GRAD SCHOOL ZERO TEAM T

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Software Requirements Specification

CCNY Grove School of Engineering | CSC 322 Software Engineering

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Revision History

Date	Version	Description	Author
10/24/21	draft	First pass - draft	J. Berdecía
10/25/21	1.0	Incorporate teammates' review comments	J. Berdecía
11/21/21	1.1	Use cases, exceptional scenarios	J. Berdecia
11/21/21	1.2	System Screens & Prototype of functionality	B. Debi
11/23/21	1.3	E-R Diagram	J. Berdecia
11/25/21	1.4	Introduction, UML Collaboration Class	I. Qumar
		Diagram	
11/26/21	1.5	Detailed design	D. Aguilar-Rodriguez
11/26/21	1.6	Petri-Net Diagrams	J. Berdecia

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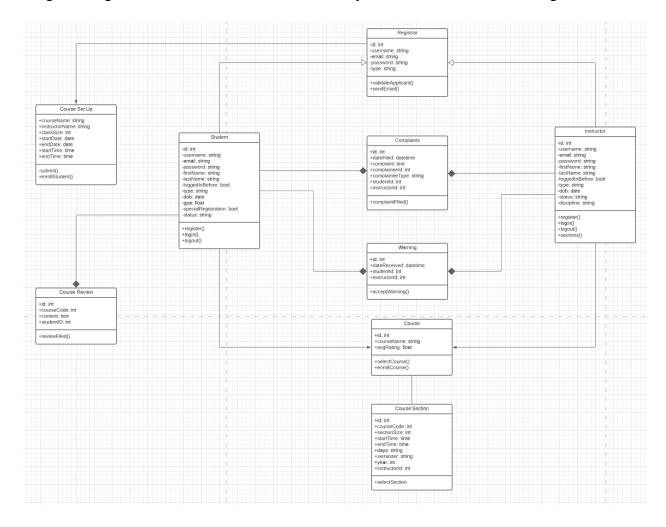
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Introduction

GradSchoolZero is a web-based university management system designed for students and faculty to access curricula. Students will be able to view courses that they are enrolled in, as well as the grade in those courses. Students are able to file complaints against instructors or other students, whereas the faculty can only file complaints against their students. The registrar has the most control of this system. Enrollments, setting up courses, and sending out warnings are a few of the responsibilities that registrar holds. Everyone else who views *GradSchoolZero* will be able to see things like highest and lowest rated classes and exceptional students who have a high GPA.



Use Cases

Visitor applies to be an instructor

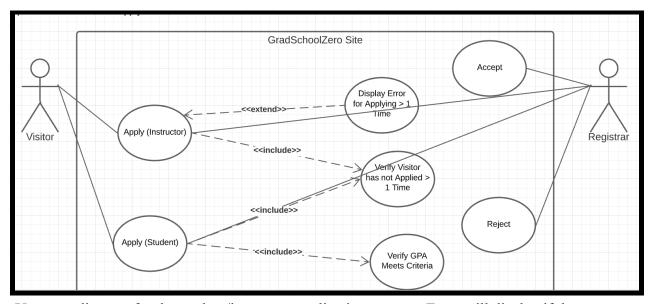
1. Visitor hovers over apply tab and clicks "INSTRUCTOR"

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- 2. Visitor arrives at form and enters date of birth, discipline, name, GPA, and email
- 3. Visitor clicks "SUBMIT"
- 4. Visitor receives email with application decision
- 5. If accepted, visitor will receive unique username and temporary password
- 6. EXCEPTIONAL: If visitor applies more than once, prompt will display notifying that visitor has already submitted an application and cannot re-apply

Visitor applies to be a student

- 1. Visitor hovers over apply tab and clicks "STUDENT"
- 2. Visitor arrives at form and enters date of birth, name, and email
- 3. Visitor clicks "SUBMIT"
- 4. Visitor receives email with application decision
- 5. If accepted, visitor will receive unique username and temporary password
- 6. EXCEPTION: If visitor applies more than once, prompt will display notifying that visitor has already submitted an application and cannot re-apply



Use-case diagram for the student/instructor application process. Error will display if the student/instructor applies more than once. Student will enter their GPA.

