Case Study

Problem Scenario: The Indian Government wants to develop a Library Management System (LMS) to store information of the members, books, status of books issue, book availability and suppliers details

List of Tables:

Table #1: LMS_MEMBERS
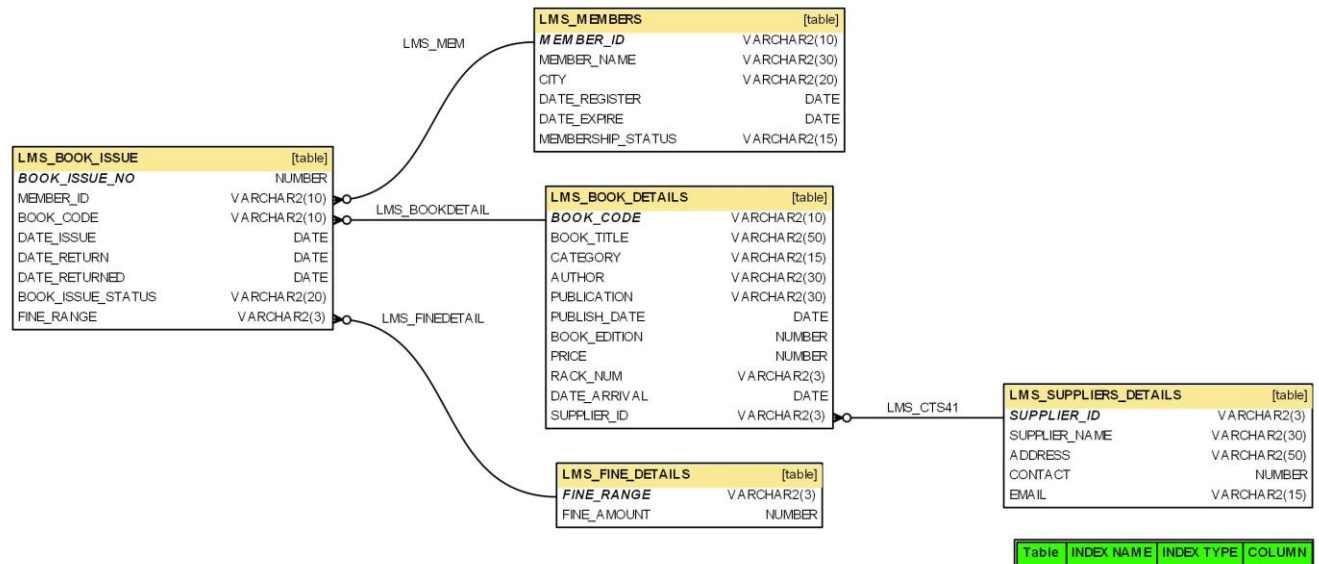
Table #2: LMS_SUPPLIERS_DETAILS

Table #3: LMS_FINE_DETAILS

Table #4: LMS_BOOK_DETAILS

Table #5: LMS_BOOK_ISSUE

ER Diagram:

LMS_MEMBERS	[table]
MEMBER_ID	VARCHAR2(10)
MEMBER_NAME	VARCHAR2(30)
CITY	VARCHAR2(20)
DATE_REGISTER	DATE
DATE_EXPIRE	DATE
MEMBERSHIP_STATUS	VARCHAR2(15)

LMS_BOOK_ISSUE	[table]
BOOK_ISSUE_NO	NUMBER
MEMBER_ID	VARCHAR2(10)
BOOK_CODE	VARCHAR2(10)
DATE_ISSUE	DATE
DATE_RETURN	DATE
DATE_RETURNED	DATE
BOOK_ISSUE_STATUS	VARCHAR2(20)
FINE_RANGE	VARCHAR2(3)

LMS_BOOK_DETAILS	[table]
BOOK_CODE	VARCHAR2(10)
BOOK_TITLE	VARCHAR2(50)
CATEGORY	VARCHAR2(15)
AUTHOR	VARCHAR2(30)
PUBLICATION	VARCHAR2(30)
PUBLISH_DATE	DATE
BOOK_EDITION	NUMBER
PRICE	NUMBER
RACK_NUM	VARCHAR2(3)
DATE_ARRIVAL	DATE
SUPPLIER_ID	VARCHAR2(3)

LMS_SUPPLIERS_DETAILS	[table]
SUPPLIER_ID	VARCHAR2(3)
SUPPLIER_NAME	VARCHAR2(30)
ADDRESS	VARCHAR2(50)
CONTACT	NUMBER
EMAIL	VARCHAR2(15)

LMS_FINE_DETAILS	[table]
FINE_RANGE	VARCHAR2(3)
FINE_AMOUNT	NUMBER

Table	INDEX NAME	INDEX TYPE	COLUMN

Relationships: LMS_MEM, LMS_BOOKDETAIL, LMS_FINEDETAIL, LMS_CTS41

Database and Table Creations - DDL Queries:

<Refer to attachment "LMS_DDL.sql" in LMS_DDL_DML.zip" which is available in the *Resources* section>

Loading Data - DML Queries:

<Refer to attachment "LMS_DML.sql" in LMS_DDL_DML.zip" which is available in the *Resources* section>

Simple Questions:

Problem # 1:
Write a query to display the member id, member name, city and membership status who are all having life time membership. **Hint**: Life time membership status is "Permanent".

Problem # 2:
Write a query to display the member id, member name who have not returned the books. **Hint:** Book return status is book_issue_status ='Y' or 'N'.

Problem # 3:
Write a query to display the member id, member name who have taken the book with book code 'BL000002'.

