

6/12

2024

MOP  **LEARN**

Database Documentation

Note

This is a simplified representation of the project database. The real database may require more complex relationships, depending on the data collected from the contributors' platforms.

Table of Contents

PART 1: ANALYSIS	4
1. Data Requirements	4
1.1 Problem Definition	4
1.2 Data Requirements	5
1.3 Business Rules.....	7
PART 2: DESIGN DB	8
2. ER Diagram Design	8
2.1 Design of Business Rules	8
2.2 ER Diagram	9
3. ER-to-Logical Schema Mapping	10
3.1 Mapping of Regular Entity Type.....	10
3.2 Mapping of Weak Entity Type	12
3.3 Mapping of Binary 1-1 Relationship Type.....	12
3.4 Mapping of Binary 1-N Relationship Type	13
3.5 Mapping of Binary M-N Relationship Type.....	16
3.6 Mapping of Multivalued Attributes	19
3.7 Mapping of n-ary Relationship Type	19
3.8 Schema Diagram.....	20

PART 1: ANALYSIS

1. Data Requirements

1.1 Problem Definition

Self-learning has become a critical tool for personal and professional development in today's fast-paced world. However, many individuals face significant barriers that restrict their ability to engage effectively in the self-learning process. These barriers can be categorized into three main challenges:

- **Financial Costs** – The high cost of paid courses makes quality education inaccessible for many learners.
- **Limited Awareness of Opportunities** – Many learners are unaware of the wealth of educational opportunities and resources available to them, leading to missed chances for growth.
- **Lack of Support and Motivation** – The absence of a learning partner often leads to decreased morale and enthusiasm, causing learners to abandon their educational pursuits.

This documentation outlines how MOPlern's database is structured to support the platform's goals of overcoming these challenges. The database enables efficient management of course information, exclusive offers, and user partnerships, ensuring an interactive and seamless self-learning experience.

1.2 Data Requirements

Users

Each user has:

- id: a unique number for each user.
- username: a unique name for each user.
- full_name: consist of first and last name.
- email: the email address of user.
- password: the user account password.
- gender: user gender (male or female).
- image: user profile image.
- profile_background: the profile background header.
- specialization: user study specialization.
- location: user country location.
- bio: brief description about user.

Categories

Each category has:

- id: a unique number for each category.
- title: the category name.

Topics

Each topic has:

- id: a unique number for each topic.
- title: the topic name.

Courses

Each course has:

- id: a unique number for each course.
- title: the course title.
- image: the course image.
- link: the course link that forwards to the contributing platform.
- price: the current course price.
- old_price: the old course price (before discount).
- rating: the course average ratings.
- total_reviews: total number of reviews given to this course.
- level: course level (beginner, intermediate, or expert).

Contributors

Each contributing platform has:

- id: a unique number for each contributing platform.
- name: the platform name (e.g. Udemy, Coursera, etc.).
- logo: platform logo.
- phone_number: the platform contact's phone number.
- email: the platform contact's email.

Contribution Form

Each contribution form has:

- id: a unique number for each contributing form.
- platform_name: the platform name (e.g. Udemy, Coursera, etc.).
- logo: platform logo.
- phone_number: the platform contact's phone number.
- email: the platform contact's email.

- content: description of platform and contribution request.
- status: pending, approved, or rejected.

Languages

Each language has:

- id: a unique number for each language.
- language: (e.g. English, Arabic, etc.)

1.3 Business Rules

- Each user can **speak** multiple languages, and each language can be spoken by multiple users.
- Each user can **establish a friendship** with multiple partners (other users).
- Each user can be **interested in** multiple topics, and each topic can be linked to multiple users as their interests.
- Each category can **have** multiple topics, and each topic belongs to one specific category.
- Each category can **have** multiple courses, and each course belongs to one specific category.
- Each topic can **have** multiple courses associated with it, and each course belongs to one specific topic.
- Each course is **offered in** a single language, and each language can have multiple courses.
- Each user can **join** the partner list of multiple courses, and each course can have a partner list containing multiple users.
- Each course is **offered by** a single contributing platform, and each contributing platform can offer multiple courses.
- Each approved contribution form is **accepted as** an official contributor in the system, and each contributing platform can fill out one submission form.

