Assignment

→ Analysis and Design of Library management System.

1. key Issues with the file based system.

Data Redundancy:

* multiple copies of the same data can exist, leading to excessive Storage usage.

Data in consistency: Due to redundancy, in consistent data can arise when updates are not propagated properly

Difficulty in Data Retrieval: Complex queries require extensive searching and processing

Lack of Data integrity & security: File-based system lack constraints to ensure data accuracy & validity
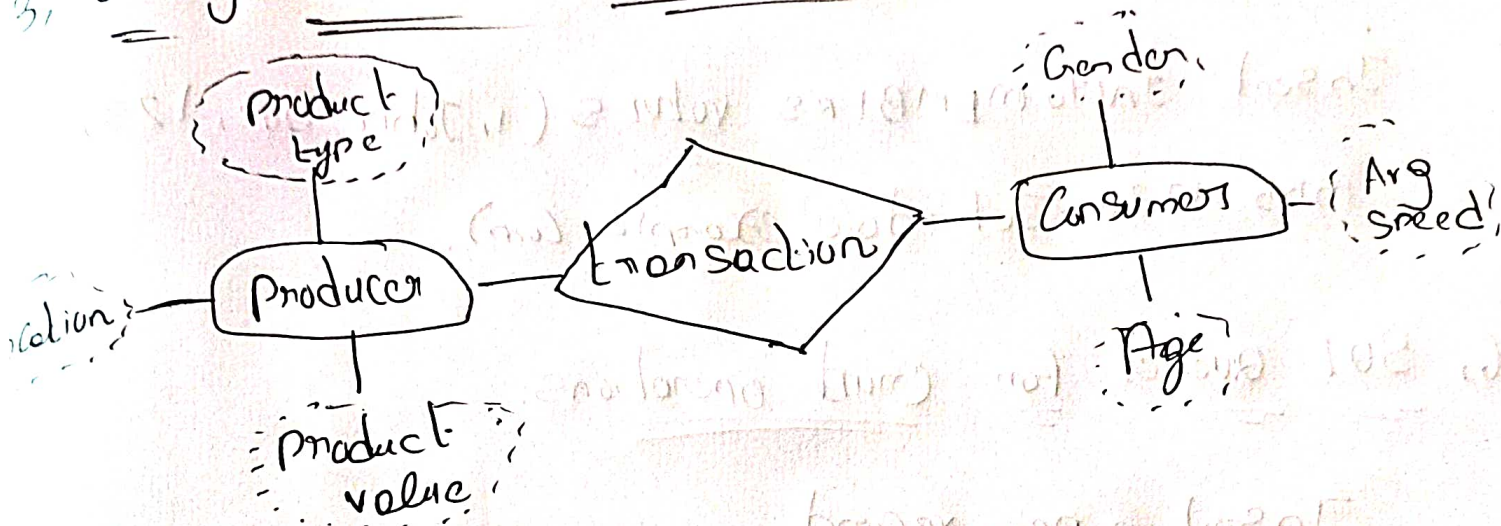
2, main entities and Attributes:

Books: Book ID, Title, Author, ISBN, publisher, Year published, Genre, Copies Available

members: member ID, First name, Last name, Address, phone no., email

Transactions: Transaction ID, member ID, Book ID,
Borrow Date, Due Date, Return Data

3, entity Relationship (E.R) Diagram:

4, Sql table Creation Scripts.

```
create TABLE Books (
    Book ID INT PRIMARY KEY,
    title varchar (255),
    Author Varchar (255),
    ISBN   VARCHAR (13),
    Publisher VARCHAR (255),
    Year Publisher YEAR ,
    Genre VARCHAR (50),
    Copies Available INT );
```

5, Simple Data for each table

Insert INTO BOOKS VALUES (1, Jasworth, 9177545940, Scribner, 1925, Fiction 1,5);

Insert INTO MEMBERS values (1, John, Doe, 123, 1555-1234, Johndo@ example. Com).

6, SQL Queries for Crud operations:

Insert a new record

Insert INTO Books (BooksID, title, Author, ISBN, Genre, publisher)

Values (3, "Harry ponter", 1960, Fiction, 1960)

7, Example Queries:

List of all Books borrowed by a Specific member.

Select Books title

From Transactions

Join Books on Transactions Book ID = Books. BookID

where Transactions. member ID = 1;

Due dates for all borrowed books.

select Books. title, Transaction, Due Date from
transaction

Join Transaction, Book ID = Books = BookID.

8, Report Comparing File-Based system and DBMS :

Data management : File-based system Data management
is manual and prone to human error

DBMS. Centralized data management with automated
updates ensuring data ~~to be~~ Consisting and
integrity

Data - Retrieval : File-based system : Retrieval is
slow , requiring manual searching through
files.