



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

COURSE PLAN

Department	: DATA SCIENCE & COMPUTER APPLICATIONS
Course Name & code	: Database Lab & DSE 2241
Semester & branch	: 4 th Semester, BTech
Name of the faculty	: Vinayak Mantoor & Archana. H
No. of contact hours/week	: 3 hours/week

Continuous Evaluation	60%
Five Evaluations	Mini Project-15 Mid Term -20 Observation Book-5*2=10 Quiz-10 Execution-5 Max.Marks:60
Lab Examination	40%
	Examination of 3 hours duration that includes questions based on: SQL + PL/SQL Max.Marks:40

INSTRUCTIONS TO STUDENTS

1. Students should be regular and come prepared for the lab practice.
2. In case a student misses a class, it is his/her responsibility to complete that missed exercise(s).
3. Students should bring the observation book daily for the lab.
4. They should implement the given query/program individually.
5. Students should clearly listen to the instructions given by the faculty.
6. Once the query/program gets executed, they should show the query/program and results to the instructors and copy the same in their observation book.
7. When copying down the query in the observation book the template to be followed is:
 - a. Question No
 - b. Question
 - c. Query statement

- d. Output
- 8. When copying down the PL/SQL program in the observation book the template to be followed is:
 - a. Program No
 - b. Program title
 - c. Program Code
 - d. Output
- 9. Questions for lab tests and exam need not necessarily be limited to the questions in the manual, but could involve some variations and / or combinations of the questions.

CONTENTS

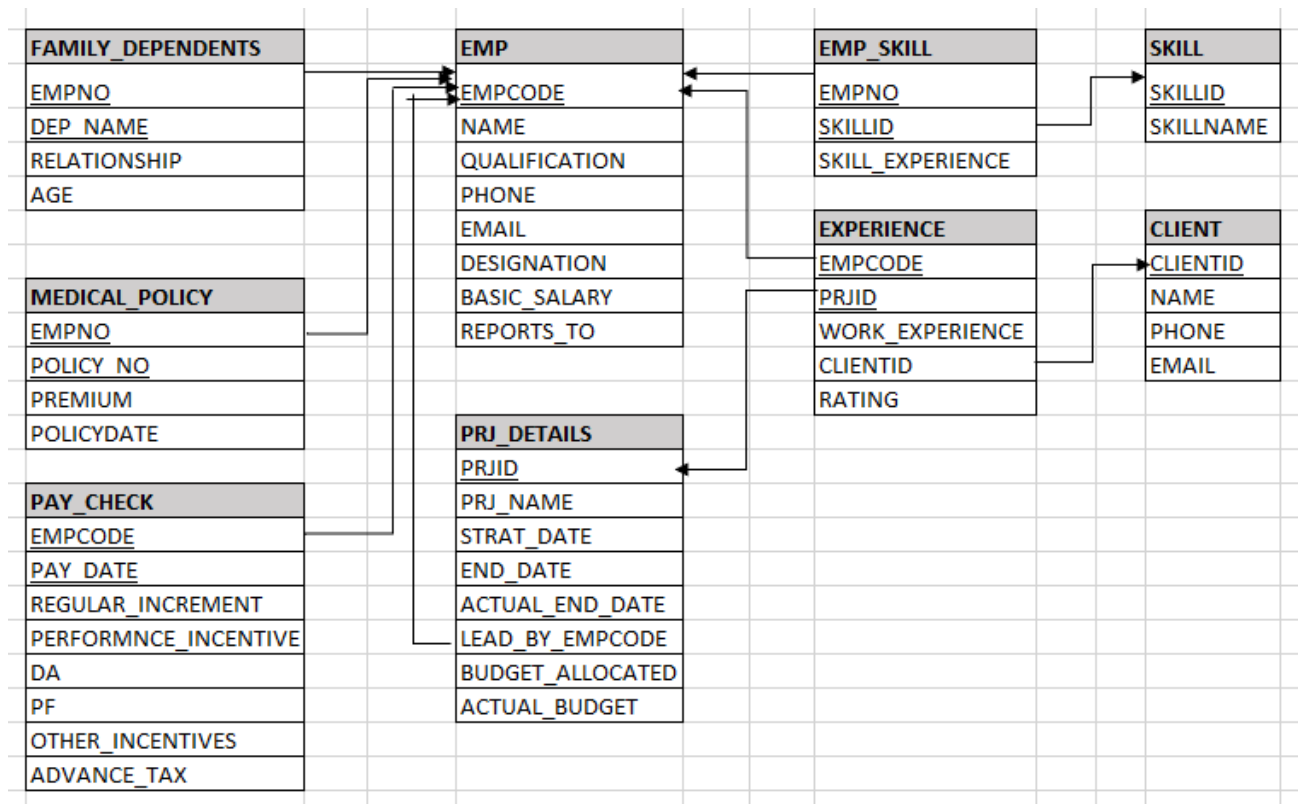
Week	Topics to be covered
1-2	SQL Basics – CREATE, ALTER, DROP
3	Populate and manipulate the database using INSERT, UPDATE, DELETE
4-5-6	Mini Project Abstract submission SQL Simple, join, subquery and Advanced Queries
7	Requirement specification submission PL/SQL, Cursors, Exception Handling.
8	Procedures, Functions
9	Schema diagram & Schema design Triggers
10	Mini-Project Implementataion
11	Mini Project Demo.
12	End Term Practical Examination