PART 2: DESIGN DB

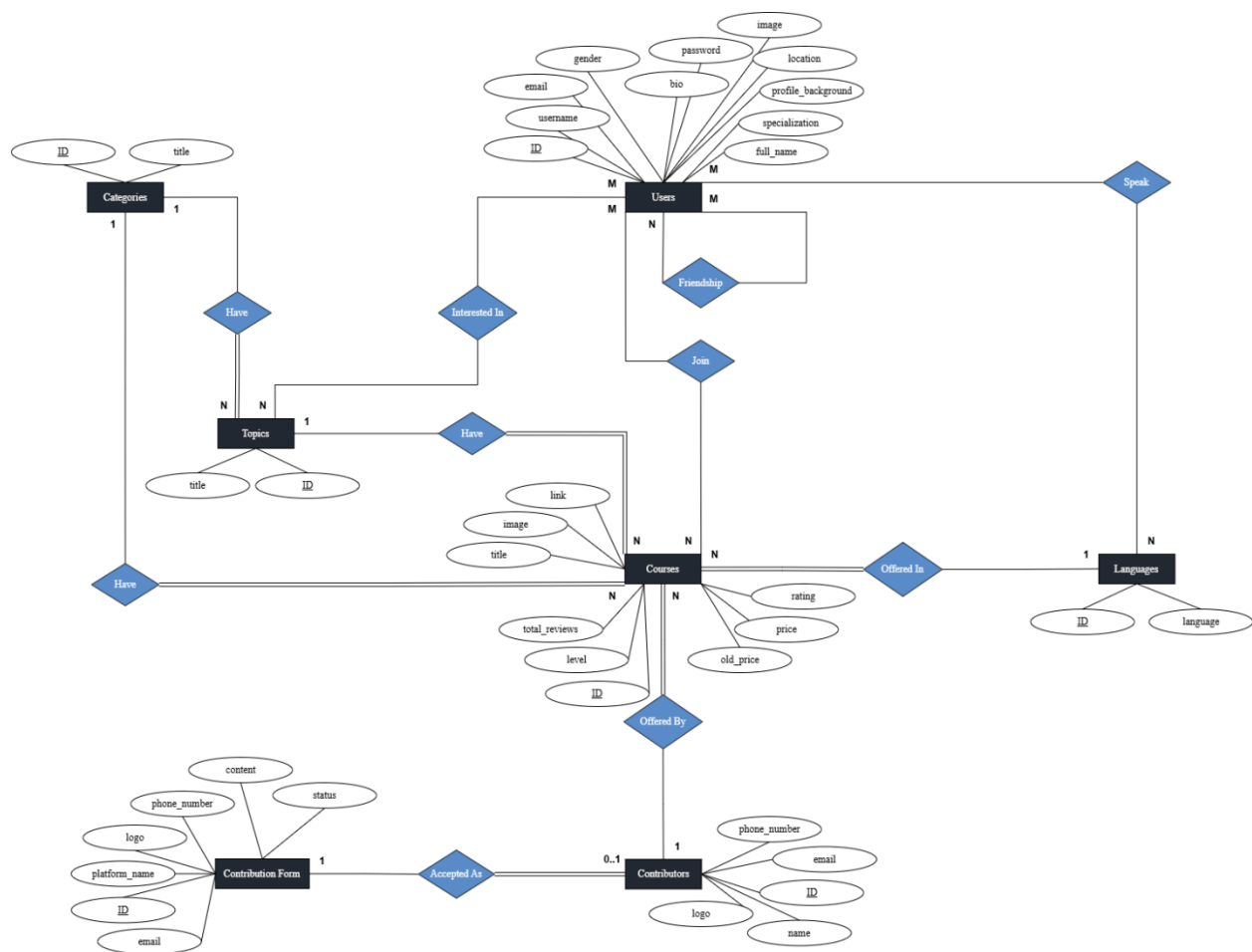
2. ER Diagram Design

2.1 Design of Business Rules

Business Rule	Design Decision	Justification
Each user can speak multiple languages, and each language can be spoken by multiple users.	Binary M:N	Both users and language entities partially participate in the relationship “speak”.
Each user can establish a friendship with multiple partners (other users).	Binary M:N	The user’s entity has partial participation with the relationship “have”.
Each user can be interested in multiple topics, and each topic can be linked to multiple users as their interests.	Binary M:N	Both users and topics entities partially participate in the relationship “interested in”.
Each category can have multiple topics, and each topic belongs to one specific category.	Binary 1:N	The categories entity partially participates in the relationship “have” while the topics entity totally participates.
Each category can have multiple courses, and each course belongs to one specific category	Binary: 1:N	The categories entity partially participates in the relationship “have” while the courses entity totally participates.
Each topic can have multiple courses associated with it, and each course belongs to one specific topic.	Binary 1:N	The topics entity partially participates in the relationship “have” while the courses entity totally participates.
Each course is offered in a single language, and each language can have multiple courses.	Binary 1:N	The languages entity partially participates in the relationship “offered in” while the courses entity totally participates.
Each user can join the partner list of multiple courses, and each course can have a partner list containing multiple users.	Binary M:N	Both users and courses entities partially participate in the relationship “join”.

Each course is offered by a single contributing platform, and each contributing platform can offer multiple courses.	Binary 1:N	The contributor's entity partially participates in the relationship "offered by" while the courses entity totally participates.
Each approved contribution form is accepted as an official contributor in the system, and each contributing platform can fill out one submission form.	Binary 1:1	The contribution form entity partially participates in the relationship "accepted as" while the contributors entity totally participates.

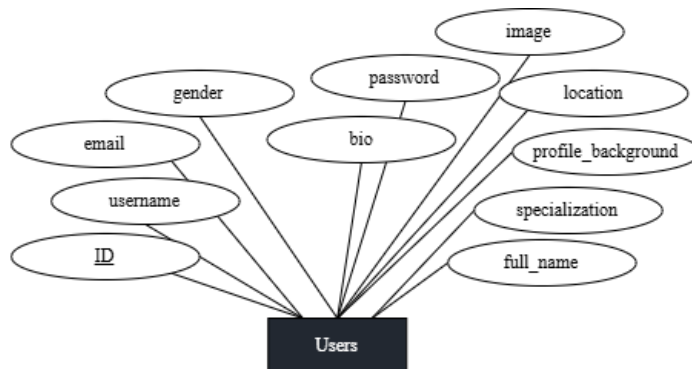
2.2 ER Diagram



3. ER-to-Logical Schema Mapping

3.1 Mapping of Regular Entity Type

This is done by creating a new relation for each regular entity and including all its simple attributes.



