Introduction

Objectives

- After completing this lesson, you should be able to:
  - Describe the differences in Oracle Database editions, options, and packs
  - List the database offerings in Oracle Cloud
  - Explain the sample database that will be used in the course practices

Course Objectives

- After completing this course, you should be able to:
  - Describe Oracle Database architecture
  - Explain Oracle Database Cloud Service (DBCS) architecture and features
  - Create and manage DBCS database deployments
  - Configure the database to support your applications
  - Manage database security and implement auditing
  - Implement basic backup and recovery procedures
  - Move data between databases and files
  - Employ basic monitoring procedures and manage performance

Introducing Oracle Database

- Oracle provides cloud and on-premises offerings.
- The purpose of Oracle Database is to store, organize, and retrieve data for your applications.
- You can install Oracle Database in your environment (on-premises) or use Oracle Database in Oracle's environment (cloud).

Oracle Database 19c

- First annual release of Oracle Database
- Will be released first on Oracle Cloud and Engineered Systems, with on-premises releases following
- Quarterly Release Updates (RUs) and Release Update Revisions (RURs) will be delivered

Oracle Database 19c On-Premises Editions

- Oracle Database is available in the following editions, each suitable for different development and deployment scenarios:
  - Oracle Database Personal Edition (PE)
  - Oracle Database Standard Edition 2 (SE2)
  - Oracle Database Enterprise Edition (EE)

Oracle Database Standard Edition 2

- SE2 supports Oracle Real Application Clusters (RAC).
- SE2 supports single tenant but lacks the following features, options, and tools:
  - Parallel execution
  - Oracle Data Guard
  - Enterprise Manager Cloud Control
  - Management packs

Oracle Database Options

Option	Description
Oracle Active Data Guard	Increases performance, availability, data protection, and return on investment wherever Data Guard is used for real-time data protection and availability
Oracle Advanced Analytics	Empowers data and business analysts to extract knowledge, discover new insights, and make predictions—working directly with large data volumes
Oracle Advanced Compression	Provides comprehensive data compression and Information Lifecycle Management (ILM) capabilities for all types of data
Oracle Advanced Security	Helps you protect sensitive information and comply with privacy and compliance regulations by enabling database encryption and data redaction
Oracle Database In-Memory	Enables any existing Oracle Database–compatible application to automatically and transparently take advantage of columnar in-memory processing, without additional programming or application changes
Oracle Database Vault	Enables you to control when, where, and by whom the database and application data can be accessed

