CS 5200 - Database Management Systems
Final Project

NUgram Social Networking Site

Group Name:

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Group Members

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Introduction:

NUgram is designed to be a simple and engaging social network just for Northeastern University students. It's a place where students can meet online to talk, share ideas, and keep up with what's happening on campus. This social site will offer features like profile creation, friend connections, group discussions, and real-time updates on university events and news. By bringing all these elements together, NUgram will make it easier for every student to stay informed about campus life, find study groups or clubs that match their interests, and get to know other students. Our proposal will cover how NUgram can make student life more connected and fun, helping Huskies feel like a part of something bigger.

Why this Project?

NUgram is more than just a social networking project; it's a dedicated community space tailored for the Northeastern University student body. This project was born out of the observation that while many social platforms exist, few offer a localized experience that caters exclusively to the needs of university students. NUgram fills this gap by providing a focused environment for students to connect, engage, and thrive within their own university setting.

This project presents a unique opportunity to immerse ourselves in the intricacies of Database and web development, leveraging a robust stack of technologies such as

MySQL, SQL, Python, and front-end web technologies including HTML, CSS, and JavaScript.

As we undertake the development of NUgram, we will be honing our competencies in MySQL for sophisticated database management, employing SQL for data manipulation and retrieval, utilizing Python for server-side logic, and crafting a user-centric interface with HTML, CSS, and JavaScript. This endeavor is not merely an academic exercise but a practical foray into the technologies that form the backbone of today's web solutions. Through NUgram, we aim to facilitate enhanced connectivity amongst students while concurrently building a foundation of knowledge and skills that are highly valued in the field of web development and beyond.

Database Description:

The NUgram database is designed to cater to the unique social networking needs of Northeastern University students, to enhance campus connectivity and engagement. Central to this ecosystem is the **User** table, it serves as a repository of profiles for students to create and manage their digital identities within the university community. Each student is uniquely identified by their NUID.

Each student's login credentials are securely stored in the **Credentials** table, ensuring that only Northeastern community members have access to the network.

Inter-student connectivity is fostered through the **Follows** table, which enables students to establish and maintain connections, analogous to forming friendships within a university setting. This feature is instrumental in nurturing a cohesive student network.

Students can form groups as shown in the **Groups** table, allowing students to congregate based on shared interests or academic pursuits, mirroring the diversity of clubs and organizations found on the physical campus.

Content sharing is a cornerstone of NUgram, made possible through the **Post** table where students share updates, ideas, or events. This interaction is enriched by the **Comments** and **Likes** features, which allow students to engage with content in a meaningful way.

The time-bound **Story** feature, as recorded in the **Story** table, offers a snapshot of the day-to-day experiences of students, contributing to the vibrancy and immediacy of campus news and events.

Private messaging, handled by the **Messages** table, ensures students can communicate directly and in real time, facilitating personal connections and swift information exchange.

Lastly, the **Notifications** table is critical for keeping students informed and alert to interactions and updates, ensuring they remain in the loop, students can notified about messages, posts, comments and likes.

The NUgram database is crafted to mirror the dynamism of Northeastern University's campus life and enhance it by offering a comprehensive suite of features that promote interaction, information sharing, and community building within a formal and secure online setting.

README:

NUGRAM Web Application Setup Report

Overview

This report outlines the setup process for the NUGRAM Web Application, focusing on essential steps and requirements.

System Prerequisites

- **Python:** The core language used. Install from [Python's Official Website](#).

Required Software

- **Flask:** Web framework for Python.
- **MySQL Connector for Python:** Enables database connectivity.
- **Flask-CORS:** Manages Cross-Origin Resource Sharing.

These can be installed via pip commands.

Database Configuration

- **MySQL Database:** Stores application data. Import **NUGRAMfile.sql** to set up the necessary database structure.

Setup Process

For Unix-based Systems (Ubuntu, Mac)

- **Directory Navigation:** Use terminal to navigate to the NUGRAM directory.
- **Environment Variables:** Configure necessary variables for database connectivity.
- **Application Launch:** Use Flask commands to start the web application.
- **Interface Access:** Open **login.html** in a browser to access the user interface.

For Windows

- **Directory Navigation:** Utilize command prompt for directory access.
- **Environment Variables:** Set up similar to Unix systems but with Windows-specific commands.
- **Application Launch:** Initiate the application using Flask within the Windows environment.
- **Interface Access:** Same method as in Unix-based systems.

