CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY
FACULTY OF TECHNOLOGY & ENGINEERING
DEVANG PATEL INSTITUE OF ADVANCE TECHNOLOGY AND RESEARCH (DEPSTAR)

Subject Name: Database Management System **Semester:** 4
Subject Code: CE246 **Academic Year:** 2021-22

Practical List

Instructions:
Practical Format: Aim, Practical Implementation, Output (Screenshot), Conclusion.

Note: Following Practical(s) are to be implemented on Oracle.

<table>
<tr><th>Sr. No</th><th>Aim of the Practical</th><th>Hrs.</th></tr>
<tr><td>1</td><td>Evaluation of Database (File System, DBMS, RDBMS, DDBMS)</td><td></td></tr>
<tr><td>2</td><td>Introduction to Oracle (step by step installation, introduction of sql, plsql).</td><td>2</td></tr>
<tr><td>3</td><td>To study DDL-create and DML-insert commands.

(i) Create tables according to the following definition.
● CREATE TABLE DEPOSIT (ACTNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER (8,2), ADATE DATE);
● CREATE TABLE BRANCH (BNAME VARCHAR2(18), CITY VARCHAR2(18));
● CREATE TABLE CUSTOMERS (CNAME VARCHAR2(19), CITY VARCHAR2(18));
● CREATE TABLE BORROW (LOANNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER (8,2));

(ii) Insert the data as shown below.
DEPOSIT
<table>
<tr><th>ACTNO</th><th>CNAME</th><th>BNAME</th><th>AMOUNT</th><th>ADATE</th></tr>
<tr><td>100</td><td>ANIL</td><td>VRCE</td><td>1000.00</td><td>1-MAR-95</td></tr>
<tr><td>101</td><td>SUNIL</td><td>AJNI</td><td>5000.00</td><td>4-JAN-96</td></tr>
<tr><td>102</td><td>MEHUL</td><td>KAROLBAGH</td><td>3500.00</td><td>17-NOV-95</td></tr>
<tr><td>104</td><td>MADHURI</td><td>CHANDI</td><td>1200.00</td><td>17-DEC-95</td></tr>
<tr><td>105</td><td>PRMOD</td><td>M.G.ROAD</td><td>3000.00</td><td>27-MAR-96</td></tr>
<tr><td>106</td><td>SANDIP</td><td>ANDHERI</td><td>2000.00</td><td>31-MAR-96</td></tr>
<tr><td>107</td><td>SHIVANI</td><td>VIRAR</td><td>1000.00</td><td>5-SEP-95</td></tr>
<tr><td>108</td><td>KRANTI</td><td>NEHRU PLACE</td><td>5000.00</td><td>2-JUL-95</td></tr>
<tr><td>109</td><td>MINU</td><td>POWAI</td><td>7000.00</td><td>10-AUG-95</td></tr>
</table></td><td>4</td></tr>
</table>

BRANCH

BNAME	CITY
VRCE	NAGPUR
AJNI	NAGPUR
KAROLBAGH	DELHI
CHANDI	DELHI
DHARAMPETH	NAGPUR
M.G.ROAD	BANGLORE
ANDHERI	BOMBAY
VIRAR	BOMBAY
NEHRU PLACE	DELHI
POWAI	BOMBAY

CUSTOMERS

CNAME	CITY
ANIL	CALCUTTA
SUNIL	DELHI
MEHUL	BARODA
MANDAR	PATNA
MADHURI	NAGPUR
PRAMOD	NAGPUR
SANDIP	SURAT
SHIVANI	BOMBAY
KRANTI	BOMBAY
NAREN	BOMBAY

BORROW

LOANNO	CNAME	BNAME	AMOUNT
201	ANIL	VRCE	1000.00
206	MEHUL	AJNI	5000.00
311	SUNIL	DHARAMPETH	3000.00
321	MADHURI	ANDHERI	2000.00
375	PRMOD	VIRAR	8000.00
481	KRANTI	NEHRU PLACE	3000.00

From the above given tables perform the following queries:

(1) Describe deposit, branch.

(2) Describe borrow, customers.

(3) List all data from table DEPOSIT.

(4) List all data from table BORROW.

(5) List all data from table CUSTOMERS.

(6) List all data from table BRANCH.

(7) Give account no and amount of depositors.

(8) Give name of depositors having amount greater than 4000.

(9) Give name of customers who opened account after date '1-12-96'.

(10) Give name of city where branch karolbagh is located.

(11) Give account no and amount of customer having account opened between date 1-12-96 and 1-6-96.

(12) Give names of depositors having account at VRCE.

4 **Create the below given table and insert the data accordingly**.

