DESIGN: DATABASE

Maryville Hub is an integrated social media platform designed specifically for Maryville University students and faculty. It aims to enhance campus life by providing a central hub for academic, social, and community engagement. The platform will offer features such as course enrollment, event management, community forums, and personalized calendars, all tailored to improve the university experience.

MongoDB will be the perfect fit for Maryville Hub due to its flexibility, scalability, and robust performance. As a NoSQL document database, MongoDB stores data in flexible, JSON-like documents, meaning fields can vary from paper to document, and data structure can be changed over time. This is particularly advantageous for Maryville Hub, as the application is expected to evolve with the addition of new features and user requirements.

The schema-less nature of MongoDB allows for easy modifications and updates, ensuring that the platform can adapt quickly to the dynamic needs of the university community without the need for extensive database restructuring.

DATA STRUCTURE

User collection

```
{
    "_id":"ObjectId",
    "username":"String",
    "email":"String",
    "passwordHash":"String",
    "fullName":"String",
    "profilePicture":"String",
    "major":"String",
    "enrolledCourses":[
        "ObjectId"
    ],
    "communityInteractions":[
        "ObjectId"
    ],
    "calendarEvents":[
        "ObjectId"
    ]
}
```

Stores user credentials, personal information, and references to courses, community interactions, and calendar events they're involved with.

Course collection

```
{
    "_id":"ObjectId",
    "courseCode":"String",
    "title":"String",
    "description":"String",
    "instructor":"ObjectId",
    "enrolledStudents":[
        "ObjectId"
    ]
}
```

Contains details about courses offered, including the instructor and enrolled students. Links to the Users collection.

Course community collection

```
{
    "_id":"ObjectId",
    "title":"String",
    "content":"String",
    "author":"ObjectId",
    "comments":[
        {
            "commenter":"ObjectId",
            "comment":"String",
            "timestamp":"Date"
        }
    ]
}
```

Holds posts and discussions within the community. The author and commenters fields link to the Users collection, facilitating community engagement.

Calendar collection

```
{
    "_id":"ObjectId",
    "title":"String",
    "description":"String",
    "date":"Date",
    "associatedCourse":"ObjectId // References Course collection (if applicable)"
}
```

Lists personal and academic events on the user's calendar. The associatedCourse field links to the Courses collection when relevant.

Event collection

```json
{
    "_id":"ObjectId",
    "title":"String",
    "description":"String",
    "date":"Date",
    "location":"String",
    "organizer":"ObjectId",
    "attendees":[
        "ObjectId"
    ]
}
```

Stores information about campus events. The organizer and attendees fields link to the Users collection, facilitating event organization and participation.