Course Outcomes (COs)

At the end of this course, the student should be able to:

		No. of Contact Hours
C01:	Create and modify database objects.	6
C02:	Manipulate the data in the database.	3
C03:	Design queries to retrieve the data from database.	9
C04:	Perform database operations by integrating procedural language constructs, stored programs.	9
C05:	Develop database application.	6

Following is the schema diagram corresponding to database used in the lab manual.



Course Plan

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2.1 Add column REPORTS_TO to EMP table with Foreign Key constraint refereeing to EMPCODE and constraint name -FK_REPORTS_TO_EMPCODE.

2.2 Set a constraint on SKILLID column belonging to SKILL table- every column value starts with letter 'S'.

2.3 Add primary key constraint on EMPNO, SKILLID columns belonging to EMP_SKILL table having constraint name- PK_EMPNO_SKILLID.

2.4 Set Unique constraint on PRJ_NAME belonging to PRJ_DETAILS table with constraint name UNQ_PRJ_NAME.

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	<p>2.5 ADD column EMAIL to CLIENT & constraint with name 'VALID_EMAIL', valid only if-contains @. Symbols as in email format and there must be only 3 letters after. symbol on EMAIL column.</p> <p>2.6 Add Unique Key constraint on PHONE belonging to EMP having constraint name -UNQ_PHONE.</p> <p>2.7 Add Unique Key constraint on EMAIL belonging to EMP having constraint name -UNQ_EMAIL.</p> <p>2.8 Drop primary key constraint from MEDICAL_POLICY table and add primary key constraint on EMPNO, POLICYNO, POLICYDATE.</p> <p>2.9 Drop constraint from PREMIUM belonging to MEDICAL_POLICY table & add new constraint that PREMIUM amount must be more than 1000/-.</p>																																																																																																																	
L3	<p>Note: Insert records into the following tables.</p> <ul style="list-style-type: none">Student can enter a valid value into the columns left blank, columns with NULL must be entered with NULL value only.If some records cannot be inserted because of violation of constraints, then write the reason for violation in the record book and choose a data satisfying the constraint and insert them into the table. <u>Write all such insert commands in the record book.</u>Insert 1 records of your own to each table and also <u>write the corresponding insert commands in the record book.</u> <p>3.0 EMP table data.</p> <p>EMP</p> <table><tr><th>EMPCODE</th><th>NAME</th><th>QUALIFICATION</th><th>PHONE</th><th>EMAIL</th><th>DESIGNATION</th><th>SALARY</th><th>REPORTS_TO</th></tr><tr><td>100</td><td>RAJESH</td><td>BTECH</td><td></td><td>rajesh@digisol.com</td><td>DEVELOPER</td><td></td><td>101</td></tr><tr><td>101</td><td>RAVI</td><td>MTECH</td><td></td><td>ravi@digisol.com</td><td>PROJEACT LEADER</td><td></td><td>102</td></tr><tr><td>102</td><td>VIJAY</td><td>BTECH</td><td></td><td>vijay@digisol.com</td><td>PROJECT MANAGER</td><td></td><td>110</td></tr><tr><td>108</td><td>AJAY</td><td>BTECH</td><td></td><td>ajay@digisol.com</td><td>TECHNICAL HEAD</td><td></td><td>102</td></tr><tr><td>110</td><td>BHASKAR</td><td>MTECH</td><td></td><td>bhaskar@digisol.com</td><td>PROJECT DIRECTOR</td><td></td><td>106</td></tr><tr><td>106</td><td>RAJ</td><td>MSC</td><td></td><td>raj@digisol.com</td><td>PRJOECT LEADER</td><td></td><td>110</td></tr><tr><td>105</td><td>MANISH</td><td>MCA</td><td></td><td>manish@digisol.com</td><td>DEVELOPER</td><td></td><td>106</td></tr><tr><td>106</td><td>PRSAD</td><td>PHD</td><td></td><td>prasad@digisol.com</td><td>CEO</td><td></td><td>NULL</td></tr><tr><td>102</td><td>RAKESH</td><td>MTECH</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>108</td><td>RAKESH</td><td>MTECH</td><td></td><td></td><td>Developer</td><td></td><td></td></tr><tr><td>109</td><td></td><td>MBA</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>110</td><td></td><td></td><td></td><td></td><td>S. ENGINEER</td><td></td><td></td></tr><tr><td>111</td><td>RAJ</td><td></td><td></td><td>raj@digital.com</td><td></td><td></td><td></td></tr></table>	