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# **Tables**

## Creating User

* create user sql\_lab identified by sql\_lab;
* grant connect, resource to sql\_lab;

## Creating Table

* **Emp**:

CREATE TABLE Emp (

Empno NUMBER(4) NOT NULL,

Ename VARCHAR2(10),

Job VARCHAR2(9),

Mgr NUMBER(4),

Hiredate DATE,

Sal NUMBER(7,2),

Comm NUMBER(7,2),

Deptno NUMBER(2)

);

* **Designation\_Masters:**

CREATE TABLE Designation\_Masters (

Design\_code NUMBER(3) NOT NULL,

Design\_name VARCHAR2(50)

);

* **Department \_Masters:**

CREATE TABLE Department\_Masters (

Dept\_Code NUMBER(2) NOT NULL,

Dept\_name VARCHAR2(50)

);

* **Student\_Masters:**

CREATE TABLE Student\_Masters (

Student\_Code NUMBER(6) NOT NULL,

Student\_name VARCHAR2(50) NOT NULL,

Dept\_Code NUMBER(2),

Student\_dob DATE,

Student\_Address VARCHAR2(240)

);

* **Student\_Marks:**

CREATE TABLE Student\_Marks (

Student\_Code NUMBER(6),

Student\_Year NUMBER NOT NULL,

Subject1 NUMBER(3),

Subject2 NUMBER(3),

Subject3 NUMBER(3)

);

* **Staff\_Masters:**

CREATE TABLE Staff\_Masters (

Staff\_code NUMBER(8) NOT NULL,

Staff\_Name VARCHAR2(50) NOT NULL,

Design\_code NUMBER,

Dept\_code NUMBER,

HireDate DATE,

Staff\_dob DATE,

Staff\_address VARCHAR2(240),

Mgr\_code NUMBER(8),

Staff\_sal NUMBER(10,2)

);

* **Book \_Masters:**

CREATE TABLE Book\_Masters (

Book\_Code NUMBER(10) NOT NULL,

Book\_Name VARCHAR2(50) NOT NULL,

Book\_pub\_year NUMBER,

Book\_pub\_author VARCHAR2(50) NOT NULL

);

* **Book\_Transactions:**

CREATE TABLE Book\_Transactions (

Book\_Code NUMBER,

Student\_code NUMBER,

Staff\_code NUMBER,

Book\_Issue\_date DATE NOT NULL,

Book\_expected\_return\_date DATE NOT NULL,

Book\_actual\_return\_date DATE

);

# **Data**

* **Emp**:

insert into emp values(7839, 'KING', 'PRESIDENT', null, to\_date('17-11-1981','dd-mm-yyyy'), 5000, null, 10);

insert into emp values(7698, 'BLAKE', 'MANAGER', 7839, to\_date('1-5-1981','dd-mm-yyyy'), 2850, null, 30);

insert into emp values(7782, 'CLARK', 'MANAGER', 7839, to\_date('9-6-1981','dd-mm-yyyy'), 2450, null, 10);

insert into emp values(7566, 'JONES', 'MANAGER', 7839, to\_date('2-4-1981','dd-mm-yyyy'), 2975, null, 20);

insert into emp values(7788, 'SCOTT', 'ANALYST', 7566, to\_date('13-JUL-87','dd-mm-rr') - 85, 3000, null, 20);

insert into emp values(7902, 'FORD', 'ANALYST', 7566, to\_date('3-12-1981','dd-mm-yyyy'), 3000, null, 20);

insert into emp values(7369, 'SMITH', 'CLERK', 7902, to\_date('17-12-1980','dd-mm-yyyy'), 800, null, 20);

insert into emp values(7499, 'ALLEN', 'SALESMAN', 7698, to\_date('20-2-1981','dd-mm-yyyy'), 1600, 300, 30);

insert into emp values(7521, 'WARD', 'SALESMAN', 7698, to\_date('22-2-1981','dd-mm-yyyy'), 1250, 500, 30);

