Tech Module Exercises: 0 / 126

SQL

* Mini Projects

|  |  |  |
| --- | --- | --- |
| S.No. | Mini-project Description | Topics Covered |
| 1 | Employee\_Information | SQL |

* + In this TECH Module, you are expected to complete the below Mini-Project(s)
* Topics to Learn

To complete the above project, you will need to lean the below technical topics-

* + **Introduction to SQL**

Learning Material for **Introduction to SQL**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Introduction SQL | select intro.pdf | PDF | Mandatory |
| 2. | Introduction SQL | https://www.youtube.com/watch?v=lzzAXsySxx4&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU | Video | Suggestive |
| 3. | Installing oracle | https://www.youtube.com/watch?v=NRnSO3dn4uA&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=2 | Video | Suggestive |
| 4. | Installing SQL Developer | https://www.youtube.com/watch?v=ClEdGRGnm1c&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=3 | Video | Suggestive |
| 5. | Connection to SQL Developer | https://www.youtube.com/watch?v=\_y8-NtVPyKk&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=4 | Video | Suggestive |
| 6. | Creating a new user in database | https://www.youtube.com/watch?v=0ik4kUfo2jo&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=5 | Video | Suggestive |
| 7. | Creating a sample database | https://www.youtube.com/watch?v=9TZJvUSg0lc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=6 | Video | Suggestive |
| 8. | Creating a sample database | https://www.youtube.com/watch?v=uzkGWJ16\_Pc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=7 | Video | Suggestive |

* + - Hands-on Assignments for **Introduction to SQL**
      * No Hands-on Assignments for this topic
  + **Retrieving Data Using the SQL SELECT Statement**

Learning Material for **Retrieving Data Using the SQL SELECT Statement**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | View data using SELECT | https://www.youtube.com/watch?v=VIUvVhKL4bE&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=8 | Video | Suggestive |
| 2. | Arithmetic Operators | Arithmetic Expression.pdf | PDF | Mandatory |
| 3. | Column Alias | Defining a Column Alias.pdf | PDF | Mandatory |
| 4. | Column Alias | https://www.youtube.com/watch?v=61nelDstVAc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=40 | Video | Suggestive |
| 5. | Null Values | What is a NULL value.pdf | PDF | Mandatory |

* + - Hands-on Assignments for **Retrieving Data Using the SQL SELECT Statement**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Determine the Structure of DEPT Table and its Contents. | Sqlplus Command |  |
| 2. | Determine the Structure of EMP Table and its Contents. | Sqlplus Command |  |
| 3. | Display the Ename and Deptno from Emp table whose Empno is 7788. | Sqlplus Command |  |

* + **Restricting and Sorting Data**

Learning Material for **Restricting and Sorting Data**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Where Clause and Comparison Operators | Restricting and Sorting Data.pdf | PDF | Mandatory |
| 2. | Where Clause | https://www.youtube.com/watch?v=oBs-M\_Dhidg&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=10 | Video | Suggestive |
| 3. | Where Clause | https://www.youtube.com/watch?v=OjdBsetknJ0&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=11 | Video | Suggestive |
| 4. | Order By Clause | Using the ORDER BY Clause.pdf | PDF | Mandatory |
| 5. | Order By Clause | https://www.youtube.com/watch?v=RDx4QRlP9qo&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=22 | Video | Suggestive |
| 6. | Order By Clause | https://www.youtube.com/watch?v=1RddX8D-MoI&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=23 | Video | Suggestive |

