PMF
Matematički odsjek

Baze podataka

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Baza podataka za Web Forum

Zagreb, 2022

Sadržaj

1. Introduction

In the following document I will model and design a database for a forum - a web portal where ideas and views on a particular issue can be exchanged.
We want to model a database for a web forum on which different users can talk about a particular topic. Every user has an identification number for its account, which is created with email and password. The forum is constructed with sections which contain posts from specific topics. Hence every section has identification, name and only one moderator. The moderator is actually the user who made the particular section. Every user can start many discussions by making a post under particular section. Moreover every user can join a discussion with making a reply to the specific discussion.

2. Conceptual scheme

The aforementioned database will be designed with the relational model. For that reason in the following part the problem will be graphically represented with the Chen diagram.

2.1. **Identifying the entities and relationships.** For the forum database we have identified the following entities and relationship:

Entities: User, section, discussion and reply.

- USER has the attributes identification number, email, username, password, registration date
- SECTION has the attributes identification number, subject, number of posts
- DISCUSSION has the attributes identification number, section, title, content
- REPLY has the attributes identification number, content

The primary keys for our entities are: user identification number, section identification number, discussion identification number and reply identification number.

Relationships: Makes, posts, writes and belongs to.

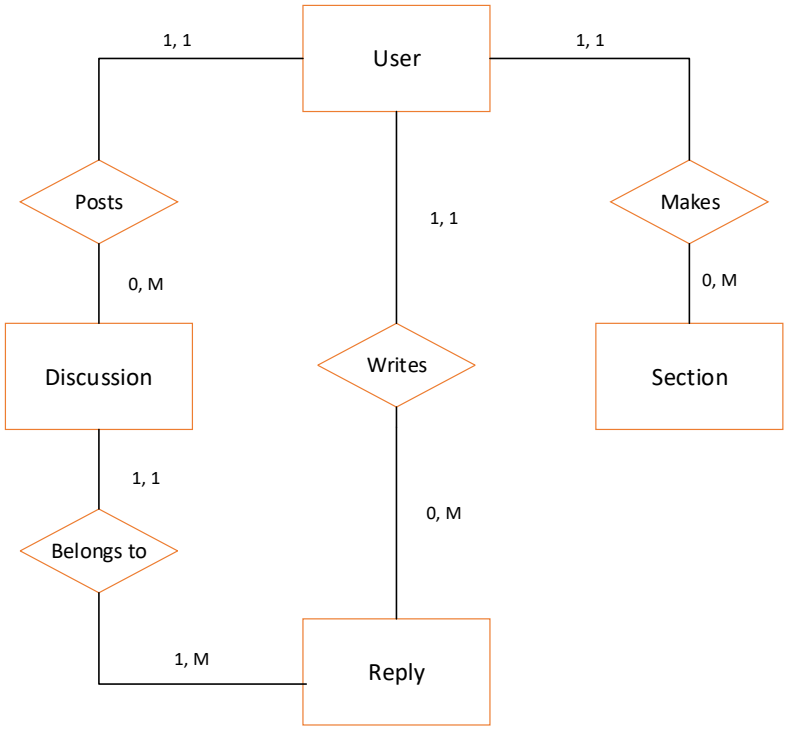
- MAKES between USER and SECTION
- POSTS between USER and DISCUSSION with an attribute date

- WRITES between USER and REPLY with an attribute date
- BELONGS TO between POST and SECTION

Next, for each relationship, we determine the **cardinality**:

- MAKES in direction from USER to SECTION has cardinality 0, M and in the opposite direction 1, 1
- POSTS in direction from USER to DISCUSSION has cardinality 0, M and in the opposite direction 1, 1
- WRITES in direction from USER to REPLY has cardinality 0, M and in the opposite direction 1, 1
- IS UNDER in direction from DISCUSSION to SECTION has cardinality 0, M and in the opposite direction 1, 1

2.2. **Chen's diagram.** Once we have identified all the entities, relationships and attributes, we can now design the conceptual scheme of the database. For this purpose we will use a reduced Chen diagram.



Slika 1. Chen's diagram

3. Relation scheme

After the conceptual scheme was constructed we can move to the next step of the design process for database - the relation scheme. For our database of the Web Forum the scheme looks like this:

USER(user_id, email, username, password, registration_date)
SECTION(section_id, user_id, subject, no_posts)
DISCUSSION(discussion_id, user_id, section_id, title, discussion_content, discussion_date)
REPLY(reply_id, user_id, discussion_id, reply_content, reply_date)
POSTS(user_id, discussion_id)

The primary keys for our relations are respectively underlined in the above scheme.

4. Dictionary

In the following section we will construct a dictionary for the data which will include all the attributes, their types and description of the entities. This can be shown in the next table.

Name	Type	Decription
user_id	integer	identification number that uniquely identifies every user
email	character	email addres of registered user
username	character	username of user
password	character	password of user
registration_date	timestamp	date when the user was registered
section_id	integer	identification number that uniquely identifies every section
subject	character	name of the section
no_posts	integer	number of discussion posted in the section
discussion_id	integer	identification number that uniquely identifies every discussion
title	character	title of the discussion
discussion_content	character	content of the discussion
section_name	character	name of the section to which the discussion belongs
discussion_date	timestamp	date of posting the discussion
reply_id	integer	identification number that uniquely identifies every reply
reply_content	character	content of the reply
reply_date	timestamp	date of making the reply