Users

<u>ID</u>	username	full_name	specialization	image	bio	location	email	profile_background	password	gender
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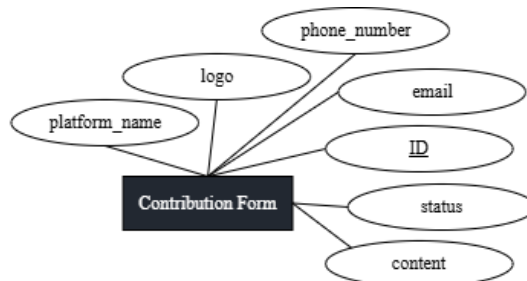
Categories

<u>ID</u>	title
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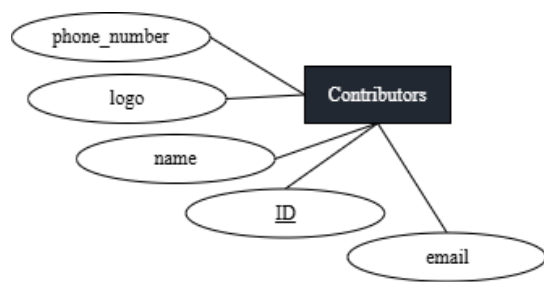
Topics

<u>ID</u>	title
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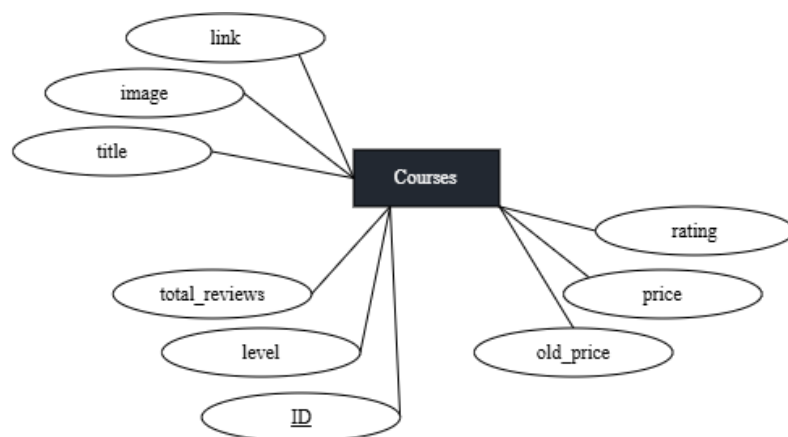
Contribution Form

<u>ID</u>	platform_name	logo	email	phone_number	content	status
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Contributors

<u>ID</u>	name	logo	phone_number	email
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Courses

<u>ID</u>	title	image	link	level	rating	total_reviews	price	old_price
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Languages

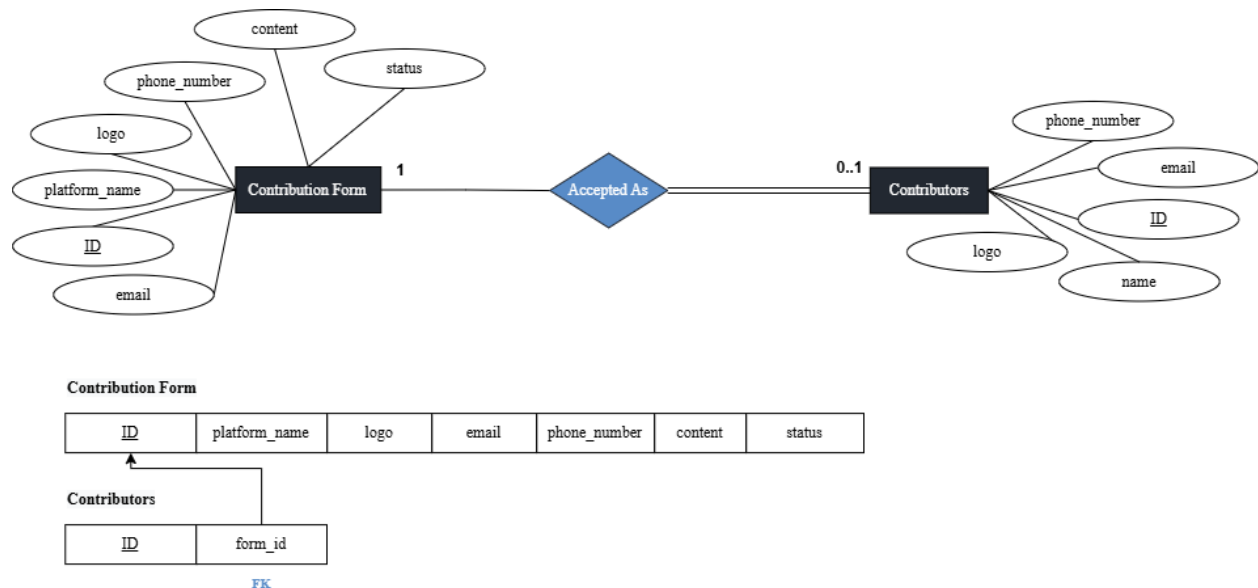
<u>ID</u>	language
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3.2 Mapping of Weak Entity Type

The system doesn't have any weak entities.

