SAINTGITS College of Engineering
Master of Computer Applications (MCA) Programme

Semester III (2017 – 2020) & Semester I (2018 - 2020)
RLMCA 231 – Database Lab
Laboratory Plan (Lesson Plan)

Cycle No	Course Outcomes	Cycle Problem Topic	Date of Practice
1	1	Imagine that an organization has many divisions. Each division consists of many branches and each branch consists of many employees. Draw an ER Diagram and create the schema for the database objects – **ER Diagram 1**	
2		Given the following rules, create an appropriate ERD Diagram and the schema for the database objects • A company operates many departments • Each department employs one or more employees • Each of the employee may or may not have one or more dependents • Each employee may or may not have an employee history **ER Diagram 2**	
3		Draw the ER Diagram that models the information requirements in the following scenario. Create the schema A manufacturing company has several assembly plants in different cities. Each plant produces one product that requires certain parts in the assembly. Parts are from appropriate suppliers located in different cities – **ER Diagram 3**	
4		Use the following business rules to create the ER Diagram. Write all appropriate connections and cardinalities in the ER Diagram • A department employs many employees but each employee is employed by one department • A division operates many departments • An employee may be assigned many projects. A project may have many employees assigned to it • A project must have at least one employee assigned to it • One of the employee manages each department. Each department is managed by one employee	

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<table>
<tr><td></td><td rowspan="3"></td><td>

- One of the employees run each division, each division is run by one employee – **ER Diagram 4**

</td><td></td></tr>
<tr><td>5</td><td>College consists of several departments. Department employ teachers and programme courses. Course is conducted in semesters. Each semester comprises of several subjects. Students attend the class to learn a subject. Subjects are assessed by examinations

Given the above rules, create the appropriate Entity Relationship Diagram (ERD) using Chen methodology or Crow's Foot technique– ER Diagram 5</td><td></td></tr>
<tr><td>6</td><td>Create a database object, TABLE (Organization), with the following attributes and constraints based on ER Diagram 1

<table>
<tr><th>SNo</th><th>Column Name</th><th>Data Type</th><th>Length</th><th>Constraint</th><th>Remarks</th></tr>
<tr><td>1</td><td>Orgn_Id</td><td>NUMBER</td><td>8</td><td>NOT NULL, PK</td><td>Organization Id</td></tr>
<tr><td>2</td><td>Orgn_Name</td><td>VARCHAR</td><td>50</td><td>NOT NULL</td><td>Organization Name</td></tr>
<tr><td>3</td><td>Orgn_CEO</td><td>VARCHAR</td><td>25</td><td>NULL</td><td>Organization Chairman</td></tr>
<tr><td>4</td><td>Orgn_Business</td><td>VARCHAR</td><td>25</td><td>NOT NULL, CHECK</td><td>Type of business of organization</td></tr>
<tr><td>5</td><td>Orgn_Contact</td><td>VARCHAR</td><td>25</td><td>NULL</td><td>Organization contact person</td></tr>
<tr><td>6</td><td>Orgn_Phone_No</td><td>VARCHAR</td><td>15</td><td>NULL</td><td>Organization phone number</td></tr>
</table>
</td><td></td></tr>
<tr><td>6</td><td>1</td><td>Create a database object, TABLE (Division), with the following attributes and constraints
<table>
<tr><th>SNo</th><th>Column Name</th><th>Data Type</th><th>Length</th><th>Constraint</th><th>Remarks</th></tr>
<tr><td>1</td><td>Divn_Id</td><td>NUMBER</td><td>8</td><td>NOT NULL</td><td>Division Id</td></tr>
<tr><td>2</td><td>Divn _Name</td><td>VARCHAR</td><td>50</td><td>NOT NULL</td><td>Division Name</td></tr>
<tr><td>3</td><td>Divn _Head</td><td>VARCHAR</td><td>50</td><td>NOT NULL</td><td>Division Head</td></tr>
<tr><td>4</td><td>Divn _Location</td><td>VARCHAR</td><td>25</td><td>NOT NULL</td><td>City where division is located</td></tr>
<tr><td>5</td><td>Divn _Contact</td><td>VARCHAR</td><td>25</td><td>NULL</td><td>Division contact person</td></tr>
<tr><td>6</td><td>Divn _Phone_No</td><td>VARCHAR</td><td>15</td><td>NULL</td><td>Division</td></tr>
</table>
</td><td></td></tr>
</table>

						phone number	
		7	Orgn_Id	NUMBER	8	NOT NULL	Organization Id

7

Create a database object, TABLE (Branch), with the following attributes and constraints. Create the constraints at the *table* level

