

Oracle SQL

An introduction

Introduction

- Instructor: Raul
- In order to understand your needs, please tell me about your SQL and IT education and experience, and anything you think is relevant for this course.

Relational Databases

- Principles: relational theory, normalization

Oracle concepts

Oracle Database groups related information into logical structures called **schemas**. The logical structures contain schema objects.

- **Tables** - The basic units of data storage in Oracle Database. Tables hold all user-accessible data. Each table contains **rows** that represent individual data **records**. Rows are composed of **columns** that represent the **fields** of the records.
- **Indexes** - Optional objects that can improve the performance of data retrieval from tables. Indexes are created on one or more columns of a table, and are automatically maintained in the database.
- **Views** - Combine information from several different tables into a single presentation. A view can rely on information from both tables and other views.
- Other objects: sequences, synonyms, procedures, functions, triggers, packages

Setup

- Oracle Database
- Oracle Client
- SQL Developer

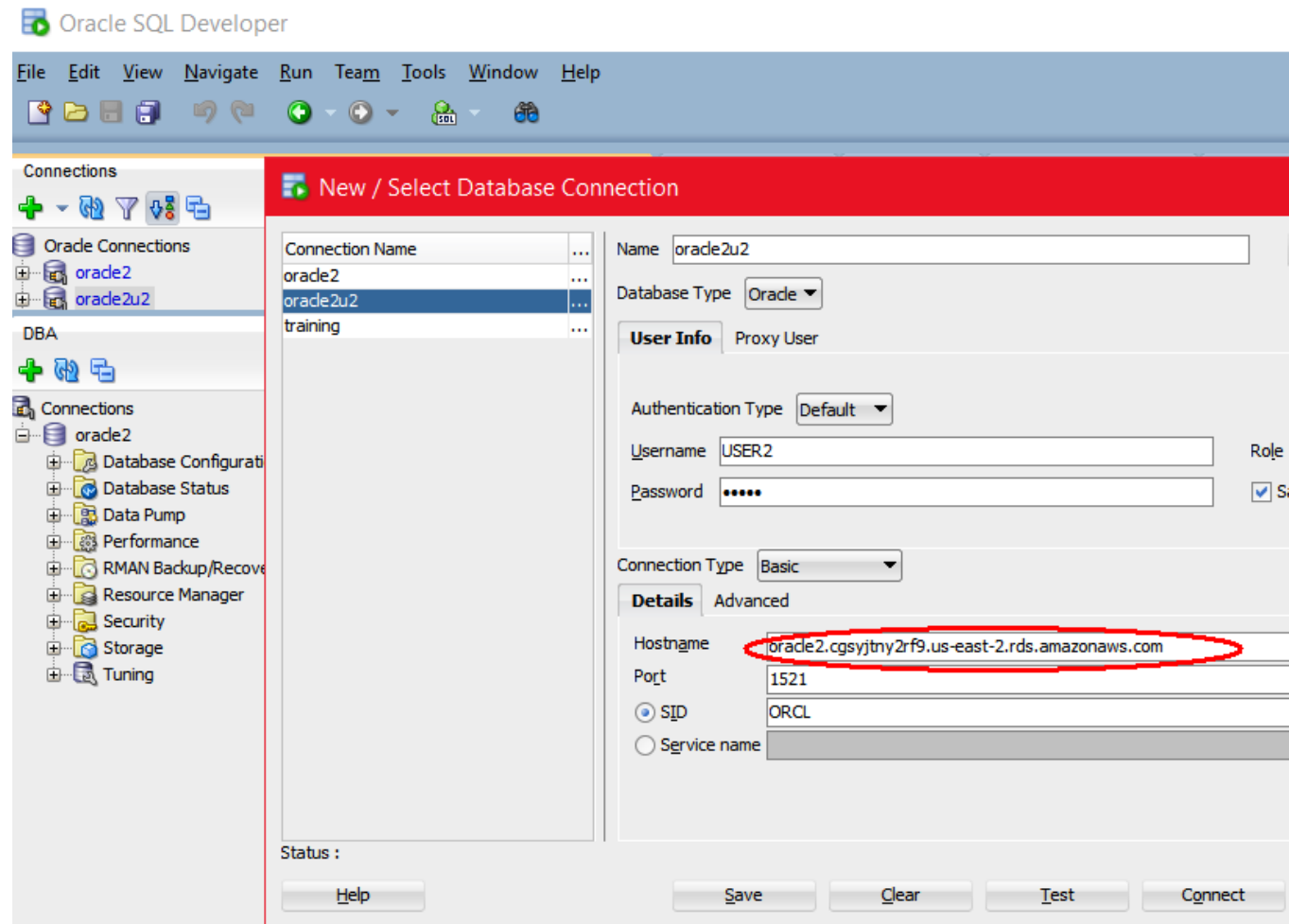
Database Connection

- We are using Oracle 12c hosted by Amazon RDS.
- Each of you is assigned a database instance. Please use it responsibly.
- In order to connect to your assigned database, you will need the following details:

Name	User / Password	Hostname
Abc	USER1	oracle1.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER2	oracle2.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER3	oracle3.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER4	oracle4.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER5	oracle5.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER6	oracle6.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER7	oracle7.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER8	oracle8.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER9	oracle9.cgsyjtny2rf9.us-east-2.rds.amazonaws.com
	USER10	