* + - Hands-on Assignments for **Restricting and Sorting Data**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Display the Ename,Sal,Comm from Emp table who earn commission and sort the records in descending order of Salary and Comm. Use column’s numeric position in the ORDER BY clause | Sorting Data |  |
| 2. | The HR department needs a query to display all unique job codes from the EMP table. | Functions |  |
| 3. | The HR department wants more descriptive column headings for its report on employees. Name the column headings Emp #, Employee, Job, and Hire Date, respectively by giving Column Alias. | Columns Alias |  |
| 4. | The HR department has requested a report of all employees and their job IDs. Display the last name concatenated with the job ID (separated by a comma and space) and name the column Employee and Title by giving Column Alias. | Operators |  |
| 5. | To familiarize yourself with the data in the EMP table, create a query to display all the data from that table. Separate each column output by a comma. ENAME,JOB,HIREDATE,MGR.Name the column title THE\_OUTPUT. | Column Alias |  |
| 6. | Create a report to display the ename, job , and Hiredate for the employees name is SCOTT or TURNER. Order the query in ascending order by hiredate. | Sorting Data |  |
| 7. | Display the ename and department number of all employees in departments 20 or 30 in ascending alphabetical order by ename. | Sorting Data |  |
| 8. | Modify the previous query to display the last name and salary of employees who earn between 2000 and 3000 and are in department 20 or 30. Label the columns Employee and Monthly Salary, respectively giving Column Alias. | Sorting Data and Column Alias |  |
| 9. | The HR department needs a report that displays the last name and hire date for all employees who were hired in 1981 | Operators |  |
| 10. | Display the Ename, Sal of employees who earn more than an amount the user specifies after a Prompt. | Using Prompts |  |
| 11. | Create a report to display the last name and job title of all employees who do not have a manager. | SQL Operators |  |
| 12. | Create a query that prompts the user for Manager ID and generate EMPNO,ENAME, SAL,DEPTNO. The user should have the ability to sort the records on a selected Column. | Using Prompts and Sorting Data |  |
| 13. | The HR department wants to run reports based on a manager. Create a query that prompts the user for a MGR and generates the empno, ename, salary, and department for that manager’s employees. The HR department wants the ability to sort the report on a selected column | Using Prompts |  |
| 14. | Display all employee last names in which the third letter of the name is A | SQL Operators |  |
| 15. | Display the last name of all employees who have both an A and an S in their ename | SQL Operators |  |
| 16. | Display the Ename, Job, Sal for all employees whose jobs are CLERK and whose salary is in 800 or 950 or 1300. | SQL Operators |  |

* + **Using Single-Row Functions to Customize The Output**

Learning Material for **Using Single-Row Functions to Customize The Output**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | What are functions | https://www.youtube.com/watch?v=rQiS3Lq9It0&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=30 | Video | Suggestive |
| 2. | SQL Function Character Function | Using Single-Row Functions.pdf | PDF | Mandatory |
| 3. | Numeric Functions | Number Function.pdf | PDF | Mandatory |
| 4. | Data Functions | Working with Dates.pdf | PDF | Mandatory |
| 5. | Other Functions | convertion function.pdf | PDF | Mandatory |
| 6. | TO\_CHAR | to\_char function.pdf | PDF | Mandatory |
| 7. | TO\_NUMBER and TO\_DATE | to\_number to\_date.pdf | PDF | Mandatory |
| 8. | General Functions | General Functions.pdf | PDF | Mandatory |