Create Table **Job** (job_id, job_title, min_sal, max_sal)

COLUMN NAME	DATA TYPE
job_id	Varchar2(15)
job_title	Varchar2(30)
min_sal	Number(7,2)
max_sal	Number(7,2)

Create table **Employee** (emp_no, emp_name, emp_sal, emp_comm, dept_no, l_name, dept_name, job_id, location, manager_id, hiredate)

COLUMN NAME	DATA TYPE
emp_no	Number(3)
emp_name	Varchar2(30)
emp_sal	Number(8,2)
emp_comm	Number(6,1)
dept_no	Number(3)
l_name	Varchar2(30)
dept_name	Varchar2(30)
job_id	Varchar2(15)
location	Varchar2(15)
manager_id	Number(5)
hiredate	Date

Create table **deposit**(a_no,cname,bname,amount,a_date).

COLUMN NAME	DATA TYPE
a_no	Varchar2(5)
cname	Varchar2(15)
bname	Varchar2(10)
amount	Number(7,2)
a_date	Date

Create table **borrow** (loanno, cname, bname, amount).

COLUMN NAME	DATA TYPE
loanno	Varchar2(5)
cname	Varchar2(15)
bname	Varchar2(10)
amount	Varchar2(7,2)

4

Insert following values in the table **Employee**.

emp_	emp_nam	emp_sal	emp_co m	dept _	l_name	dept_name	job_id	location	manag id	hiredate
101	Smith	800		20	shah	machine learning	fi_mgr	toronto	105	09-aug-96
102	Snehal	1600	300	25	gupta	data science	lec	las vegas		14-mar-96
103	Adama	1100	0	20	wales	machine learning	mk_mgr	ontario	105	30-nov-95
104	Aman	3000		15	sharma	virtual reality	comp_op	mexico	12	02-oct-97
105	Anita	5000	50,000	10	patel	big data analytics	comp_op	germany	107	01-jan-98
106	Sneha	2450	24,500	10	joseph	big data analytics	fi_acc	melbourne	105	26-sep-97
107	Anamika	2975		30	jha	artificial intelligence	it_prog	new york		15jul-97

Insert following values in the table **Job**.

job_id	job_name	min_sal	max_sal
it_prog	Programmer	4000	10000
mk_mgr	Marketing manager	9000	15000
fi_mgr	Finance manager	8200	12000
fi_acc	Account	4200	9000
lec	Lecturer	6000	17000
comp_op	Computer Operator	1500	3000

Insert following values in the table **deposit**.

A_no	cname	Bname	Amount	date
101	Anil	andheri	7000	01-jan-06
102	sunil	virar	5000	15-jul-06
103	jay	villeparle	6500	12-mar-06
104	vijay	andheri	8000	17-sep-06
105	keyur	dadar	7500	19-nov-06
106	mayur	borivali	5500	21-dec-06

Perform following queries

(1) Retrieve all data from **employee, jobs and deposit.**
(2) Give details of account no. and deposited rupees of customers having account opened between dates **01-01-06 and 25-07-06**.
(3) Display all jobs with minimum salary is greater than 4000.
(4) Display name and salary of employee whose department no is 20. Give alias name to name of employee.
(5) Display employee no, name and department details of those employee whose department lies **in (10,20).**
(6) Display the **non-null** values of employees.
(7) Display name of customer along with its account no **(both column should be displayed as one)** whose amount is not equal to 8000 Rs.
(8) Display the content of job details with minimum salary **either 2000 or 4000**.

To study various options of <u>LIKE</u> predicate

(1) Display all employee whose name start with 'A' and third character is ''a'.
(2) Display name, number and salary of those employees whose name is 5 characters long and first three characters are 'Ani'.
(3) Display all information of employee whose second character of name is either 'M' or 'N'.
(4) Find the list of all customer name whose branch is in 'andheri' or 'dadar' or 'virar'.
(5) Display the job name whose first three character in job id field is 'FI_'.
(6) Display the title/name of job who's last three character are '_**MGR**' and their maximum salary is greater than **Rs 12000**.
(7) Display the non-null values of employees and also employee name second character should be 'n' and string should be 5-character long.
(8) Display the null values of employee and also employee name's third character should be 'a'.
(9) What will be output if you are giving LIKE predicate as '%_%' ESCAPE '\'