EMPCODE	NAME	QUALIFICATION	PHONE	EMAIL	DESIGNATION	SALARY	REPORTS_TO	100	RAJESH	BTECH		rajesh@digisol.com	DEVELOPER		101	101	RAVI	MTECH		ravi@digisol.com	PROJEACT LEADER		102	102	VIJAY	BTECH		vijay@digisol.com	PROJECT MANAGER		110	108	AJAY	BTECH		ajay@digisol.com	TECHNICAL HEAD		102	110	BHASKAR	MTECH		bhaskar@digisol.com	PROJECT DIRECTOR		106	106	RAJ	MSC		raj@digisol.com	PRJOECT LEADER		110	105	MANISH	MCA		manish@digisol.com	DEVELOPER		106	106	PRSAD	PHD		prasad@digisol.com	CEO		NULL	102	RAKESH	MTECH						108	RAKESH	MTECH			Developer			109		MBA						110					S. ENGINEER			111	RAJ			raj@digital.com				CO2
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105	MANISH	MCA		manish@digisol.com	DEVELOPER		106																																																																																																											
106	PRSAD	PHD		prasad@digisol.com	CEO		NULL																																																																																																											
102	RAKESH	MTECH																																																																																																																
108	RAKESH	MTECH			Developer																																																																																																													
109		MBA																																																																																																																
110					S. ENGINEER																																																																																																													
111	RAJ			raj@digital.com																																																																																																														

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3.9 Run COMMIT command. Delete the employee having empcode 100 and confirm the result with justification.																																																																															
3.10 Update email of employee with EMPCODE 100 to rajesh@digital.com and confirm the result with justification.																																																																															
3.11 Update WORK_EXP by changing ProjId of employee 111 to P9 and confirm the result with reason.																																																																															
3.12 Run COMMIT command. Delete the client information from CLIENT table having ClientID C1. Confirm the result with reason.																																																																															
3.13 Run COMMIT command. Delete a family dependent information belonging to employee with employee id 100. Confirm the result. If records get deleted, run ROLLBACK to restore records back.																																																																															
3.14 Update the EMP table to increase salary of DEVELOPERS by 1%.																																																																															
3.15 Update employee code to which 108 Reports to as 106.																																																																															
3.16 Update employee code to which 108 Reports to as 117. Confirm the result with reason. Type COMMIT;																																																																															
L4	4.1 Retrieve all Clients information 4.2 Display name, phone and email of employees having designation DEVELOPER. 4.3 Display name of employees who are working under employee with code 106. 4.4 Display name and email id of employees working as TECHNICAL HEAD and Designation BTECH. 4.5 Find name of employees who is drawing salary in the range 100000 to 200000. (two queries using comparison and BETWEEN) 4.6 List the Skills owned by the employee with Employee number 101.							CO3																																																																							