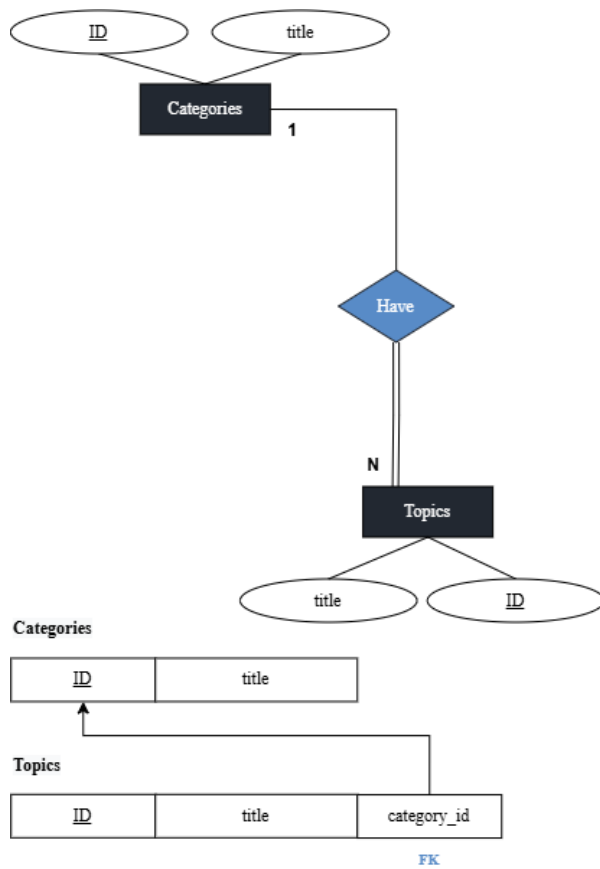
3.3 Mapping of Binary 1-1 Relationship Type

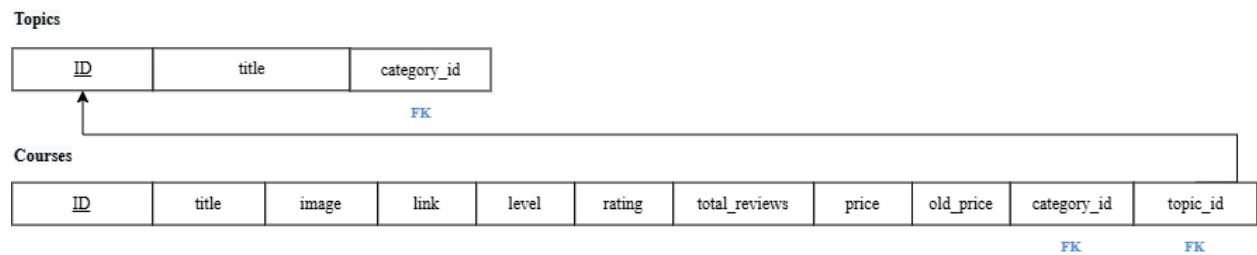
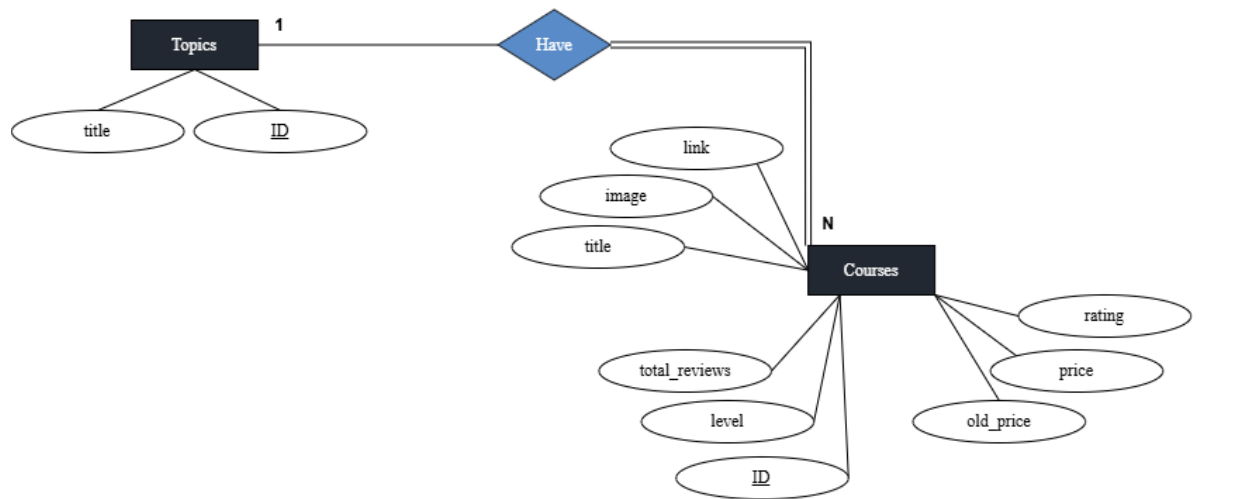
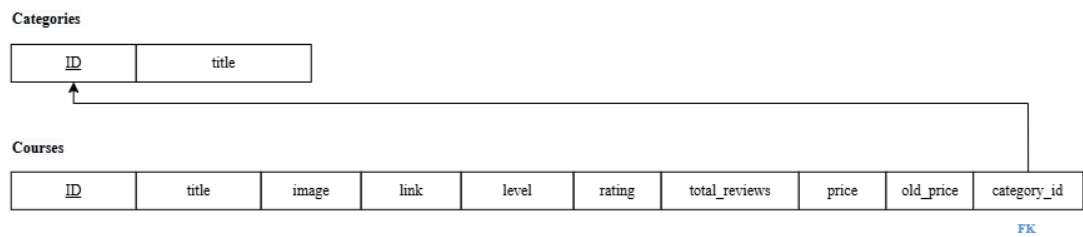
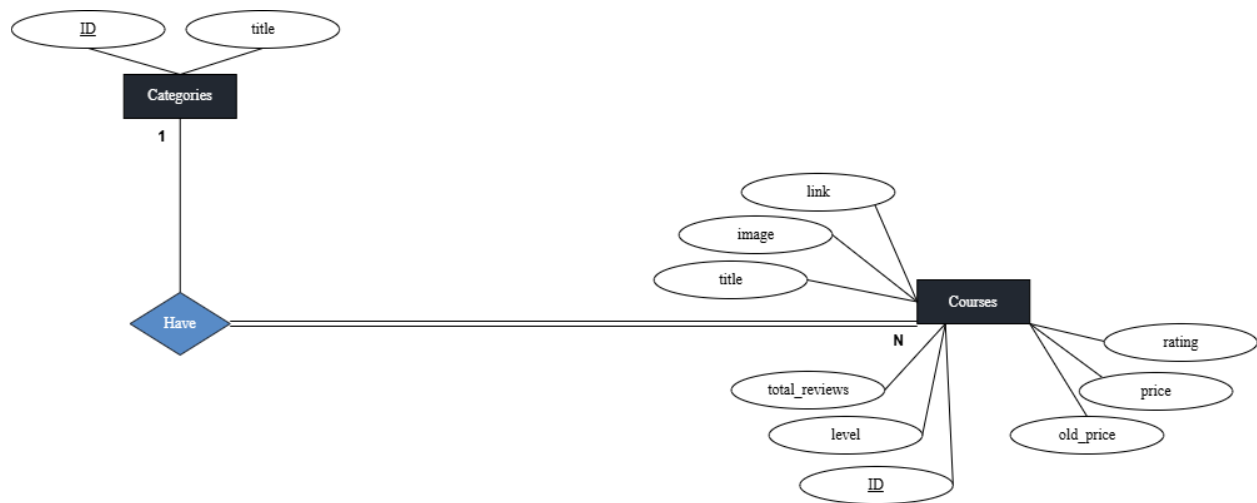
This is done by identifying which entity is the relationship's owner (typically the one with full participation). The primary key of the owner entity is used as a foreign key in the other entity's table. If the relationship is symmetric (both entities fully participate), we can choose either entity to host the foreign key or create a separate table to represent the relationship explicitly.



