

NULabs

PROJECT PROPOSAL

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CS 3200 Database Design

Northeastern University

8 March 2021

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PROJECT DESCRIPTION

This project will collect and track information related to the research at Northeastern and provide a platform for Northeastern affiliates to interact with this information. This data will be stored in MySQL, which can allow users to quickly perform many types of operations using the data. Additionally, this project will feature a GUI that provides a way for users to easily query the data in a clean visualization.

The data that will be stored in this database system will include labs, lab members and their hierarchies, projects, publications, buildings, and colleges at Northeastern. Different levels of functionality will be provided to three types of users of the application: Students, Principal Investigators (PIs), and Administrators. A student may read lab projects and apply for the corresponding labs. PIs may view their own lab projects and choose to create a new project, update an existing project, or delete a project. Finally, administrators may create new projects, update lab buildings, or create new buildings. PIs and administrators are also required to provide valid login information using their Northeastern usernames before modifying sensitive information stored in the database.

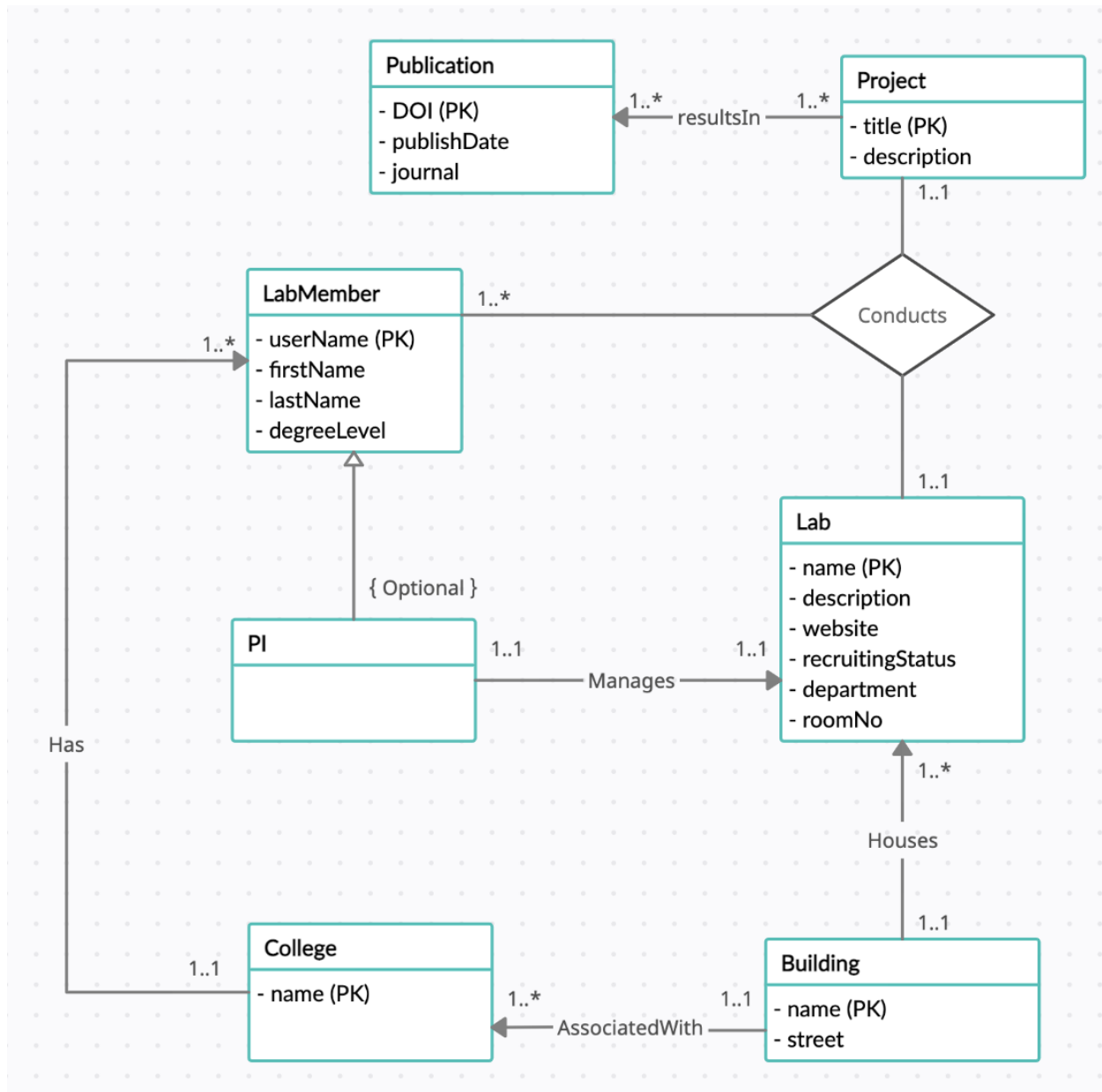
REQUIREMENT SPECIFICATIONS

Database Storage	SQL (Relational)
DBMS	MySQL
Software	Git, PyCharm, Creately, MySQL Workbench
Languages	Python, SQL, HTML, CSS, JavaScript
Libraries	NumPy, Pandas, Django, Pymysql
Hardware	A computer that is capable of compiling and executing Python and connecting to MySQL

