

CMPT354 Database Normalization

Group 23333 (Project 52)

- 1 user [ID, username, email, password, level]
FD:
id \rightarrow email, username, password, level
email, password \rightarrow level, username, id

We set the primary key is ID. For the user the candidate keys are {id} and {email, password}, we use them can get other information of user
Because all LHSs are super keys, user is BCNF

- 2 library [userID, ID, name]
FD:
userID, ID \rightarrow name

The primary key is {userID, ID} which can know the name
The foreign key is userID, referenced from user.ID

Because all LHSs are super keys, library is BCNF

- 3 post [userID, ID, pName, postContent]
FD:
userID, ID \rightarrow pName, postContent

The primary key is userID and ID from which we can know the post name and its content.
The foreign key is userID, referenced from user.ID

Because all LHSs are super keys, post is BCNF

- 4 postmessage[userID, postID, message, time stamp, author]
FD:
userID, postID \rightarrow message, author, timestamp

The primary key is userID and postID from which we can know the message, author and time stamp.
The foreign keys are userID, and postID
postmessage.userID reference user.ID
postmessage.postID reference post.ID

Because all LHSs are super keys, postmessage is BCNF

- 5 document [userID, ID, course, fileName, type, URL]

FD:

userID, ID \rightarrow course, fileName, type, URL

URL \rightarrow userID, ID, course, fileName, type

fileName \rightarrow type

BCNF: doc1(ID, userID, course, fileName, URL), doc2(fileName, type)

Keys for doc1 are {userID, ID}, {URL}. Primary key is {URL}, and foreign key are {userID} and {filename},

doc1.userID referenced user.ID.

doc1.fileName referenced doc2.fileName;

Primary key for doc2 is {filename}, and no foreign key.

- 6 collectdoc[docID, userID, libraryID]

The key is {docID, userID, libraryID}

This table is relation between library and document

Because all attributes are part of key, collectdoc is BCNF