Relationships and Cardinality in the Database Schema

Each of the table relationships is represented by a line connecting two tables in the EER Diagram. The symbols at the end of each line indicate the “cardinality” of the relationship (e.g., one-to-one, one-to-many, many-to-many). The cardinality describes how instances of one table relate to instances of another table.

Overview of Database Tables and Their Relationships

- **Client**: This table contains information about the clients. Each client has a gender, which is referenced from the Gender table, establishing a **one-to-many** relationship (one gender can be associated with many clients). There’s a relationship with the User table, it represents the case manager assigned to each client, which also be **a one-to-many** relationship (one user can manage many clients).
- **Gender**: This table contains a list of genders. It’s referenced by the Client table, creating a **one-to-many relationship** (one gender can be associated with many clients).
- **Incident**: This table stores data about incidents. Each incident is associated with a specific client, a service, and a service intensity, creating **one-to-many relationships (one client/service/service intensity can be associated with many incidents).**
- **Service**: This table contains information about the services provided. Each service is associated with a specific service type and service severity, **creating one-to-many relationships (one service type/service severity can be associated with many services).** Services are also linked to incidents, indicating which services are provided during each incident.
- **Service Type**: This table contains a list of service types. Each service type is provided by a specific agency, establishing a **one-to-many relationship (one agency can provide many service types).** Service types are also linked to services, indicating the type of each service.
- **Service Intensity**: This table contains information about the intensity of services. It’s linked to incidents, indicating the intensity of service required for each incident.
- **Agency**: This table contains a list of agencies. It’s referenced by the Service Type table, creating a **one-to-many relationship (one agency can provide many service types).**
- **User**: The user in the system is a case manager, then the User table is linked to the Client table, indicating which user (case manager) is managing each client. This is also a **one-to-many relationship (one user can manage many clients).**

Analysis of Table Relationships in the Database Schema

- **Client and Gender**: The Client table has a foreign key that references the Gender table. This means that each client has a gender associated with them. The gender is not stored directly in the Client table but is instead referenced from the Gender table. This allows for efficient storage (as genders can be reused across multiple clients) and ensures data consistency (as the list of possible genders is maintained in one place).
- **Incident and Client**: The Incident table has a foreign key that references the Client table. This indicates that each incident is associated with a specific client. This is a common pattern in database design where an "event" table (in this case, Incident) references an "entity" table (Client). This allows the database to keep track of which client each incident is associated with.
- **Service Type and Agency**: The Service Type table has a foreign key that references the Agency table. This suggests that each service type is provided by a specific agency. This allows the database to keep track of which agency provides each type of service, which can be useful for reporting and analysis purposes.
- **Service Intensity and Incident**: The Service Intensity table has a foreign key that references the Incident table. This implies that each incident has a defined service intensity. This could be used to track the level of service required for each incident, which could be useful for resource allocation and planning.
- **Other Relationships**: The diagram also includes other tables such as User, Service, and Service Severity. Each of these tables is connected to others through foreign keys, indicating various relationships. For example, the User table might be linked to the Client table, indicating which user is managing each client. The Service table could be linked to the Incident table, showing which services are being provided for each incident. The Service Severity table could be linked to the Service table, indicating the severity level of each service.