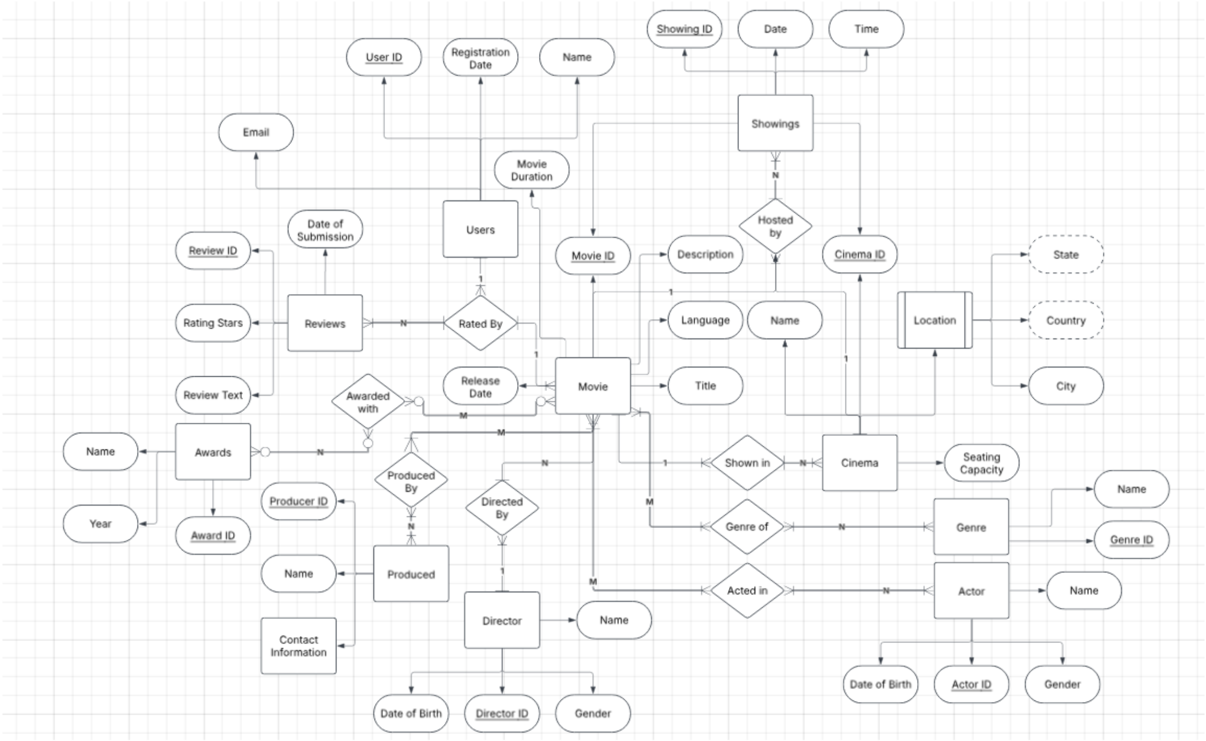
Q9) ER Diagram for Movie Database System



Explanation of the ER Diagram

My ER diagram represents a **Movie Database System**, incorporating all the required entities and relationships efficiently. The key components are:

1. **Movie**:
   - Each movie has a unique **Movie ID**, **Title**, **Release Date**, **Genre**, **Language**, and **Description**.
   - Movies can belong to multiple genres (**many-to-many** relationship).
   - Each movie has a **Movie Duration** attribute.
2. **Actors**:
   - Each actor has a unique **Actor ID**, **Name**, **Date of Birth**, and **Gender**.
   - The **Acted In** relationship represents a **many-to-many** connection between movies and actors.
3. **Directors**:
   - Each director has a unique **Director ID**, **Name**, **Date of Birth**, and **Gender**.
   - A director can direct multiple movies, but each movie is directed by only one director (**one-to-many** relationship).
4. **Producers**:
   - Each producer has a **Producer ID**, **Name**, and **Contact Information**.
   - Movies are produced by multiple producers (**many-to-many** relationship).
5. **Genres**:
   - Each genre has a **Genre ID** and **Name**.
   - A movie can belong to multiple genres, and each genre can be associated with multiple movies (**many-to-many** relationship).
6. **Reviews and Users**:
   - Each user has a **User ID**, **Name**, **Email**, and **Registration Date**.
   - Users can submit multiple reviews, where each review contains a **Review ID**, **Rating Stars**, **Review Text**, and **Date of Submission**.
   - The **Rated By** relationship connects **Users** to **Reviews**, and **Reviews** to **Movies** (**one-to-many relationship** from user to reviews and **one-to-one** from review to movie).
7. **Cinemas and Showings**:
   - Each cinema has a **Cinema ID**, **Name**, **Location** (City, State, Country), and **Seating Capacity**.

- Movies are shown in cinemas through **Showings**, which include a **Showing ID**, **Date**, and **Time**.
- The **Hosted By** relationship connects **Showings** to **Cinemas** (**many-to-one** relationship).

8. **Awards**:
   - Each award has an **Award ID**, **Name**, and **Year**.
   - Movies can win multiple awards (**many-to-many** relationship).

Design Choices and Justifications

1. **Many-to-Many Relationships**:
   - Movies can have multiple actors and genres.
   - Multiple producers can be associated with a movie.
   - Movies can win multiple awards.
2. **One-to-Many Relationships**:
   - A director directs multiple movies, but a movie has only one director.
   - A cinema hosts multiple showings, but each showing is linked to a single cinema.
3. **Entities vs. Attributes**:
   - **Awards** are treated as a separate entity rather than an attribute of a movie, allowing multiple movies to win the same award.
   - **Genres** are separate from movies to avoid redundancy.
   - **Showings** are treated as a separate entity to accommodate multiple screenings of the same movie at different times and locations.
4. **Data Redundancy Reduction**:
   - **Users** and **Reviews** are separate to prevent duplication of user data.
   - **Location** is modeled as a separate component inside **Cinema** to maintain structured data.