

Oracle Database SQL

Oracle Database 11g: SQL Fundamentals I

Exam Number: 1Z0-051

Exam Title: Oracle Database 11g: SQL Fundamentals I

Exam Number: 1Z0-071

Exam Title: Oracle Database SQL

Oracle and Structured Query Language (SQL)

- Identify the connection between an ERD and a Relational Database
- Explain the relationship between a database and SQL
- Describe the purpose of DDL
- Describe the purpose of DML
- Build a SELECT statement to retrieve data from an Oracle Database table

Restricting and Sorting Data

- Use the ORDER BY clause to sort SQL query results
- Limit the rows that are retrieved by a query
- Use ampersand substitution to restrict and sort output at runtime
- Use SQL row limiting clause

Using Single-Row Functions to Customize Output

- Use various types of functions available in SQL
- Use character, number, and date and analytical (PERCENTILE_CONT, STDDEV, LAG, LEAD) functions in SELECT statements

Using Conversion Functions and Conditional Expressions

- Describe various types of conversion functions that are available in SQL
- Use the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
- Apply general functions and conditional expressions in a SELECT statement

Reporting Aggregated Data Using the Group Functions

- Describe the use of group functions
- Group data by using the GROUP BY clause
- Include or exclude grouped rows by using the HAVING clause

Displaying Data from Multiple Tables

- Describe the different types of joins and their features
- Use SELECT statements to access data from more than one table using equijoins and nonequijoins
- Join a table to itself by using a self-join
- View data that generally does not meet a join condition by using outer joins

Using Subqueries to Solve Queries

- Define subqueries
- Describe the types of problems subqueries can solve
- Describe the types of subqueries
- Query data using correlated subqueries
- Update and delete rows using correlated subqueries
- Use the EXISTS and NOT EXISTS operators
- Use the WITH clause
- Use single-row and multiple-row subqueries

Using the Set Operators

- Describe set operators
- Use a set operator to combine multiple queries into a single query
- Control the order of rows returned

Manipulating Data

- Truncate data
- Insert rows into a table
- Update rows in a table
- Delete rows from a table
- Control transactions

Using DDL Statements to Create and Manage Tables

- Describe data types that are available for columns
- Create a simple table
- Create constraints for tables
- Drop columns and set column UNUSED
- Create and use external tables

Managing Objects with Data Dictionary Views

- Query various data dictionary views

Controlling User Access

- Differentiate system privileges from object privileges
- Grant privileges on tables and on a user
- Distinguish between privileges and roles

Managing Schema Objects

- Describe how schema objects work
- Create simple and complex views with visible/invisible columns
- Create, maintain and use sequences
- Create and maintain indexes including invisible indexes and multiple indexes on the same columns
- Perform flashback operations

Manipulating Large Data Sets

- Describe the features of multitable INSERTs
- Merge rows in a table

Retrieving Data Using the SQL SELECT Statement

- List the capabilities of SQL SELECT statements
- Execute a basic SELECT statement

Restricting and Sorting Data

- Limit the rows that are retrieved by a query
- Sort the rows that are retrieved by a query
- Use ampersand substitution to restrict and sort output at runtime

Using Single-Row Functions to Customize Output

- Describe various types of functions available in SQL
- Use character, number, and date functions in SELECT statements

Using Conversion Functions and Conditional Expressions

- Describe various types of conversion functions that are available in SQL
- Use the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
- Apply conditional expressions in a SELECT statement

Reporting Aggregated Data Using the Group Functions

- Identify the available group functions
- Describe the use of group functions
- Group data by using the GROUP BY clause
- Include or exclude grouped rows by using the HAVING clause

Displaying Data from Multiple Tables

- Write SELECT statements to access data from more than one table using equijoins and nonequijoins
- Join a table to itself by using a self-join
- View data that generally does not meet a join condition by using outer joins
- Generate a Cartesian product of all rows from two or more tables

Using Subqueries to Solve Queries

- Define subqueries
- Describe the types of problems that the subqueries can solve
- List the types of subqueries
- Write single-row and multiple-row subqueries

Using the Set Operators

- Describe set operators
- Use a set operator to combine multiple queries into a single query
- Control the order of rows returned

Manipulating Data

- Describe each data manipulation language (DML) statement
- Insert rows into a table
- Update rows in a table
- Delete rows from a table
- Control transactions

Using DDL Statements to Create and Manage Tables

- Categorize the main database objects
- Review the table structure
- List the data types that are available for columns
- Create a simple table
- Explain how constraints are created at the time of table creation
- Describe how schema objects work

