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*Application Instructions*

***Section 1: Introduction***

*The database system presented is meticulously crafted to efficiently manage and track crucial information within the context of a bicycle repair store. The system comprises dedicated tables for customers, bicycles, mechanics, invoices, and problems, all of which are integral components of the enterprise. Each table serves a distinct purpose and establishes relationships with others, ensuring organized data retrieval and management.*

1. Customers:
   * Holds vital information about customers, including their cusID, first name, last name, phone number, and country.
   * Primary key: cusID
2. Bicycle:
   * Contains comprehensive details about bicycles, such as their VIN, make, model, price, and size.
   * Primary key: VIN
3. Mechanic:
   * Compiles pertinent data about mechanics, including their mechID, first name, last name, age, and country.
   * Primary key: mechID
4. Invoice:
   * Serves as a repository for invoices and encompasses invoiceID, order date in, order date out, cusID, and VIN.
   * Primary key: invoiceID
   * Foreign keys: cusID, VIN
5. Problem:
   * Catalogs specific problems with corresponding information including proID, problem description, price, invoiceID, and mechID.
   * Primary key: proID
   * Foreign keys: invoiceID, mechID

***Data Explanation (Bicycle Repair Store):***

*This database system is purposefully designed to cater to the operations of a bicycle repair store. It centralizes information related to customers, bicycles, mechanics, invoices, and problem records. For example:*

*Customers: Retains details of clientele, facilitating streamlined communication and service provision.*

*Bicycle: Encompasses critical data about the store's inventory, including unique identifiers (VIN), make, model, pricing, and sizing information.*

*Mechanic: Keeps track of the skilled workforce, recording their identification, personal details, and relevant demographics.*

*Invoice: Acts as a hub for transactional records, detailing customer interactions, order dates, and associated bicycle information.*

*Problem: Captures specific issues encountered during repairs, along with cost implications, tying them back to the original invoice and the responsible mechanic.Relationships between the tables in the database:*

1. Customers and Invoice:
   * Many to one relationship
   * Multiple invoices can be associated with one customer, but one customer can have multiple invoices.
2. Bicycle and Invoice:
   * Many to one relationship
   * Multiple invoices can involve one bicycle, but one bicycle can be in multiple invoices.
3. Mechanic and Problem:
   * Many to one relationship
   * Multiple problems can be associated with one mechanic, but one mechanic can solve multiple problems.

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***Section 3: Historical Data Framework and Multi-valued Fields***

*In this database system, multi-valued historical data fields are introduced in the following tables and relationships:*

*Customers - Contains (relationship)*

*Invoice - Is-related-to (relationship)*

*Problem - Is-a (relationship)*

*For each of these fields, a set of triggers and stored procedures are created to handle INSERTS, UPDATES, and DELETES, keeping a history of changes using timestamps.*

***Database Schema:***

***Entity Descriptions:***

*Customers: Stores customer information.*

*Bicycle: Contains details about bicycles.*

*Mechanic: Holds information about mechanics.*

*Invoice: Tracks invoices for services rendered.*

*Problem: Records specific problems addressed in each repair job.*

*Customers\_History, Invoice\_History, Problem\_History: Tables for tracking historical data changes.*