3.4 Mapping of Binary 1-N Relationship Type

This is done by including a foreign key on the N side.





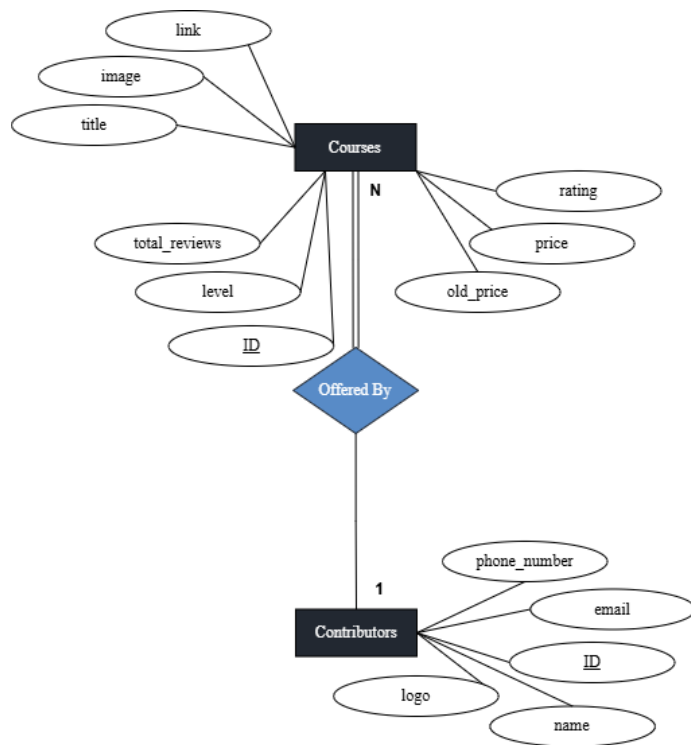


Languages

<u>ID</u>	language
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Courses

<u>ID</u>	title	image	link	level	rating	total_reviews	price	old_price	category_id	topic_id	language_id
									FK	FK	FK



