CS409 Assignment 1 Solution - Fall 2026

Question 1: DBMS Architecture Levels

Description	Level of DBMS Architecture
The database defines the company-wide entities Customer, Device, and Rental, their attributes, and the relationships among them.	Conceptual Level
A customer-specific database view displays only that customer's current rentals and due dates.	External Level
The DBA selects disk file organization and creates an index on Rental_Date to improve data retrieval.	Internal Level

Question 2: Device Rental System

1. Main Entities and Their Attributes

Entity	Attributes
Branch	Branch_ID (Primary Key), Branch_Name
Device	Device_ID (Primary Key), Device_Name, Daily_Rate, Branch_ID (Foreign Key)
Customer	Customer_ID (Primary Key), Customer_Name, Contact_No
Rental	Rental_ID (Primary Key), Rental_Date, Return_Date (Optional / NULL), Customer_ID (Foreign Key), Device_ID (Foreign Key)

2. Relationships and Cardinalities

Relationship	Cardinality	Explanation
Branch - Device	One-to-Many (1:N)	One branch can have many devices, but each device belongs to exactly one branch.
Customer - Rental	One-to-Many (1:N)	One customer can have many rental records, but each rental belongs to exactly one customer.

Device - Rental	One-to-Many (1:N)	One device can appear in many rental records over time, but each rental record refers to exactly one device.

3. ER Diagram