* + - Hands-on Assignments for **Using Single-Row Functions to Customize The Output**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Write a query to display the current date. Label the column Date. | Date Functions |  |
| 2. | The HR department needs a report to display the employee number, last name, salary, and salary increased by 15.5% (expressed as a whole number) for each employee. Label the column New Salary. | Numeric Functions |  |
| 3. | Modify the previous query to add a column alias that subtracts the old salary from the new salary. Label the column Increase | Column Alias |  |
| 4. | Write a query that displays the ename (with the first letter uppercase and all other letters lowercase) and the length of the ename for all employees whose name starts with the letters J, A, or M. Give each column an appropriate label. Sort the results by the employees’ enames. | String Functions |  |
| 5. | Rewrite the query so that the user is prompted to enter a letter that starts the last name. For example, if the user enters H when prompted for a letter, then the output should show all employees whose last name starts with the letter H. | Using Prompts and SQL Operators |  |
| 6. | The HR department wants to find the length of employment for each employee. For each employee, display the ename and calculate the number of months between today and the date on which the employee was hired. Label the column MONTHS\_WORKED. Order your results by the number of months employed. Round the number of months up to the closest whole number. | Date Functions |  |
| 7. | Create a report that produces the following for each employee: | Column Alias |  |
| 8. | Create a query to display the last name and salary for all employees. Format the salary to be 15 characters long, left-padded with the $ symbol. Label the column SALARY. | String Functions |  |
| 9. | Display each employee’s last name, hire date, and salary review date, which is the first Monday after six months of service. Label the column REVIEW. Format the dates to appear in the format similar to “Monday, the Thirty-First of July, 2000.” | Date Functions |  |
| 10. | Display the last name, hire date, and day of the week on which the employee started. Label the column DAY. Order the results by the day of the week, starting with Monday. | Date Functions |  |
| 11. | Create a query that displays the employees’ last names and commission amounts. If an employee does not earn commission, show “No Commission.” Label the column COMM. | Other Functions |  |
| 12. | Create a query that displays the first eight characters of the employees’ last names and indicates the amounts of their salaries with asterisks. Each asterisk signifies a thousand dollars. Sort the data in descending order of salary. Label the column EMPLOYEES\_AND\_THEIR\_SALARIES. | String Functions |  |
| 13. | Using the DECODE function, write a query that displays the grade of all employees based on the value of the column JOB\_ID, using the following data: PRESIDENT-A,MANAGER-B,SALESMAN-C,CLERK-D | Other Functions |  |
| 14. | Rewrite the statement in the preceding exercise using the CASE syntax | Other Functions |  |

* + **Reporting Aggregated Data Using The Group Functions**

Learning Material for **Reporting Aggregated Data Using The Group Functions**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Counting data | https://www.youtube.com/watch?v=CtxmkMbKwXI&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=31 | Video | Suggestive |
| 2. | Group Functions | Reporting Aggregated Data group function.pdf | PDF | Mandatory |
| 3. | Group By Clause | groupby.pdf | PDF | Mandatory |
| 4. | Group By Clause | https://www.youtube.com/watch?v=3rNgZd6x8Hs&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=32 | Video | Suggestive |
| 5. | Group By Clause | https://www.youtube.com/watch?v=co9M6bmYFiM&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=33 | Video | Suggestive |
| 6. | Having Clause | Using the HAVING Clause.pdf | PDF | Mandatory |
| 7. | Having Clause | https://www.youtube.com/watch?v=Xlj4XRO3mFg&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=35 | Video | Suggestive |

* + - Hands-on Assignments for **Reporting Aggregated Data Using The Group Functions**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Find the highest, lowest, sum, and average salary of all employees. Label the columns | Group Functions |  |
| 2. | Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number. | Group Functions |  |
| 3. | Modify the above query to display the minimum, maximum, sum, and average salary for each job type. | Group by Clause |  |
| 4. | Write a query to display the number of people with the same job | Group Functions |  |
| 5. | Determine the number of managers without listing them. Label the column Number of Managers | Group by Clause |  |
| 6. | Find the difference between the highest and lowest salaries. Label the column DIFFERENCE. | Group Functions |  |
| 7. | Create a report to display the manager number and the salary of the lowest-paid employee for that manager. Exclude anyone whose manager is not known. Exclude any groups where the minimum salary is $2000 or less. Sort the output in descending order of salary. | Where Clause, Group by Clause, Order by Clause |  |
| 8. | Create a query to display the total number of employees and, of that total, the number of employees hired in 1980, 1981, and 1982. Create appropriate column headings. | Single Row and Group Functions |  |

* + **Using the Set Operators**

Learning Material for **Using the Set Operators**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Union/Union All | Using the Set Operators union.pdf | PDF | Mandatory |
| 2. | Union/Union All | https://www.youtube.com/watch?v=kCj3RW5DSRs&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=25 | Video | Suggestive |
| 3. | Intersect/Minus | INTERSECT and minus Operator.pdf | PDF | Mandatory |
| 4. | Intersect/Minus | https://www.youtube.com/watch?v=1GVDrRxMJyc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=26 | Video | Suggestive |
| 5. | Intersect/Minus | https://www.youtube.com/watch?v=V6\_LnRchAVM&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=27 | Video | Suggestive |