insert into emp values(7654, 'MARTIN', 'SALESMAN', 7698, to\_date('28-9-1981','dd-mm-yyyy'), 1250, 1400, 30);

insert into emp values(7844, 'TURNER', 'SALESMAN', 7698, to\_date('8-9-1981','dd-mm-yyyy'), 1500, 0, 30);

insert into emp values(7876, 'ADAMS', 'CLERK', 7788, to\_date('13-JUL-87', 'dd-mm-rr') - 51, 1100, null, 20);

insert into emp values(7900, 'JAMES', 'CLERK', 7698, to\_date('3-12-1981','dd-mm-yyyy'), 950, null, 30);

insert into emp values(7934, 'MILLER', 'CLERK', 7782, to\_date('23-1-1982','dd-mm-yyyy'), 1300, null, 10);

* **Department \_Masters:**

INSERT INTO department\_masters VALUES(10,'Computer Science');

INSERT INTO department\_masters VALUES(20,'Electricals');

INSERT INTO department\_masters VALUES(30,'Electronics');

INSERT INTO department\_masters VALUES(40,'Mechanics');

INSERT INTO department\_masters VALUES(50,'Robotics');

* **Designation\_Masters:**

INSERT INTO designation\_masters VALUES(101,'HOD');

INSERT INTO designation\_masters VALUES(102,'Professor');

INSERT INTO designation\_masters VALUES(103,'Reader');

INSERT INTO designation\_masters VALUES(104,'Sr.Lecturer');

INSERT INTO designation\_masters VALUES(105,'Lecturer');

INSERT INTO designation\_masters VALUES(106,'Director');

* **Student\_Masters:**

INSERT INTO student\_masters VALUES(1001,'Amit',10,'11-Jan-80','chennai');

INSERT INTO student\_masters VALUES(1002,'Ravi',10,'1-Nov-81','New Delhi');

INSERT INTO student\_masters VALUES(1003,'Ajay',20,'13-Jan-82',null);

INSERT INTO student\_masters VALUES(1004,'Raj',30,'14-Jan-79','Mumbai');

INSERT INTO student\_masters VALUES(1005,'Arvind',40,'15-Jan-83','Bangalore');

INSERT INTO student\_masters VALUES(1006,'Rahul',50,'16-Jan-81','Delhi');

INSERT INTO student\_masters VALUES(1007,'Mehul',20,'17-Jan-82','Chennai');

INSERT INTO student\_masters VALUES(1008,'Dev',10,'11-Mar-81','Bangalore');

INSERT INTO student\_masters VALUES(1009,'Vijay',30,'19-Jan-80','Bangalore');

INSERT INTO student\_masters VALUES(1010,'Rajat',40,'20-Jan-80','Bangalore');

INSERT INTO student\_masters VALUES(1011,'Sunder',50,'21-Jan-80','Chennai');

INSERT INTO student\_masters VALUES(1012,'Rajesh', 30,'22-Jan-80',null);

INSERT INTO student\_masters VALUES(1013,'Anil',20,'23-Jan-80','Chennai');

INSERT INTO student\_masters VALUES(1014,'Sunil',10,'15-Feb-85', null);

INSERT INTO student\_masters VALUES(1015,'Kapil',40,'18-Mar-81','Mumbai');

INSERT INTO student\_masters VALUES(1016,'Ashok',40,'26-Nov-80',null);

INSERT INTO student\_masters VALUES(1017,'Ramesh',30,'27-Dec-80',null);

INSERT INTO student\_masters VALUES(1018,'Amit Raj',50,'28-Sep-80','New Delhi');

INSERT INTO student\_masters VALUES(1019,'Ravi Raj',50,'29-May-81','New Delhi');

INSERT INTO student\_masters VALUES(1020,'Amrit',10,'11-Nov-80',null);

INSERT INTO student\_masters VALUES(1021,'Sumit',20,'1-Jan-80','Chennai');

* **Student\_Marks:**

INSERT INTO student\_marks VALUES(1001, 2010, 55,45,78);

