

GLS UNIVERSITY
Bachelor of Computer Applications (BCA)
(Core Course)
Semester-III
210301307 PRACTICAL ON DBMS-II

1. Course Objective:

- The students will implement and learn various MySQL Database functions
- To make students familiar with advanced techniques of MySQL.
- To understand to join tables and sub-queries.
- To use JSON with mySQL.

2. Course Duration:

The course will have sessions which are divided into five modules. Each module consists of nine sessions of 60 minutes each and carries a weightage of 20%.

3. Course Contents:

Module No.	Modules/Sub-Modules	No. of Sessions	Marks Weightage
I	Functions <ul style="list-style-type: none"> • Distinct Values • Date Functions <ul style="list-style-type: none"> ○ Date & Time Format ○ Sysdate, Now , Current Date ○ Testing against a date range ○ Extract date from given date ○ Date Arithmetic • Date Calculations • String Functions • Sorting Data Function • Math Functions to_Number Function 	09	20%
II	Joins- Data Analytics <ul style="list-style-type: none"> • Inner Join • Cross Join • Natural Join • Right Outer Join • Left Outer Join • Full Outer Join • Self-Join(.) operator 	09	20%
III	Sub-Queries and Views Sub-Queries : <ul style="list-style-type: none"> • Query inside a query • Query with Distinct Values • Select with Top Values • Sub-queries with “where” 	09	20%

	View : <ul style="list-style-type: none"> • Create a view <ul style="list-style-type: none"> ○ Inline Views ○ Simple View ○ Materialized View ○ Complex View • Select a view • Drop a view 		
IV	Advanced Queries <ul style="list-style-type: none"> • Sub-queries using IN operator • Sub-queries using NOT IN operator • Sub-queries using GROUP BY clause • Sub-queries using HAVING query 	09	20%
V	MySQL with JSON <ul style="list-style-type: none"> • Creating a JSON field • Adding data a JSON field • Reading data from JSON • Selecting individual attributes • Displaying field using JSON_EXTRACT • Updating data in JSON field • Deleting data in JSON field • JSON FUNCTIONS <ul style="list-style-type: none"> ○ JSON_APPEND ○ JSON_INSERT ○ JSON_LENGTH ○ JSON_MERGE() ○ JSON_PRETTY() ○ JSON_REMOVE() ○ JSON_REPLACE() ○ JSON_CONTAINS 	09	20%

Following type of sample questions can be asked in the final examination

1. **Flights** (flno, from_city, to_city, distance, departs, arrives, price)
Aircraft (aid, aname, cruisingrange)
Certified (eid, aid)
Emp (eid, ename, salary)
 - List the details of Flights table
 - Increase the prices by 50 percent in Flight Table of all Rows.
 - Delete the rows whose flno is 10 in Flights table.
 - Display the passengers going to 'Ahmedabad';
 - Display the details of costliest Flight.
2. **Employee** (EmpId, Firstname, Lastname, Hiredate, City, Salary, DesigNo, DeptNo)

Department (Deptid, DeptName)

Designation (DesigId, DesigName)

Project (ProjectId, Proj_Name, EmpId, City, Status)

- Update the Hiredate of all employee by 2 years.
- Increase salary of all employees by 12% in Employee.
- Drop the city column.
- List the details of those employees where salary is more than average salary.
- List the details of those employees who work on more than 2 projects.
- Delete the rows where Project status is completed.
- List the Employee and project names which are in city 'Bangalore'.

3. **Branch_Master** (B_No, B_Name, Location)

Customer_Master (C_No, C_Name, Gender, DOB, City, Contact_No)

Account_Master (Acc_No, Acc_Type, B_No, C_No, Open_Date, Curr_Balance)

- Display details of male as well as who belong to 'Mumbai' city customers only.
- Display the details of account opened between the years 2000 and 2007.
- List all records where current balance is not less than 4000.
- List all branch names where branch number is 1 or 3.
- List the customer names of maxing & minimum balance.
- Display the total number of customers in each type of account.
- List the count of accounts, whose balance is less than the average balances.

4. **Cust** (Custno, Custname, Addln1, Addln2, City, State, Phone)

Item (Itemno, Itemname, Itemprice, Qty_On_Hand)

Invoice (Invno, Invdate, Custno)

Inv_Item (Invno, Itemno, Qty_Used)

- Find the total value of each item (item price * qty).
- Display items with unit price between ` 100 and ` 500.
- Find all the customers whose name starts with the letter 'P'.
- Sort all items in descending order by their prices.
- Display invoice dates as per the format "January 16, 2012".
- Find the total, average, highest and lowest unit price of an item.
- Count number of items ordered in each invoice.
- Find invoices in which three or more items have been ordered.
- Display the details of items along with its quantity used (use natural join).

5. **Movie** (Title, Year, Length, InColor, StudioName, Producer)

StarsIn (movieTitle, movieYear,

starName) **MovieStar** (starname,

address, gender, birthdate) **Studio**

(name, address)

- Find the address of RajShree studios.
- Find ShahRukh Khan's birthdate.
- Find all the stars that appear either in a movie made in 1980 or a movie with "Mujhe" in the title.

- Insert one row into the table studio against the column address
- Find all the stars who either are 'male' or birth month is 'July'.
- Change address of movie star where movie year is 1998.