SNo	Column Name	Data Type	Length	Constraint	Remarks
1	Bran_Id	NUMBER	8	NOT NUL	Branch Id.
2	Bran _Name	VARCHAR	25	NOT NULL	Branch Name. City where branch is located
3	Bran _ Head	VARCHAR	25	NULL	Branch Manager's name
4	Bran _Total_Emp	NUMBER	25	NOT NULL	Total employees in the branch
5	Bran _Contact	VARCHAR	25	NULL	Branch contact person
6	Bran _Phone_No	VARCHAR	15	NOT NULL, CHECK	Branch phone number
7	Divn_Id	NUMBER	8	NOT NULL	Division Id
	Create PK and FK for the table after defining all columns				

7

Create a database object, TABLE (Employee), with the following attributes and constraints. Create the constraints at the *table* level

SNo	Column Name	Data Type	Length	Constraint	Remarks
1	Emp_Id	NUMBER	8	NOT NULL	Employee Id. PK
2	Emp _FName	VARCHAR	25	NOT NULL	Employee First Name
3	Emp_LName	VARCHAR	25	NOT NULL	Employee Last Name
4	Emp_Salary	NUMBER	10,2	NOT NULL	Employee Salary

		5	Emp_Mgr_Id	NUMBER	8	NULL	Employee Manager Id
		6	Emp_Dept	VARCHAR	15	NOT NULL	Employee Department
		7	Emp_Job	VARCHAR	15	NOT NULL	Employee Designation
		8	Emp_Join_Date	DATE		NOT NULL	Employee Join Date
		9	Emp_Gender	CHAR	1	NOT NULL	Employee Gender
		10	Bran_Id	NUMBER	8	NOT NULL	Foreign Key
			Create PK and FK for the table after defining all columns				
8	**1**	• Change the structure of the TABLE,Organization to *add* a new column named'Orgn_Regn_No'. Data type – VARCHAR, Length 50, NULL • Change the structure of the TABLE,Organization to *add* a new column named 'Orgn_Address'. Data type – VARCHAR, Length 50, NULL • Change the structure of the TABLE,Organization to *add* a new column named 'Orgn_Web_Site'. Data type – VARCHAR, Length 50, NULL • Change the structure of the TABLE,Organization to *add* a new column named 'Orgn_Email'. Data type – VARCHAR, Length 50, NULL • Change the structure of the TABLE,Organization to *add* a new column named 'Orgn_Start_Date'. Data type – DATE, NOT NULL. Set the default value as sysdate • Change the structure of the TABLE,Organization to *modify* the column named'Orgn_Business'. Data type – VARCHAR, Length 50, NOT NULL • Change the structure of the TABLE,Organization to *modify* the column named'Orgn_Reg_No'. Data type – VARCHAR, Length 30, NOT NULL • Change the structure of the TABLE,Organization to *modify* the column named'Orgn_Phone_No'. Data type – NUMBER, Length 15, NOT NULL • Change the structure of the TABLE,Organization to *drop* the column named 'Orgn_Web_Site' • Change the structure of the TABLE,Organization to *drop* the column named 'Orgn_Email' *Final structure of the table, Organization is as follows*						

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		<table><tr><th>SNo</th><th>Column Name</th><th>Data Type</th><th>Length</th><th>Constraint</th><th>Remarks</th></tr><tr><td>1</td><td>Orgn_Id</td><td>NUMBER</td><td>8</td><td>NOT NULL, PK</td><td>Organization Id</td></tr><tr><td>2</td><td>Orgn_Name</td><td>VARCHAR</td><td>50</td><td>NOT NULL, UNIQUE</td><td>Organization Name</td></tr><tr><td>3</td><td>Orgn_Regn_No</td><td>VARCHAR</td><td>30</td><td>NOT NULL</td><td>Organization Registration Details</td></tr><tr><td>4</td><td>Orgn_CEO</td><td>VARCHAR</td><td>25</td><td>NULL</td><td>Organization Chairman</td></tr><tr><td>5</td><td>Orgn_Business</td><td>VARCHAR</td><td>50</td><td>NOT NULL, CHECK</td><td>Type of business of organization</td></tr><tr><td>6</td><td>Orgn_Address</td><td>VARCHAR</td><td>50</td><td>NULL</td><td>Organization address</td></tr><tr><td>7</td><td>Orgn_Contact</td><td>VARCHAR</td><td>25</td><td>NULL</td><td>Organization contact person</td></tr><tr><td>8</td><td>Orgn_Phone_No</td><td>NUMBER</td><td>15</td><td>NULL</td><td>Organization phone number</td></tr><tr><td>9</td><td>Orgn_Start_Date</td><td>DATE</td><td></td><td>NULL</td><td>Organization start date</td></tr></table>	
9	**1**	• Add a primary key constraint to the table, Division for the column, Divn_Id • Add a foreign key constraint to the table, Division for the column, Orgn_Id • Add a UNIQUE constaint to the table, Division for the column, Divn_Phone_No • Drop the primary key constraint for the table, Branch • Drop the foreign key constraint for the table, Branch • Add a primary key constraint to the table, Branch for the column, Bran_Id • Add a foreign key constraint to the table, Branch for the column, Divn_Id • Add a CHECK constraint to the table, Branch for the column, Bran_Total_Emp so that it is greater than zero always • Add a CHECK constraint to the table, Employee for the column, Emp_Salary so that it is greater than zero always	