INSERT INTO student\_marks VALUES(1002, 2010, 66,74,88);

INSERT INTO student\_marks VALUES(1003, 2010, 87,54,65);

INSERT INTO student\_marks VALUES(1004, 2010, 65,64,90);

INSERT INTO student\_marks VALUES(1005, 2010, 78,88,65);

INSERT INTO student\_marks VALUES(1006, 2010, 65,86,54);

INSERT INTO student\_marks VALUES(1007, 2010, 67,79,49);

INSERT INTO student\_marks VALUES(1008, 2010, 72,55,55);

INSERT INTO student\_marks VALUES(1009, 2010, 71,59,58);

INSERT INTO student\_marks VALUES(1010, 2010, 68,44,92);

INSERT INTO student\_marks VALUES(1011, 2010, 89,96,78);

INSERT INTO student\_marks VALUES(1012, 2010, 78,56,55);

INSERT INTO student\_marks VALUES(1013, 2010, 75,58,65);

INSERT INTO student\_marks VALUES(1014, 2010, 73,74,65);

INSERT INTO student\_marks VALUES(1015, 2010, 66,45,74);

INSERT INTO student\_marks VALUES(1016, 2010, 68,78,74);

INSERT INTO student\_marks VALUES(1017, 2010, 69,44,52);

INSERT INTO student\_marks VALUES(1018, 2010, 65,78,56);

INSERT INTO student\_marks VALUES(1019, 2010, 78,58,74);

INSERT INTO student\_marks VALUES(1020, 2010, 45,55,65);

INSERT INTO student\_marks VALUES(1021, 2010, 78,79,78);

INSERT INTO student\_marks VALUES(1001, 2011, 68,44,92);

INSERT INTO student\_marks VALUES(1002, 2011, 89,96,78);

INSERT INTO student\_marks VALUES(1003, 2011, 78,56,55);

INSERT INTO student\_marks VALUES(1004, 2011, 75,58,65);

INSERT INTO student\_marks VALUES(1005, 2011, 73,74,65);

INSERT INTO student\_marks VALUES(1006, 2011, 66,45,74);

INSERT INTO student\_marks VALUES(1007, 2011, 68,78,74);

INSERT INTO student\_marks VALUES(1008, 2011, 69,44,52);

INSERT INTO student\_marks VALUES(1009, 2011, 65,78,56);

INSERT INTO student\_marks VALUES(1010, 2011, 78,58,74);

INSERT INTO student\_marks VALUES(1011, 2011, 45,55,65);

INSERT INTO student\_marks VALUES(1012, 2011, 78,79,78);

INSERT INTO student\_marks VALUES(1013, 2011, 66,74,88);

INSERT INTO student\_marks VALUES(1014, 2011, 65,64,90);

INSERT INTO student\_marks VALUES(1015, 2011, 78,88,65);

INSERT INTO student\_marks VALUES(1016, 2011, 65,86,54);

INSERT INTO student\_marks VALUES(1017, 2011, 67,79,49);

INSERT INTO student\_marks VALUES(1018, 2011, 72,55,55);

INSERT INTO student\_marks VALUES(1019, 2011, 71,59,58);

INSERT INTO student\_marks VALUES(1020, 2011, 55,45,78);

INSERT INTO student\_marks VALUES(1021, 2011, 87,54,65);

* **Staff\_Masters:**

INSERT INTO staff\_masters VALUES(100001,'Arvind',102,30,'15-Jan-03','15-Jan-80','Bangalore',100006,17000);

INSERT INTO staff\_masters VALUES(100002,'Shyam',102,20,'17-Feb-02','18-Feb-80','Chennai',100007,20000);

INSERT INTO staff\_masters VALUES(100003,'Mohan',102,10,'19-Jan-02','23-Mar-80','Mumbai',100006,24000);

INSERT INTO staff\_masters VALUES(100004,'Anil',102,20,'11-Mar-01','22-Apr-77','Hyderabad',100006,20000);