Problem # 4:
Write a query to display the book code, book title and author of the books whose author name begins with 'P'.

Problem # 5:
Write a query to display the total number of Java books available in library with alias name 'NO_OF_BOOKS'.

Problem # 6:
Write a query to list the category and number of books in each category with alias name 'NO_OF_BOOKS'.

Problem # 7:
Write a query to display the number of books published by "Prentice Hall" with the alias name "NO_OF_BOOKS".

Problem # 8:
Write a query to display the book code, book title of the books which are issued on the date "1st April 2012".

Problem # 9:
Write a query to display the member id, member name, date of registration and expiry date of the members whose membership expiry date is before APR 2013.

Problem # 10:
write a query to display the member id, member name, date of registration, membership status of the members who registered before "March 2012" and membership status is "Temporary"

Problem #11:
Write a query to display the member id, member name who's City is CHENNAI or DELHI. **Hint**: Display the member name in title case with alias name 'Name'.

Problem #12:
Write a query to concatenate book title, author and display in the following format.
Book_Title_is_written_by_**Author**
Example: Let Us C_is_written_by_Yashavant Kanetkar
Hint: display unique books. Use "BOOK_WRITTEN_BY" as alias name.

Problem #13:
Write a query to display the average price of books which is belonging to 'JAVA' category with alias name "AVERAGEPRICE".

Problem #14:
Write a query to display the supplier id, supplier name and email of the suppliers who are all having gmail account.

Problem#15:
Write a query to display the supplier id, supplier name and contact details. Contact details can be either phone number or email or address with alias name "CONTACTDETAILS". If phone number is null then display email, even if email also null then display the address of the supplier. **Hint**: Use Coalesce function.

Problem#16:
Write a query to display the supplier id, supplier name and contact. If phone number is null then display 'No' else display 'Yes' with alias name "PHONENUMAVAILABLE". **Hint:** Use NVL2.

Average Questions:

Problem # 1:
Write a query to display the member id, member name of the members, book code and book title of the books taken by them.

Problem # 2:
Write a query to display the total number of books available in the library with alias name "NO_OF_BOOKS_AVAILABLE" (Which is not issued). **Hint:** The issued books details are available in the LMS_BOOK_ISSUE table.

Problem # 3:
Write a query to display the member id, member name, fine range and fine amount of the members whose fine amount is less than 100.

Problem # 4:
Write a query to display the book code, book title and availability status of the 'JAVA' books whose edition is "6". Show the availability status with alias name "AVAILABILITYSTATUS". **Hint:** Book availability status can be fetched from "BOOK_ISSUE_STATUS" column of LMS_BOOK_ISSUE table.

Problem # 5:
Write a query to display the book code, book title and rack number of the books which are placed in rack 'A1' and sort by book title in ascending order.

Problem # 6:
Write a query to display the member id, member name, due date and date returned of the members who has returned the books after the due date. **Hint:** Date_return is due date and Date_returned is actual book return date.

Problem # 7:
Write a query to display the member id, member name and date of registration who have not taken any book.

Problem # 8:
Write a Query to display the member id and member name of the members who has not paid any fine in the year 2012.

Problem # 9:
Write a query to display the date on which the maximum numbers of books were issued and the number of books issued with alias name "NOOFBOOKS".

Problem # 10:
Write a query to list the book title and supplier id for the books authored by "Herbert Schildt" and the book edition is 5 and supplied by supplier 'S01'.

Problem # 11:
Write a query to display the rack number and the number of books in each rack with alias name "NOOFBOOKS" and sort by rack number in ascending order.

Problem # 12:
Write a query to display book issue number, member name, date or registration, date of expiry, book title, category author, price, date of issue, date of return, actual returned date, issue status, fine amount.

Problem # 13:
Write a query to display the book code, title, publish date of the books which is been published in the month of December.

Problem # 14:

Write a query to display the book code, book title and availability status of the 'JAVA' books whose edition is "5". Show the availability status with alias name "AVAILABILITYSTATUS". **Hint:** Book availability status can be fetched from "BOOK_ISSUE_STATUS" column of LMS_BOOK_ISSUE table.

Complex Questions:

Problem # 1:
Write a query to display the book code, book title and supplier name of the supplier who has supplied maximum number of books. For example, if "ABC Store" supplied 3 books, "LM Store" has supplied 2 books and "XYZ Store" has supplied 1 book. So "ABC Store" has supplied maximum number of books, hence display the details as mentioned below.

Example:

BOOK_CODE	BOOK_TITLE	SUPPLIER_NAME
BL000008	Easy Reference for Java	ABC STORE
BL000001	Easy Reference for C	ABC STORE

BL000003   Easy Reference for VB   ABC STORE

Problem # 2:
Write a query to display the member id, member name and number of remaining books he/she can take with "REMAININGBOOKS" as alias name. **Hint:** Assuming a member can take maximum 3 books. For example, Ramesh has already taken 2 books; he can take only one book now. Hence display the remaining books as 1 in below format.

Example:

MEMBER_ID	MEMBER_NAME	REMAININGBOOKS
LM001	RAMESH	1
LM002	MOHAN	3

Problem # 3
Write a query to display the supplier id and supplier name of the supplier who has supplied minimum number of books. For example, if "ABC Store" supplied 3 books, "LM Store" has supplied 2 books and "XYZ Store" has supplied 1 book. So "XYZ Store" has supplied minimum number of books, hence display the details as mentioned below.

Example:

SUPPLIER_ID	SUPPLIER_NAME
S04	XYZ STORE