Patrick McGrath, Alex Zilbersher

Database Design Project Proposal

**Members**

Patrick McGrath  
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**Group Blackboard Name**

McGrathZilbersher

**Description of Group**

For this project we will be creating a database that will allow students to interact with each other across different colleges within the university. The database will have listings of all students within the university, grouped by college. The ‘central’ table where the students name and college is listed will also contain information relating to the student's graduation date and major. Branching out of this table will be additional tables formed between students of different colleges, representing groups or clubs of sorts. These clubs and groups will have the purpose of representing a partnership between the students involved in these groups, as they work together to develop new ideas, create new companies, and share ideas. Each group will have its own table, containing fields representing the group\_id, students, and purpose of the group. In these groups people will work together, develop and create new ideas, and those ideas will then be stored as part of the group, so that the members can access them later. To enable this we will create individual views for students, allowing them to access the information in their group in an organized way.

Additionally we will have separate views for group administrators, giving them permission to manage the students in that group, while also regulating the files (giving them permission to delete files).

Each college (CCIS, Business) will have its own series of groups (those groups that align most to that college) however many of these groups, if not all, will contain students of different colleges. To use an example, if a group of business students wish to create a new company, and they need hired talent from the Computer Science school, they can enter the database system of Computer Science students, filter them by credentials, then add the selected students to their group which will be located within the college of business.

**SQL vs. NoSQL Storage**

For this project we will likely use SQL storage to take full advantage of the relational model provided by SQL databases. We plan on establishing many relationships between students, colleges, and groups, allowing users to easily navigate between those entities finding out the information they are looking for. We think this model will best suit our needs, giving us the most control over our database while allowing us to organize it in an aesthetic and well designed way.

**Software, Hardware, Apps, Hosting**

Regarding the technical needs of this project we will likely host these servers on Amazon’s Iaas machines, renting the resources from them. We plan on doing this to maintain a stable 24/7 uptime, while also getting the expertise of Amazon in maintaining the best security, maintenance, and networking practices so that we can ensure that our data’s integrity is upheld while always being able to physically access that data. As for the front end, we will likely build a website of sorts that will allow users to view all of the information in the database in a more aesthetic way, hiding a lot of the complexity included in our database. On this website we will let users view the students in their groups and view files that they have access to.

**Why does this data interest you?**

I think it would be really interesting and useful to implement a sort of database or system like this, to allow people to communicate easier across different disciplines, so that people of one major can easily meet others in different majors. This problem was identified to me when I heard that at institutions like Northeastern the individual colleges operate under individual business models, where colleges are graded of sorts based on the number of students taking courses in that college. This fact indicates that colleges would like to control the amount of courses students of that college would be able to take in other colleges, which is naturally extremely detrimental for both students and certain colleges (take entrepreneurship for example, those classes need both creative, artistic, technical, and business oriented people in order for the classes to function correctly. If only business students take them then part of the experience is left out). If this system could be implemented it could help resolve this problem, allowing for more communication between different people, allowing others to share ideas, build on ideas, and recruit others, leading to benefit across the board.

Project Progress Report Updates:

Question: Is this using NU data or will it be canned data for some simulated university?

The data used by this database would be canned. The data would be realistic (but fake) representation of the implementation of this database for students at Northeastern University.

Question: You probably want Amazon's RDS if you want them to host a MySQL DB for you.

We will be using Amazon RDS as the hosting solution for this database. Hopefully the micro package which is free will be sufficient for our needs.

Question: You need to provide what you are using to build the web page. Also specify the host language for the database server applications. If you have not built a website before, this may be too much to do in one semester.

We will be using Java as the host language for the applications considering we both are fairly proficient with it. As for the website, we are planning on making that a stretch goal. If we can complete the other aspects of the assignment with enough time to spare we will develop and integrate the website with the database.

Student

Student

Note

Group

Makes Note

Responds to Note

Student responding to note enters group with other student

Thread

(Discussion)

Student Posts thread

Student Responds to Thread

**Technical Specifications:**

The language used for application development on this database will be Java due to our familiarity with the language. As for user interaction, we will either use Swing to create graphical user interfaces, or create some sort of website to allow users to input information (currently the website stands as a stretch goal, if there is sufficient time then it will be added on). As for the hosting solution for this database we will be using Amazon’s RDS hosting systems. Amazon offers a Micro Plan which is free, so hopefully that plan would accommodate our needs, if not, we will purchase whatever upgrades necessary to handle the needs of our database. The data used in this database will be canned – although it will still be a realistic depiction of the databases application at Northeastern University.

UML (on next page):