Student/instructor changes password upon first login

- 1. Student/instructor logs in with unique username and temporary password
- 2. Student/instructor is prompted to change password on dashboard
- 3. Student/instructor populates fields with new password
- 4. If password meets requirements, student/instructor is notified that the password has been changed
- 5. EXCEPTION: If password does not meet requirements, student/instructor is re-prompted to enter new password

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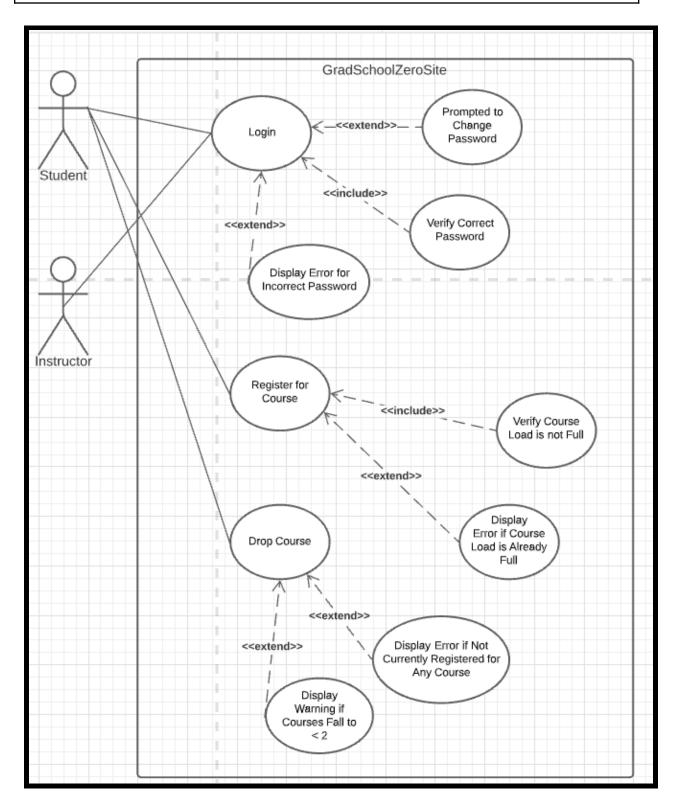
Student registers for a course

- 1. Student logs into site and lands in dashboard
- 2. Student clicks register
- 3. Student selects course and presses submit
- 4. EXCEPTION: Student is currently registered for 5 courses, the course registration page will raise a prompt saying that student is registered for the maximum number of courses
- 5. EXCEPTION: Student is already registered with >= 2 courses (not qualified to register during the special period), the course registration page will raise a prompt that student is not approved to register at this time
- 6. EXCEPTION: Student is registering when not in the course registration period, the course registration page will raise a prompt that student is not approved to register at this time

Student drops course

- 1. Student logs in to GSZ and is redirected to the dashboard
- 2. Student scrolls down to current course list
- 3. Student clicks button displayed as 'Drop Class' next to corresponding course
- 4. Student dashboard refreshes with corresponding course specified as 'DROPPED'
- 5. EFFECT: Student is warned if falling to < 2 courses
- 6. EFFECT: Student is suspended if dropped all courses
- 7. EFFECT: Student gets grade of W when dropping class between the course registration and grading periods
- 8. EXCEPTION: Student drops course when not in between the course registration and grading periods, button will be grayed-out

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Petri-Net diagram displaying process of registering and dropping a course. If a student already has a full course load, an error will be displayed if trying to register for an additional course. If the student's course load falls to <2, a warning will be displayed.

