Information System - Lab work 8

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1 Requirement

You need a database to manage information about the magazines that you buy habitually.

For each magazine, its title, the ISSN (code that identifies the publication), number and year are stored. You need also data about the articles, including its title, page of beginning and page of ending. It is assumed that there are no two articles with the same title.

Every article can be written by several authors, whose name, e-mail address and ascription are stored. Besides, a number that indicates the order of has to be stored.

2 Design Database

2.1 Determine concepts that needs to be stored

- Magazine
- Article
- Author

Figure 1: Concepts

2.2 Determine attributes of each concept

- Magazine (title, ISSN, number, year, order_no)
- Article (title, begin_page, end_page)
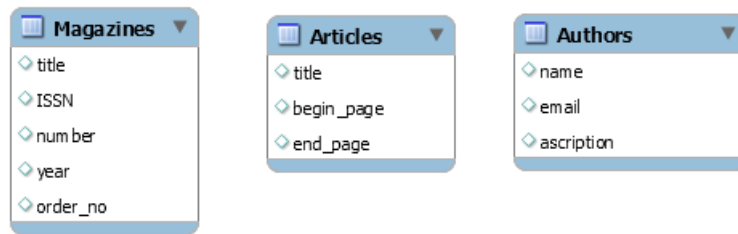- Author (name, email, ascription)

Figure 2: Attributes

2.3 Determine links (relationships) between them

- Article and Magazine ("has")

- Article and Author ("has")

2.4 Determine types of each concept attribute

- Magazine

  - title VARCHAR(100)
  - ISSN VARCHAR(20)
  - number INT
  - year INT
  - order_no INT

- Article

  - title VARCHAR(100)
  - begin_page INT
  - end_page INT

- Author

  - name VARCHAR(50)
  - email VARCHAR (50)
  - ascription VARCHAR (200)

2.5 Solve foreign key links

- Magazines

  - magazine_id INT
  - title VARCHAR(100)

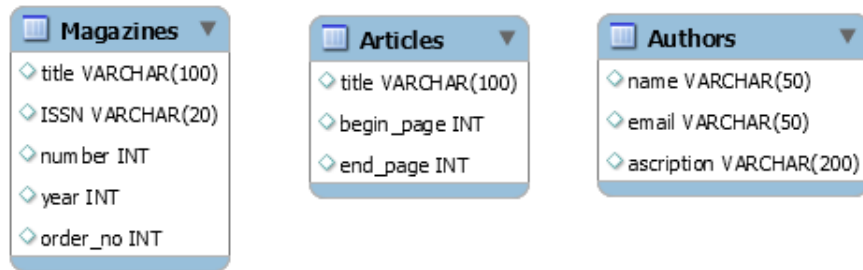Figure 3: Type of attributes

    – ISSN VARCHAR(20)

    – number INT

    – year INT

    – order_no INT

- Articles

    – article_id INT

    – title VARCHAR(100)

    – begin_page INT

    – end_page INT

    – magazin_id INT

- Authors

    – author_id INT

    – name VARCHAR(50)

    – email VARCHAR (50)

    – ascription VARCHAR (200)

- Article_Author

    – article_id INT

    – author_id INT
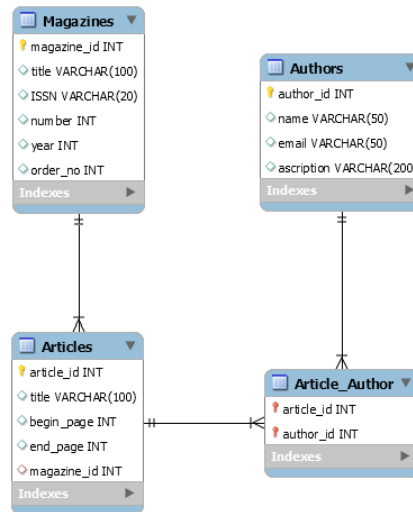
Figure 4: Solve foreign key links

2.6 Implementation

```
CREATE DATABASE Magazines;
USE Magazines;

CREATE TABLE Magazines (
   magazine_id INT NOT NULL,
   title VARCHAR(100),
   ISSN VARCHAR(20),
   number INT,
   year INT,
   order_no INT,
   PRIMARY KEY (magazine_id)
);

CREATE TABLE Articles (
   article_id INT NOT NULL,
   title VARCHAR(100),
   begin_page INT,
   end_page INT,
   magazine_id INT,
   PRIMARY KEY (article_id),
   FOREIGN KEY (magazine_id)
   REFERENCES Magazines(magazine_id)
);
```

```sql
CREATE TABLE Authors (
    author_id INT NOT NULL,
    name VARCHAR(50),
    email VARCHAR(50),
    ascription VARCHAR(200),
    PRIMARY KEY (author_id)
);

CREATE TABLE Article_Author (
    article_id INT NOT NULL,
    author_id INT NOT NULL,
    PRIMARY KEY (article_id, author_id),
    FOREIGN KEY (article_id) REFERENCES Articles(article_id),
    FOREIGN KEY (author_id) REFERENCES Authors(author_id)
)
```

```
mysql> describe Magazines;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| magazine_id | int(11)      | NO   | PRI | NULL    |       |
| title       | varchar(100) | YES  |     | NULL    |       |
| ISSN        | varchar(20)  | YES  |     | NULL    |       |
| number      | int(11)      | YES  |     | NULL    |       |
| year        | int(11)      | YES  |     | NULL    |       |
| order_no    | int(11)      | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
6 rows in set (0.00 sec)

mysql> describe Articles;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| article_id  | int(11)      | NO   | PRI | NULL    |       |
| title       | varchar(100) | YES  |     | NULL    |       |
| begin_page  | int(11)      | YES  |     | NULL    |       |
| end_page    | int(11)      | YES  |     | NULL    |       |
| magazine_id | int(11)      | YES  | MUL | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)

mysql> describe Authors;
+------------+--------------+------+-----+---------+-------+
| Field      | Type         | Null | Key | Default | Extra |
+------------+--------------+------+-----+---------+-------+
| author_id  | int(11)      | NO   | PRI | NULL    |       |
| name       | varchar(50)  | YES  |     | NULL    |       |
| email      | varchar(50)  | YES  |     | NULL    |       |
| ascription | varchar(200) | YES  |     | NULL    |       |
+------------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)

mysql> describe Article_Author;
+------------+---------+------+-----+---------+-------+
| Field      | Type    | Null | Key | Default | Extra |
+------------+---------+------+-----+---------+-------+
| article_id | int(11) | NO   | PRI | NULL    |       |
| author_id  | int(11) | NO   | PRI | NULL    |       |
+------------+---------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

Figure 5: Output