Creating Other Schema Objects

- Create simple and complex views
- Retrieve data from views
- Create, maintain, and use sequences
- Create and maintain indexes
- Create private and public synonyms

Oracle Database 11g

Oracle Database 11g: Administration I

Exam Number: 1Z0-052

Exam Title: Oracle Database 11g: Administration I

Exploring the Oracle Database Architecture

- Explain the Memory Structures
- Describe the Process Structures
- Overview of Storage Structures

Preparing the Database Environment

- Identify the tools for Administering an Oracle Database
- Plan an Oracle Database installation
- Install the Oracle software by using Oracle Universal Installer (OUI)

Creating an Oracle Database

- Create a database by using the Database Configuration Assistant (DBCA)

Managing the Oracle Instance

- Setting database initialization parameters
- Describe the stages of database startup and shutdown
- Using alert log and trace files
- Using data dictionary and dynamic performance views

Configuring the Oracle Network Environment

- Configure and Manage the Oracle Network
- Using the Oracle Shared Server architecture

Managing Database Storage Structures

- Overview of tablespace and datafiles
- Create and manage tablespaces
- Space management in tablespaces

Administering User Security

- Create and manage database user accounts
- Grant and revoke privileges
- Create and manage roles
- Create and manage profiles

Managing Data and Concurrency

- Monitor and resolve locking conflicts

Managing Undo Data

- Overview of Undo
- Transactions and undo data
- Managing undo

Implementing Oracle Database Security

- Database Security and Principle of Least Privilege
- Work with Standard Database Auditing

Database Maintenance

- Use and manage optimizer statistics
- Use and manage Automatic Workload Repository (AWR)
- Use advisory framework
- Manage Alerts and Thresholds

Performance Management

- Use Automatic Memory Management
- Use Memory Advisors
- Troubleshoot invalid and unusable objects

Intelligent Infrastructure Enhancements

- Use the Enterprise Manager Support Workbench
- Managing Patches

Backup and Recovery Concepts

- Identify the types of failure that can occur in an Oracle database
- Describe ways to tune instance recovery
- Identify the importance of checkpoints, redo log files, and archived log files
- Overview of flash recovery area
- Configure ARCHIVELOG mode

Performing Database Backups

- Create consistent database backups
- Back up your database without shutting it down
- Create incremental backups
- Automate database backups
- Manage backups, view backup reports and monitor the flash recovery area

Performing Database Recovery

- Overview of Data Recovery Advisor
- Use Data Recovery Advisor to Perform recovery (Control file, Redo log file and Data file)

Moving Data

- Describe and use methods to move data (Directory objects, SQL*Loader, External Tables)
- Explain the general architecture of Oracle Data Pump
- Use Data Pump Export and Import to move data between Oracle databases

Oracle Database 11g

Oracle Database 11g: Administration II

Exam Number: 1Z0-053

Exam Title: Oracle Database 11g: Administration II

Database Architecture and ASM

- Describe Automatic Storage Management (ASM)
- Set up initialization parameter files for ASM and database instances
- Start up and shut down ASM instances
- Administer ASM disk groups

Configuring for Recoverability

- Configure multiple archive log file destinations to increase availability
- Define, apply and use a retention policy
- Configure the Flash Recovery Area
- Use Flash Recovery Area

Using the RMAN Recovery Catalog

- Identify situations that require RMAN recovery catalog
- Create and configure a recovery catalog
- Synchronize the recovery catalog
- Create and Use RMAN stored scripts
- Back up the recovery catalog
- Create and use a virtual private catalog

Configuring Backup Specifications

- Configure backup settings
- Allocate channels to use in backing up
- Configure backup optimization

Using RMAN to Create Backups

- Create image file backups
- Create a whole database backup
- Enable fast incremental backup
- Create duplex backup and back up backup sets
- Create an archival backup for long-term retention
- Create a multisection, compressed and encrypted backup
- Report on and maintain backups

Performing User-Managed Backup and Recovery

- Recover from a lost TEMP file
- Recover from a lost redo log group
- Recover from the loss of password file
- Perform user-managed complete database recovery
- Perform user-managed incomplete database recovery
- Perform user-managed and server managed backups
- Identify the need of backup mode
- Back up and recover a control file

Using RMAN to Perform Recovery

- Perform complete recovery from a critical or noncritical data file loss using RMAN
- Perform incomplete recovery using RMAN
- Recover using incrementally updated backups
- Switch to image copies for fast recovery
- Restore a database onto a new host
- Recover using a backup control file
- Perform Disaster recovery