Student reviews course

- 1. Student logs into site and lands in dashboard
- 2. Student clicks course, and then clicks review course
- 3. Student enters number of stars and written review
- 4. EFFECT: Student gets warning for 1 or 2 taboo word(s) (which are censored ****)
- 5. EXCEPTION/EFFECT: Student gets 2 warnings for >= 3 taboo words and review is not posted
- 6. EXCEPTION: Student attempts to review course outside of the course running period, review button will be gray-ed out

Student applies for graduation

- 1. Student logs into site and lands in dashboard
- 2. Student clicks apply for graduation
- 3. Student graduates and leaves the system
- 4. EXCEPTION: Student has not met graduation requirements, receives warning for reckless graduation application

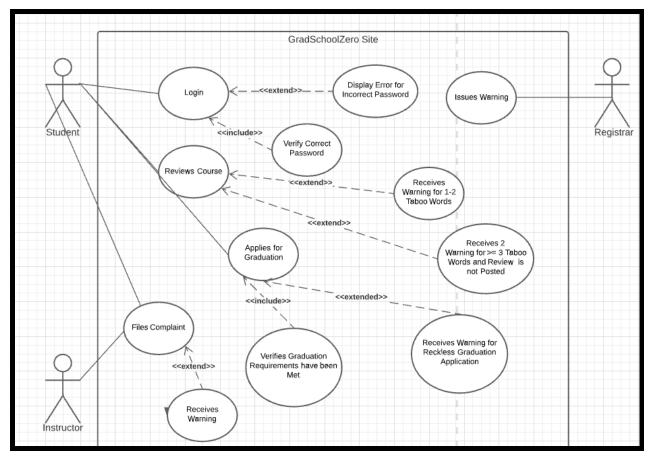
Student files complaint

- 1. Student logs into site and lands on the dashboard
- 2. Student presses file a complaint
- 3. Student populates the text box (to complain about another student or instructor) and submits
- 4. EFFECT: Student or instructor gets a warning
- 5. EFFECT: Student receiving their third warning will be suspended for a semester

Instructor files complaint

- 1. Instructor logs into site and lands on the dashboard
- 2. Instructor presses file a complaint
- 3. Instructor populates the text box and submits
- 4. EFFECT: Student gets punished or instructor gets a warning

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Petri-Net diagram displaying processes for filing complaints, applying for graduation and reviewing courses. Diagram accounts for taboo words, graduation requirements not met, and other warnings by the registrar.

Instructor allows wait-listed student to take a course

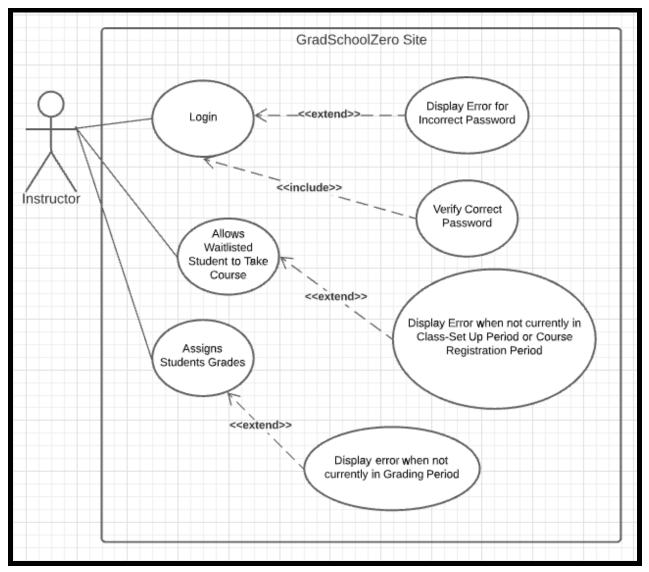
- 1. Instructor logs into site and lands on the dashboard
- 2. Instructor presses wait-list on dashboard
- 3. Instructor presses admit next to chosen student
- 4. EXCEPTION: Instructor attempt to admit student when not during class-set up period or course registration period, admit button will be grayed-out

Instructor assigns students grades

- 1. Instructor logs in to GSZ and is redirected to dashboard
- 2. Instructor clicks button displayed as 'Assign Grades'
- 3. Instructor is redirected to page with assigned courses and corresponding students
- 4. Instructor assigns grades to students using dropdowns next to each student name
- 5. Instructor presses submit and the page is refreshed with corresponding students with their grades assigned

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6. EXCEPTION: Instructor tries to assign grades when not in grading period, grading button will be gray-ed out



Petri-Net diagram displays additional roles for instructor.