5	**To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables.** (1) List total deposit from deposit. (2) List total loan from karolbagh branch (3) Give maximum loan from branch vrce. (4) Count total number of customers (5) Count total number of customer's cities. (6) Create table supplier from employee with all the columns. (7) Create table sup1 from employee with first two columns. (8) Create table sup2 from employee with no data (9) Insert the data into sup2 from employee whose second character should be 'n' and string should be 5 characters long in employee name field. (10) Delete all the rows from sup1. (11) Delete the detail of supplier whose sup_no is 103. (12) Rename the table sup2. (13) Destroy table sup1 with all the data. (14) Update the value dept_no to 10 where second character of emp. name is 'm'. (15) Update the value of employee name whose employee number is 103. (16) Add one column phone to employee with size of column is 10. (17) Modify the column emp_name to hold maximum of 30 characters. (18) Count the total no as well as distinct rows in dept_no column with a condition of salary greater than 1000 of employee (19) Display the detail of all employees in ascending order, descending order of their name and no. (20) Display the dept_no in ascending order and accordingly display emp_comm in descending order. (21) Update the value of emp_comm to 500 where dept_no is 20. (22) Display the emp_comm in ascending order with null value first and accordingly sort employee salary in descending order. (23) Display the emp_comm in ascending order with null value last and accordingly sort emp_no in descending order.	4
6	**To study Single-row functions.** (1) Write a query to display the current date. Label the column Date (2) For each employee, display the employee number, salary, and salary increased by 15% and expressed as a whole number. Label the column New Salary (3) Modify your query no (2) to add a column that subtracts the old salary from the new salary. Label the column Increase	4

	(4) Write a query that displays the employee's names with the first letter capitalized and all other letters lowercase, and the length of the names, for all employees whose name starts with J, A, or M. Give each column an appropriate label. Sort the results by the employees' last names. (5) Write a query that produces the following for each employee: <employee last name> earns <salary> monthly (6) Display the name, date, number of months employed and day of the week on which the employee has started. Order the results by the day of the week starting with Monday. (7) Display the date of emp in a format that appears as Seventh of June 1994 12:00:00 AM. (8) Write a query to calculate the annual compensation of all employees (sal +comm.).	
7	**Displaying data from Multiple Tables (join)** (1) Give details of customers ANIL. (2) Give name of customer who are borrowers and depositors and having living city nagpur (3) Give city as their city name of customers having same living branch. (4) Write a query to display the last name, department number, and department name for all employees. (5) Create a unique listing of all jobs that are in department 30. Include the location of the department in the output (6) Write a query to display the employee name, department number, and department name for all employees who work in NEW YORK. (7) Display the employee last name and employee number along with their manager's last name and manager number. Label the columns Employee, Emp#, Manager, and Mgr#, respectively. (8) Create a query to display the name and hire date of any employee hired after employee "smith".	4

8	**To apply the concept of Aggregating Data using Group functions.** (1) List total deposit of customer having account date after 1-jan-96. (2) List total deposit of customers living in city Nagpur. (3) List maximum deposit of customers living in bombay. (4) Display the highest, lowest, sum, and average salary of all employees. Label the columns Maximum, Minimum, Sum, and Average, respectively. Round your results to the nearest whole number. (5) Write a query that displays the difference between the highest and lowest salaries. Label the column DIFFERENCE. (6) Create a query that will display the total number of employees and, of that total, the number of employees hired in 1995, 1996, 1997, and 1998 (7) Find the average salaries for each department without displaying the respective department numbers. (8) Write a query to display the total salary being paid to each job title, within each department. (9) Find the average salaries > 2000 for each department without displaying the respective department numbers. (10) Display the job and total salary for each job with a total salary amount exceeding 3000 and sorts the list by the total salary. (11) List the branches having sum of deposit more than 5000 and located in city bombay.	4
9	**To solve queries using the concept of sub query.** (1) Write a query to display the last name and hire date of any employee in the same department as smith. Exclude smith (2) Give name of customers who are depositors having same branch city of mr. sunil. (3) Give deposit details and loan details of customer in same city where pramod is living. (4) Create a query to display the employee numbers and last names of all employees who earn more than the average salary. Sort the results in ascending order of salary. (5) Give names of depositors having same living city as mr. anil and having deposit amount greater than 2000 (6) Display the last name and salary of every employee who reports to ford. (7) Display the department number, name, and job for every employee in the Accounting department. (8) List the name of branch having highest number of depositors. (9) Give the name of cities where in which the maximum numbers of branches are located. (10) Give name of customers living in same city where maximum depositors are located.	4

