# User\_Data Schema

Functional Dependencies:

* user\_id → email, password\_hash, first\_name, last\_name, year\_level, bio, created\_at, college\_id (FK), major\_id (FK)
* college\_id → college\_name
* major\_id → major\_name
* course\_id → course\_code, course\_name, college\_id (FK)

Highest Normal Form: BCNF

* It is in 1NF, since all attributes are atomic. For example, no attribute in the “user” entity (ie, all attributes implied by user\_id) can be broken down into meaningful smaller parts. This applies to all other relations in the schema.
* It is in 2NF since it is in 1NF, and there are no partial dependencies, since every key is a single key, not a composite one, and every attribute is directly determined by said key. We can see in the ER diagram, and data dictionary that the primary keys are as follows: user\_id, college\_id, major\_id, and course\_id, which are all singular keys.
* It is in 3NF since it is in 2NF, and the left-hand side of every FD is a superkey.
* It is in BCNF, since it is in 3NF, and the left-hand side of every FD is a superkey.

# Study Groups & Collaboration Schema

Functional Dependencies:

* Group\_id → group\_name, created\_time, current\_members, max\_members, is\_private, course\_id (FK)
* session\_Id -> location, start\_time, end\_time, notes, date, group\_id (FK)
* Request\_id -> group\_id (FK), user\_id (FK), status, request\_date, expire\_date, approvedBy(FK)
* Message\_id -> group\_id(FK) user\_id (FK), content, sent\_time, edited
* Resource\_id -> uploader\_id (FK), title, upload\_date, description, filetype
* user\_id → study\_style, meeting\_pref, bio *(MatchProfile)*
* request\_id → requester\_user\_id (FK), target\_user\_id (FK), course\_id (FK), status, created\_at (Message\_Request)

Highest Normal Form

* All attributes are atomic; therefore, it is 1NF
* It is in 2NF since each table uses a single attribute primary key, leaving no partial dependencies
* 3NF because every non-key attribute depends only on its table’s key
* It is BCNF since, for every listed dependency, the left side is a super key of its relation