Registrar cancels a course

- 1. Registrar logs into site and lands on the dashboard
- 2. Registrar clicks on course database and clicks cancel next to a selected course
- 3. EXCEPTION: Registrar attempts to cancel a course when not in the class-set up period, course registration or class running period
- 4. EFFECT: Student with < 2 courses registered may re-register during special course period

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- 5. EFFECT: Instructor with at least once cancelled course will be warned
- 6. EFFECT: Instructor with all courses cancelled will be suspended and cannot teach in the following semester

Registrar creates course section

- 1. Registrar logs into site and lands on the dashboard
- 2. Registrar clicks add course section
- 3. Registrar enters text fields and clicks submit
- 4. EXCEPTION: Registrar attempts to create course section while not in course set-up period, add course section button will be grayed-out

Registrar deregisters a student

- 1. Registrar logs into site and lands on the dashboard
- 2. Registrar clicks student database
- 3. Registrar hovers next to a student's name and clicks deregister
- 4. EFFECT: Student falls to < 2 courses and gets warned
- 5. EFFECT: Student falls to 0 courses and gets suspended

Registrar issues a warning to student/instructor

- 1. Registrar logs into site and lands on the dashboard
- 2. Registrar clicks student database
- 3. Registrar hovers next to a student's/instructor's name and clicks warn
- 4. EFFECT: Student receiving their third warning will be suspended for a semester

Registrar changes period from Course Set-up Period to Course Registration Period

- 1. Registrar logs in to GSZ and is redirected to dashboard
- 2. Registrar clicks button displayed as 'Course Registration Period'
- 3. Registrar is redirected to Course Registration web page

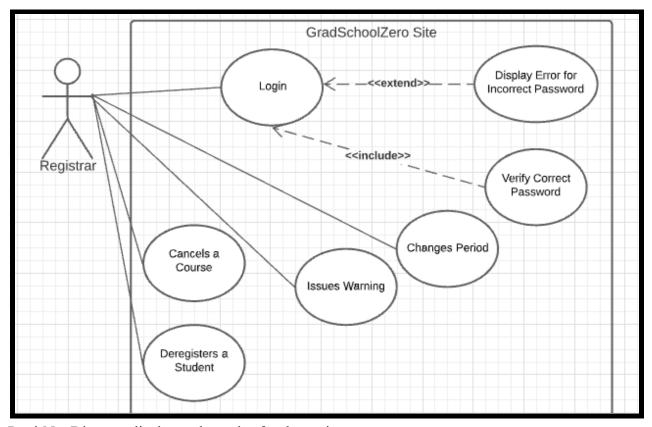
Registrar changes period from Course Registration Period to Class Running Period

- 4. Registrar logs in to GSZ and is redirected to dashboard
- 5. Registrar clicks button displayed as 'Class Running Period'
- 6. Registrar is redirected to Class Running Period web page

Registrar changes period from Class Running Period to Grading Period

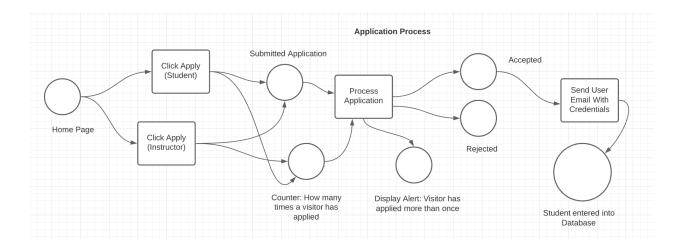
- 7. Registrar logs in to GSZ and is redirected to dashboard
- 8. Registrar clicks button displayed as 'Grading Period'
- 9. Registrar is redirected to Grading Period web page

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Petri-Net Diagram displays other roles for the registrar.