INSERT INTO staff\_masters VALUES(100005,'John',106,10,'21-Jan-01','22-May-76','Bangalore',100007,32000);

INSERT INTO staff\_masters VALUES(100006,'Allen',103,30,'23-Apr-01','22-Jan-80','Chennai',100005,42000);

INSERT INTO staff\_masters VALUES(100007,'Smith',103,20,'12-Mar-02','19-Jul-73','Mumbai',100005,62000);

INSERT INTO staff\_masters VALUES(100008,'Raviraj',102,40,'11-Jan-03','17-Jun-80','Bangalore',100006,18000);

INSERT INTO staff\_masters VALUES(100009,'Rahul',102,20,'11-Dec-03','16-Jan-78','Hyderabad',100006,22000);

INSERT INTO staff\_masters VALUES(100010,'Ram',103,30,'17-Jan-02','17-Jan-79','Bangalore',100007,32000);

* **Book \_Masters:**

INSERT INTO book\_masters VALUES(10000001,'Let Us C++',2000,'Yashavant Kanetkar');

INSERT INTO book\_masters VALUES(10000002,'Mastersing VC++',2005,'P.J Allen');

INSERT INTO book\_masters VALUES(10000003,'JAVA Complete Reference',2004,'H.Schild');

INSERT INTO book\_masters VALUES(10000004,'J2EE Complete Reference',2000,'H. Schild');

INSERT INTO book\_masters VALUES(10000005,'Relational DBMS',2000,'B.C. Desai');

INSERT INTO book\_masters VALUES(10000006,'Let Us C',2000, 'Yashavant Kanetkar');

INSERT INTO book\_masters VALUES(10000007,'Intoduction To Algorithams',2001,'Cormen');

INSERT INTO book\_masters VALUES(10000008,'Computer Networks',2000,'Tanenbaum');

INSERT INTO book\_masters VALUES(10000009,'Introduction to O/S',2001,'Millan');

* **Book\_Transactions:**

INSERT INTO book\_transactions VALUES(10000006,1012,NULL,'02-Feb-2011','09-Feb-2011',NULL);

INSERT INTO book\_transactions VALUES(10000008,NULL,100006,'10-Mar-2011','17-Mar-2011','15-Mar-2011');

INSERT INTO book\_transactions VALUES(10000009,NULL,100010,'01-Apr-2011','08-Apr-2011','10-Apr-2011');

INSERT INTO book\_transactions VALUES(10000004,1015,NULL,'12-Feb-2011','19-Feb-2011',NULL);

INSERT INTO book\_transactions VALUES(10000005,NULL,100007,'14-Mar-2011','21-Mar-2011','21-Mar-2011');

INSERT INTO book\_transactions VALUES(10000007,NULL,100007,'01-Apr-2011','07-Apr-2011','06-Apr-2011');

INSERT INTO book\_transactions VALUES(10000007,NULL,100006,'01-Apr-2010','07-Apr-2010','06-Apr-2010');

INSERT INTO book\_transactions VALUES(10000005,1009,NULL,'31-May-2011','08-JUN-2011','08-JUN-2011');

commit;

# **Lab 1: Basic SQL Command**

1. **Retrieve the details (Name, Salary and dept code) of the staff who are working in department code 20, 30 and 40.**

Select staff\_name, staff\_sal, dept\_code from staff\_masters where dept\_code in (20,30,40);

1. **Display the code and total marks for every student. Total Marks will be calculated as subject1+subject2+subject3 .(Refer Student\_marks table )**

select student\_code, subject1+subject2+subject3 as "Total Marks" from student\_marks;

1. **List the Name and Designation code of the staff who have joined before Jan 2003 and whose salary range is between 12000 and 25000. Display the columns with user defined Column headers. Hint: Use As clause along with other operators**

select staff\_name as "Name", design\_code as "Code" from staff\_masters where hiredate < '01-JAN-2003' and staff\_sal between 12000 and 25000;