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- Add a CHECK constraint to the table, Employee for the column, Emp_Dept so that user can enter only values 'Finance', 'Human Resource', 'Purchase', 'Logistics', 'Sales & Marketing', 'Management', 'Operation'
- Change the structure of the TABLE,Employee for the column named 'Emp_Join_Date'. Set the default value as sysdate
- Add a CHECK constraint to the table, Employee for the column, Emp_Gender so that user can enter only values 'M' or 'F'

9

1

Create a database object, TABLE (Organization / Company), with the following attributes and constraints based on ER Diagram 2. *Do not create the table. It has been aleady created*

SNo	Column Name	Data Type	Length	Constraint	Remarks
1	Orgn_Id	NUMBER	8	NOT NULL, PK	Organization Id
2	Orgn_Name	VARCHAR	50	NOT NULL, UNIQUE	Organization Name
3	Orgn_Regn_No	VARCHAR	30	NOT NULL	Organization Registration Number
4	Orgn_CEO	VARCHAR	25	NULL	Organization Chairman
5	Orgn_Business	VARCHAR	50	NOT NULL, CHECK	Type of business of organization
6	Orgn_Address	VARCHAR	50	NULL	Organization address
7	Orgn_Contact	VARCHAR	25	NULL	Organization contact person
8	Orgn_Phone_No	NUMBER	15	NOT NULL	Organization phone number
9	Orgn_Start_Date	DATE		NOT NULL	Organization start date

10

Create a database object, TABLE (Department), with the following attributes and constraints based on ER Diagram 2 .

SNo	Column Name	Data Type	Length	Constraint	Remarks
1	Dept_Id	NUMBER	8	NOT NULL, PK	Department Id

		2	Dept _Name	VARCHAR	50	NOT NULL	Department Name
		3	Dept_Head	VARCHAR	30	NULL	Department Head
		4	Dept _ Extn_No	NUMBER	8	NULL	Department Intercomm Number
		5	Dept_ Location	VARCHAR	50	NULL	Department Location

11	**1**	• Change the structure of the TABLE,Department to *add* a new column named'Orgn_Id'. Data type – NUMBER, Length 8, NOT NULL • Add a foreign key constraint to the table, Department for the column, 'Orgn_Id' • Change the structure of the TABLE, Employee to *drop* the column named 'Emp_Dept' • Change the structure of the TABLE,Employee to *add* a new column named'Dept_Id'. Data type – NUMBER, Length 8, NOT NULL • Add a foreign key constraint to the table, Employee for the column, 'Dept_Id'	

Final structure of the table, Department is as follows

SNo	Column Name	Data Type	Length	Constraint	Remarks
1	Dept_Id	NUMBER	8	NOT NULL, PK	Department Id
2	Dept _Name	VARCHAR	50	NOT NULL	Department Name
3	Dept_Head	VARCHAR	30	NULL	Department Head
4	Dept _ Extn_No	NUMBER	8	NULL	Department Intercomm Number
5	Dept_ Location	VARCHAR	50	NULL	Department Location
6	Orgn_Id	NUMBER	8	NOT NULL, FK	Organization Id

Final structure of the table, Employee is as follows

SNo	Column Name	Data Type	Length	Constraint	Remarks
1	Emp_Id	NUMBER	8	NOT NULL	Employee Id. PK