No.	Topics	CO
	<p>4.7 Display the name of skills that employee with emp code 101 is having.</p> <p>4.8 Retrieve Employee code of employees who worked with clients C1 or C2 and having rating either A or B.</p> <p>4.9 Display the name of Employees who worked with client C2 and having Rating B.</p> <p>4.10 List How many dependents an employee RAVI is having?</p> <p>4.11 Retrieve employee name, Designation and Total annual salary (Salary*12) and rename the column as Annual_Salary. (using join)</p> <p>4.12 List name of all employees and their dependents name if exist otherwise null.</p> <p>4.13 List the project leader name and name of projects which have completed without time slippage and budget slippage.</p> <p>4.14 Display employee name, Salary and pay check details corresponding to month -March.</p> <p>4.15 Find the Employee name and his higher authority name, phone to who the employee reports.</p> <p>4.16. Display the project details in the descending order of their actual closing date.</p> <p>4.17 Display Employee names, skill name in ascending order of employee number and descending order of their skill experience.</p> <p>4.18 Display Employee name, dependent name, age where the relationship is SON and sort employee name in ascending and age in descending order.</p> <p>4.19 Retrieve Employee names in Ascending order and Project names in descending order in which employees have worked.</p> <p>4.20. Find name of employees who have worked in SPYDER or APOLLO (use set Operator)</p> <p>4.21 Find the name of employees who are having both skills Oracle & AZURE (use set Operator)</p> <p>4.22 Retrieve the name of employees who do not work in project JUPITOR (use set Operator)</p> <p>4.23 Display the name of employee who reports to none.</p> <p>4.24 Display all employee names, email whose name starts with RA.</p> <p>4.25 Retrieve the name of projects which are started between 01-01-2020 to 41-12-2020.</p> <p>4.26 Display the name of employees who has at least few skills that employee with employee number 101 is having.</p>	
L5	<p>5.1 List all employee names who are having same designation as that of employee 100.</p> <p>5.2 Find the name of all employees who reports to Vijay. (use set membership)</p> <p>5.3 List the name, designation and email of employees who have worked in the at least one of the projects in which Vijay has worked. (use set membership)</p> <p>5.4 List the name of employees who has Daughters.</p> <p>5.5 List the name of employees who do not work on SPYDER. (use set membership)</p> <p>5.6 List the employees who have at least one skill that employees working on project P1 are possessing. (set comparison)</p>	CO3

No.	Topics	CO
	<p>5.7 List the employee names who has more work experience in project P1 compared to experience of every employee working in project P2. (set comparison)</p> <p>5.8 List the name of employees who worked in the project and client combinations in which Empcode 100 has worked. (Use set cardinality)</p> <p>5.9 List the name of employees who didn't work on any of the project in which employee with empcode 106 has worked. (Use set cardinality)</p> <p>5.10 Find the name of projects for which Allocated budget is at least more than the total salary of employees working on those projects. (correlation variable)</p> <p>5.11 Display project name and the number of employees working on those projects and who obtained A or B ratings on the project they have worked. Sort the displayed records in descending order of number of employees worked.</p> <p>5.12 Display the name of projects under which more than 2 employees are working.</p> <p>5.13 Find Employee name and the number of dependents they are having.</p> <p>5.14 Retrieve total premium amount collected each year.</p> <p>5.15 Find employee name and having more than 20 months of total skill experience (irrespective of kind of skill) Use WITH clause.</p> <p>5.16 Create a table called EMP_PRJ containing Employee name (Emp_Name), Project Budget (Budget) and Name of the project (Project_Name) which are led by employee with code 110.</p> <p>5.17. Increment the salary of employees by 10% for the employees who are PROJECT LEADER and 5% for employees who are DEVELOPER (use update ... case.)</p> <p>5.18. Create a view EMP_SKILL_EXPERIENCE containing employee name, skill_name & skill_experience where experience is more than 20 months.</p> <p>After creating view, update the skill_experience of any employee and confirm the result with reasoning.</p> <p>5.19 Create a view EMP_DESIGNATION containing Empno, Name, Salary of employees working with role DEVELOPER, PROJECT LEADER.</p> <p>After creating view, update the salary of any employee and confirm the result with reasoning.</p> <p>5.20 Display employee name and number of projects in which they are working (using scalar sub query)</p> <p>Optional- Try writing 5.5 to 5.9 queries in alternate way.</p>	
L6	<p>6.1 Display name of all name of employees in Upper, Lower, 1st letter capital format.</p> <p>6.2 Display employee name and Designation of all the employees in the following format (using concatenation operator)</p> <p>"Rajesh Works as Developer."</p>	CO3