* + - Hands-on Assignments for **Using the Set Operators**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Create a matrix query to display the job, the salary for that job based on department number, and the total salary for that job, for departments 10, 20, and 30, giving each column an appropriate heading. | Sing Row, Group Functions and Group by Clause |  |
| 2. | Using set operator display the DEPTNO,SUM(SAL) for each dept, JOB,SUM(SAL) for each Job and Total Salary. | Set Operators |  |
| 3. | Using Set Operator display the JOB and Deptno in employees working in deptno 20,10,30 in that order. | Set Operators |  |

* + **Displaying Data from Multiple Tables Using Joins**

Learning Material for **Displaying Data from Multiple Tables Using Joins**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | SQL 1999 Joins: Natural Join | Displaying Data.pdf | PDF | Mandatory |
| 2. | Joins | https://www.youtube.com/watch?v=7kvDp4mZsRc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=41 | Video | Suggestive |
| 3. | Natural Join | https://www.youtube.com/watch?v=dMPnWMTR9VU&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=46 | Video | Suggestive |
| 4. | SQL 1999 Joins: Natural Join/Using Clause/On Clause | Retrieving Records with the USING Clause.pdf | PDF | Mandatory |
| 5. | Inner Joins | https://www.youtube.com/watch?v=7kvDp4mZsRc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=41 | Video | Suggestive |
| 6. | Left Outer Join | https://www.youtube.com/watch?v=DQwhFcbEnQ4&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=43 | Video | Suggestive |
| 7. | Right outer Join | https://www.youtube.com/watch?v=jzJgC9Hr0Vs&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=44 | Video | Suggestive |
| 8. | Full outer Join | https://www.youtube.com/watch?v=5tCOkFAvWkw&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=45 | Video | Suggestive |
| 9. | Cross Join | https://www.youtube.com/watch?v=NPqCi7QyLhM&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=47 | Video | Suggestive |
| 10. | Self Join Non Equi Join | self join and non equi join.pdf | PDF | Mandatory |
| 11. | Self Join Non Equi Join | https://www.youtube.com/watch?v=G4vO83UUzek&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=48 | Video | Suggestive |
| 12. | Historical Joins | HISTORICAL.pdf | PDF | Mandatory |

* + - Hands-on Assignments for **Displaying Data from Multiple Tables Using Joins**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Write a query for the HR department to produce the addresses of all the departments. Use the EMP and DEPT tables. Show the EMPNO, ENAME,SAL, DNAME and LOC in the output. Use a NATURAL JOIN to produce the results. | Natural Join |  |
| 2. | The HR department needs a report of all employees. Write a query to display the JOB,MGR,SAL,COMM,DNAME of employees whose JOB is SALESMAN. | Equi Join |  |
| 3. | The HR department needs a report of employees in LOC DALLAS. Display the ENAME, job, DEPTNO, and DNAME for all employees who work in DALLAS. | Equi Join |  |
| 4. | Create a report to display employees’ ename and employee number along with their manager’s name and manager number. Label the columns Employee, Emp#, Manager, and Mgr#, respectively. | Self Join |  |
| 5. | Modify the previous Query to display all employees including King, who has no manager. Order the results by the employee number. | Outer Join |  |
| 6. | The HR department needs a report on job grades and salaries. To familiarize yourself with the SALGRADE table, first show the structure of the SALGRADE table. Then create a query that displays the name, job, department name, salary, and grade for all employees. | Non-Equi Join |  |
| 7. | Display the ENAME,DNAME of all the employees. Also display those department name which do not have any employees working. | Outer Join |  |
| 8. | The HR department needs to find the names and hire dates for all employees who were hired before their managers, along with their managers’ names and hire dates. | Self Join with Outer Join |  |
| 9. | Display the EMPNO,ENAME,DNAME,LOC of those employees who are working as CLERK. Use the USING clause. | USING Clause |  |
| 10. | Display the ENAME,SAL,MGR,DNAME of employees whose salary is more than 2000. Use the ON clause. | On Clause |  |
| 11. | Display the EMPNO,ENAME,JOB,DEPTNO,DNAME,LOC of employees. Use LEFT OUTER JOIN. | LEFT OUTER JOIN |  |
| 12. | Display the ENAME,DNAME of employees. Use RIGHT OUTER JOIN. | RIGHT OUTER JOIN |  |
| 13. | Display the EMPNO,DNAME,LOC of employees. Use FULL OUTER JOIN. | FULL OUTER JOIN |  |