		2	Emp _FName	VARCHAR	25	NOT NULL	Employee First Name
		3	Emp_LName	VARCHAR	25	NOT NULL	Employee Last Name
		4	Emp_Salary	NUMBER	10,2	NOT NULL	Employee Salary
		5	Emp_Mgr_Id	NUMBER	8	NULL	Employee Manager Id
		6	Dept_Id	NUMBER	8	NOT NULL FK	Department Id
		7	Emp_Job	VARCHAR	15	NOT NULL	Employee Designation
		8	Emp_Join_Date	DATE		NULL	Employee Join Date
		9	Emp_Gender	CHAR	1	NOT NULL	Employee Gender
		10	Bran_Id	NUMBER	8	NOT NULL	Foreign Key
12	**1**	Create a database object, TABLE (Dependent), with the following attributes and constraints based on ER Diagram 2. Create the constraints at the *table* level					
		SNo	Column Name	Data Type	Length	Constraint	Remarks
		1	Dpen_Id	NUMBER	8	NOT NULL, PK	Dependent Id
		2	Dpen _Name	VARCHAR	50	NOT NULL	Dependent Name
		3	Dpen_Relationship	VARCHAR	30	NULL	Dependent Relationship
		4	Dpen_Gender	CHAR	1	NOT NULL, CHECK	Dependent Gender – ‘M’ or ‘F’
		5	Dpen_DOB	DATE		NULL, Default sysdate	Dependent date of birth
		6	Emp_Id	NUMBER	8	NOT NULL, PK,FK	Employee Id
			Create a compound PK for the table based on columns, Emp_Id & Dpen_Id				
12		Create a database object, TABLE (Employee History, Emp_History), with the following attributes and constraints based on ER Diagram 2. Create the constraints at the *table* level					

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			SNo	Column Name	Data Type	Length	Constraint	Remarks
			1	Emp_Hist_Id	NUMBER	8	NOT NULL, PK	History Id
			2	Emp_Hist_Desc	VARCHAR	50	NOT NULL	History Description
			3	Emp_Hist_Date	DATE		NOT NULL, Default sysdate	Date of creation of history
			4	Emp_Id	NUMBER	8	NOT NULL, PK,FK	Employee Id
				Create a compound PK for the table based on columns, Emp_Id & Emp_Hist_Id				
13	1	Create a database object, TABLE (Doctor), with the following attributes. *(Not related to ER Diagram – Additional exercise)* Create the constraints at the *table* level						
			SNo	Column Name	Data Type	Length	Constraint	Remarks
			1	Doct_Id	NUMBER	8	NOT NULL, PK	Doctor Id
			2	Doct_Name	VARCHAR	50	NOT NULL	Doctor Name
			3	Doct_Address	VARCHAR	50	NULL	Doctor Address
			4	Doct_City	VARCHAR	50	NULL	Doctor City
				Create PK for the table after defining all columns				
13		Create a database object, TABLE (Hospital), with the following attributes. *(Not related to ER Diagram – Additional exercise)* Create the constraints at the *table* level						
			SNo	Column Name	Data Type	Length	Constraint	Remarks
			1	Hosp_Id	NUMBER	8	NOT NULL, PK	Hospital Id
			2	Hosp_Name	VARCHAR	50	NOT NULL	Hospital Name
			3	Hosp_Street	VARCHAR	50	NULL	Hospital Street
			4	Hosp_City	VARCHAR	50	NULL	Hospital City

		Create PK for the table after defining all columns	
14		Create a database object, TABLE (Visit), with the following attributes. *(Not related to ER Diagram – Additional exercise)* Create the constraints at the *table* level SNo | Column Name | Data Type | Length | Constraint | Remarks 1 | Doct_Id | NUMBER | 8 | NOT NULL, PK | Doctor Id 2 | Hosp_Id | VARCHAR | 50 | NOT NULL,PK | Hospital Id 3 | Visit_Date | DATE | | NOT NULL, Default Sysdate | Visit Date | Create PK for the table after defining all columns	
15	**1**	Create a database object, TABLE (Designation), with the following attributes and constraints based on ER Diagram 5. (***Before proceed with the exercise, ask the lab instructor. Very important***) SNo | Column Name | Data Type | Length | Constraint | Remarks 1 | Desn_Id | NUMBER | 8 | NOT NULL, PK | Designation Id 2 | Desn _Name | VARCHAR | 50 | NOT NULL | Designation Name 3 | Desn_Low_Salary | NUMBER | 8 | NULL | Designation Low Salary 4 | Desn_High_Salary | NUMBER | 8 | NULL | Designation Low Salary 5 | Desn_Grade | CHAR | 5 | NULL | Designation Grade Follow and execute the steps carefully • Create a database object, TABLE (Designation) with ONLY ONE column named, 'Desn_Name' as follows ➢ CREATE TABLE Designation AS SELECT DISTINCT Emp_Job AS Desn_Name FROM Employee ➢ ALTER TABLE Designation ADD (Desn_Id NUMBER,	