Conclusion

The NUGRAM Web Application setup involves installing Python, setting up a MySQL database, configuring environment variables, and launching the application via Flask. The process is tailored for both Unix-based and Windows systems. Proper installation of the mentioned software is crucial for the successful deployment and operation of the application.
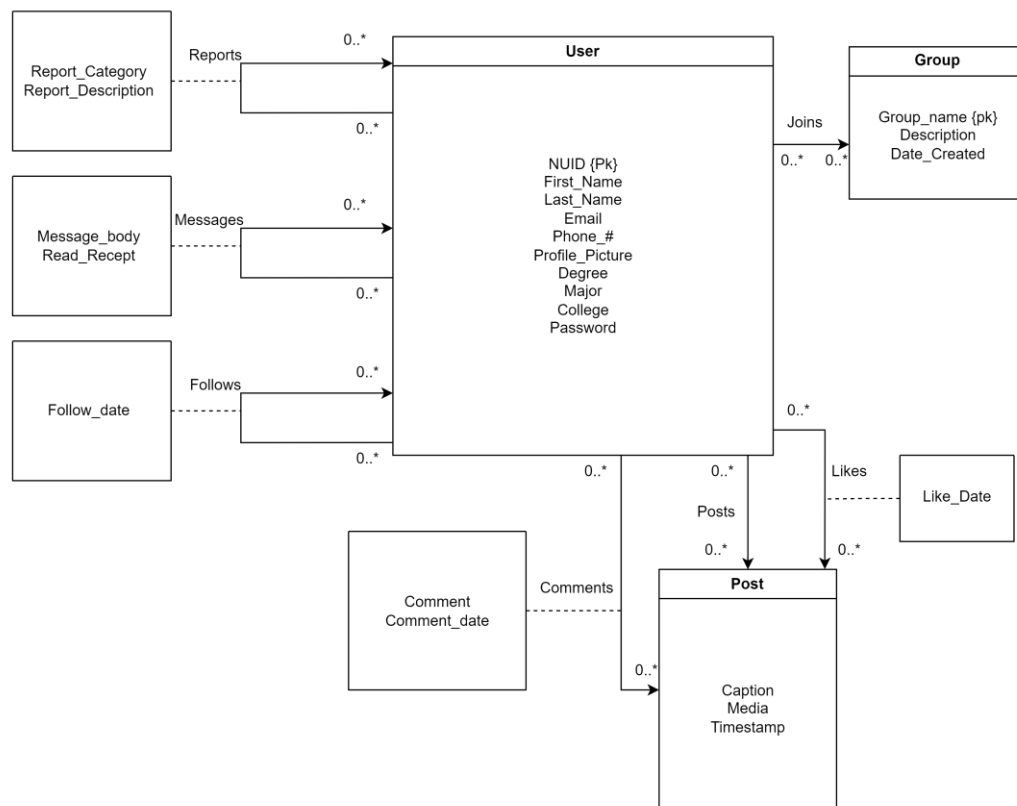
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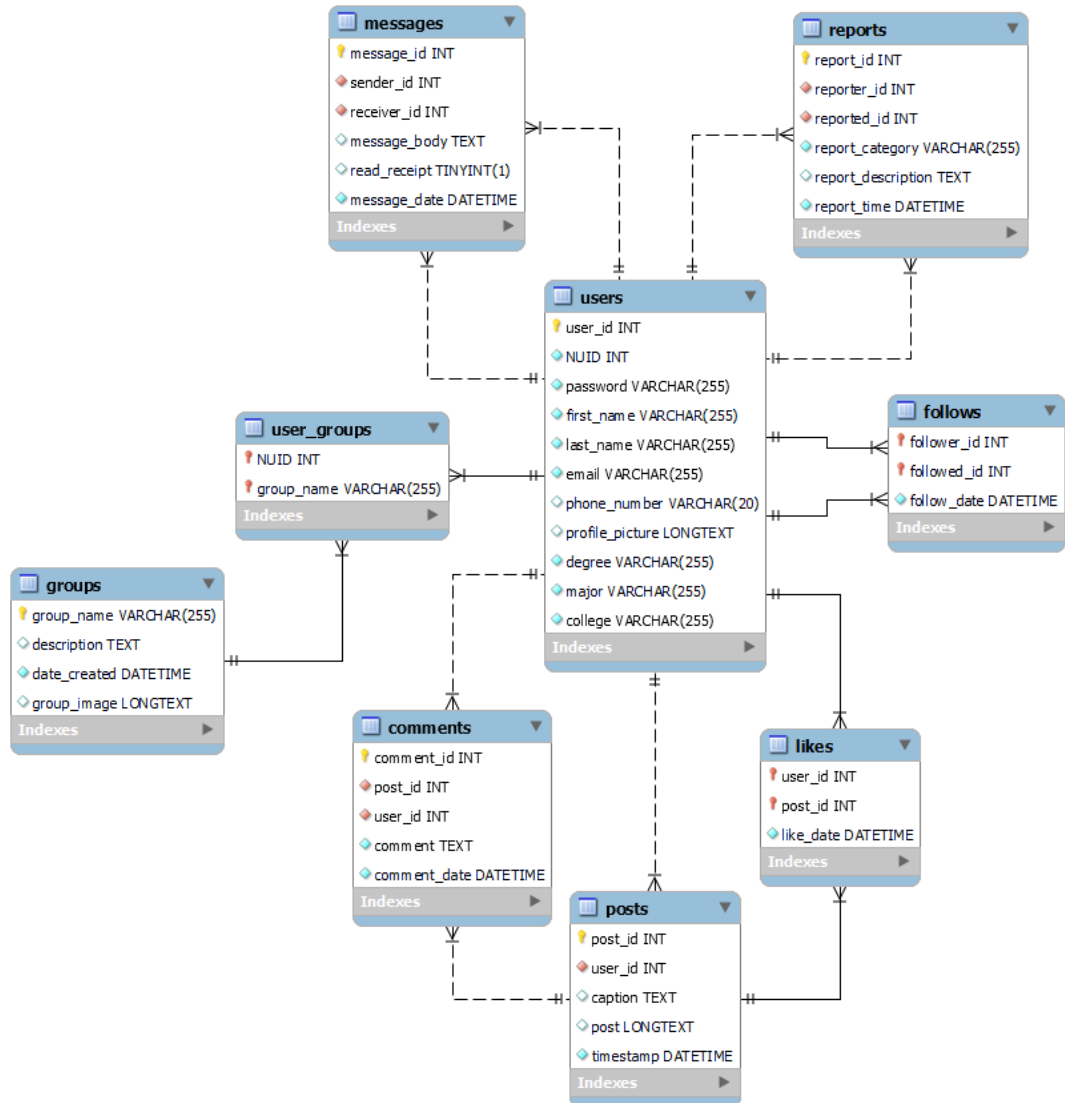
Database: MySQL

