit-border-radius: 4px;" ||src=""||apex_util.get_blob_file_src('P6_PRODUCT_IMAGE',p.product_id)||" height="75" width="75" />') detail_img,
14             decode(nvl(dbms_lob.getlength(p.product_image),0),0,null,
15                    apex_util.get_blob_file_src('P6_PRODUCT_IMAGE',p.product_id))
16      decode(nvl(dbms_lob.getlength(p.product_image),0),0,null,
17             detail_img_no_style,
18             tags
19
20
21 from demo_product_info p
```

A context menu is open on the right side of the code editor, with the "Use Plain Text Editor" option highlighted. Other options include "Tab Inserts Spaces", "Tab Size", "Indent Size", "Themes", "Show Line Numbers", and "Show Ruler".

Cancel OK

Summary

In this lesson, you learned how to:

- Create a page in your application
- View the page definition
- Use page designer UI elements
- Manage pages in page designer





Hands-on Lab



Oracle **APEX**



Unit 5: Developing Reports

Lesson Objectives

After completing this lesson, you should be able to:

- List the type of reports that you can create in Application Express
- Describe the different ways of creating reports in Application Express
- Create an interactive report
- Create an interactive grid
- Create a classic report
- Create a report with form
- Create a faceted search page

Understanding Different Report Types

A report is the formatted result of a SQL query.

Interactive Report

This screenshot shows a grid-based report interface. The columns are labeled: Project, Task Name, Start Date, End Date, Assigned To, Cost, Budget, and Status Id. A context menu is open over the second row, listing options like Filter, Data, Format, Chart, Group By, Pivot, Report, Download, Subscription, and Help. The 'Report' option is highlighted with a red box.

Project	Task Name	Start Date	End Date	Assigned To	Cost	Budget	Status Id
ACME Web Express Configuration	Identify server requirements	02-AUG-19	03-AUG-19	John Watson	200	500	4
ACME Web Express Configuration	Determine Web listener configuration(s)	04-AUG-19	04-AUG-19	James Cassidy	600	500	4
ACME Web Express Configuration	Run installation	07-AUG-19	07-AUG-19	James Cassidy	200	200	4
ACME Web Express Configuration	Create pilot workspace	09-AUG-19	09-AUG-19	John Watson	100	100	4
ACME Web Express Configuration	Specify security authentication scheme(s)	14-AUG-19	14-AUG-19	John Watson	200	300	1
ACME Web Express Configuration	Configure Workspace provisioning	15-AUG-19	15-AUG-19	John Watson	200	100	1
ACME Web Express Configuration	Select servers for Development, Test, Production	18-AUG-19	20-AUG-19	James Cassidy	200	600	1
Bug Tracker	Document quality assurance procedures	18-JUN-19	21-JUN-19	Myra Sutcliff	3000	2000	4
Bug Tracker	Review automated testing tools	22-JUN-19	24-JUN-19	Myra Sutcliff	750	1500	4

Report with Form

This screenshot shows a report interface with a grid of project tasks on the left and a detailed form on the right. The tasks are the same as in the previous screenshot. The form on the right is titled 'Project Details' and includes fields for Project (ACME Web Express Configuration), Task Name (Identify server requirements), Start Date (02-AUG-19), End Date (03-AUG-19), Assigned To (John Watson), Cost (200), Budget (500), and Status Id (4). Buttons for 'Create', 'Cancel', and 'Apply Changes' are at the bottom.

Project	Task Name	Start	End	Assigned	Status
ACME Web Express Configuration	Identify server requirements				
ACME Web Express Configuration	Determine Web listener configuration(s)				
ACME Web Express Configuration	Run installation				
ACME Web Express Configuration	Create pilot workspace				
ACME Web Express Configuration	Specify security authentication scheme(s)				
ACME Web Express Configuration	Configure Workspace provisioning				
ACME Web Express Configuration	Select servers for Development, Test, Production				
Bug Tracker	Document quality assurance procedures				
Bug Tracker	Review automated testing tools				

Classic Report

This screenshot shows a classic report interface with a grid of project tasks. The columns are labeled: Project, Task Name, Start Date, End Date, Assigned To, Cost, Budget, and Status Id. The data is identical to the other reports.

