**Entity-Relationship (ER) Diagram Relationships for Hotel Management System**

Below are the relationships for your **Hotel Management System** that you can use in an **ER Diagram**:

**Entities & Relationships**

1. **Guests ↔ Bookings**
   * A **guest** can make **multiple bookings**.
   * Each **booking** is associated with **one guest**.
   * **One-to-Many Relationship (1:N)**

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Guests (1) ---- (N) Bookings

1. **Rooms ↔ Bookings**
   * A **room** can have **multiple bookings** over time.
   * Each **booking** is linked to **one room**.
   * **One-to-Many Relationship (1:N)**

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Rooms (1) ---- (N) Bookings

1. **Bookings ↔ Billing**
   * Each **booking** has **one billing** entry.
   * A **billing** entry belongs to **one booking**.
   * **One-to-One Relationship (1:1)**

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Bookings (1) ---- (1) Billing

1. **Bookings ↔ Services**
   * A **booking** can request **multiple services**.
   * A **service** can be used in **multiple bookings**.
   * **Many-to-Many Relationship (M:N)** (Needs a **join table**: booking\_services)

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Bookings (M) ---- (N) Services

1. **Staff ↔ Bookings**
   * A **staff member** (like receptionists) can handle **multiple bookings**.
   * Each **booking** is assigned to **one staff member**.
   * **One-to-Many Relationship (1:N)**

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Staff (1) ---- (N) Bookings

1. **Staff ↔ Security**
   * A **staff member** can have **multiple security settings**.
   * A **security setting** can be assigned to **multiple staff members**.
   * **Many-to-Many Relationship (M:N)** (Needs a **join table**: staff\_security)

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Staff (M) ---- (N) Security

1. **Settings**
   * Global **settings** apply to the entire hotel system.
   * No direct foreign key needed, but settings affect system-wide behavior.
   * **Standalone Table**
2. **Inventory ↔ Staff**
   * A **staff member** can manage **multiple inventory items**.
   * Each **inventory item** is managed by **one staff member**.
   * **One-to-Many Relationship (1:N)**

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Staff (1) ---- (N) Inventory

1. **Reports**
   * Generated from **Bookings, Billing, and Inventory**.
   * Usually **automatically created** by the system.
   * No direct relationship, but they reference **multiple tables**.

**ER Diagram Summary**

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Guests (1) ---- (N) Bookings (N) ---- (1) Rooms

| |

| |-- (1:1) -- Billing

| |

| |-- (M:N) -- Services

|

Staff (1) ---- (N) Inventory

Staff (1) ---- (N) Bookings

Staff (M) ---- (N) Security

Settings (Standalone)

Reports (Generated from other tables)

**Next Steps**

* Use **draw.io**, **Lucidchart**, or **Microsoft Visio** to visually map out this ER diagram.
* If you need a **SQL schema** with FOREIGN KEY relationships, let me know!

Would you like me to generate a **graphical ER diagram** for you? 🚀