Oracle Database Options

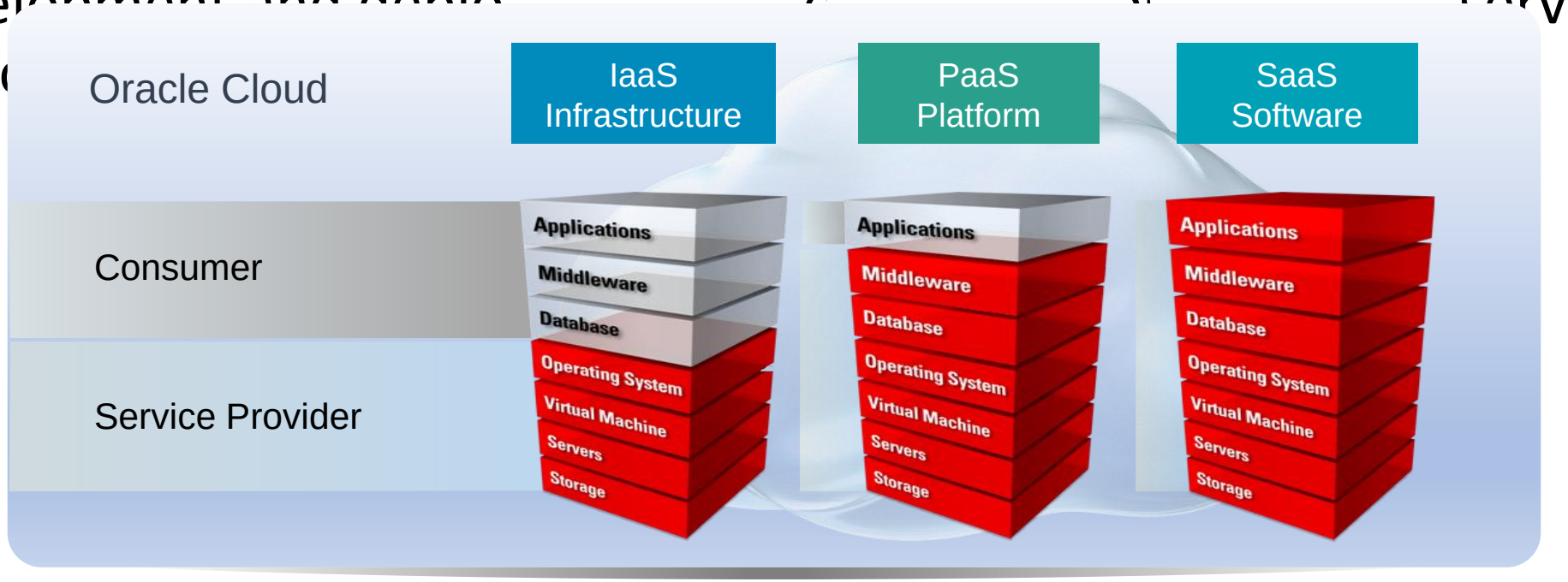
Option	Description
Oracle Label Security	Provides sophisticated and flexible security based on row labels for fine-grained access control
Oracle Multitenant	Enables an Oracle database to function as a multitenant container database (CDB) that includes one or more pluggable databases (PDBs)
Oracle On-Line Analytical Processing (OLAP)	A full-featured OLAP server embedded in Oracle Database Enterprise Edition
Oracle Partitioning	Adds significant manageability, availability, and performance capabilities to large underlying database tables and indexes
Oracle Real Application Clusters (Oracle RAC)	A database computing environment that harnesses the processing power of multiple interconnected computers using clustering technology
Oracle Real Application Testing	Comprises a suite of features that help protect database applications from the undesirable impact of routine changes
Oracle Spatial and Graph	Includes advanced features for spatial data and analysis and for physical, network, and social graph applications

Oracle Management Packs

Pack	Description
Oracle Cloud Management Pack for Oracle Database	Helps to set up a Database Cloud and operate the Database as a Service model
Oracle Data Masking and Subsetting Pack	Facilitates the creation of production-like data for nonproduction environments by replacing production data with fictitious yet realistic values
Oracle Database Lifecycle Management Pack for Oracle Database	Provides a comprehensive solution that helps database, system, and application administrators automate the processes required to manage the Oracle Database Lifecycle
Oracle Diagnostics Pack	Provides automatic performance diagnostic and advanced system monitoring functionality
Oracle Tuning Pack	Provides database administrators with expert performance management for the Oracle environment, including SQL tuning and storage optimizations