Project	Task Name	Start Date	End Date	Assigned To	Cost	Budget	Status Id
ACME Web Express Configuration	Identify server requirements	02-AUG-19	03-AUG-19	John Watson	200	500	4
ACME Web Express Configuration	Determine Web listener configuration(s)	04-AUG-19	04-AUG-19	James Cassidy	600	500	4
ACME Web Express Configuration	Run installation	07-AUG-19	07-AUG-19	James Cassidy	200	200	4
ACME Web Express Configuration	Create pilot workspace	09-AUG-19	09-AUG-19	John Watson	100	100	4
ACME Web Express Configuration	Specify security authentication scheme(s)	14-AUG-19	14-AUG-19	John Watson	200	300	1
ACME Web Express Configuration	Configure Workspace provisioning	15-AUG-19	15-AUG-19	John Watson	200	100	1
ACME Web Express Configuration	Select servers for Development, Test, Production	18-AUG-19	20-AUG-19	James Cassidy	200	600	1
Bug Tracker	Document quality assurance procedures	18-JUN-19	21-JUN-19	Myra Sutcliff	3000	2000	4
Bug Tracker	Review automated testing tools	22-JUN-19	24-JUN-19	Myra Sutcliff	750	1500	4

Interactive Grid

This screenshot shows an interactive grid interface with a header bar containing search, go, actions, and reset buttons. The grid has columns for Project, Task Name, Start Date, End Date, Assigned To, Cost, Budget, and Status Id. The data is identical to the other reports.

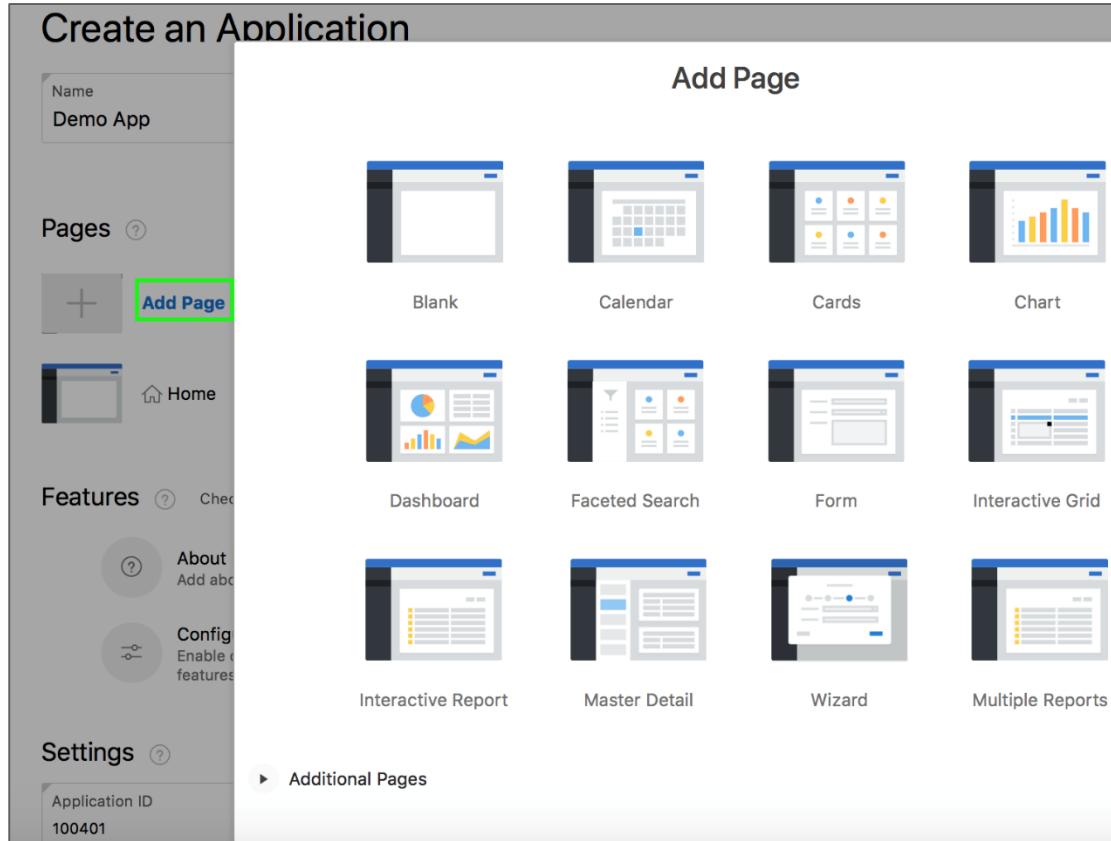
Project	Task Name	Start Date	End Date	Assigned To	Cost	Budget	Status Id
ACME Web Expr...	Identify server r...	02-AUG-19	03-AUG-19	John Watson	200	500	4