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<table>
<tr><td></td><td></td><td>Desn_Low_Salary NUMBER, Desn_High_Salary NUMBER, Desn_Grade CHAR(5))
➢ ……*See the demo*
• Change the structure of the TABLE,Employee to *drop* the column named ‘Emp_Job’
• Add a foreign key constraint to the table, Employee for the column, Desn_Id
• Add a foreign key constraint to the table, Division for the column, Orgn_Id
• Update the table, Employee for the column, Desn_Id with the value (Check the Employee data file, ‘Emp_Data.txt’)
• Change the structure of the TABLE,Employee to *add* a new column named’Emp_Comm’. Data type – NUMBER, Length (8,2) , NULL</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>15</td><td>1</td><td>Create a database object, TABLE (Person), with the following attributes. (Not related to ER Diagram – <u>Additional exercise</u>) Create the constraints at the table level
<table>
<tr><th>SNo</th><th>Column Name</th><th>Data Type</th><th>Length</th><th>Constraint</th><th>Remarks</th></tr>
<tr><td>1</td><td>Person_Id</td><td>NUMBER</td><td>8</td><td>NOT NULL, PK</td><td>Person Id</td></tr>
<tr><td>2</td><td>Person _Name</td><td>VARCHAR</td><td>50</td><td>NOT NULL</td><td>Person Name</td></tr>
<tr><td>3</td><td>Person_Join_Date</td><td>DATE</td><td></td><td>NOT NULL</td><td>Person Join Date</td></tr>
<tr><td>4</td><td>Person_Age</td><td>NUMBER</td><td>8</td><td>NOT NULL</td><td>Person Age</td></tr>
<tr><td>5</td><td>Person_Marital_Status</td><td>VARCHAR</td><td>1</td><td>NOT NULL</td><td>Marital Status</td></tr>
<tr><td>6</td><td>Person_ Gender</td><td>VARCHAR</td><td>1</td><td>NOT NULL</td><td>Person Gender</td></tr>
<tr><td>7</td><td>Person_Dept</td><td>VARCHAR</td><td>4</td><td>NOT NULL</td><td>Department</td></tr>
<tr><td></td><td colspan="5">Create PK for the table after defining all columns</td></tr>
</table></td><td></td></tr>
<tr><td>15</td><td>1</td><td>• Update the columns, organization contact (person name or receptionist) and start date for all organizations. Year of the organization stat date is to be from 1998 to 2005
• Update division contact (person name) of all divisions whose division ID is from 11 to 15
• Update the branch contact of all branches same as division contact</td><td></td></tr>
</table>

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		• Update the branch head of all branches whose id is 110 / 131 / 171 • Update the employee join date for all employees. Year of the join date is to be from 2002 to 2015	
16	**1**	1. Find all organizations which has the business manufacturing 2. Find all organizations which start with the letter 'B' or 'S' 3. List all organizations which started in the year 2010 4. Find out all unique divisions whose organization is doing manufacturing business 5. Find all the divisions whose organization contact is null 6. Find out all the branches belong to a division 7. Find out the total number of employees worked in a particular division 8. List all the branches of all the organizations in ascending order 9. Find out all the employees who belong to a branch	
16	**1**	1. Display Organization Name, Division Name, Branch Name, Employee Name in descending order 2. Display organization name whose id is 3,4 and 5 3. Display division name whose id is an odd number 4. Display employee names who belong to division 11, 13 and 17 5. Display divisions who does not have any branches at all 6. Display employee names whose name starts with ‘f’ or ‘r’ 7. Find out how many employees are there in each branch 8. Find out the employees who belong to a particular company, ‘Microsoft Corporation’ 9. Update the join date for all employees. Year of the date is to be from 1998 to 2010	