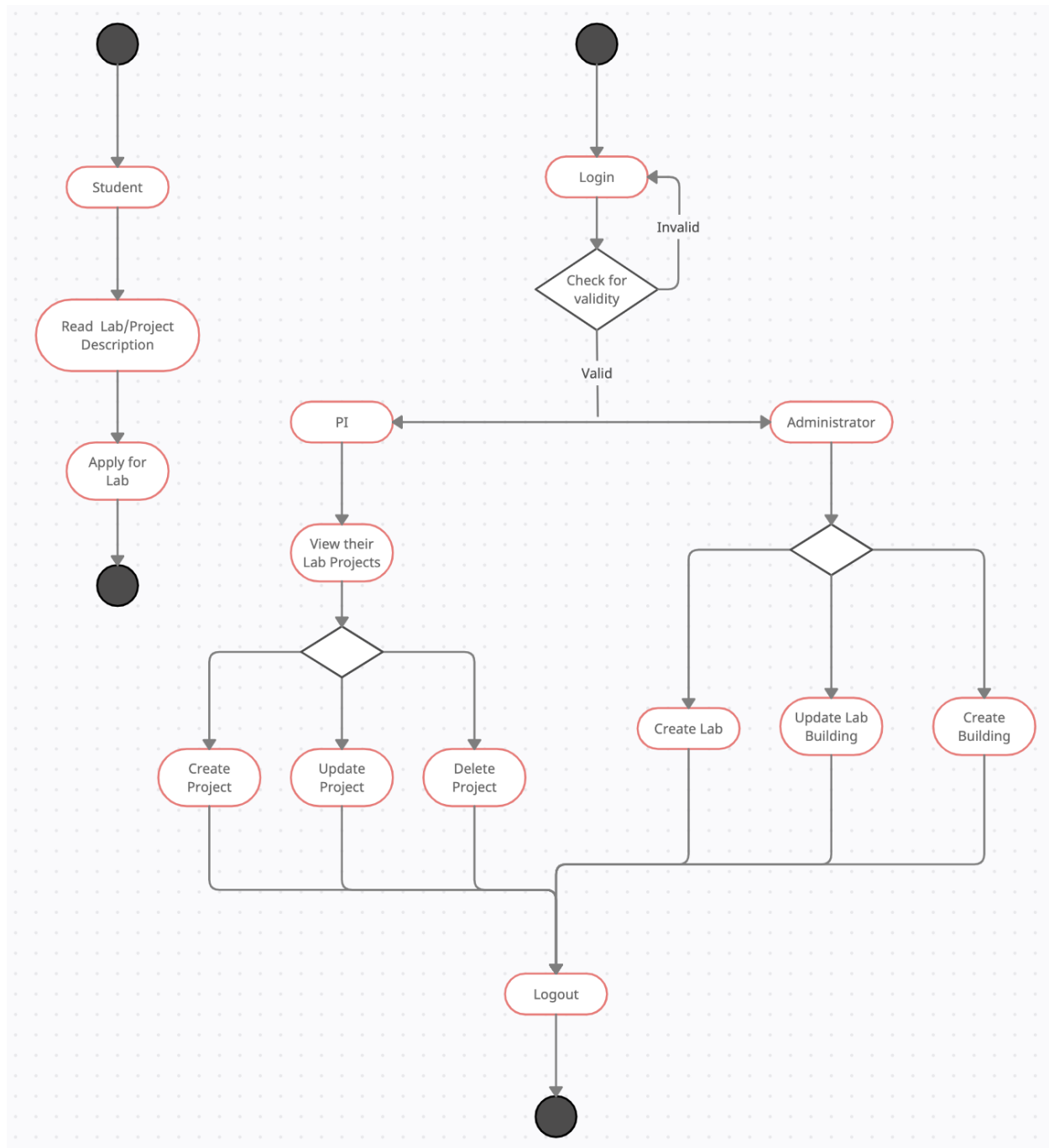
MOTIVATION

This project and data domain is of interest to us since we are both active members of the research community at Northeastern. However, there is not an application or website that exists that allows people to view all of the research labs and their pertaining information across all of the different colleges at Northeastern in one centralized location. Rather, different colleges and professors choose to publish their lab information across a variety of websites and formats, resulting in a lack of continuity across the university. Thus, this project aims to simplify the experience of accessing research-related data and bolster overall participation in research as a byproduct. Students will be able to more easily view all of the available research opportunities, and having increased student interaction will also benefit PIs in allowing them to make their ongoing projects and open positions more widely available to a greater audience. Administrators will likewise have a standardized, singular tool for tracking and updating lab and building data.

CONCEPTUAL DESIGN (UML DIAGRAM)



USER INTERACTION FLOWCHART



1. A Student can read the lab projects stored in the database.
 - a. A Student may choose to apply to a lab that is conducting a project that they find interesting.

2. A user may login to the application using their Northeastern username.
 - a. If the username is valid, they may proceed as either a PI or an Admin.
 - b. If the username is invalid, they will be asked to try to login again.
3. A PI may view their lab projects associated with their lab.
 - a. A PI may choose to create a new lab project for their lab.
 - b. A PI may choose to update an existing project in their lab.
 - c. A PI may choose to delete a lab project from their lab.
4. An Administrator may choose from three available options.
 - a. An Administrator may create a new lab.
 - b. An Administrator may update an existing building.
 - c. An Administrator may create a new building.
5. A User may log out of the application.

REFERENCES

1. <https://www.khoury.northeastern.edu/research/>
2. <https://cos.northeastern.edu/research/researchandlabs/>
3. <https://coe.northeastern.edu/faculty-staff-directory/>
4. <https://damore-mckim.northeastern.edu/centers-and-initiatives/>
5. <https://bouve.northeastern.edu/research/>
6. <https://cssh.northeastern.edu/research/>