ACME Web Expr...	Determine Web I...	04-AUG-19	04-AUG-19	James Cassidy	600	500	4
ACME Web Expr...	Run installation	07-AUG-19	07-AUG-19	James Cassidy	200	200	4
ACME Web Expr...	Create pilot wor...	09-AUG-19	09-AUG-19	John Watson	100	100	4
ACME Web Expr...	Specify security...	14-AUG-19	14-AUG-19	John Watson	200	300	1
ACME Web Expr...	Configure Work... ace provisioning	15-AUG-19	15-AUG-19	John Watson	200	100	1
ACME Web Expr...	Select servers f...	18-AUG-19	20-AUG-19	James Cassidy	200	600	1
Bug Tracker	Document qualit...	18-JUN-19	21-JUN-19	Myra Sutcliff	3000	2000	4
Bug Tracker	Review automati...	22-JUN-19	24-JUN-19	Myra Sutcliff	750	1500	4

Selecting an Appropriate Report Type

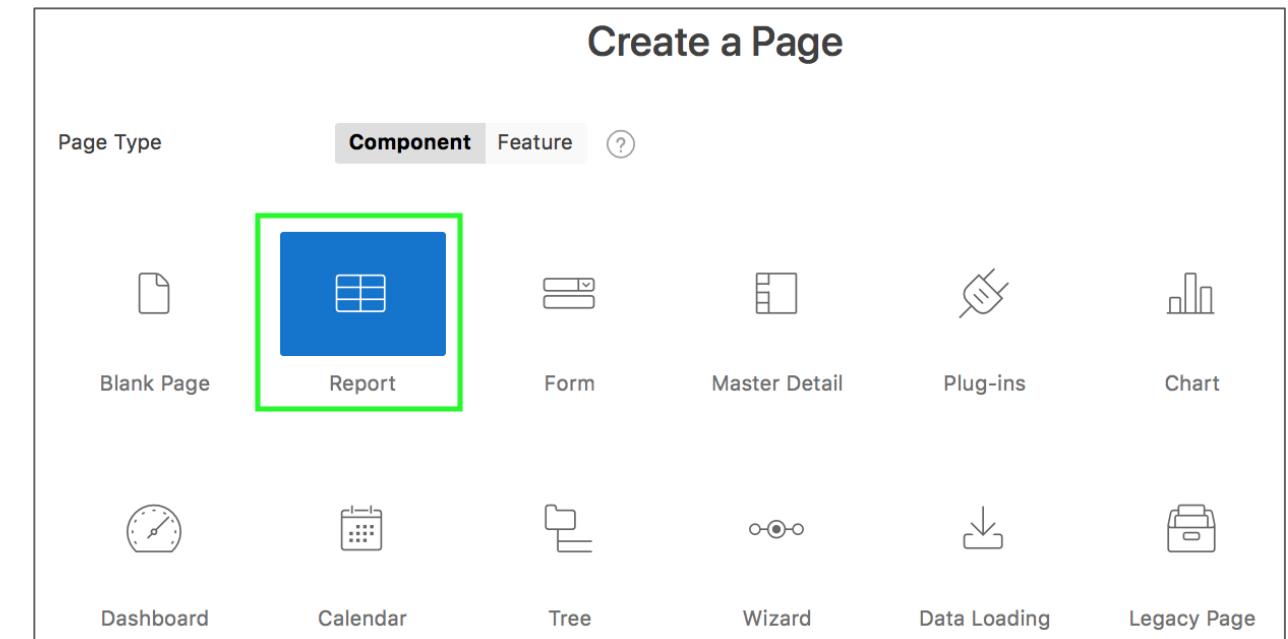
Capabilities	Interactive Report	Interactive Grid	Classic Report
End user customization of how and what data displays	Yes	Yes	No
End user can add, modify, and refresh data directly on the report	No	Yes	No
End user can rearrange the report interactively using the mouse	No	Yes	No

Understanding Different Ways of Creating Reports

Creating a report when you create a new app



- Create a report when you create a new database application
- Create a report as a new page in an application
- Create a report region on a page in an application



Creating a report as a new page in an app

Understanding Different Ways of Creating Reports

Creating a report region on a page in an application

Using the context menu