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16	**1**	10. Display all the employees who joined on Jan 01, YYYY 11. Find out the name of employees whose name and branch name starts with 'a' 12. Find out how many employees are there in the branch ' Dehradun' 13. Write a query to display the names of employees whose first letter is a vowel 14. Change the length of the columns EMP_FNAME and EMP_LNAME to 60 15. Write a query to find the length of the names of all employees 16. Write a query to generate CSVs from the employee table 17. Get a list of divisions for which no employees are employed 18.Get the list of branches whose divison name is 'Planning' 19.Get the list of divisions where employee with the name 'anju' / 'ajith' is working 20.Generate the list of employees who are working in the company 'Delta Corporation' 21.Display the list of employees whose first letter of the first name is 'A' and work in the branch start with the letter 'B' 22. Generate the list of employees along with the division name which is in ascending order 23. Find out the number of employees in division and its branches 24. Find out the divison name of an employee using CASE...END who works in the branches 'Baroda' and 'Delhi' 25. Find out the answer for Qn. 24 by using DECODE function	

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	1	1. Find out all doctors who have visited hospitals in same city in which they live 2. Find which hospital 'Dr. Joshi' has visited 3. Count number of doctors visited to 'Sunrise Hospital and Research Center' on 26 Novemver 2008 4.Find out how many times 'Dr. Joshi' has visited 'Sunrise Hospital and Research Center	
17	**1**	1. Get a list of all male employees 2. Get a list of all female employees 3. Get a list of all employees older than 50 years 4. Get a list of all employees younger than 25 years 5. Get a list of all employees between 20 and 30 years of age 6. Get a list of all employees who have joined the company in the year 1995 7. Get a list of all employees from FIN, HRD and COMM departments 8. Get a list of all employees who are not in HRD department 9. Get a list of all employees whose name starts with the letter A 10. Get a list of unmarried male employees greater than 35 years of age, and unmarried female employees greater than 30 years of age	
17	**1**	1. Create a query to display the last name, designation name, join date and employee number for each employee who belong to the division from 13 to 20. Employee number appearing first and in ascending order 2. Create a query to display employee name, employee gender, employee number, employee salary and organization name of the employees who worked in IT organizations 3. Create a query to find all organization name and register number for which there are no divisions 4. Create a query to find organization name, division name, branch name and employee name of those employees who are earning an annual salary of more than 1,50,000	

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17	**1**	5. Create a query to display the employee first name, last name, and join date of those employees who were joined between 01 Jan 2005 and 31 Dec 2010 and who are "Engineers" 6. Create a query to display the divisions under which there are no employees 7. Create a query to display organization name of those employees who have and 'a' or 'e' in their last name 8. Create a query to display the employee last name, job role and salary of all employees who worked in the division 17 and whose salary is more than 12000 9. Create a query to display employee number, first name, last name, salary and salary increased by 15% and expressed as a whole number. Label the column as New Salary 10. Create a query that displays the employee's first name and last name with the first letter of both capitalized and all other letters lowercase, and the length of the names, for all employees whose name start with 'J', 'A', 'G' or 'M'. Give the column an appropriate label 11. Create a query – For each employee, display the employee's last name and calculate the number of months between today date and joining date of the employee. Label the column MONTHS_WORKED. Order your results by the the number of months employed. Round the number of months upto the near whole number 12. Create a query to display the last name and salary for all employees of the division named 'Web Technologies'. Format the salary to be 15 characters long, left padded with '$'. Label the column SALARY 13. Create a query to display each employee's last name, join date, designation name, salary and performance review date which is the first Monday after six months of service. Label the column REVIEW. Format	

18	**1**	the dates to appear in the format similar to "Monday, the Thirty-First of July, 2016" 14. Create a query to display the last name, join date, day of the week, week of the month and month on which the employee joined. Label the column "Date Details". Order the results by the day of the week starting with Monday 15. Create a query to find the employee name who are working in branches with names starting with a vowel 16. Create a query that display department name, employee full name and all the emplolyees who work in the same department as a given employee. Give each column an appropriate label 17. Create a query to display the employee name and join date of any employee who joined after employee 'AJITH' 18. Create a query to find the highest, lowest, sum and average salary of all employees. Label the columns as Maximum, Minimum, Sum and Average respectively. Round your results to the nearest whole number 19. Create a query to show each department's name, division name, number of employees, and the average salary for all employees in that department. Label the column Department, Division, Number of People and Salary Respectively. Round the average salary to two decimal places 20. Create a query that will display the total number of employees and , of that total, the number of employees hired in 2005, 2007, 2009 and 2011. Provide appropriate column headings 21. Create a query to show the employee first name, last name, salary and department name of those employees in the department 10 and whose salary is greater than the average salary of the department 22. Create a query to show the employee first name, last name, salary and department name of those employees whose designation is same as that of employee with number 1001 and salary is greater than that of employee with number 1012	

