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DATABASEwk1

Scenario Analysis:

A database helps a retail store efficiently manage its inventory by storing, organizing, and retrieving product information in a structured way. The main tables could include Products, Suppliers, and Inventory Transactions .

The Products table stores product details such as *Product ID* (primary key), ProductName, Category, Price, and Reorder Level . The Suppliers table includes *Supplier ID* (primary key), SupplierName, and ContactDetails. The InventoryTransactions table records stock movements with *TransactionID* (primary key), ProductID (foreign key), QuantityIn, QuantityOut, and TransactionDate.

Primary keys uniquely identify each record, while foreign keys link related data between tables, ensuring data integrity. Using this database, the store can track stock levels in real time, prevent overstocking or stockouts, and make informed purchasing decisions.

2. TABLE CREATION

Primary Key: CourseID

CourseID (PK)	CourseName	Credits
C101	Database Systems	4
C102	Programming I	3
C103	Web Development	3

Table 2: Students

Primary Key: StudentID

Foreign Key: CourseID (references Courses.CourseID)

StudentID (PK)	StudentName	Age	CourseID (FK)
S001	Thabo Mokoena	20	C101
S002	Lerato Nkosi	22	C102
S003	Neo Dlamini	21	C101

Explanation

- **CourseID** in the **Courses** table uniquely identifies each course.
- **StudentID** uniquely identifies each student.
- **CourseID** in the **Students** table is a foreign key that links each student to a course, creating a relationship between the two tables.

3.COMPARISON

Databases and file systems differ mainly in how they handle data redundancy and querying. In a file system, the same data is often stored in multiple files, which leads to high redundancy and a greater risk of inconsistency when updates are made. Databases reduce redundancy by storing data in related tables and using normalization techniques, ensuring that data is stored only once and shared where needed. Querying is also more powerful in databases. File systems require custom programs to search or retrieve data, which is time-consuming and limited. Databases use structured query languages like SQL, allowing users to quickly and efficiently retrieve, filter, and analyze data.

4.MySQL DBMS

MySQL is a widely used open-source relational database management system (RDBMS) that organizes data into structured tables and supports the Structured Query Language (SQL) for managing and querying data. It is known for being fast, scalable, and reliable, making it suitable for applications from small websites to large business systems. MySQL supports multiple operating systems, numerous data types, and ACID-compliant transactions to ensure data integrity. It also offers features like replication, security controls, and various storage engines for flexibility and performance. MySQL is commonly used to manage business data in e-commerce platforms, web applications, and content management systems.