* + **Using Sub queries to Solve Queries**

Learning Material for **Using Sub queries to Solve Queries**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Sub Queries | Using Sub queries to Solve Queries.pdf | PDF | Mandatory |
| 2. | Sub Queries | https://www.youtube.com/watch?v=XOhxDe-tOIc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=57 | Video | Suggestive |
| 3. | Single Row Subqueries | Single-Row Subqueries.pdf | PDF | Mandatory |
| 4. | Single Row Subqueries | https://www.youtube.com/watch?v=P6z6cx\_-gik&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=58 | Video | Suggestive |
| 5. | Multirow Subqueries | multirow subquery.pdf | PDF | Mandatory |
| 6. | Multirow Subqueries | https://www.youtube.com/watch?v=Lo51zIfLgPs&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=59 | Video | Suggestive |

* + - Hands-on Assignments for **Using Sub queries to Solve Queries**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Create a report that displays EMPNO,ENAME,DEPTNO of employees who work with that Employee.(Nested Sub Query) | Nested Sub Query |  |
| 2. | Display the employees who earn more than the avg salary of EMP table.( Nested Sub Query). | Nest Sub Query |  |
| 3. | Display the ENAME,JOB who are Managers( Use Exists Operator) | Exists Operator |  |
| 4. | Display the employees who earn less than the least salary of DEPTNO 10.(Use ALL operator). | All Operator) |  |
| 5. | Display the employees who have the same DEPTNO and MGR of a given employee, excluding that employee.(Use Nested Sub Query) | Nest Sub Query |  |
| 6. | Write a query that displays the employee number and name of all employees who work in a department with any employee whose name contains a R | Nested Sub Query |  |
| 7. | The HR department needs a report that displays the ename, deptno, job of all employees whose work in NEW YORK.(Nest Sub Query) | Nested Sub Query |  |
| 8. | Modify the query so that the user is prompted for a LOC | Using Prompt |  |
| 9. | Create a report for HR that displays the name and salary of every employee who reports to King.(Nest Sub Query) | Nested Sub Query |  |
| 10. | Write a query to display all the employees working with JAMES | Nested Sub Query |  |
| 11. | Display all the employees who earn less than the average salaries of their respective departments.(Correlated Sub Queries) | Correlated Sub Query |  |
| 12. | Write a query to display the LOC and average salary of Each location.(Scalar Sub query). | Scalar Sub Query |  |
| 13. | Write a query to display the least N salaries. Use In-Line Views. | In Line Views |  |
| 14. | Display the Last N rows from the employees table(Use Correlated Sub Queries). | Correlated Sub Query |  |
| 15. | Display the employees from employees table and sort only employees working in DALLAS.(Scalar Sub Query). | Scalar Sub Query |  |
| 16. | Display the employees who earn a salary less than avgsal of their respective department. Also display the avgsal.(Use Inline Views). | In Line Views |  |
| 17. | Write a query that display the LOC of those DEPTS that have a sum of sal less than the avgsal of all the employees in DEPT table. (Use WITH Clause). | WITH Clause |  |

* + **Using DDL Statements to Create and Manage Tables**

Learning Material for **Using DDL Statements to Create and Manage Tables**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Create Table Syntax/Default Option | Using DDL Statements.pdf | PDF | Mandatory |
| 2. | Create Table Syntax/Default Option | https://www.youtube.com/watch?v=BiV1IrzB1sY&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=65 | Video | Suggestive |
| 3. | Create Table Syntax/Default Option | CREATE TABLE example.pdf | PDF | Mandatory |
| 4. | Constraints Introduction | Including Constraints.pdf | PDF | Mandatory |
| 5. | Add/Enable/Disable/Drop Constraints | alter and drop.pdf | PDF | Mandatory |
| 6. | Add/Enable/Disable/Drop Constraints | https://www.youtube.com/watch?v=R\_e6hquue6s&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=66 | Video | Suggestive |
| 7. | Add/Enable/Disable/Drop Constraints | https://www.youtube.com/watch?v=PIRuMoxUuBc&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=67 | Video | Suggestive |