Database Language: SQL

Backend: Python, Python flask
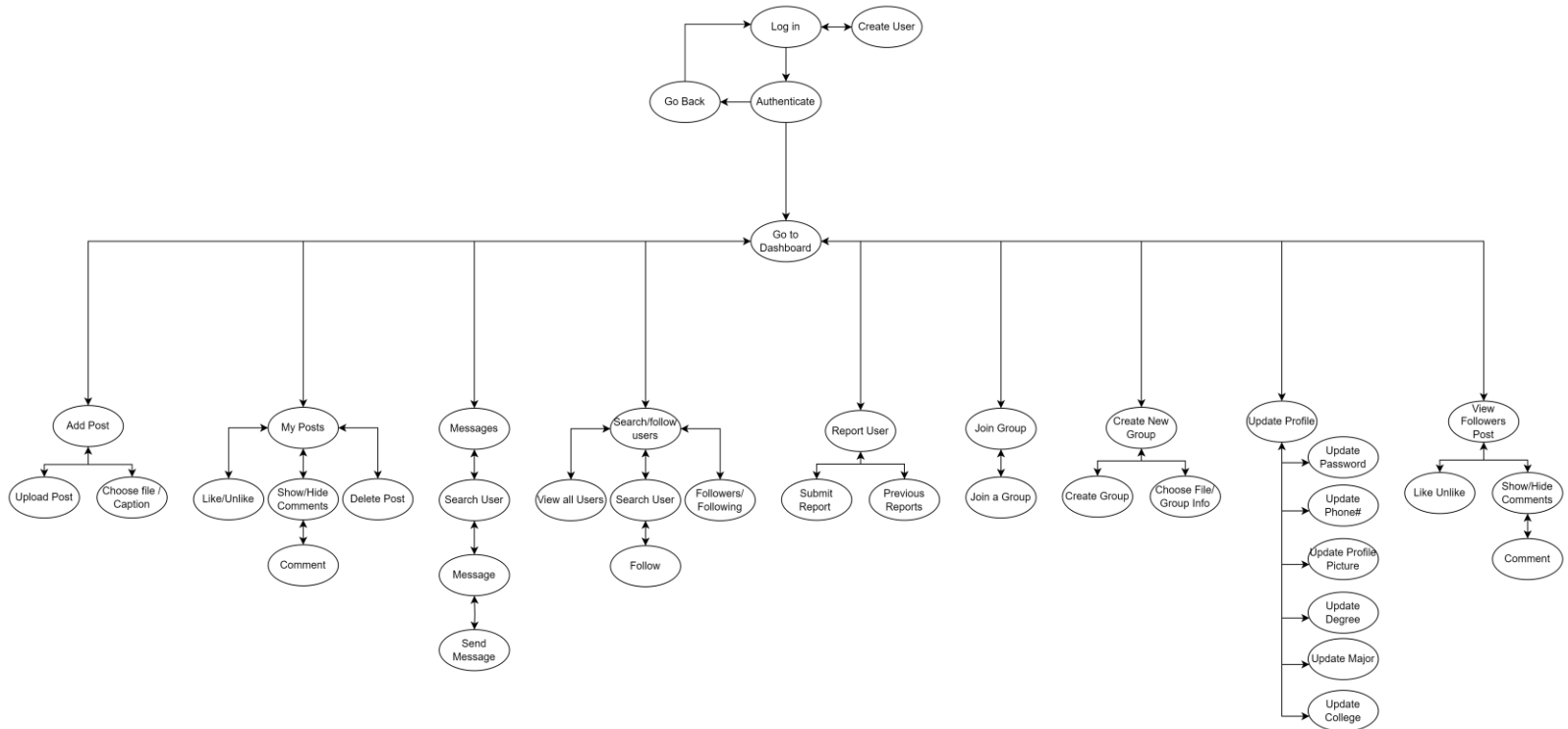
Frontend: html, CSS, JavaScript.

