38. Telecom Billing System

A Telecom Billing System is a software solution designed to manage the billing and invoicing processes for telecommunications services provided to subscribers. It encompasses various functionalities such as subscriber management, plan management, call detail recording, invoicing, payment processing, and customer support.

**Summary of Entities and its attributes:**

1. **Subscriber**: Represents individuals or organizations who subscribe to telecom services. Attributes may include subscriber\_id, name, address, phone\_number, etc.
2. **Plan**: Describes the various subscription plans offered by the telecom company. Attributes may include plan\_id, plan\_name, description, cost\_per\_month, etc.
3. **Call Detail Record (CDR)**: Contains information about each call made by subscribers. Attributes may include cdr\_id, caller\_number, callee\_number, call\_duration, call\_date\_time, etc.
4. **Invoice**: Represents the billing statement generated for each subscriber based on their usage. Attributes may include invoice\_id, subscriber\_id (foreign key), total\_amount, billing\_period, etc.
5. **Service**: Describes additional services offered by the telecom company (e.g., internet, SMS, MMS, roaming, etc.). Attributes may include service\_id, service\_name, description, cost\_per\_unit, etc.
6. **Device**: Represents the devices used by subscribers (e.g., smartphones, routers, modems, etc.). Attributes may include device\_id, device\_type, model, manufacturer, etc.
7. **Complaint**: Contains information about complaints raised by subscribers regarding service issues or billing discrepancies. Attributes may include complaint\_id, subscriber\_id (foreign key), description, status, date\_raised, etc.
8. **Coverage**: Describes the coverage areas provided by the telecom company (e.g., network towers, service availability zones, etc.). Attributes may include coverage\_id, area\_name, description, etc.
9. **Promotion**: Represents promotional offers or discounts provided to subscribers. Attributes may include promotion\_id, promotion\_name, description, start\_date, end\_date, discount\_percentage, etc.

**Summary of entity relationships:**

1. **Subscriber-Plan**: One subscriber can have only one plan, but one plan can be subscribed to by multiple subscribers. This is a one-to-many relationship.
2. **Subscriber-Call Detail Record (CDR)**: One subscriber can have multiple call records, but each call record belongs to only one subscriber. This is a one-to-many relationship.
3. **Subscriber-Invoice**: One subscriber can have multiple invoices, but each invoice belongs to only one subscriber. This is a one-to-many relationship.
4. **Subscriber-Device**: One subscriber can have multiple devices, but each device is associated with only one subscriber. This is a one-to-many relationship.
5. **Subscriber-Service**: One subscriber can subscribe to multiple services, and each service can be subscribed to by multiple subscribers. This is a many-to-many relationship, likely implemented using an associative table.
6. **Subscriber-Complaint**: One subscriber can raise multiple complaints, but each complaint is raised by only one subscriber. This is a one-to-many relationship.
7. **Subscriber-Promotion**: One subscriber can avail multiple promotions, and each promotion can be availed by multiple subscribers. This is a many-to-many relationship, likely implemented using an associative table.

ER DIAGRAM