* + - Hands-on Assignments for **Using DDL Statements to Create and Manage Tables**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Create table dept1 as below with following columns: DEPTNO INTEGER PK,DNAME VARCHAR2(30) NOT NULL,LOC VARCHAR2(30) NOT NULL | Create |  |
| 2. | Create table emp1 with the following columns EMPNO INTEGER PK,ENAME VARCHAR2(20) NOT NULL,SAL NUMBER(10,2) check(sal>5000),mgr number FK(EMPNO),DEPTNO INTEGER FK(DEPTNO) | Create |  |
| 3. | Create tables Dept11,Emp11 from Dept1,Emp1. | Create with Sub Query |  |
| 4. | Add a new column Address-Varchar2(30) in the Emp1 table. | Alter |  |
| 5. | Rename SAL column in Emp1 table to SALARY. | Alter |  |
| 6. | Rename the FK constraint names and verify the names for the EMP1. | Alter |  |
| 7. | Modify ENAME Column by increasing the length of the column to 40. | Alter |  |
| 8. | Drop the NOT NULL constraint for ENAME. | Drop |  |
| 9. | Create comment on Dept1 table as ‘Depts of WIPRO’ | Comments |  |
| 10. | Create comment on Deptno of Dept1 as ‘Deptno of WIPRO’ | Comments |  |
| 11. | Create a comment on Emp1 table as ‘Employees of WIPRO’ | Comments |  |
| 12. | Create a comment on Empno of Emp1 table as ‘Empno of WIPRO’ | Comments |  |
| 13. | Remove all the comment on the tables and columns. | Comments |  |
| 14. | Set sal,ename columns of Emp1 table as unused. | Alter |  |
| 15. | Drop the unused columns. | Alter |  |
| 16. | Drop Emp1,Dept1 Tables. | Drop |  |
| 17. | Create Table Emp1 from EMP table by copying data also. Check your data. | Create with Sub Query |  |
| 18. | Rename Emp1 to EMP\_Test. | Alter |  |
| 19. | Truncate Emp\_Test table and confirm your delete. | Truncate |  |
| 20. | Create Emp2 from Emp by only copying Empno,Ename,sal columns by copying Data. | Create with Sub Query |  |
| 21. | Drop Emp2 Table. | Drop |  |
| 22. | Create Emp2 table again from EMP table without copying data. | Create with Sub Query |  |
| 23. | Drop Emp2 table. | Drop |  |
| 24. | Flashback the first Emp2 table that contained data and check your table. | Flashback Table |  |
| 25. | Flashback the recently dropped table by renaming to EMP2\_1. | Flashback Table |  |
| 26. | Check your tables. | SQL Plus Commands |  |

* + **Manipulating Data**

Learning Material for **Manipulating Data**

Below is the learning material that you are expected to read along with completion of the hands-on assignments. The material is mentioned is the order in which it should be read.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Material Title | Material Location | Type of Material | Classification |
| 1. | Data Manipulation and INSERT command | Date Manipulation Language insert.pdf | PDF | Mandatory |
| 2. | Data Manipulation and Update command | Changing Data in a Table.pdf | PDF | Mandatory |
| 3. | Data Manipulation and Update command | https://www.youtube.com/watch?v=6sAN0ahAoUo&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=62 | Video | Suggestive |
| 4. | Data Manipulation and Delete command | Removing a Row from a Table.pdf | PDF | Mandatory |
| 5. | Data Manipulation and Delete command | https://www.youtube.com/watch?v=x2fpyMreoEo&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=62 | Video | Suggestive |
| 6. | COMMIT/ROLLBACK/SAVE POINTS | Database Transaction.pdf | PDF | Mandatory |
| 7. | COMMIT/ROLLBACK/SAVE POINTS | https://www.youtube.com/watch?v=j4mOUDUtRJ4&list=PLZDOU071E4v6bO3cXRZ8WYXIWHN2JsrnU&index=63 | Video | Suggestive |