Contributors

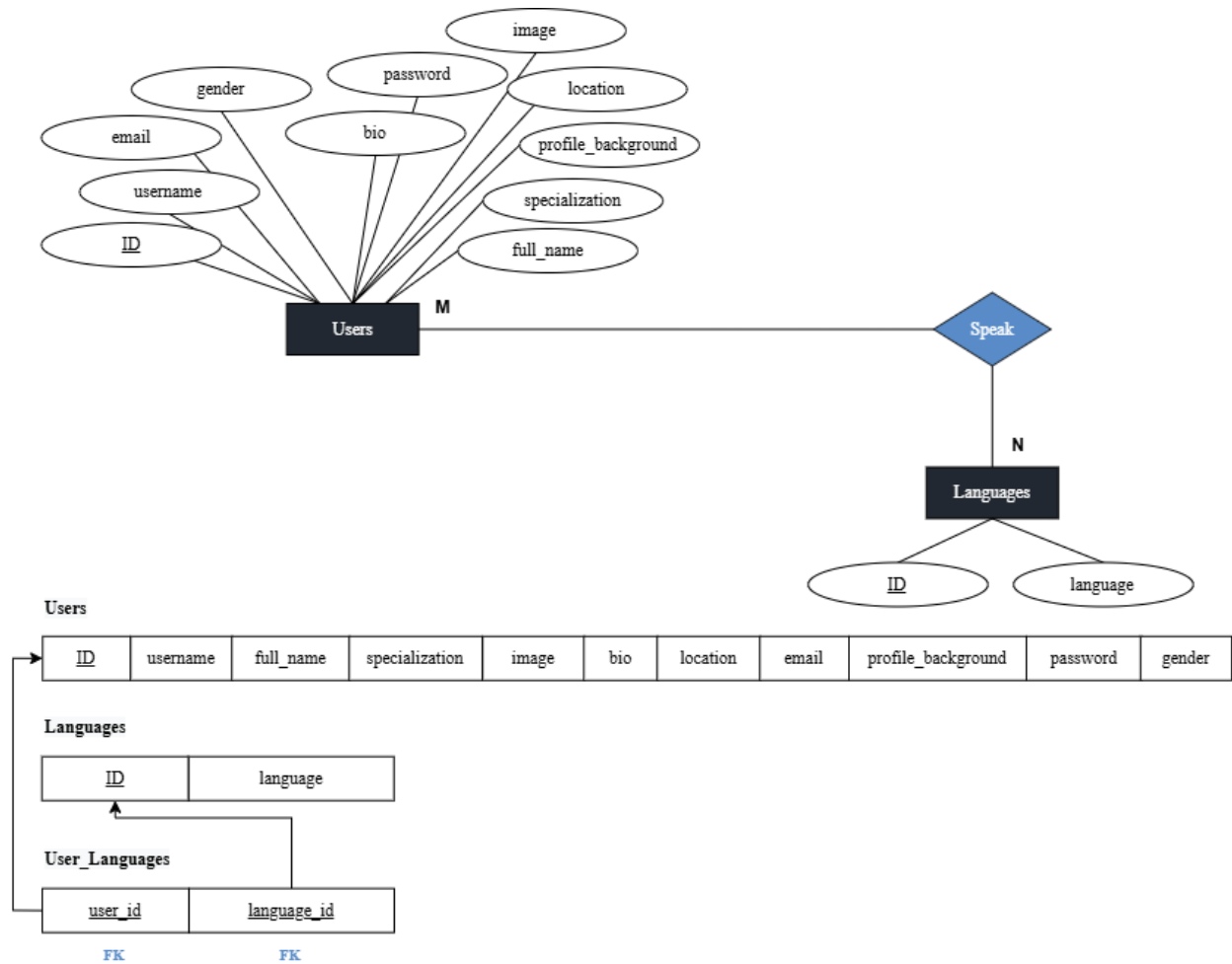
<u>ID</u>	form_id
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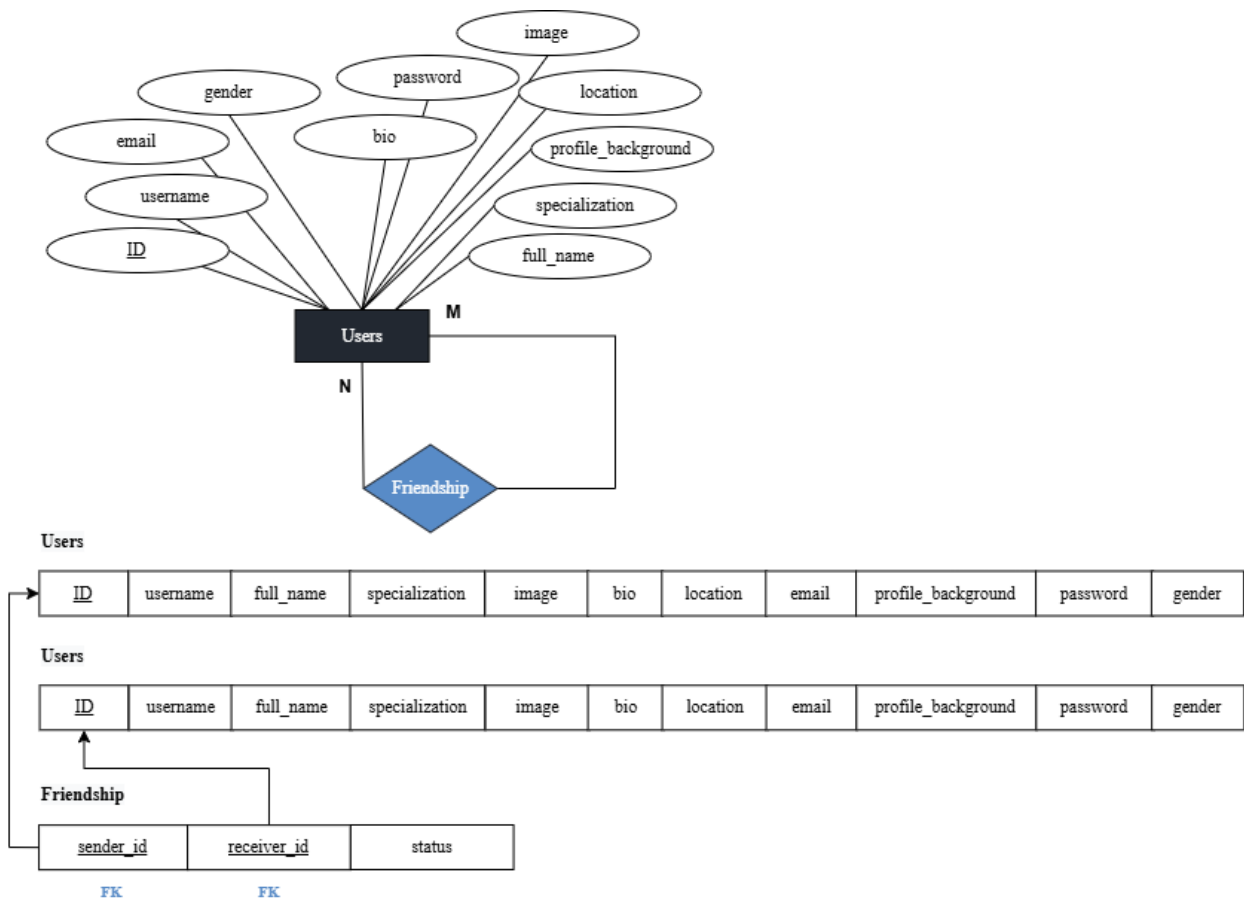
Courses