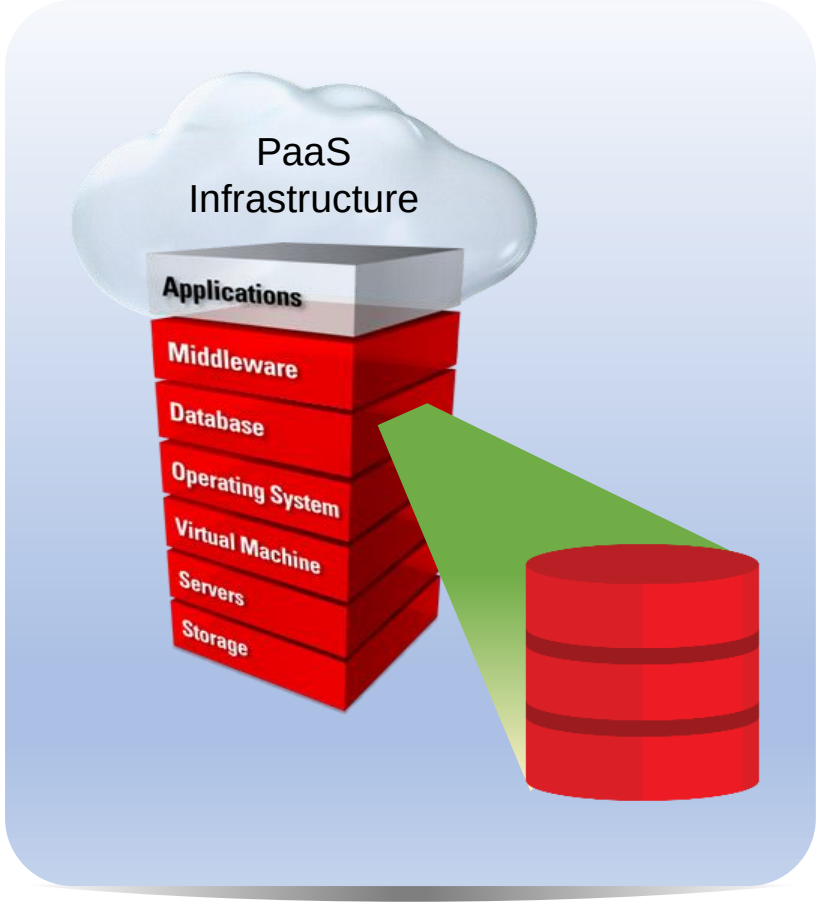
What Is Oracle Cloud?

- Oracle Cloud is an enterprise cloud for business. Oracle Cloud offers self-service business applications delivered on an integrated develo[illegible] services and [illegible]



Oracle Database Cloud Service: Overview

- Oracle Database Cloud Service is a PaaS offering.
- With Oracle Database Cloud Service, you can:
  - Provision a full-featured dedicated Oracle database
  - Use cloud tooling to back up, patch, and manage the database
  - Avail of the complete administration privileges of the server and database to manage it as you need



Oracle Database Cloud Service Editions

Edition	Included Options	Included Packs
Standard	None	None
Enterprise	None	None
Enterprise—High Performance	Advanced Analytics, Advanced Compression, Advanced Security, Database Vault, Label Security, Multitenant, OLAP, Partitioning, Real Application Testing, Spatial and Graph	Cloud Management for Oracle Database, Database Lifecycle Management, Data Masking and Subsetting, Diagnostics, Tuning
Enterprise—Extreme Performance	Active Data Guard, Advanced Analytics, Advanced Compression, Advanced Security, Database In-Memory, Database Vault, Label Security, Multitenant, OLAP, Partitioning, Real Application Clusters, Real Application Testing, Spatial and Graph	Cloud Management for Oracle Database, Database Lifecycle Management, Data Masking and Subsetting, Diagnostics, Tuning