* + - Hands-on Assignments for **Manipulating Data**

Complete the below hands-on assignments before proceeding with the next Topic

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Hands-on Assignment | Topic Covered | Status |
| 1. | Create EmpTest from Emp table by copying structure and data. | Create with Sub Query |  |
| 2. | Add a new row into the EmpTest table for Empno,Ename,Sal columns. In Ename should have the Current User. | Insert |  |
| 3. | Update EmpTest by increasing the Salary of TURNER by 15%. Confirm your changes. | Update |  |
| 4. | Update the salary of Smith with salary of Scott using EmpTest table. | Update |  |
| 5. | Increase all the employees salary by 10% in EmpTest table who are working in NEW YORK. | Update with Sub Query |  |
| 6. | Delete all the Comm data from EmpTest Table. | Delete |  |
| 7. | Delete all the employees from EmpTest table who are working in SALES dept. | Delete with Sub Query |  |
| 8. | Delete all the who are working with that employee, except that Employee.(Prompt for the ENAME). | Delete with Sub Query |  |
| 9. | Create Emp2 from Emp by only copying Empno,Ename,sal without copying data | Create with Sub Query |  |
| 10. | Create Emp3 from Emp by only copying Empno,Job without copying data. | Create with Sub Query |  |
| 11. | Using multitable insert Emp data into Emp2 and Emp3 Tables | Multi Table Insert |  |
| 12. | Truncate Emp2 Table and insert following two rows as follows: 7788, SMITH, 4500 /7654, JACK, 3500 | Truncate |  |
| 13. | Commit the Data. | Commit |  |
| 14. | Using Merge statement insert and update Emp2 using Emp | Merge Statemets |  |
| 15. | Verify your changes. | Select Statement |  |
| 16. | Rollback the Data. | Rollback |  |
| 17. | Using Merge statements update Emp2 table for only Empno=7788 and Insert only those employees whose salary is more than 3000. | Merge Statemets |  |
| 18. | Verify your changes. | Select Statement |  |
| 19. | Create a User WIPRO. | Create User |  |
| 20. | Grant ALL permission on EMP table from SCOTT to WIPRO user. | Grant |  |
| 21. | Delete all the employees in deptno 10 and do not issue a Commit. | Delete |  |
| 22. | From WIPRO user delete all the employees from SCOTT.EMP table in DEPTNO=10. What happens and Why? | Delete |  |
| 23. | Issue a Rollback in SCOTT user and Check the WIPRO user. | Rollback |  |
| 24. | In SCOTT user give a query on EMP using FOR UPDATE clause with WAIT 20 seconds? What happens? | For Update Clause |  |
| 25. | In WIPRO User issue a ROLLBACK and now check in SCOTT user. | Rollback |  |
| 26. | ROLLBACK all the transactions in SCOTT and WIPRO Users. | Rollback |  |

* Learning Outcomes

Upon completion of this TECH Module, you should be able to:

* + Learnt how to write basic sql statements
  + Learnt how to use different operators
  + Learnt how to use different In built Functions
  + Learnt how to use Aggregate Functions
  + Implement Set Operators
  + Learnt Joins and types of Joins
  + Learnt how to implement Sub Queries
  + Learnt how to Create, Alter, Drop Objects
  + Learnt how to insert update or delete tuples
  + Learnt how to use Views, Synonyms, Sequences and Indexes
* Sample Questions

After gaining knowledge of the above module, below are the possible interview questions that you should be able to confidently answer.

|  |  |
| --- | --- |
| No. | Questions |
| 1 | What is the difference between sql and SQLPLus commands |
| 2 | What is the difference between cancat function and || operator |
| 3 | What is the difference between joins and set operator |
| 4 | What is the syntax to create a table |
| 5 | How can you drop a table |
| 6 | Can we get back dropped tables |
| 7 | What is the difference between truncate and delete statements |
| 8 | How can we get information about views |
| 9 | How to crate comments on tables |
| 10 | How to remove comments |
| 11 | What is the difference between View and Synonym |
| 12 | How to see the source code of a View |