

# Data and Applications

Project Phase I

## **Team 16: Data Kedavra:**

Pahulpreet Singh [2019113013]

Rishabh Khanna [2019113025]

Kshitijaa Jaglan [2019115005]

# The Mini-World

We are modelling the Database used by a **University/College Publication**. The Publication in question will have **Magazines** consisting of **Articles** and **Cartoons**. The Magazine Issue would be defined by its 'Volume' and 'Issue', where Volume corresponds to an year of publication, and Issue refers to each publication in the given year. The database will store the media produced by the Publication (including Articles and Cartoons), along with Members Information, Subscribers and Sponsors.

The **Members** are divided into **Subclasses** based on their **Role** in the Publication, they could be either Author, Designer, Editor or a Marketing Team Member. In our case any given Member has to **belong to exactly one** of the following classes.

The **Subscribers** will be getting an Email Notification whenever an issue is realised, and will have an option to subscribe for 6 or 12 months.

The **visitors** visiting the website will have the functionality to **filter** the magazine issues, articles, etc., based on parameters like date, author, etc. and **access** them.

Whereas, **Members** will have access to **modify** the data inside the database **based on their roles**. For example, writers will be able to modify the data related to articles, designers can modify that related to cartoons and so on.

# Database Requirements

## ENTITIES

- **Magazine**
  - Composite Key: **issue\_no, volume\_no**
  - Composite Attribute : **date**
- **Article** (Weak Entity, Identified by Magazine)
  - Partial key: **page\_num**
  - Attribute: **title**
  - Multivalued Attribute : **Category**
- **Cartoon** (Weak Entity, Identified by Magazine)
  - Partial key: **image**
  - Attribute: **Caption**
  - Multivalued Attribute : **Tags**
- **Members**
  - Primary Key attribute: **member\_id**
  - Key attribute: **supervisor\_id**
  - Composite Attribute: **Name**
  - Attribute: **Email**
  - Attribute: **Date of Joining**
  - Derived Attribute: **Years they've worked**
  - Subclasses:
    - Author
      - Multi valued Attribute: **Languages**
    - Designer
      - Multivalued Attribute: **Softwares**
    - Editor
      - Multivalued Attribute: **Genres**
    - Marketing Team Member
      - Multivalued Attribute: **Platforms** (Twitter, Instagram, Facebook, E-mail, etc.)
- **Subscribers**
  - Key Attribute: **Email**
  - Attribute: **Name**
  - Attribute: **Subscription Type** (6 months/12 months)
  - Attribute: **Date of Subscription**

- **Sponsors**
  - Key Attribute: **sponsor\_id**
  - Attribute: **Product**
  - Attribute: **Payment Option**

## **RELATIONS**

- **Includes:** *Relation between a magazine and the articles included*  
It is also the identifying relation for the Weak Entity "Article".  
One magazine can have a minimum of Five articles and a maximum of Twenty articles.
- **Contribute:** *A relation between article, designer, editor and author*  
Each Author/Designer/Editor can work on any number of articles. An article can have either one author, or be a collaboration of at most Three authors. An Article has exactly One Designer and exactly One Editor.
- **Draws:** *Relation between a designer and a cartoon*  
A cartoon is drawn by exactly one designer, and each Designer can draw any number of Cartoons.
- **Subscribed:** *Relation between subscriber and magazine*  
A Magazine can have any number of Subscribers.
- **Supervise:** *Relation between member and member*  
A member can be supervised by at most one member, and can supervise any number of members.
- **Selling adverts:** *Relation between advertisers and sponsors*  
An advertisement member can contact upto 2 companies (0,2), so can a company contact/work upto 3 advertisement members (1,3).

# **Functional Requirements**

## **Retrieval:**

- Selection
  - List all Issues.
  - List all Articles.
  - List all Authors.
  - Articles from a particular Magazine Issue.
  - List of all Articles written by an Author.
  - List all Editors.
  - List of all Articles edited by an Editor.
  - List all Designers.
  - List of all Articles designed by a Designer.
  - Show Cartoons by Designer.
  - Show Cartoons from a particular Issue.
  - Show Cartoons from a particular Volume.
  - Subscribers for a given Volume.
  - Subscribers for a given Issue.
- Projection
  - Issues in a Volume.
  - Articles with a particular category.
  - Sort Articles by name.
  - Show Cartoons with a particular Tag.
  - Subscribers with a particular subscription type.
- Aggregate
  - Average number of subscribers for a Volume.
  - Total number of articles in a Volume.
  - Subscription Change between two given dates.
- Search
  - Search Articles by name.
  - Search Members by name.

- Analysis
  - Most frequent category of Articles written by each Author.
  - List of subscribers who subscribed between two consecutive Volumes.

## **Modification:**

- Insertion
  - Creating an Issue.
  - Adding Tags to Article.
  - Adding Categories to the Article.
  - Adding Tags to the Article.
  - Add a Member.
  - Add a Subscriber.
  - Add a Sponsor.
- Updation
  - Modify the contents of the Article.
  - Change the issue of an Article.
  - Change the tags in an Article.
  - Change the categories in an Article.
  - Modify Member details.
  - Modify Subscriber details.
- Deletion
  - Remove a Member.
  - Delete an Article.
  - Unsubscribe.
  - Remove a Sponsor.