1. **List the code, name, and department number of the staff who have experience of 18 or more years and sort them based on their experience.**

select staff\_code code, staff\_name name, dept\_code as "department code", trunc((sysdate-hiredate)/365) as "experience" from staff\_masters where (sysdate-hiredate)/365>18 order by "experience";

1. **List the name, designation code, and salary for 10 years of the staff who are working in departments 10 and 30.**

select staff\_name, design\_code, staff\_sal\*10 from staff\_masters where dept\_code in (10, 30);

1. **Display name concatenated with dept code separated by comma and space. Name the column as ‘Student Info’.**

select student\_name || ', ' || dept\_code as "student info" from student\_masters;

1. **Display the staff details who do not have manager. Hint: Use is null**

select staff\_name from staff\_masters where mgr\_code is null;

1. **Write a query which will display name, department code and date of birth of all students who were born between January 1, 1981 and March 31, 1983. Sort it based on date of birth (ascending).Hint: Use between operator**

select student\_name, dept\_code from student\_masters where student\_dob between '01-Jan-1981' and '31-March-1983' order by student\_dob;

1. **Display the Book details that were published during the period of 2001 to 2004. Also display book details with Book name having the character ‘&’ anywhere.**

select \* from book\_masters where book\_pub\_year between 2001 and 2004 or book\_name like '%&%';

1. **Display the Book details where the records have the word “COMP” anywhere in the Book name.**

select \* from book\_masters where lower(book\_name) like '%comp%';

1. **List the details of the staff, whose names start with ‘A’ and end with ‘S’ or whose names contains N as the second or third character, and ending with either ‘N’ or ‘S’.**

select staff\_name from staff\_masters where lower(staff\_name) like 'a%s' or staff\_name like '\_n' or staff\_name like '\_\_n' or staff\_name like '%n' or staff\_name like '%s';

1. **List the names of the staff having ‘\_’ character in their name.**

select staff\_name from staff\_masters where staff\_name like '%\\_%';

1. Create the Customer table with the following columns.

CustomerId Number(5)

Cust\_Name varchar2(20)

Address1 Varchar2(30)

Address2 Varchar2(30)

* 1. **2.** Modify the Customer table Cust\_Name column of datatype with Varchar2(30), rename the column to CustomerName and it should not accept Nulls.

1. a) Add the following Columns to the Customer table.
   * 1. Gender Varchar2(1)
     2. Age Number(3)
     3. PhoneNo Number(10)

b) Rename the Customer table to Cust\_Table

1. Insert rows with the following data in to the Customer table.
2. Insert into customer values: (1000, ‘Allen’, ‘#115 Chicago’, ‘#115 Chicago’, ‘M’, ‘25, 7878776’)
3. In similar manner, add the below records to the Customer table:
   1. 1000, Allen, #115 Chicago, #115 Chicago, M, 25, 7878776
   2. 1001, George, #116 France, #116 France, M, 25, 434524
   3. 1002, Becker, #114 New York, #114 New York, M, 45, 431525
4. Insert the row given below in the Customer table and see the message generated by the Oracle server.
   1. 1002, John, #114 Chicago, #114 Chicago, M, 45, 439525
5. Delete all the existing rows from Customer table, and let the structure remain itself using TRUNCATE statement.
6. In the Customer table, add a column E\_mail.
7. Drop the E\_mail column from Customer table.
8. Add a new column EmailId to Customer table.
9. Mark EmailId column as unused before dropping it.
10. Drop the unused EmailId column from the Customer table.
11. Create the Suppliers table based on the structure of the Customer table. Include only the CustomerId, CustomerName, Address1, Address2, and phoneno columns.
12. Name the columns in the new table as SuppID, SName, Addr1, Addr2, and Contactno respectively.
13. Drop the above table and recreate the following table with the name CustomerMaster.
    * 1. CustomerId Number(5) Primary key(Name of constraint is CustId\_PK)
      2. CustomerName Varchar2(30) Not Null
      3. Addressl Varchar2(30) Not Null
      4. Address2 Varchar2(30)
      5. Gender Varchar2(l)
      6. Age Number(3)
      7. PhoneNo Number(10)
14. Create Employee table with same structure as EMP table.