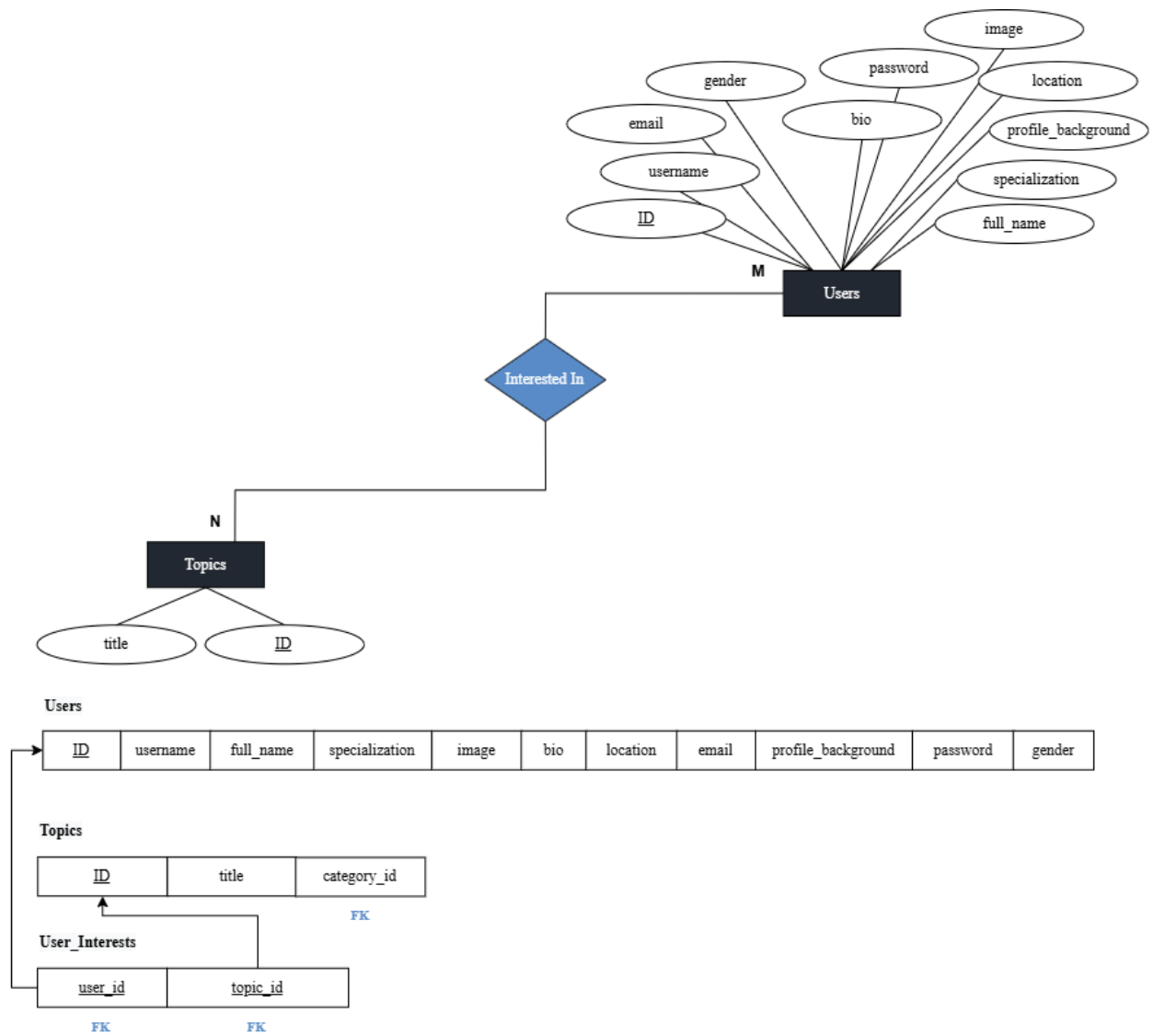
<u>ID</u>	title	image	link	level	rating	total_reviews	price	old_price	category_id	topic_id	language_id	platform_id
									FK	FK	FK	FK