Petri-Net Diagrams



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Diagram displaying the application process for both prospective students and instructors. Exception case: if a visitor has applied more than once, they will have an alert displayed and their application will not go through.

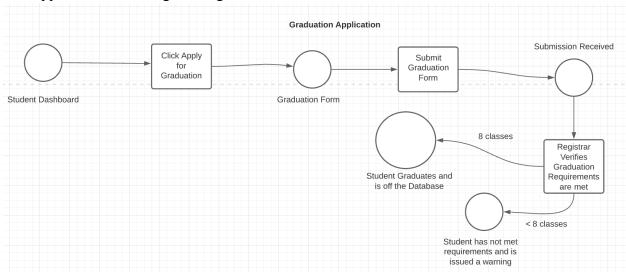


Diagram displaying the graduation application process. Exception case: if a student has not completed the required 8 classes, they will be issued a warning and not graduate.

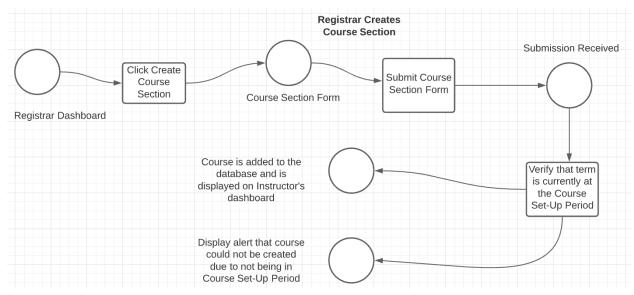
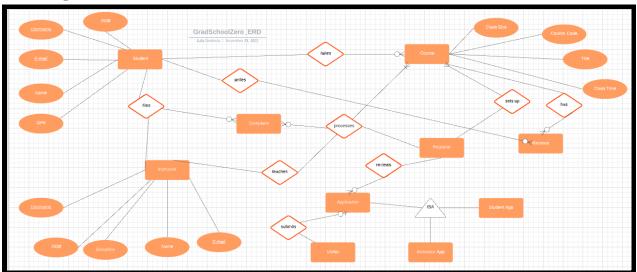


Diagram displaying the process of creating a course section (by the registrar). Exception case: registrar attempts to create a course section when it is not currently the course set-up period.

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E-R Diagram



Link to clear view of E-R diagram

Detailed Design

```
def generate_username(first_name, last_name):
    first_initial = first character of first_name string
    last_six = first six characters of last_name string

    partial_username = lowercase(first_inital + last_initial)

    existing_students = query list of users whose username starts
with partial_username

    if there exists students whose usernames start with
partial_username:
        last_student_username = last student's username from
existing_students list
        username = increment digit from last_student_username
    else:
        username = partial_username + '000'
```

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```
return username
Def generate password():
     Characters = string of all uppercase and lowercase letters,
digits from 0 through 9, and special characters
     password = string of 16 randomly chosen characters from
characters string variable.
     Return password
Def generate email content (response dictionary):
     If response dictionary['response'] == 'accepted':
          Content = ('congrats on being accepted. Below is your
login info' +
                     '\nUsername' + response dictionary['username'] +
                     '\nPassword' + response dictionary['password'])
     Else if response dictionary['response'] == 'rejected':
          Content = ('You have been rejected.' +
                     '\nReason:' +
                     response dictionary['reason'])
     Return content
# note: EMAIL ADDRESS and EMAIL PASSWORD are constant variables from
#operating system environment variables
Def send email(recipient, content):
     msg = EmailMessage() # from email.message import EmailMessage
     msg['Subject'] = 'GradSchoolZero Admissions'
     msg['From'] = EMAIL ADDRESS
     msg['To'] = recipient
     msg.set content(content)
     # import smtplib at top of the python file
     With smtplib.SMTP SSL('smtp.gmail.com', port 465) as smtp:
          smtp.login(EMAIL ADDRESS, EMAIL PASSWORD)
          smtp.send message(msg)
Def home():
```

Return render of home page

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```
Def login():
     If user is already logged in:
          Return redirect to home page
     Login form = data entered in login form
     If login form has been filled out correctly:
          user = query from User table by the username that was
entered in login form
          If user exists and password hash match:
                login user(user) #from flask login import login user
                If from login form 'student' was selected and
user.type == 'student':
                     Return redirect to student dashboard
                If from login form 'instructor' was selected and
user.type == 'instructor':
                     Return redirect to instructor dashboard
                If from login form 'registrar' was selected and
user.type == 'instructor':
                     Return redirect to registrar dashboard
          Else:
                Flash message 'login unsuccessful'
     Return render of login page
Def student app():
     If user is already logged in:
          Return redirect to home page
     Student app form = StudentApplicationForm()
     If student app form was correctly filled out:
          Student applicant = instantiation of
StudentApplicant(first name, last name, email, dob, gpa from
student app form)
          Add student applicant to applicant table
          Commit changes to db
          Flash message 'application filed successfully. You will be
```