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18	**1**	23. Create a query to show the department name and minimum salary so that minimum salary is greater than the minimum salary in department 10 24. Create a query to find the employees who earn the same salary as the minimum salary for each department 25. Create a quert to show all the data of 'Managers' of 'Delta Corporation' who have been hired after 2007 and before 2011	
18	**1**	1. Create a query to list the employee first name, last name and department names of all employees together with the number of years and the number of completed months that they have been employed and their last name start with 'J', 'K', 'L' or 'M' 2. Create a query to show all unique Designations in the department 10, 20 and 30 3. Create a query to show the organization name, division name, branch name, department name and the number of employees working in each department that 1. Includes fewer than 3 employees 2. Has the highest number of employees 3. Has the lowest number of employees 4. Create a query to list all employees who were hired on the day of the week on which the highest number of employees were hired 5. Create a query to show all employee data for 'Accountant' and 'Engineer' who were joined after the year 2007 6. Create a query to list employee number, first name, last name, department name, salary and designation name whose last name ends with 'n' and belong to the branch 110 or 171. Create two possible solution 7. Create a query to show the department number and name, and the number of employees working in each department that 1. Has fewer than 3 employees	

		2. Has the highest number of employees 3. Has the lowest number of employees	
19	**1**	• Create a copy of the following table(s) in your own schema Organization, Division, Branch, Department, Designation, Employee, Dependent, Doctor, Hospital, Visit and Person. Give name of the table as Orgn_02, Divn_02, Branch_02, Dept_02, Desn_02, Emp_02, Dpen_02, Doctor_02, Hosp_02, Visit_02 and Person_02 respectively • Check the data dictionary tables – USER_TABLES, USER_OBJECTS, USER_CONSTRAINTS and find out the new tables and their constraints • Write the actual name of all constraints of all tables and find the type of constraint of each • Create a sequence named, 'Orgn_Seq' with the following properties – Starting number - 6, Increment -1, Maximum – 10, Minimum - 6, No cycle, No cache • Check the data dictionary table, USER_SEQUENCES to find out the new sequence created and the current sequence value as well as next sequence value available • Insert data into the table, Orgn_02 using the sequence, Orgn_Seq. Provide data only for columns with NOT NULL constraint enabled. (*Create 3 organizations) (Hint – use* • Create a sequence named, 'Divn_Seq' with the following properties – Starting number - 21, Increment -1, Maximum – 25, Minimum - 21, No cycle, No cache • Check the data dictionary table, USER_SEQUENCES to find out the new sequence created and the current sequence value as well as next sequence value available • Insert data into the table, Divn_02 using the sequence, Divn_Seq. Provide data only for columns with NOT NULL constraint enabled.	

	1	(*Create 5 divisions under the organization with id 3)* • Create an index for the table, Organization based on the columns ☐ Orgn_Id ☐ Orgn_Regn_No Name the index as 'Idx_*Orgn_Id_Regn*' • Check the data dictionary table, USER_INDEXES to find out the new index created for the table, Organization • Create an index for the table, Division based on the columns ☐ Divn_Id ☐ Divn_Name Name the index as 'Idx_*Divn_Id_Name*' • Check the data dictionary table, USER_INDEXES to find out the new index created for the table, Division • Create an index for the table, Branch based on the columns ☐ Bran_Id ☐ Bran_Name Name the index as 'Idx_*Bran_Id_Name*' • Check the data dictionary table, USER_INDEXES to find out the new index created for the table, Branch • Create an index for the table, Department based on the columns ☐ Dept_Id ☐ Dept_Name Name the index as 'Idx_*Dept_Id_Name'* • Check the data dictionary table, USER_INDEXES to find out the new index created for the table, Department • Create an index for the table, Employee based on the columns	

	1	☐ Emp_Id ☐ Emp_FName ☐ Emp_LName Name the index as 'Idx_*Emp_Id_Name'* • Check the data dictionary table, USER_INDEXES to find out the new index created for the table, Employee • Find out all primary indexes created in the schema by querying the table, USER_INDEXES • Create a view for the table, Organization based on the columns - Orgn_Id, Orgn_Name, Orgn_Regn_No, Orgn_CEO, Orgn_Business, Orgn_Phone_No and Orgn_Start_Date Name the view as 'Vw_Orgn_1*'* • Create a view for the table, Organization which started during the period from 2002 to 2005 based on the columns - Orgn_Id, Orgn_Name, Orgn_Regn_No, Orgn_CEO, Orgn_Phone_No and Orgn_Start_Date Name the view as 'Vw_Orgn_2*'*	