Using RMAN to Duplicate a Database

- Creating a duplicate database
- Using a duplicate database

Performing Tablespace Point-in-Time Recovery

- Identify the situations that require TSPITR
- Perform automated TSPITR

Monitoring and Tuning RMAN

- Monitoring RMAN sessions and jobs
- Tuning RMAN
- Configure RMAN for Asynchronous I/O

Using Flashback Technology

- Restore dropped tables from the recycle bin
- Perform Flashback Query
- Use Flashback Transaction

Additional Flashback Operations

- Perform Flashback Table operations
- Configure, Monitor Flashback Database and Perform Flashback Database operations
- Set up and use a Flashback Data Archive

Diagnosing the Database

- Set up Automatic Diagnostic Repository

- Using Support Workbench
- Perform Block Media Recovery

Managing Memory

- Implement Automatic Memory Management
- Manually configure SGA parameters
- Configure automatic PGA memory management

Managing Database Performance

- Use the SQL Tuning Advisor
- Use the SQL Access Advisor to tune a workload
- Understand Database Replay

Space Management

- Manage resumable space allocation
- Describe the concepts of transportable tablespaces and databases
- Reclaim wasted space from tables and indexes by using the segment shrink functionality

Managing Resources

- Understand the database resource manager
- Create and use Database Resource Manager Components

Automating Tasks with the Scheduler

- Create a job, program, and schedule
- Use a time-based or event-based schedule for executing Scheduler jobs
- Create lightweight jobs
- Use job chains to perform a series of related tasks

Administering the Scheduler

- Create Windows and Job Classes
- Use advanced Scheduler concepts to prioritize jobs

Oracle Database 11g

Oracle Database 11g: Performance Tuning

Exam Number: 1Z0-054

Exam Title: Oracle Database 11g: Performance Tuning

Basic Tuning Tools

- Diagnose performance issues using top wait events and the time model
- Use dynamic performance views to view statistics and wait events
- Use Enterprise Manager Monitoring
- Identify the key tuning components of the alert logs

Using Automatic Workload Repository

- Create and manage AWR snapshots
- Generate and read AWR reports, analyze Compare Periods reports

Defining Problems

- Identify performance issues & set tuning priorities
- Interpret tuning diagnostics
- Tune for life cycle phase

Using Metrics and Alerts

- Interpret metric views and alerts

Baseline

- Create and manage AWR baselines
- Create AWR baselines for future time periods
- Monitor performance and enable adaptive thresholds

Using AWR-Based Tools

- Tune automatic maintenance tasks
- Analyze ADDM reports
- Analyze Active Session History (ASH) reports

Monitoring an Application

- Configure and manage services
- Use services with client applications, Database Resource Manager and Scheduler
- Configure services aggregation, tracing, and set performance-metric thresholds

Identifying Problem SQL Statements

- Describe SQL statement processing
- View the SQL statement statistics to identify the SQL statements that perform poorly
- Describe and use methods for Viewing Execution Plans

Influencing the Optimizer

- Describe the optimizer's behavior
- Adjust parameters to influence the optimizer

- Influence the optimizer (access methods, join techniques and adjust data structures)

SQL Performance Management

- Manage optimizer statistics
- Configure automatic SQL tuning and SQL profiling
- Set up and use SQL plan baseline

Using SQL Performance Analyzer

- Describe SQL Performance Analyzer process and benefits
- Use SQL Performance Analyzer

Using Database Replay

- Identify when and how to use Database Replay
- Use Enterprise Manager to record and replay workloads

Tuning the Shared Pool

- Describe Latches and Mutexes
- Diagnose and change cursor sharing
- Diagnose and resolve shared pool fragmentation
- Manage the results cache and tune the large pool
- Tune the data dictionary cache

Tuning the Buffer Cache

- Describe the buffer cache architecture
- Explain the symptoms that indicate a buffer cache problem
- Tune the buffer cache for performance issues

Tuning PGA and Temporary Space

- Diagnose PGA memory issues and size the PGA
- Diagnose temporary space issues
- Specify temporary tablespace parameters for efficient operation

Automatic Memory Management

- Implement Automatic Shared Memory Management (ASMM)
- Implement Automatic Memory Management (AMM)

Tuning Segment Space Usage

- Tune segment space management
- Use Automatic Segment Space Management
- Diagnose row migration and chaining
- Use segment shrinking and table compression