notified of our decision via email.'

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Return redirect to login page Return render of student application page Def instructor app(): If user is already logged in: Return redirect to home page instructor app form = InstructorApplicationForm() If instructor app form was correctly filled out: instructor applicant = instantiation of InstructorApplicant(first name, last name, email, dob, gpa from instructor_app_form) Add instructor applicant to applicant table Commit changes to db Flash message 'application filed successfully. You will be notified of our decision via email.' Return redirect to login page Return render of instructor application page Def statistics page(): Return render of statistics page Def student dash(): Return render of student dashboard Def instructor dash(): Return render of instructor dashboard Def registrar default dash(): change form period = ChangePeriodForm() If change period form is correctly filled out: Flash message 'Period changed successfully' Return render of registrar dashboard Def registrar class setup(): Class setup form = ClassSetUpForm() If class setup form was correctly filled out:

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```
Flash message 'Course submitted successfully'
     Return render of class setup page
Def student course setup():
     student class enroll form = StudentClassEnrollForm()
     If student class enroll form is correctly filled out:
          Flash message 'Enrolled in course successfully'
     Return render of course enrollment page
Def view courses():
     Return render of view all courses page
Def warned stu instructor():
     Warning form = WarningForm()
     If warning form was correctly filled out:
          Flash message 'warning created successfully'
     Return render of create warning page
Def registrar grading period():
     Return render of course grades page
Def student graduation():
     Student graduation form = StudentGraduationForm()
     If Student graduation form was correctly filled out:
          Flash message 'Form submitted successfully! You'll be
notified with a decision'
     Return render of graduation application form page
Def registrar view applicants():
     Instruc apps = query of all instructor applicants
     student_apps = query of all student applicants
     Return render of applicants page with applicants populated from
instructor apps and student apps lists
Def student app accept(index)
     Applicant = query student applicant by index
     Generated username = generate username(applicant.first name,
applicant.last name)
```

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```
Generated password = generate password()
     Hashed password =
generate password hash (generated password) #from bcrypt library
     Student user = instantiation of Student object
     Admission = python dictionary with key values { 'response':
'accepted', 'username': generated username, 'password':
generated password}
     Email content = generated email content(admission)
     Send email(applicant.email, email content)
     Add student user to Student table
     Delete applicant from student applicant table
     Commit changes to db
     Return redirect to registrar view applicants
Def instructor app accept(index)
     Applicant = query instructor applicant by index
     Generated username = generate username(applicant.first name,
applicant.last name)
     Generated password = generate password()
     Hashed password =
generate password hash (generated password) #from bcrypt library
     instructor user = instantiation of Instructor object
     Admission = python dictionary with key values { 'response':
'accepted', 'username': generated username, 'password':
generated password}
     Email content = generated email content(admission)
     Send email(applicant.email, email content)
     Add instructor user to Instructor table
     Delete applicant from instructor applicant table
     Commit changes to db
```