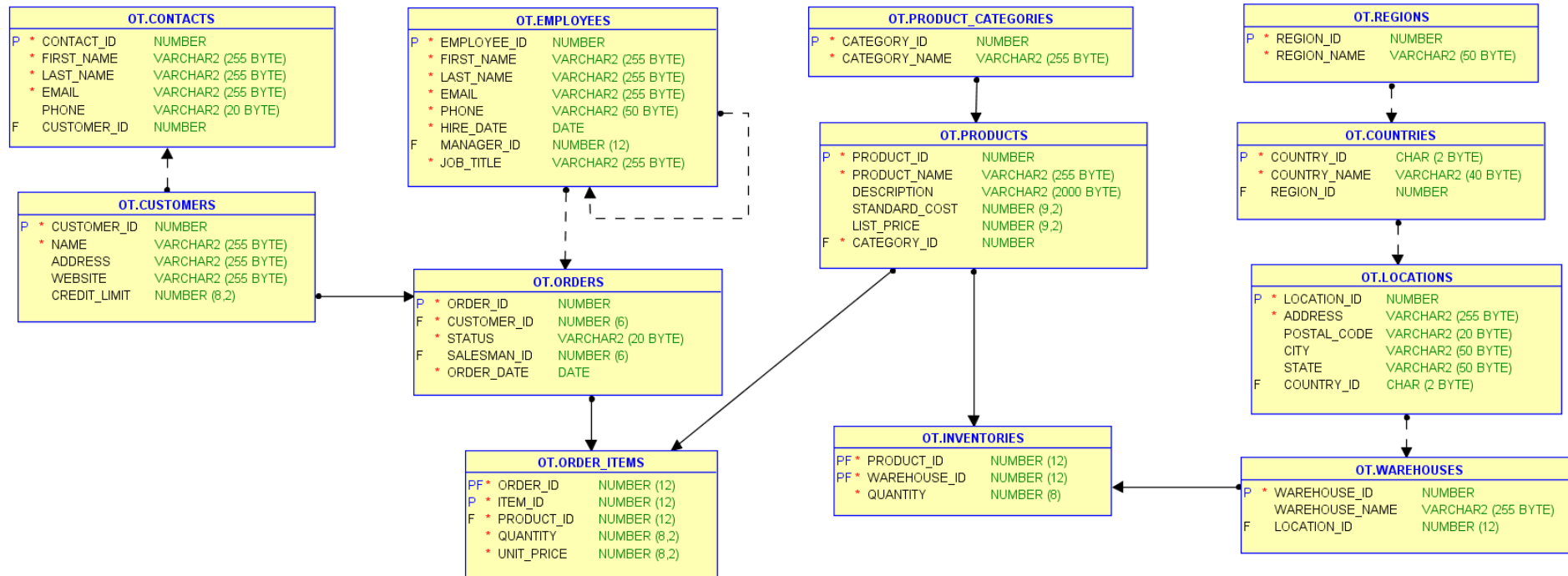
Connect from Oracle SQL Developer

Name: your choice
Username: see table
Password: same as Username
Hostname: see table
Port: 1521
SID: ORCL



Sample Data

- We will use the sample OT data preloaded



OT - Tables

Table Name	Description
EMPLOYEES	The employees of a retail company offering products for sale to corporate clients
CUSTOMERS	The corporate customers buying products from the retail company
CONTACTS	The employees of the corporate customers
ORDERS	The corporate customers place orders to buy products from the retail company, represented by a salesman.
ORDER_ITEMS	On order is comprised of one or more items, each for a quantity at a specific price
PRODUCTS	An order item is for a product, identified by a product id
PRODUCT_CATEGORIES	Each product belongs to a category
WAREHOUSES	Each product can be stocked at a number of warehouses
INVENTORIES	Each warehouse stocks a quantity of products
LOCATIONS	Each warehouse has a physical location, specified by a postal address
COUNTRIES	Each address is in a country
REGIONS	A region covers a number of countries

SQL

Structured Query Language (SQL)

Data Definition Language (DDL)

- CREATE
- ALTER
- DROP
- TRUNCATE
- COMMENT
- RENAME

Data Manipulation Language (DML)

- SELECT
- INSERT
- UPDATE
- DELETE
- MERGE
- CALL
- EXPLAIN PLAN
- LOCK TABLE

Data Control Language (DCL)

- GRANT
- REVOKE

Transaction Control (TCL)

- COMMIT
- SAVEPOINT
- ROLLBACK
- SET TRANSACTION

DML

- Used for accessing the data within a database
- Basic operations:
 - SELECT (not really Manipulation)
 - INSERT
 - UPDATE
 - DELETE
 - MERGE

Querying the database

```
SELECT select_list FROM source_list
```

- select_list : columns, functions, literals, etc.
- source_list : table, view, query, etc.
- “SELECT *”
- Column alias

Filtering

```
SELECT select_list FROM source_list WHERE condition
```

Conditions:

- Comparison: =, <, >, <=, >=, !=
- Group comparison: ANY, SOME, ALL
- IS NULL,
- BETWEEN, EXISTS, IN
- Pattern matching: LIKE (using %, _ ,ESCAPE), REGEXP_LIKE
- Compound: NOT, AND, OR
- Floating point: IS NAN, IS INFINITE

SELECT - Execution Order

1. from, join, where
2. connect by
3. group by
4. having
5. analytic functions
6. select-list (distinct, scalar subqueries etc)
7. order by

References

Resource	Location
Oracle SQL Reference	https://docs.oracle.com/database/121/SQLRF/toc.htm
Oracle Database 2 Day Developer's Guide	https://docs.oracle.com/database/121/TDDDG/toc.htm



THANK YOU

average 45%