

## **Online Newspaper Database Project Report**

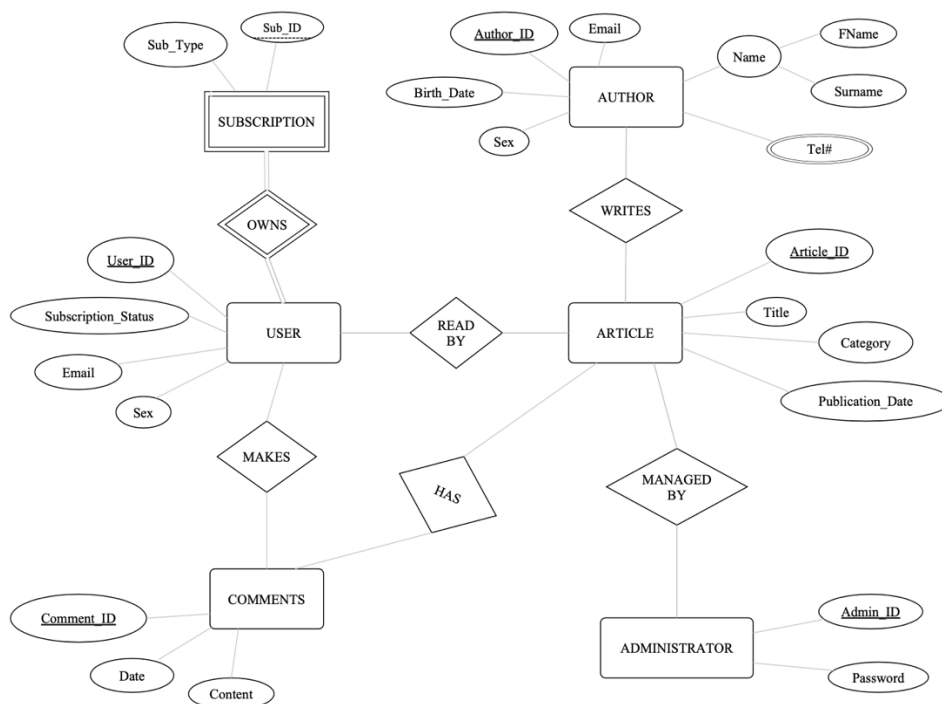
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### Database Description and Purpose:

This database is designed to manage the operations of an online newspaper, including user subscriptions, articles, comments, and administrative functions. The database aims to ensure:

1. **User Interaction:** Users can subscribe to the service, read articles, and leave comments.
2. **Content Management:** Articles are written by authors, categorized, and managed by administrators.
3. **Subscription Management:** Tracks subscription types and their association with users.
4. **Administrative Oversight:** Administrators manage the content of the newspaper.

### ER Diagram:



### ER Schema:

AUTHOR = (Author\_ID, Name(Fname, Surname), Birth\_Date, Sex, {Tel#}, Email)

ARTICLE = (Article\_ID, Title, Category, Publication\_Date)

ADMINISTRATOR = (Admin\_ID, Password)

USER = (User\_ID, Subscription\_Status, Email, Sex)

SUBSCRIPTION = (Sub\_ID, Sub\_Type)

Owns = (User\_ID, Sub\_ID)

Writes = (Author\_ID, Article\_ID)

ManagedBy = (Article\_ID, Admin\_ID)

ReadBy = (User\_ID, Article\_ID)

Has = (Article\_ID, Comment\_ID)

### Relational Schema:

AUTHOR = (Author\_ID, Name, Birth\_Date, Sex, Email)

AUTHOR\_TEL = (Author\_ID, Tel#)

ARTICLE = (Article\_ID, Title, Category, Publication\_Date)

ADMINISTRATOR = (Admin\_ID, Password)

USER = (User\_ID, Subscription\_Status, Email, Sex)

SUBSCRIPTION\_OWNS = (Sub\_ID, User\_ID, Sub\_Type)

Writes = (Author\_ID, Article\_ID)

ManagedBy = (Article\_ID, Admin\_ID)

ReadBy = (User\_ID, Article\_ID)

Has = (Article\_ID, Comment\_ID)

### Entities:

- All essential roles in the newspaper system are represented:
  - AUTHORS for content creation.
  - ARTICLES as the central feature of the newspaper.
  - USERS for interacting with the platform.
  - ADMINISTRATORS for managing the system.
  - SUBSCRIPTIONS to track user memberships.

### Relationships:

- All relationships accurately describe the interactions:
  - Writes: Links authors to their articles.
  - ManagedBy: Links articles to administrators for oversight.
  - Owns: Links users to their subscriptions.
  - ReadBy: Tracks which users read which articles.
  - Has: Connects articles to their comments.

### Normalization:

- Multi-valued attributes (Tel#) have been correctly separated into a new relation (AUTHOR\_TEL).
- Subscription details are encapsulated in a separate entity (SUBSCRIPTION).

## Constraints

### 1. Primary Keys

- Each entity must have a unique identifier:
  - Author\_ID for AUTHOR
  - Article\_ID for ARTICLE
  - Admin\_ID for ADMINISTRATOR
  - User\_ID for USER
  - Sub\_ID for SUBSCRIPTION
  - Comment\_ID for COMMENTS

### 2. Foreign Keys

- Relationships between entities are represented using foreign keys:
  - Writes: Author\_ID in WRITES references Author\_ID in AUTHOR; Article\_ID references Article\_ID in ARTICLE.
  - ManagedBy: Article\_ID references Article\_ID in ARTICLE; Admin\_ID references Admin\_ID in ADMINISTRATOR.
  - ReadBy: User\_ID references User\_ID in USER; Article\_ID references Article\_ID in ARTICLE.
  - Owns (Subscription Ownership): User\_ID references User\_ID in USER; Sub\_ID references Sub\_ID in SUBSCRIPTION.
  - Has: Article\_ID references Article\_ID in ARTICLE; Comment\_ID references a potential COMMENT entity.

### 3. Cardinality

- Owns: A user can own only one subscription at a time, but a subscription can belong to multiple users.
- Writes: An author can write many articles, but an article can only be written by one author.
- ManagedBy: An article can be managed by one administrator, but an administrator can manage multiple articles.
- ReadBy: A user can read many articles, and an article can be read by many users.
- Has: An article can have many comments, and each comment belongs to one article.