Tuning I/O

- Diagnose database I/O issues
- Describe the Stripe and Mirror Everything (SAME) concept
- Set filesystemio_options and Choose appropriate I/O solutions
- Tune Automatic Storage Management (ASM)

Appendix B Using Statspack

- Using Statspack

Oracle Database 11g

Oracle Real Application Clusters (RAC) 11g Release 2 and Grid Infrastructure Administration

Exam Number: 1Z0-058

Exam Title: Oracle Real Application Clusters (RAC) 11g Release 2 and Grid Infrastructure Administration

Section 1 - Grid Infrastructure: Clusterware and ASM

Oracle Grid Infrastructure

- Explain the principles and purposes of clusters
- Describe Cluster hardware best practices
- Understand Oracle Clusterware Architecture
- Describe how Grid Plug and Play affects Clusterware
- Describe ASM architecture and components

Grid Infrastructure Installation

- Perform pre-install tasks for Grid Infrastructure
- Install Grid Infrastructure
- Verify the installation
- Configure ASM disk groups
- Configure ASM volumes
- Make ASM cluster file system
- Mount ACFS volumes

Administering Oracle Clusterware

- Display Clusterware management proficiency
- Demonstrate OCR backup and recovery techniques
- Managing Network Settings

Managing Clusterware

- Perform prerequisite steps for extending a cluster
- Use Oracle Universal Installer (OUI) to add a node to an Oracle Clusterware home
- Use OUI to remove a node from an Oracle Clusterware home

Making Applications Highly Available With Oracle

- Describe the High Availability components of Oracle Clusterware
- Contrast Policy-Managed and Administration Managed databases
- Describe the functionality of server pools
- Describe application placement policies
- Create an application Virtual IP (VIP)
- Manage application resources

Troubleshooting Oracle Clusterware

- Locate Oracle Clusterware log files
- Gather all log files using diagcollection.pl
- Enable resource debugging
- Enable component-level debugging
- Enable tracing for Java-based tools
- Troubleshoot the Oracle Cluster Registry (OCR) file

Administering ASM Instances

- Understand and apply ASM initialization parameters
- Manage ASM instances and associated processes
- Monitor ASM using the V\$ASM dynamic performance views

Administering ASM Disk Groups

- Create and delete ASM disk groups
- Set the attributes of an existing ASM disk group
- Perform ongoing maintenance tasks on ASM disk groups
- Explain key performance and scalability considerations for ASM disk groups

Administering ASM Files, Directories, and Templates

- Use different client tools to access ASM files
- Describe the format of a fully qualified ASM file name
- Explain how ASM files, directories and aliases are created and managed
- Understand and manage disk group templates

Administering ASM Cluster File

- Administer ASM Dynamic Volume Manager
- Manage ASM volumes
- Implement ASM Cluster File System
- Manage ASM Cluster File System (ACFS)
- Use ACFS Snapshots
- Using command line tools to Manage ACFS

Section 2 - Real Application Clusters

Real Application Clusters Database Installation

- Install the Oracle database software
- Create a cluster database
- Perform post-database creation tasks
- Perform a single instance to RAC conversion

RAC Database Administration

- Use Enterprise Manager cluster database pages
- Define redo log files in a RAC environment
- Define undo tablespaces in a RAC environment
- Start and stop RAC databases and instances
- Modify initialization parameters in a RAC environment

Use Enterprise Manager cluster database pages

- Define redo log files in a RAC environment
- Define undo tablespaces in a RAC environment
- Start and stop RAC databases and instances
- Modify initialization parameters in a RAC environment

Managing Backup and Recovery for RAC

- Configure the RAC database to use ARCHIVELOG mode and the flash recovery area
- Recover from media failure and instance failures
- Tune instance recovery in RAC
- Configure RMAN for the RAC environment

RAC DB Monitoring and Tuning

- Determine RAC-specific tuning components
- Determine RAC-specific wait events, global enqueues, and system statistics
- Implement the most common RAC tuning tips
- Use the Cluster Database Performance pages
- Use the Automatic Workload Repository (AWR) in RAC
- Use Automatic Database Diagnostic Monitor (ADDM) in RAC

Services

- Configure and manage services in a RAC environment

- Use services with client applications
- Use services with the Database Resource Manager and scheduler
- Configure services aggregation and tracing

High Availability Connections(Appendix-D)

