CS 345

Databases Lab

Cours Resource Management
Database Design

Schemas of Entities and Relationships (with constraints included) :

Person Table :

- webmail_id
- hashed_pwd
- **Primary key** : webmail_id
- Functional dependencies: webmail_id ------> hashed_pwd
- **Normal form:** As webmail_id is key , it forms a **BCNF.**
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Student Table :

- webmail_id
- name
- roll_no
- semester
- year
- **Primary key** : webmail_id
- Foreign key : webmail_id references Person (webmail_id)
- Functional dependencies: webmail_id ------> {name , roll_no, semester, year}
- **Normal form**: As webmail_id is key , it forms a **BCNF.**
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Instructor Table :

- webmail _id
- name
- instructor_id
- **Primary key:** {webmail_id} , { instuctor_id }
- Foreign key : webmail_id references Person (webmail_id)
- Functional dependencies: webmail_id ------> {name , instructor_id}, instuctor_id---->
- { webmail_id, name }

  Normal form: As webmail_id , instuctor_id are keys , it forms a **BCNF.**
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Course Table :

- course_id
- course_name
- syllabus
- **Primary key :** course_id
- Functional dependencies: course_id ----> { course_name , syllabus }
- **Normal form:** As course_id is key , it forms a **BCNF.**
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Course Offerings Table :

course_id
- semester
- absolute year
- **Primary key :** course_id , semester , absolute year
- Functional dependencies: { course_id,semester,absolute year } ----> { course_id,semester,absolute year }
- Normal form: As { course_id,semester,absolute year } is primary key , it forms a **BCNF.**
- Foreign Key : course_id references Course Table(course_id)

Enrolls Table:

stud_webmail _id
- course_id
- semester
- year
- **Primary key :** stud_webmail_id, course_id, semester, year
- Foreign Key :
- course_id, semester, year references Course_offerings(course_id, semester, year)
  stud_webmail_id references student(webmail_id)
- Functional dependencies: { stud_webmail_id , course_id, semester, year } ----> { stud_webmail_id , course_id, semester, year}
- **Normal form**: As { stud_webmail_id , course_id, semester, year} is primary key , it forms a **BCNF.**

Teaches Table:

instructor_webmail_id
- course_id
- semester
- year
- **Primary key :** inst_mail_id, course_id, semester, year
- **Foreign Key :**
- course_id, semester, year references Course_offerings(course_id, semester, year)
  instructor_webmail_id references instructor(webmail_id)
- Functional dependencies: { instructor_webmail_id , course_id, semester, year } ---->{ instructor_webmail_id , course_id, semester, year}
- **Normal form:** As { instructor_webmail_id , course_id, semester, year} is primary

key , it forms a **BCNF.**

Documents Table :

file_id
- file_name
- file_data
- file_description
- uploader_id
- course_id
- semester
- year
- timestamp
- **Primary key** : file_id
- Foreign key : uploader_id references Person(webmail_id) (To deal with the
- Uploads Relation)
  course_id, semester, year references Course_offerings(course_id, semester, year)
- Functional dependencies: { file_id } ---->{ file_name , file_data, file_description,
- uploader_id, course_id, semester, year , time_stamp}
  Normal form: As file_id is primary key , it forms a **BCNF.**
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Reports Table :

Reported_by
- file_id
- **Primary key :** file_id
- **Foreign key:** Reported_by references Person(webmail_id)
- file_id references Documents(file_id)
  Functional dependencies: { file_id } ---->{ reported_by }
- **Normal form:** As file_id is primary key , it forms a **BCNF.**
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Thread Table :

thread_id
- thread_name
- webmail_id - who posted the thread
- course_id
- semester
- year
- description
- **Primary key** : thread_id
- **Foreign key** : webmail_id references Person(webmail_id) (To deal with the
-

Discussion Relation)
course_id, semester, year references Course_offerings(course_id, semester, year)

- Functional dependencies: { thread_id } ---->{ thread_name, webmail_id , course_id, semester, year , description }
- **Normal form:** As thread_id is primary key , it forms a **BCNF.**

Comment Table:

comment_id

- webmail_id - who made the comment
- comment_text
- thread_id
- Primary key : comment_id
- Foreign key : thread_id references Thread(thread_id)
- webmail_id references Person(webmail_id)
- Functional dependencies: { comment_id } ---->{ webmail_id , comment_text, thread_id }
- **Normal form:** As comment_id is primary key , it forms a **BCNF.**

Admin Table:

webmail_id

- name
- admin_id
- **Primary key**: 1. (webmail_id) 2. (admin_id)
- **Foreign key**: webmail_id references Person(webmail_id)
- Functional dependencies: {webmail_id } ---->{ name , admin_id }
- **Normal form:** As webmail_id is primary key , it forms a **BCNF.**

News feed Table

nid

- news_text
- webmail
- date
- news_content
- **Primary key**: nid
- **Foreign key**: webmail_id references Person(webmail_id)
- Functional dependencies: { nid } ---->{ news_text, webmail, date, news_content }

- **Normal form:** As nid is primary key , it forms a **BCNF.**
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News_course Table : (relation between course_offerings and news)

- nid
- course_id
- semester
- year
- **Primary key :** nid, course_id, semester, year
- **Foreign Key :**
- course_id, semester, year references Course_offerings(course_id, semester, year)
  nid references news_feed(nid)
- Functional dependencies: { nid , course_id, semester, year } ---->{ nid , course_id, semester, year}
- **Normal form:** As { nid , course_id, semester, year} is primary key , it forms a **BCNF.**

Message table:

- message_id
- webmail_id_sender
- webmail_id_reciever
- message
- time_stamp
- reciever_read
- **Primary key :** message_id
- **Foreign Key :**
- sender_webmail_id references Person(webmail_id)
  reciever_webmail_id references Person(webmail_id)
- Functional dependencies: { message_id } ---->{ webmail_id_sender ,webmail_id_reciever, message, time_stamp, reciever_read}
- **Normal form:** As { message_id} is primary key , it forms a **BCNF.**
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quiz table

- webmail_id
- first
- second.....
- tenth
-

- total
- time
- course_id
- **Primary key :** { webmail_id , course_id }
- **Foreign Key :**
- webmail_id references Person(webmail_id)
  course_id references course_offerings(course_id)

- Functional dependencies: { webmaiL_id, course_id } ---->{ webmail_id, first, second,....,tenth, total, time, course_id}
- **Normal form:** As { webmail_id , course_id } is primary key , it forms a **BCNF**

questions_quiz table

- id
- option1
- option2
- option3
- option4
- answer
- **Primary key :** { id }
- Functional dependencies: { id} ---->{ option1, option2, option3, option4 }
- **Normal form:** As {id } is primary key , it forms a **BCNF**