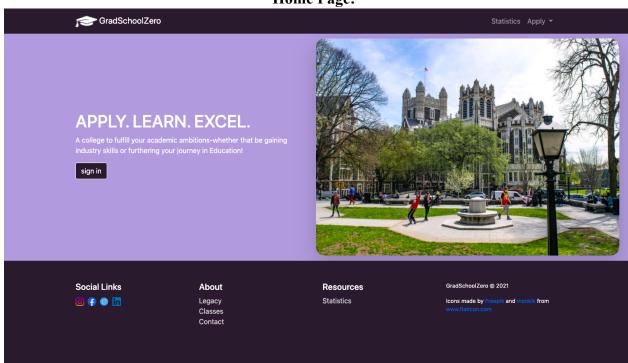
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```
Return redirect to registrar view applicants
Def instruc app delete(index):
     applicant = query instructor applicant by index
     Delete applicant from instructor applicant table
     Commit changes to db
Def student app delete(index):
     applicant = query student applicant by index
     Delete applicant from student applicant table
     Commit changes to db
Def student complaint():
     student complaint form = StudentComplaintForm()
     If student complaint form was correctly filled out:
          Flash message 'Complaint filed'
     Return render of student complaint page
Def instructor complaint():
     instructor complaint form = InstructorComplaintForm()