UML:

Logical Design:

Activity Diagram:

Log in · Create User · Go Back · Authenticate · Go to Dashboard

Add Post · Upload Post · Choose file / Caption

My Posts · Like/Unlike · Show/Hide Comments · Delete Post · Comment

Messages · Search User · Message · Send Message

Search/follow users · View all Users · Search User · Followers/ Following · Follow

Report User · Submit Report · Previous Reports

Join Group · Join a Group

Create New Group · Create Group · Choose File/ Group Info

Update Profile · Update Password · Update Phone# · Update Profile Picture · Update Degree · Update Major · Update College

View Followers Post · Like Unlike · Show/Hide Comments · Comment

Lessons Learned:

Our project aimed to develop a functional social media platform called NUgram utilizing SQL for database management, python for backend development, and JavaScript for frontend development. The most significant technical expertise gained from this project is the ability to set up and understand a functional application utilizing a regional database. This skill acquired will be a cornerstone to us professionally if we ultimately become backend developers. In terms of SQL, we not only reinforced our database-building skill but also learned practical ways to optimize queries for data analysis. The rest of the skills we learned were based on backend and front-end development through Python, Flask, and JavaScript. While balancing and creating a social media website, we learned skills relative to debugging and responsive and efficient API's. The experience gained will undoubtedly contribute to future projects and challenges in the realm of database management and web development.

Regarding time management and data domain insights, as a team, we were mostly prepared from when the project was assigned. To prepare ourselves, we created a

schedule to let us submit a finished product on time. We learned how to communicate effectively throughout the process and improved our collaborative skills. Through the usage of GitHub, we learned how to perfect our version control of the programs.

The final product NUgram went through many variations in terms of development and layout. Originally, the intention was to create a social media platform that looked similar to Instagram, but ultimately, we decided against that. Ultimately, we created a social media platform in which the main menu was not posts but rather a list of possibilities.

Future Work:

The initial concept envisioned a social media platform exclusively designed for Northeastern students. The primary objective was to help students connect with other students, offering a unique blend of club interactions, chat features, and customized posts of the friends you have made at Northeastern. This platform aimed to facilitate meaningful connections and cultivate a sense of community among Northeastern students.

Future functionalities to this can be limitless. As a social media platform, it can grow in many ways, such as adding group chats, short videos page like Instagram reels or TikTok, posting stories, etc. As NUgram would be hosted by Northeastern, many new academic-related functionalities may also be added. These may include event management, cultural exchanges, and wellness checks, potentially integrating this platform with Northeastern   academic   systems.

Bonus Work:

- 3 to 5 interesting queries that can be used for analysis or visualization of the data (at the detailed level or summary data)
- additional front end functionality such as website or a GUI
- Overly complicated translations from user operations to database operations