6. Client (Account _Number, Name)

Ship_Emp (EmployeeId, Name, Position, Salary, Remarks)

Has_Clearance (EmpID, Planet, Level)

Shipment (ShipmentId, Date, Mngr_EmpID)

Package (ShipmentID, Package Number, Content, Weight, S_Acct_No, R_Acct_No)

- Find all the package whose Recipient is 101.
- Change the name whose Name start with A.
- Insert one row in Client table to ensure that no duplicate value will be entered in the Account number column.
- Display the total weight of all the packages.
- Display details employee earning maximum salary.
- Get the minimum weight from Package table.

7. Products (Code, Name, Price, Manufacture)

Manufactures (Code, Name)

- Select the names and the prices of all the products in the store
- Add a new product: Loudspeakers, 70, manufacturer 2.
- Update the name of product 8 to "Laser Printer".
- Apply a 10% discount to all products.
- Select the names of manufacturer whose products have an average price larger than or equal to 150.
- Select all the data from the products, including all the data for each product's manufacturer.

8. Create a JSON field by using MySQL-

- ["Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday"]
- **Create a JSON array having different objects;**
[{"name":"Ram","email":"Ram@gmail.com"}, {"name":"Bob","email":"bob32@gmail.com"}]
- **Retrieve all the field with its key from JSON field.**
- **Update JSON record add Phone: 235641789 in Current field records.**
[{"name":"Ram","email":"Ram@gmail.com"}, {"name":"Bob","email":"bob32@gmail.com"}]
- **Delete a record from JSON record whose id is name.**[{"name":"Ram","email":"Ram@gmail.com"}, {"name":"Bob","email":"bob32@gmail.com"}]
- **Apply all JSON function on the given fields records**
[{"name":"Ram","email":"Ram@gmail.com"}, {"name":"Bob","email":"bob32@gmail.com"}]

4. Teaching Methods:

The following pedagogical tools will be used to teach this course:

1. Laboratory Sessions
2. Assignments and Presentations
3. Videos, e-learning

5. Evaluation:

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

1.	Assignments / Presentations	30% (Internal Assessment)
2.	Internal Examination	20% (Internal Assessment)
3.	External Examination	50% (External Assessment)

6. Basic Text Books:

Sr. No	Author/s	Name of the book	Publisher	Edition
T1	Corrone, Morris, Rob	Database Principles: Fundamentals of Design, Implementation and Management	Cengage Learning	New

7. Reference Books:

Sr. No	Author/s	Name of the book	Publisher	Edition
R1	ISRD Group Mc Graw Hill	Database Management System	Mc Graw Hill	14 th
R2	Joel Murach	Murach's MySQL	SPD	2 nd
R3	Lynn Beighley	Head First SQL	SPD	Latest

8. List of E-books / E-resources:

Sr. No	Links
1	E-Book: http://portal.aauj.edu/e_books/teach_yourself_oracle8_in_21_days.pdf
2	E-Book: http://www.tutorialspoint.com/plsql/plsql_tutorial.pdf
3	E-Book: http://www.oracle.com/technetwork/database/features/plsql/overview/sample2174ch2-129586.pdf
4	E-Book: https://docs.oracle.com/cd/B28359_01/appdev.111/b28370.pdf
5	http://srikanthtechnologies.com/books/orabook/oraclebook.html
6	http://www.nptel.ac.in/courses/106106095/
7	http://www.nptel.ac.in/courses/106106095/6
8	http://nptel.ac.in/courses/106104135/
9	http://www.nptel.ac.in/courses/110106064/
10	https://dev.mysql.com/doc/refman/5.7/en/json-function-reference.html
11	https://www.digitalocean.com/community/tutorials/working-with-json-in-mysql?_cf_chl_managed_tk_=Z0pBhxD8nXxJXirdhO_490P5LJSreO7fpO1laH9JJVU-1641794175-0-gaNycGzNCyU
12	https://www.mysqltutorial.org/mysql-json/
13	https://www.databasestar.com/mysql-json/

9. Session Plan:

Session No.	Topics / Chapters
1-5	Introduction to Function, Distinct Values, Date Functions, Date Calculations, String Functions, Sorting Data Function
6-9	Maths Functions, Rank Data function, Maths Functions, to_Number Function
10-14	Inner Join, Cross Join, Natural Join, Right Outer Join
15-18	Left Outer Join, Full Outer Join, Self-Join
19-23	Introduction to Sub-queries: Query inside a query, Query with Distinct Values, Select with Top Values, Sub-queries with “where”
24-27	Introduction to View: Create a view, Inline Views, Simple View, Complex View, Select a view, Drop a view
28-32	Introduction to Advanced Queries, Sub-queries using IN operator, Sub-queries using NOT IN operator
33-36	Sub-queries using GROUP BY clause, Sub-queries using HAVING query
36-38	Creating a JSON field, Adding data a JSON field, Reading data from JSON, Selecting individual attributes
39-41	Displaying field using JSON_EXTRACT, Updating data in JSON field, Deleting data in JSON field
42-45	JSON FUNCTIONS: JSON_APPEND, JSON_INSERT, JSON_LENGTH, JSON_MERGE(), JSON_PRETTY(), JSON_REMOVE()

10. Learning Outcome:

Upon the completion of this course, students will be able to:

- Use Structured Query Language and Database objects.
- Develop and implement the concepts of tables, types of queries and sub queries, joins.
- Understand concepts of MYSQL with JSON.