No.	Topics	CO
	<p>6.3 Assume that you are displaying salary value in place with 10 space width. Display the salary so that remaining left side spaces after displaying salary value is padded with * characters. (LAPD).</p> <p>6.4 Try the question 6.3 with RPAD.</p> <p>6.5 Retrieve number of characters in employee names.</p> <p>6.6 Retrieve substring part of employee email ids starting from 3rd position to 9th position characters.</p> <p>6.7 Retrieve the emails of all employees by replacing digisol with digitech.</p> <p>6.8 Retrieve employee name and Dependent-Name concatenated (concat ())</p> <p>6.9 Display ClientID and number of characters from Client table.</p> <p>6.10 Retrieve right trimmed ClientID (RTRIM) and number of characters in the trimmed client id.</p> <p>6.11 Try 6.10 with LTRIM and TRIM also.</p> <p>6.12 Display ASCII value of 'A' and Character corresponding to ascii value 65. (ASCII, CHR)</p> <p>6.13 Display the value 123.456 truncated to 2nd decimal position.</p> <p>6.14 Consider any number (say 9) Retrieve square root, square and 5th power of the number.</p> <p>6.15 Display the value 123.456 rounded to 2nd decimal position.</p> <p>6.16 Retrieve absolute value of -123 and remainder after dividing 123 from 10.</p> <p>6.17 Retrieve floor and ceiling value of 234.36 and -234.26.</p> <p style="padding-left: 40px;">Floor(n)- largest integer value not greater than n and Ceil(n) - smallest integer value not less than n</p> <p>6.18 Display start and end dates of projects in the format DD-Month-YYYY format. (use TO_CHAR)</p> <p>6.19 Display month and Year on which projects are actually closed. (use TO_CHAR)</p> <p>6.20 Display month, day, year extracted from Start_Date from Prj_Details. (use TO_CHAR)</p> <p>6.21 Display the project name and the number of months between the start and end dates of the projects.</p> <p style="padding-left: 40px;">Use MONTHS_BETWEEN ()</p> <p>6.22 Display all the project name, end_date of the projects and the date after 2 months of end_date.</p> <p style="padding-left: 40px;">Use ADD_MONTHS ()</p> <p>6.23 Find the date of next Thursday based on today's date.</p>	
L7	<p>WEEK-7 PL/SQL & CURSORS</p> <p>7.1 Write PL/SQL block to display reverse of a number.</p> <p>7.2 Write a PL/SQL block to check a given word is palindrome or not.</p> <p>7.3 Write a PL/SQL block to accept an employee code from the user and display the employee details.</p>	CO4