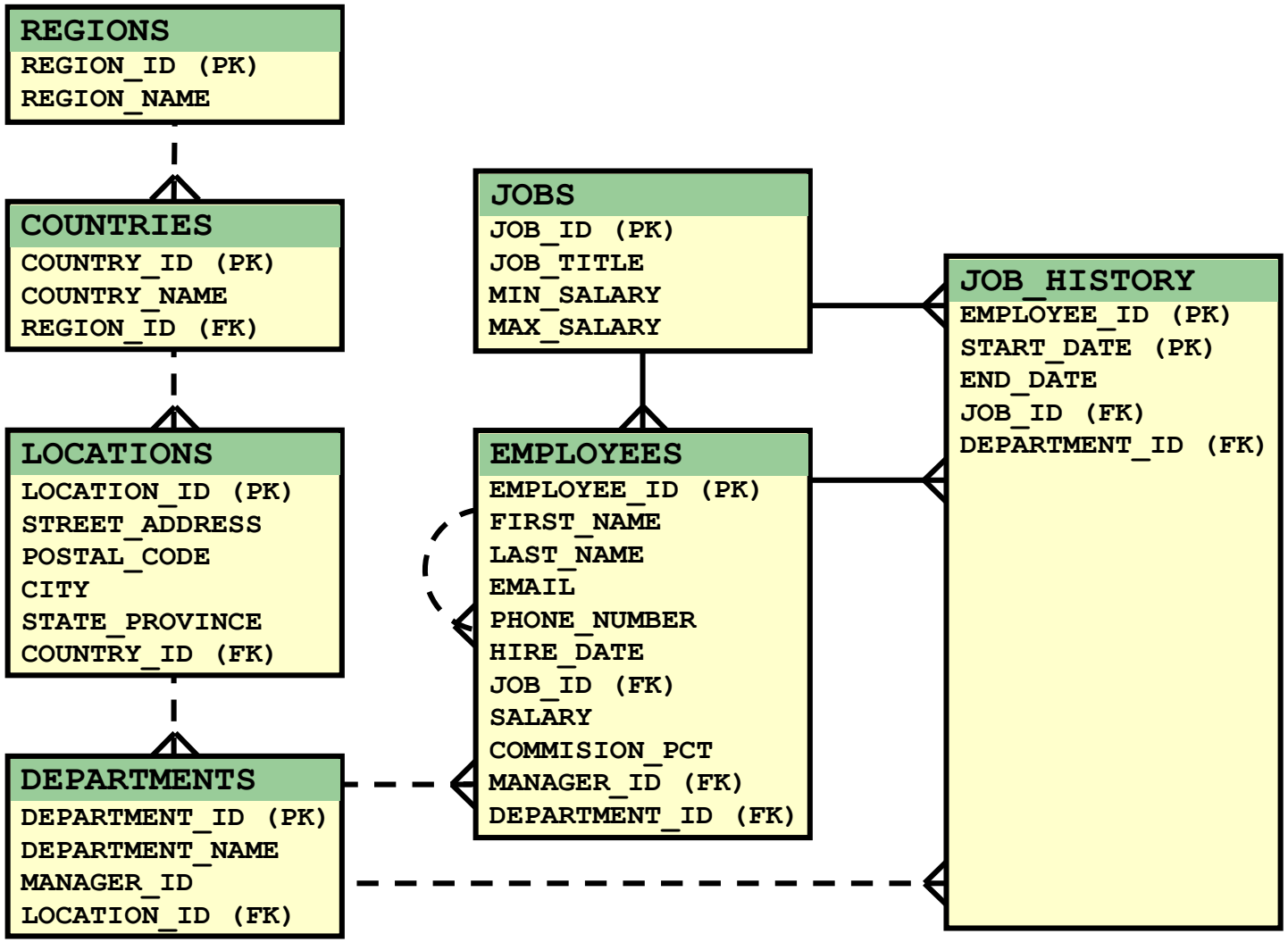
Oracle SQL and PL/SQL

```
SQL> SELECT employee_id, first_name, last_name FROM employees
     WHERE employee_id=216 ORDER BY 1;
```

- `SELECT` lists the database columns for which you want to view data.
- `FROM` lists the tables that contain those database columns.
- `WHERE` specifies column limits and table joins (this part essentially filters the rows of data).
- `ORDER BY` specifies the columns by which the results are sorted.

- PL/SQL is a procedural extension to Oracle SQL.
  - It enables you to control the flow of a SQL program, use variables, and write error-handling procedures.

HR Schema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EMPLOYEE_ID (PK)
START_DATE (PK)
END_DATE
JOB_ID (FK)
DEPARTMENT_ID (FK)

Suggested Course Schedule

Day	Lessons
1	1. Introduction 2. Oracle Database Architecture 3. Introduction to Oracle Database Cloud Service 4. Creating DBCS Database Deployments 5. Accessing an Oracle Database
2	6. Managing DBCS Database Deployments 7. Managing Database Instances 8. Understanding Oracle Net Services 9. Administering User Security
3	10. Creating PDBs 11. Creating Master Encryption Keys for PDBs 12. Creating and Managing Tablespaces 13. Managing Storage Space
4	14. Managing Undo Data 15. Moving Data 16. Backup and Recovery Concepts 17. Backup and Recovery Configuration
5	18. Creating Database Backups 19. Performing Database Recovery 20. Monitoring and Tuning Database Performance 21. SQL Tuning

Summary

- In this lesson, you should have learned how to:
  - Describe the differences in Oracle Database editions, options, and packs
  - List the database offerings in Oracle Cloud
  - Explain the sample database that will be used in the course practices