- Configure client-side, connect-time load balancing and connect-time failover
- Configure server-side, connect-time load balancing
- Use the Load Balancing Advisory (LBA)
- Describe the benefits of Fast Application Notification (FAN)
- Configure server-side callouts
- Configure Transparent Application Failover (TAF)

Design for High Availability

- Design a Maximum Availability Architecture in your environment
- Determine the best RAC and Data Guard topologies for your environment
- Configure the Data Guard Broker configuration files in a RAC environment
- Patch your RAC system in a rolling fashion

Oracle Database 11g

Oracle Database 11g Certified Master Exam

Exam Number: 11GOCM

Exam Title: Oracle Database 11g Certified Master Exam

Server Configuration

- Create the database
- Determine and set sizing parameters for database structures
- Create and manage temporary, permanent, and undo tablespaces
- Stripe data files across multiple physical devices and locations
- Configure the database environment to support optimal data access performance
- Create and manage database configuration files
- Create and manage bigfile tablespaces
- Create and Manage a tablespace that uses NFS mounted file system file
- Create and manage multiple network configuration files
- Create and configure a listener
- Configure the database instance to support shared server connections
- Set up network tracing
- Manage Oracle network processes
- Configure the network environment to allow connections to multiple databases
- Use configurationless connections

- Use OPatch to install a patch
- Use Grid Infrastructure to manage oracle databases and other resources
- Use Enterprise Manager Configuration Assistant(EMCA) utility

Enterprise Manager Grid Control

- Install and Patch Enterprise Manager Grid Control software
- Configure the Enterprise Manager repository
- Create Enterprise Manager Grid Control users
- Use Enterprise Manager to modify a database configuration
- Configure Enterprise Manager to modify database availability
- Create and manage jobs
- Create and monitor alerts
- Create notifications
- Implement Grid Control and Database Control
- Choose the appropriate tablespace type for the intended use
- Create Scheduler jobs
- Create schedules
- Assign jobs to windows
- Create programs
- Create job classes
- Install the Enterprise Manager Grid Control infrastructure
- Deploy Enterprise Manager Grid Control agents
- Configure Grid Control for business requirements

Managing Database Availability

- Maintain recovery catalogs
- Configure Recovery Manager
- Use Recovery Manager to perform database backups
- Use Recover Manager to perform complete database restore and recovery operations
- Configure RMAN
- Create different types of RMAN backups to cater for different performance and retention requirements
- Set Flashback Database parameters
- Configure a Fast Recovery Area
- Perform various recovery operations using Flashback technology

Data Management

- Manage Materialized Views to improve rewrite and refresh performance
- Configure and manage distributed materialized views
- Create and Manage encrypted tablespaces
- Manage Transport of tablespaces across platforms
- Configure a schema to support a star transformation query
- Administer external tables
- Implement Data Pump export and import jobs for data transfer
- Implement Data Pump to and from remote databases
- Configure and use parallel execution for queries
- Use SQL*Loader
- Administer, manage and tune parallel execution

Data Warehouse Management

- Administer partitioned tables and indexes using appropriate methods and keys
- Perform partition maintenance operations
- Maintain indexes on a partitioned table
- Implement securefile LOB
- Create and manage LOB segments
- Implement fine-grained access control
- Create and manage contexts
- Administer flashback data archive and schema evolution

Performance Management

- Administer Resource Manager
- Use Result Cache
- Use multi column statistics
- Gather statistics on a specific table without invalidating cursors
- Use partitioned indexes
- Administer and tune schema object to support various access methods
- Interpret execution plan
- Use SQL tuning tools and features
- Use SQL Tuning Advisor
- Use SQL Access Advisor
- Use SQL Performance Analyzer
- Configure baseline templates
- Use SQL Plan Management feature
- Implement instance caging

Grid Infrastructure and ASM

- Install Oracle Grid Infrastructure
- Create ASM Disk Groups
- Create and manage as ASM instance
- Implement ASM failure groups
- Creating ACFS File System
- Start, stop, configure and administer Oracle Grid Infrastructure

Real Application Clusters

- Install the Oracle Database 11gR2 software
- Configure ASM for the shared disks and create a clustered database
- Configure archiving
- Configure services using both Manual and Policy Managed methods

Data Guard

- Create Physical Standby Database with real-time apply.
- Configure the data guard environment to reduce overheads of fast incremental backups on the primary database
- Configure the Observer
- Switchover and switch back

- Configure connect time failover
- Convert the standby to a snapshot standby
- Configure archivelog deletion policy for the Dataguard configuration