10	**Manipulating Data** (1) Give 10% interest to all depositors. (2) Give 10% interest to all depositors having branch vrce (3) Give 10% interest to all depositors living in nagpur and having branch city bombay. (4) Write a query which changes the department number of all employees with empno 7788's job to employee 7844'current department number. (5) Transfer 10 Rs from account of anil to sunil if both are having same branch. (6) Give 100 Rs more to all depositors if they are maximum depositors in their respective branch. (7) Delete depositors of branches having number of customers between 1 to 3. (8) Delete deposit of vijay. (9) Delete borrower of branches having average loan less than 1000.	4
11	**Add and Remove constraint** (1) Add primary key constraint on job_id in job table. (2) Add foreign key constraint on employee table referencing job table. (3) Add composite primary key on lock table (lock table does not exist, while creating table add composite key) (4) Remove primary key constraint on job_id (5) Remove foreign key constraint on employee table	2
12	**Data Dictionary and E-R Diagram** Suppose that as the database administrator (DBA) in a hotel, you have to set up a database to capture all the following information that the hotel needs to maintain. • The hotel offers three types of ROOMS, including single room, double room, and triple room. Every room is Identified by its unique number. • Every employee at the hotel is either a receptionist, a cleaning staff, or a kitchen staff. Each RECEP-TIONIST is identified with her/his name, employee number and years of experience. Receptionists are responsible for ensuring the room is clean before the room is assigned to the guest. Thus, they assign a single CLEANING STAFF to clean each room every morning and/or whenever it is required. Note that the same room may need to be cleaned several times on the same day, before it gets reassigned. For each cleaning assignment, the date and the status need to be provided. The KITCHEN STAFF is characterized by their specific responsibilities, e.g. being a cook or a waiter. The cleaning staff and the kitchen staff are also uniquely identified by their employee number.	2

	• Receptionists welcome GUESTS and upon presentation of their valid traveling documents, they allocate a unique room to each guest and specify one group of facilities which is accessible to the guest during his stay. Guests are uniquely identified with their passport number but other necessary information are also recorded about the guests, including: name, phone numbers, arrival date, departure date, and credit card number. Each FACILITY GROUP contains specific set of facilities, e.g. the bar or gym, in order to be used by the guests. The arrival and departure dates of a guest will in turn determine the occupation of a specific room. • A guest can be accompanied with one person to have a double room or at most two people for a triple room. Each ACCOMPANYING person is identified by his/her name. **(12.1)** Design Data Dictionary for above problem. **(12.2)** Considering the descriptions given above, draw an ER diagram for the database, representing entities, attributes, and relationships. *Hint:* Pay attention to clear identification of different kinds of attributes (e.g. multi-valued, derived, and Primary key), the total participation for the relationship sets and generalization (or specialization) of entities.	
13	**To perform basic PL/SQL blocks** Write a PL-SQL block to find Sum and average of three numbers.	2
14	**To perform the concept of loop** Find the factorial of a number in pl/sql using for, While and Simple Loop.	2
15	**To understand the concept of "select into" and "% type" attribute**. Create an EMPLOYEES table that is a replica of the EMP table. Add a new column, STARS, of VARCHAR2 data type and length of 50 to the EMPLOYEES table for storing asterisk (*). Create a PL/SQL block that rewards an employee by appending an asterisk in the STARS column for every Rs1000/- of the employee's salary. For example, if the employee has a salary amount of Rs8000/-, the string of asterisks should contain eight asterisks. If the employee has a salary amount of Rs12500/-, the string of asterisks should contain 13 asterisks. Update the STARS column for the employee with the string of asterisks.	2

16	**To perform the concept of cursor** (a) Display all the information of EMP table using %ROWTYPE. (b) Create a PL/SQL block that does the following: In a PL/SQL block, retrieve the name, salary, and MANAGER ID of the employees working in the particular department. Take Department Id from user. If the salary of the employee is less than 1000 and if the manager ID is either 7902 or 7839, display the message <<last name>> Due for a raise. Otherwise, display the message <<last_name>> Not due for a raise.	2
17	**To perform the concept of trigger** Write a PL/SQL block to update the salary where deptno is 10. Generate trigger that will store the original record in other table before updation take place.	2
18	**To solve queries using the concept of View.** (1) Write a query to create a view for those employee belongs to the location New York. (2) Write a query to create a view for all employee with columns emp_id, emp_name, and job_id. (3) Write a query to find the salesmen of the location New York who having salary more than 3000. (4) Write a query to create a view to getting a count of how many employee we have at each department.	2
19	**To perform the concept of function and procedure** Write a PL/SQL block to update the salary of employee specified by empid. If record exist, then update the salary otherwise display appropriate message. Write a function as well as procedure for updating salary.	4
20	**To perform the concept of exception handler** Write a PL/SQL block that will accept the employee code, amount and operation. Based on specified operation amount is added or deducted from salary of said employee. Use user defined exception handler for handling the exception.	4
21	**To perform the concept of package** Create and invoke a package that contains private and public constructs.	2