

The key differences between Conceptual ERD and Logical ERD, in the form of brief points and covering all the visible differences:

### **Primary Keys and Surrogate Keys**

Conceptual ERD uses descriptive primary keys (e.g., ResidentID, LeaseID).

Logical ERD utilizes surrogate keys, i.e., UUIDs, as primary keys for all primary entities.

### **Explicit Data Types**

Conceptual ERD lacks data types for attributes.

Logical ERD mentions explicit data types (VARCHAR, DECIMAL, DATE, TIMESTAMP) for all attributes.

### **Normalization of Data**

Conceptual ERD uses a simpler structure, sometimes including related data.

Logical ERD fully normalizes the data, creating additional tables to avoid duplication and independent updating (e.g., UNIT\_AMENITY, BUILDING\_AMENITY).

### **Intersection/Join Tables**

Conceptual ERD implies some many-to-many relationships.

Logical ERD creates intersection tables (like WORKER\_ASSIGNMENT, LEASE\_OCCUPANT, BUILDING\_MANAGER\_ASSIGNMENT) for many-to-many relationships.

### **Attribute Decomposition**

Conceptual ERD sometimes includes composite attributes in a single entity.

Logical ERD splits those out into multiple fields or relationships to other entities (e.g., contact\_info break-up, addresses and assignment info break-out).

### **Specialization Handling**

Conceptual ERD uses subtype tables (MAINTENANCE STAFF, CONTRACTOR).

Logical ERD portrays both as a separate table with clear foreign key references to the main VENDOR entity and adds type field, and further links it to WORK\_ORDER entity via WORKER\_ASSIGNMENT entity..

### **Foreign Key Relationships**

Conceptual ERD uses simple lines connecting.

Logical ERD explicitly defines foreign key constraints and visually notates them as FK.

### **Operational/Transactional Tables**

Logical ERD introduces additional operational process tables (PAYMENT\_TRANSACTION, AMENITY) not seen in the conceptual figure.

**Support for Multiple Roles and Assignments**

Logical ERD allows entities (workers, managers) to have multiple roles and assignments at the same time, using assignment tables.

**History and Auditability**

Logical ERD adds timestamp fields (createdAt, updatedAt) across tables for auditing and history of changes.

**Enhanced Relationship Tracking**

Logical ERD captures more detailed flows for escalation, requests, orders, and work progress through foreign keys and additional columns.

These differences prepare the logical model for real-world database application and address all data integrity, normalization, and operational requirements in a property management workflow.