No.	Topics	CO
	<p>7.4 Write a PL/SQL block to count number of vowels, consonants, numbers and special characters in a sentence.</p> <p>7.5 Write a PL/SQL block to accept an employee code and project id to find the rating obtained on the project. Depending on the rating assign an additional incentive (A-10000, B-5000, C- 3000). Display the information in the following format-</p> <p style="padding-left: 40px;"> Employee Number: Employee Name: Salary: Project Name: Rating: Incentive: Total Salary: Salary+(A-10000, B-5000, C- 3000) Update the Other_incentive of employee in Pay_check depending on rating. </p> <p>7.6 Write a PL/SQL block to calculate Jan-2021 monthly salary of employee and other components of salary depending on Salary values in EMP table for the employee number 100. Display the salary information of employee 100 in the following format.</p> <p style="padding-left: 40px;"> Name: Basic_Salary: Salary from EMP table Regular Increment: Regular_Increment Increased Basic Salary: Salary+ Regular_Increment Performance incentive: performnce_incentive DA: 50% of Increased Basic Salary. PF: 12% of Increased Basic Salary. Other Incentive: other_incentives Advance tax paid: advance_tax Monthly Gross Salary: Salary+Regular_Increment+ Performnce_incentive+DA+PF+ other_incentives. Monthly Take home salary: Gross Salary – PF- advance_tax. </p> <p>7.7 Do the salary processing of all employees according to the Question 6. (using cursor)</p> <p>7.8 Create a Table ACCOUNT (Account_Number, Balance) with constraint on Balance that Balance must be more than 1000(minimum balance). Insert few records into the table.</p> <p>Write a PL/SQL block to accept and account number, withdrawal amount from the user. Update the Balance by deducting the withdrawal amount from the balance in the case updated balance is going to be more than minimum balance (1000) otherwise do not update the Balance. In both cases display proper message –</p> <p>Case 1:</p> <p style="padding-left: 40px;"> Current Balance: Balance Withdrawal of <Withdrawal_amount> is Successful Updated Current Balance: Updated balance after withdrawal </p> <p>Case 2:</p> <p style="padding-left: 40px;">Current Balance: Balance</p>	

No.	Topics	CO
	<p>Insufficient fund to withdraw, try with lesser withdrawal amount.</p> <p>7.9 Write a PL/SQL block to display- Name of the project leader, Name of the projects handled for which budget is managed well within the Budget allocated.</p> <p>7.10 Write a PL/SQL block to display the employees name and generate their email id in following format and display the same for all employees.</p> <p style="padding-left: 40px;">Name:</p> <p style="padding-left: 40px;">Designation:</p> <p style="padding-left: 40px;">Email Generated: Name.Designation@digisoul.com</p> <p>7.11 Write the PL/SQL block for Question 7.8. along with exception handling for-</p> <ol style="list-style-type: none"> i. Entry of not existing Account number. ii. If Resulting balance is lesser than minimum Balance. <p>7.12 Assume that we have a new project <i>Marvel</i> and there is need for human resources with skills- 3 full stack developer, 1 Oracle and 1 Azure each having at least 12 months of experience. Pass skill_experience as parameter and list all the human resources available in the company satisfying the need.</p> <p>7.13 Write PL/SQL block with parameterized cursor to display all the employee code, name, designation of the employees who are rated with a particular rating by a particular client. Pass rating and client as parameter to the cursor. (Use cursor for loop.)</p> <p>7.14 Write a PL/SQL block to display name, total work experience of 5 employees who are having highest total work experience.</p>	
L8	<p>WEEK-8 STORED PROCEDURE, FUNCTION & PACKAGES</p> <p>8.1 Create a Table ACCOUNT (Account_Number, Balance) with constraint on Balance that Balance must be more than 1000(minimum balance). Insert few records into the table.</p> <p>Write a stored procedure to accept and account number, withdrawal amount from the user. Update the Balance by deducting the withdrawal amount from the balance in the case updated balance is going to be more than minimum balance (1000) otherwise do not update the Balance. In both cases display proper message –</p> <p>Case 1:</p> <p style="padding-left: 40px;">Current Balance: Balance</p> <p style="padding-left: 40px;">Withdrawal of <Withdrawal_amount> is Successful</p> <p style="padding-left: 40px;">Updated Current Balance: Updated balance after withdrawal</p> <p>Case 2:</p> <p style="padding-left: 40px;">Current Balance: Balance</p> <p style="padding-left: 40px;">Insufficient fund to withdraw, try with lesser withdrawal amount.</p> <p style="padding-left: 40px;">Use PL/SQL block to call the stored procedure.</p> <p>8.2 Assume that we have a new project <i>Marvel</i> and there is need for human resources with certain skill having at least 12 months of experience. Write a stored procedure to pass skill, skill_experience as parameter and list all the human resources available in the company satisfying the need. Create a PL/SQL block to call procedure.</p> <p>8.3 Write a stored procedure to take project id as input parameter to find additional budget needed depending on how many days additionally project is executed (depending on actual_end_Date)</p>	CO4

