Assignment 1: Analyze a given business scenario and create an ER diagram that includes entities, relationships, attributes, and cardinality. Ensure that the diagram reflects proper normalization up to the third normal form.

Scenario: Online Bookstore

The online bookstore sells books to customers. Customers can place orders for books, and each order can contain multiple books. Each book has various attributes such as title, author, ISBN, genre, and price. Customers register on the website to place orders, and their information needs to be stored for future purchases.

Entities:

1. Customer:
    - Attributes: customer_id (Primary Key), name, email, address, phone_number
    - Relationships: Can place multiple orders.

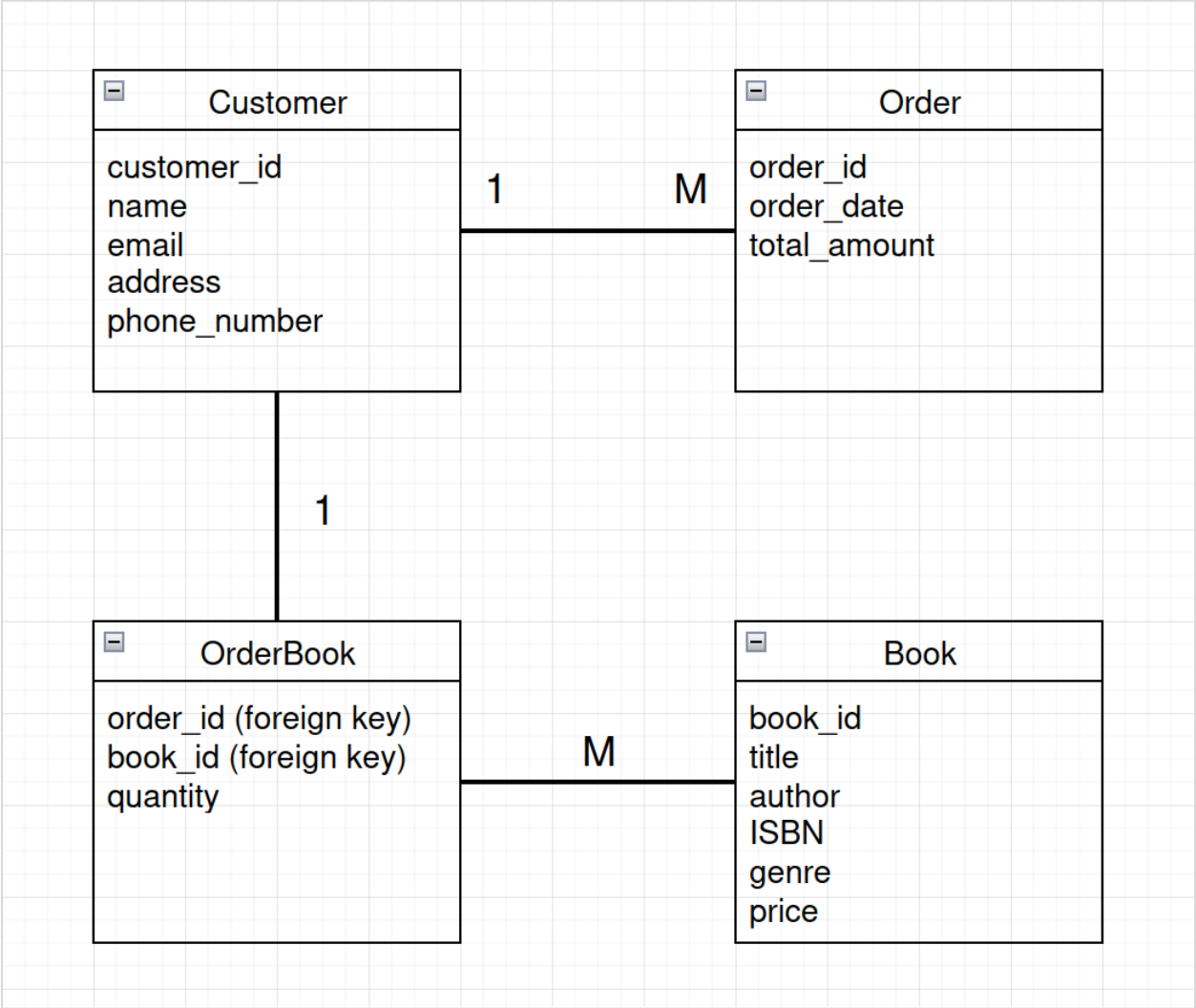
2. Order:
    - Attributes: order_id (Primary Key), order_date, total_amount
    - Relationships: Placed by one customer, contains multiple books.

3. Book:
    - Attributes: book_id (Primary Key), title, author, ISBN, genre, price
    - Relationships: Can be included in multiple orders.

Relationships:

1. Customer-Order: One customer can place multiple orders. (One-to-Many)
2. Order-Book: One order can contain multiple books, and one book can be in multiple orders. This is a Many-to-Many relationship, resolved with an intermediary table.

ER Diagram:



Normalization:

1. First Normal Form (1NF): Each table has a primary key, and all attributes are atomic.
2. Second Normal Form (2NF): All non-key attributes are fully functional dependent on the primary key. There are no partial dependencies.
3. Third Normal Form (3NF): There are no transitive dependencies. All non-key attributes are dependent only on the primary key, not on other non-key attributes.