TY B.Tech. (CSE) – II

3CS371 : Advanced Database System Lab.

Assignment No. 1

Installation, configuration & testing of Oracle 12c EE / 18c XE

1. Download / get setup CD of Oracle Server & Client (Win/Linux).
2. Read and follow the prerequisite for installation and accordingly set the system.
3. If oracle already installed, uninstall it.
4. Install Oracle Server on one machine.
5. Install Oracle Client on another machine.
6. Check the connectivity from Web client and SQL command line. (Note use the ***hr*** demo schema)
7. Create new schema/user by your group-id e.g. ***2017BCGRP01***.
8. Create sample tables in newly created schema / user
9. Repeat the step 6 for this new schema.
10. Demonstrate the DML on new tables.
11. Create GUI desktop application in Python which will connect to schema created in step 7. Allows to choose available tables. Demonstrate the CRUD operations on selected table.

REPEAT ABOVE WORK FOR MySQL 8.0 DATABASE

Deliverables : The installation steps, specific settings, SQL code (.SQL) for creating schema, tables, python (.py) source files, the document containing the screen shot of program execution / output / results.

2. PL / SQL Review :

a) Create a table called test_table with 2 columns RecordNumber (type : Number(3)) and CurrentDate (type : Date)). Write PL/SQL block which will insert 50 records into test_table. Insert the current date value into the table.

b) Create a products table products(ProductID number(4),category char(3),detail varchar2(30),price number(10,2),stock number(5)). Insert the sample data.
Write PL/SQL procedure with two arguments **X** & **Y** which will increase price by **X**% for all products in category **Y**. X and Y will be given by user.

3. **Object Relational Databases:**
    a) Create Object Table containing field “name” of size 50 characters and member function “countNoOfWords” which returns the no. of words in “name” field.
    Demonstrate the working by entering different data.

    b) Create an address type with the following attributes : address, city, state & pincode. Include the following methods
        i. to extract the addresses based on given keyword.
        j. to return the no. of words in each given field (method should accept the name of attribute/field)

    c) Create a user defined data type course_Type with 2 attributes course_id, description :
        i. Create an object table based on the type created.
        j. Insert rows into the table
    Demonstrate the working with different data sets

4. Design and implement a web-enabled student MIS (Management Information System). [Assume university schema given in textbook]
Note: use Django framework & Bootstrap 4.

5. Design and implement a system for managing online multiple-choice tests. The system should support distributed contribution of questions by teaching assistants, editing of the questions by whoever is in-charge of the course and creation of tests from the available set of questions. It should be able to administer the tests online, either at a fixed time for all students or at any time but with a time limit from start to finish and give students feedback on their scores at the end of the allotted time.
Note : The system should allow to give exam from mobile device also.
Note: use Bootstrap 4, AngularJS

6. Perform Oracle performance tuning for assignment No.4 & 5.

7. Install & configure Oracle Advanced Replication server. Use Oracle Enterprise Edition for multiple master sites.

    Write Python desktop application to demonstrate the CRUD operations on replica server.

    Use sample STUDENT Database from :
    http://www.oraclesqlbyexample.com/sampledatabasedownload.htm

8. Install & deploy the following cloud databases on windows platform :
    A] CassandraDB
    B] MongoDB
Write Python desktop Application to demonstrate the CRUD operation with above backend cloud databases. ***Assume any database***.

9. Port assignment No.4 & 5 with CassandraDB/MongoDB as backend database.

10. Consider the query of displaying grades (in GRADE Table) in sorted order as per the grades assigned (i.e NUMERIC_GRADE attribute) to students (max first) and in case of same grade assigned in order of student_id (from STUDENT_ID attribute)

    Implement in Python
    a) Parallel Sort using Range Partitioning Sort Technique.
    b) Parallel Sort using Parallel External Sort-Merge technique

    Compare the Performance of any one of the above sorting technique with variable number of records i.e with increase in no. of records how does your algorithm perform.

    Use sample STUDENT Database from :
    http://www.oraclesqlbyexample.com/sampledatabasedownload.htm

11. Install and demonstrate Oracle Parallel database : Oracle Real Application Clusters (RAC) 12c.

12. Study the support for spatial data offered by Oracle 11gR2 and implement the following :

    A] A schema to represent the geographic location of restaurants along with features such as the cuisine served at the restaurant and the level of expensiveness.
    B] A query to find moderately priced restaurants that serve the Indian food and are within 5 miles of your house (assume any location from your home)
    C] A query to find for each restaurant the distance from the nearest restaurant serving the same cuisine and with the same level of expensiveness.

Note : Follow the submission guidelines.

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