SQL>Create table employee as select \* from emp where 1=3

SQL>desc employee

|  |  |  |
| --- | --- | --- |
| **Name** | **Null?** | **Type** |
| EMPNO | NOT NULL | NUMBER(4) |
| ENAME |  | VARCHAR2(10) |
| JOB |  | VARCHAR2(50) |
| MGR |  | NUMBER(4) |
| HIREDATE |  | DATE |
| SAL |  | NUMBER(7,2) |
| COMM |  | NUMBER(7,2) |
| DEPTNO |  | NUMBER(2) |

SQL>select \* from employee

1. Write a query to populate Employee table using EMP table’s empno, ename, sal, deptno columns.

SQL>select \* from employee

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **EMPNO** | **ENAME** | **JOB** | **MGR** | **HIREDATE** | **SAL** | **COMM** | **DEPTNO** |
| 7369 | SMITH |  |  |  | 800 |  | 20 |
| 7499 | ALLEN |  |  |  | 1600 |  | 30 |
| 7521 | WARD |  |  |  | 1250 |  | 30 |
| 7566 | JONES |  |  |  | 2975 |  | 20 |
| 7654 | MARTIN |  |  |  | 1250 |  | 30 |
| 7698 | BLAKE |  |  |  | 2850 |  | 30 |
| 7782 | CLARK |  |  |  | 2450 |  | 10 |
| 7788 | SCOTT |  |  |  | 3000 |  | 20 |
| 7839 | KING |  |  |  | 5000 |  | 10 |
| 7844 | TURNER |  |  |  | 1500 |  | 30 |
| 7876 | ADAMS |  |  |  | 1100 |  | 20 |
| 7900 | JAMES |  |  |  | 950 |  | 30 |
| 7902 | FORD |  |  |  | 3000 |  | 20 |
| 7934 | MILLER |  |  |  | 1300 |  | 10 |

14 rows selected.

1. Write a query to change the job and deptno of employee whose empno is 7698 to the job and deptno of employee having empno 7788.
2. Delete the details of department whose department name is ‘SALES’.
3. Write a query to change the deptno of employee with empno 7788 to that of employee having empno 7698.
4. Insert the following rows to the Employee table through parameter substitution.
   1. 1000,Allen, Clerk,1001,12-jan-01, 3000, 2,10
   2. 1001,George, analyst, null, 08 Sep 92, 5000,0, 10
   3. 1002, Becker, Manager, 1000, 4 Nov 92, 2800,4, 20
   4. 1003, 'Bill', Clerk, 1002, 4 Nov 92,3000, 0, 20
5. Create a Project Table with below structure

|  |  |  |
| --- | --- | --- |
| **Name** | **Null?** | **Type** |
| PROJID | NOT NULL | VARCHAR2(10) |
| PROJ\_NAME |  | VARCHAR2(25) |
| START\_DATE |  | DATE |
| END\_DATE |  | DATE |

* Insert Records into Project Table
* Create Employee\_Project Table that will have Empno and Project Id as Primary key. Insert records into Employee\_Project Table using inline view

1. Insert rows with the following data into the Customer table. 6000, John, #115 Chicago, #115 Chicago, M, 25, 7878776, 10000

* 6001, Jack, #116 France, #116 France, M, 25, 434524, 20000
* 6002, James, #114 New York, #114 New York, M, 45, 431525, 15000.50

Use parameter substitution.

1. Create a Savepoint named ‘SP1’ after third record in the Customer table .
2. Insert the below row in the Customer table.

6003, John, #114 Chicago, #114 Chicago, M, 45, 439525, 19000.60

1. Execute rollback statement in such a way that whatever manipulations done before Savepoint sp1 are permanently implemented, and the ones after Savepoint SP1 are not stored as a part of the Customer table.