SAINTGITS College of Engineering
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Semester III (2017 – 2020) & Semester I (2018 - 2020)
RLMCA 231 – Database Lab
Laboratory Plan (Lesson Plan)

20		• Wite an anonymous program to insert data into the Organization table using a sequence with Organization ID ranges from 6 to 10 and other details will be provided during run time (Hint :- Use '&' to provide non Organization ID details) • Consider the following Organizational Hierarchy - Chairman and Chief Executive Officer - Executive Vice President - Vice President - Director - Project Manager - Project Leader - Software Engineer Write an anonymous program to display the above hierarchy in that order using nested anonymous blocks such that one block will display one and only one designation • Write an anonymous program to insert an already existing data of Division Id into the Division table and catch the error in the exception. Display the message as "Division Id already exist" to the user • Write an anonymous program using cursors to display the following details from Company, Department and Employee tables (Hint :- Use cursors with parameter syntax) - Company Name - Department Name - Employee Name & - Dependent Name • Write an anonymous program using FOR..LOOP to display the following marks of a subject in the examination	

21		- Subject Name - Total marks given - Average marks - Minimum marks - Maximum marks • Write an anonymous program to store the marks of a student with ID 6 and subject codes from 501 to 508 and marks 72, 65, 58, 80, 60, 83, 59 and 62 respectively. After saving the data, retrieve and display the details of marks HINT as follows - Find out whether a student with ID 6 already exist. If exist, inform the user and exit from the program. - If not exist, store the data using a FOR..LOOP - Display the data using a CURSOR - Update the marks for the subject 502 and 503 with 70 and 60 respectively - Display the data using a CURSOR • Write an anonymous program to display the following order details of those customers whose total order amount is greater than 15000 (HINT :- Use cursor) - Customer Name - Order ID - Total Amount • Write an anonymous program to display the following details using a cursor - Employee ID - Employee Name, - Designation Name - Designation Fee • Write an anonymous program to display all of the project's total cost greater than 50000	

		Arrange the data in the descending order of Project Name (HINT :- Different staff with different designation and fee is working in a project) - Project ID - Project Name - Total Hours - Total Cost	
22-25	**2**	• Write a stored procedure to save the deails of a new organization into the table • Write a stored procedure to display the details of a few organizations (*Hint* :- Pass the organization ID values from range – to range) • Write a stored procedure to save the deails of a new organization using a sequence number • Write a nested stored procedure to create a new organization, update the name of the organization, count the number of rows in the organization table and delete any one organization • Write a stored procedure to display the details of a few divisions (*Hint* :- Pass the division ID values from range – to range) • Write a stored procedure to calculate the tax based on the annual salary of an employee based on his/her number Tax rate is given as follows 100000 – 150000 -> 5% 150001 – 180000 -> 8% 180001 – 240000 -> 10% Above 240000 -> 12% • Write a stored procedure to display the employee number, name and joining date of all employees in the format "Monday, 05TH of March, 2010" • Write a stored procedure to find the monthly salary, quarterly salary, semi annual salary and annual salary of an employee based on the	

22-25		number • Write a stored procedure to find the number of employees in a particular branch based on branch name • Write a stored procedure to insert employee details into a table for a non existing department (*Hint* :- Take instructions from the teacher before proceeding with the program) • Write a stored procedure to get the details of employee number, employee name, dept. number and dept. name without using a join (Hint :- Use IF..THEN ..ELSE..END IF statement) • Write a stored procedure to increase the salary of an employee by 10% and change the designation. The old salary and designation is to be stored in the employee history table • Write a stored function to save the deails of a new organization into the table • Write a stored function to display the details of a few organizations (*Hint* :- Pass the organization ID values from range – to range) • Write a stored function to save the deails of a new organization using a sequence number • Write a nested stored function to create a new organization, update the name of the organization, count the number of rows in the organization table and delete any one organization • Write a stored function to display the details of a few divisions (*Hint* :- Pass the division ID values from range – to range) • Write a stored function to calculate the tax based on the annual salary of an employee based on his/her number Tax rate is given as follows 100000 – 150000 -> 5% 150001 – 180000 -> 8% 180001 – 240000 -> 10% Above 240000 -> 12%	

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