No.	Topics	CO																								
	<p>Additional Budget Needed= Additional days * per day cost of project per day cost of project = (Budget Allocated)/ (Duration of project in days (depending on End_date & Start_Date))</p> <p>Return Additional Budget Needed back to calling PL/SQL block. The calling PL/SQL block must display information in the following format-</p> <p style="padding-left: 40px;">Name of Project Leader:</p> <p style="padding-left: 40px;">Name & email of Employee to whom Project leader reports to:</p> <p style="padding-left: 40px;">Additional Budget Needed:</p> <p>8.4 Write a stored function to accept project id of a project and return an incentive to be given to all employee working on the project depending on the rating obtained by them. In calling PL/SQL allow the user to enter project id to be passed to the function. A-30000; B- 20000; C- 10000</p> <p>8.5 Write a stored function to accept phone a country code (such as +91, +48 etc.) to find the name of clients in those countries.</p> <p>8.6 Write a stored function to generate email ids of faculty automatically using name, empno as- name_empno@digisol.com.</p>																									
	<p>WEEK-9 TRIGGERS</p> <p>9.1 Write a trigger to be fired when basic salary hike is given to employees. Hike range and range of basic salary for each kind of designation is as below-</p> <table border="1"> <thead> <tr> <th>Designation</th><th>Regular_Increment RANGE</th><th>Basic_salary RANGE</th></tr> </thead> <tbody> <tr> <td>DEVELOPER</td><td>1000</td><td>97000 - 120000</td></tr> <tr> <td>PROJECT LEADER</td><td>2000</td><td>110000-140000</td></tr> <tr> <td>PROJECT MANAGER</td><td>3000</td><td>120000-160000</td></tr> <tr> <td>TECHNICAL HEAD</td><td>3000</td><td>140000-200000</td></tr> <tr> <td>PROJECT MANAGER</td><td>5000</td><td>180000-250000</td></tr> <tr> <td>PROJECT DIRECTOR</td><td>10000</td><td>210000-270000</td></tr> <tr> <td>CEO</td><td>20000</td><td>220000-300000</td></tr> </tbody> </table> <p>Whenever basic salary is updated, depending on the designation of the employee the trigger should check the increment range is legal and increased basic salary is in the range of valid basic salary corresponding to the designation. If anyone of these conditions is violated then cancel the update operation.</p> <p>9.2 Design a trigger to be fired when a new project detail is added or Lead_by_Empcode is updated. The trigger should check the Lead_by_Empcode is valid as per company policy. The company policy says-an employee can lead a project only if he has designation – Project Lead or Project Manager and the total skill experience is 18 or more than 18 months. If these conditions are not met then cancel the insert/update operation on project details table.</p> <p>9.3 Develop a trigger to monitor the modification of Actual end dates and actual budgets of projects. The trigger should allow only if time extension is less than 90 days and additional budget is not more than 15% of actual budget allocated. Violation of any of these rules must flash error message – “Need to take Approval through proper channel”.</p>	Designation	Regular_Increment RANGE	Basic_salary RANGE	DEVELOPER	1000	97000 - 120000	PROJECT LEADER	2000	110000-140000	PROJECT MANAGER	3000	120000-160000	TECHNICAL HEAD	3000	140000-200000	PROJECT MANAGER	5000	180000-250000	PROJECT DIRECTOR	10000	210000-270000	CEO	20000	220000-300000	CO4
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No.	Topics	CO
	9.4 Write a trigger to be fired when an obsolete skill record is deleted from SKILL table. If only one employee with that skill exists then don't delete from EMP_SKILL otherwise corresponding employees with those obsolete skills must be removed from EMP_SKILL except one employee with highest skill experience. In a main PL/SQL block ask the user to input skill id which is obsolete and to be removed and execute delete statement corresponding to that skidid.	
L10	Mini Project Implementation	CO5
L11	Mini Project Demo	CO5
L12	END SEMESTER LAB EXAM	

References

1. Ivan Bayross, "SQL, PL/SQL-The Programming Language of ORACLE", 4th Edition, BPB Publications,
2. Satish Asnani, "Oracle Database 11g", PHI, 2010.
3. Scott Urman, "ORACLE – PL/SQL Programming", Oracle Press.

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