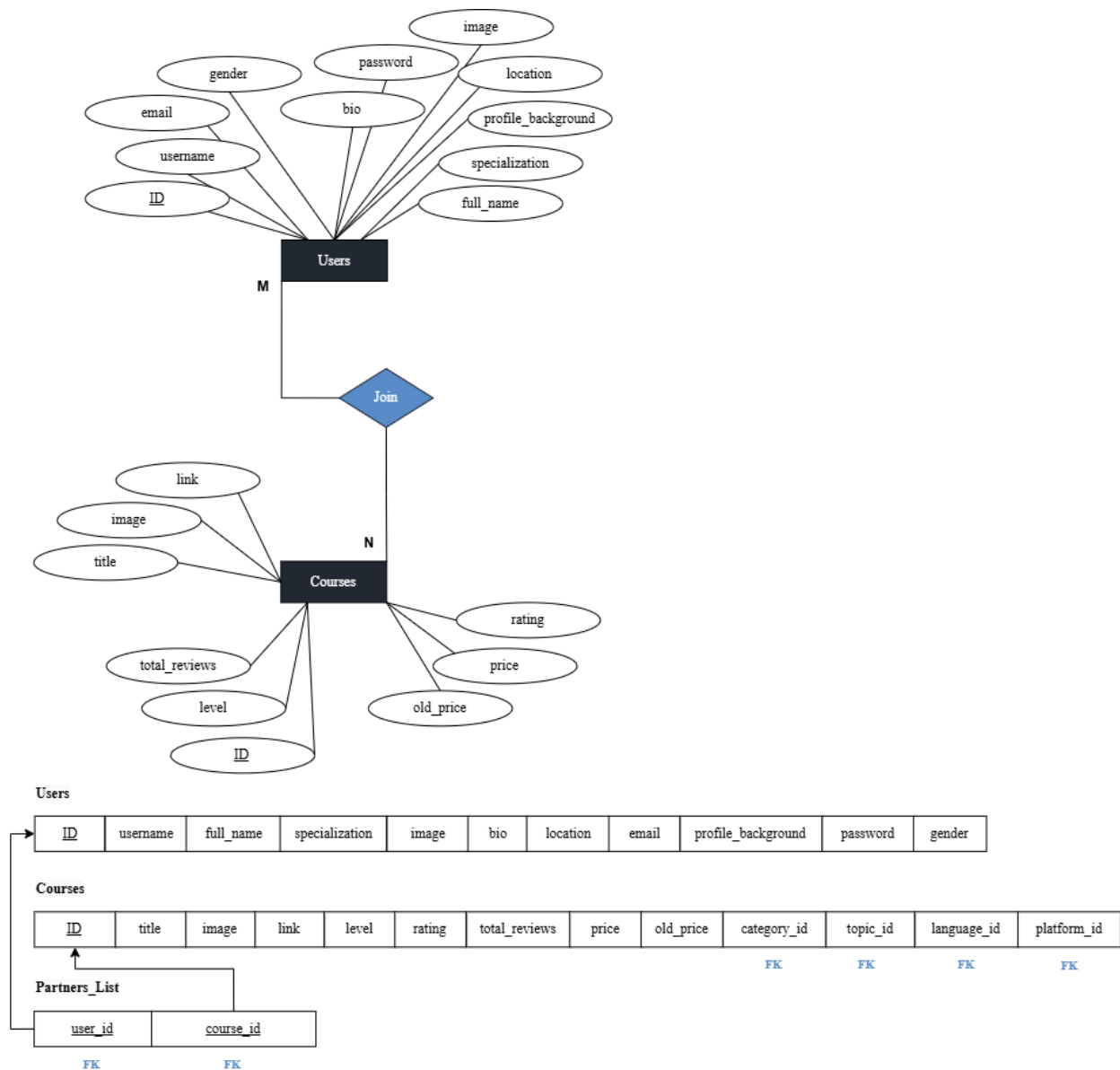
3.5 Mapping of Binary M-N Relationship Type

This is done by creating a new relation, and the combination of the primary keys of both entities will be the primary key to the new relation.









3.6 Mapping of Multivalued Attributes

The system doesn't have any multivalued attributes.

3.7 Mapping of n-ary Relationship Type

The system doesn't have any n-ary relationships.

3.8 Schema Diagram