     If instructor complaint form was successfully filled out:
          Flash message 'Complaint filed'
     Return render of instructor complaint page
```

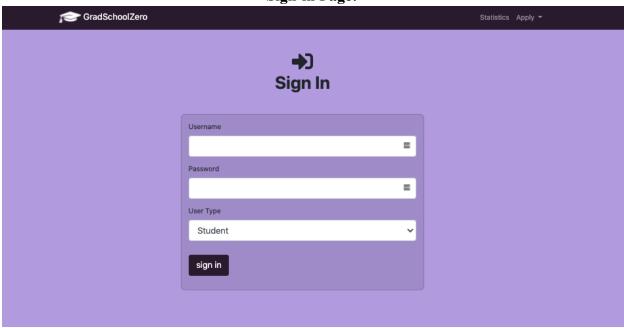
System Screens

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Home Page:

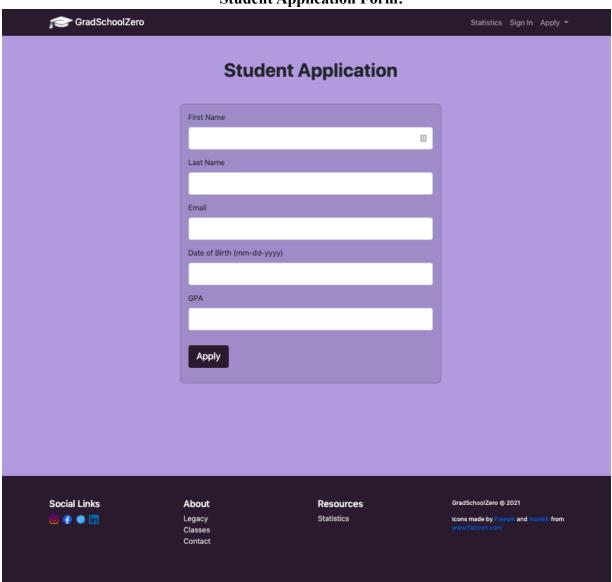


Sign-in Page:



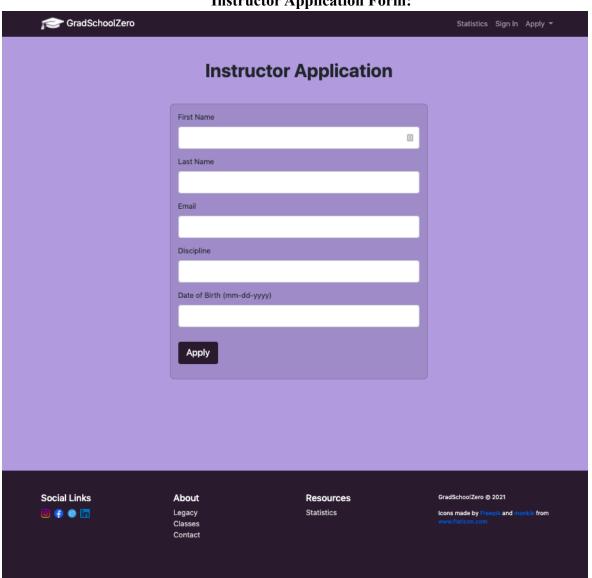
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Student Application Form:



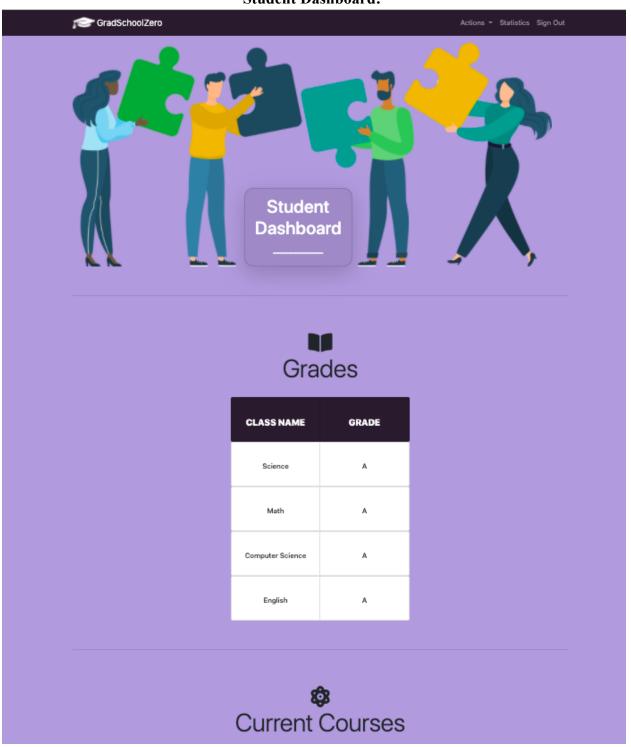
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Instructor Application Form:

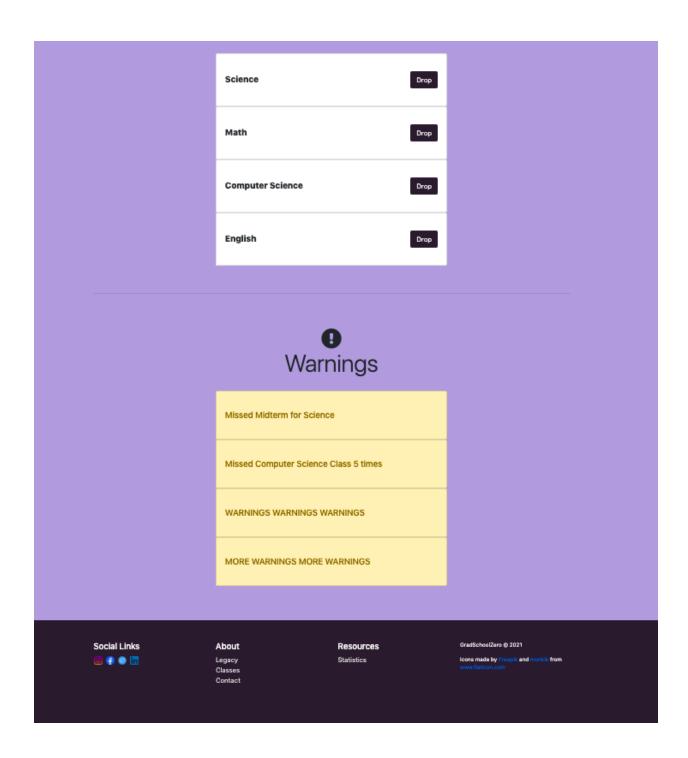


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Student Dashboard:



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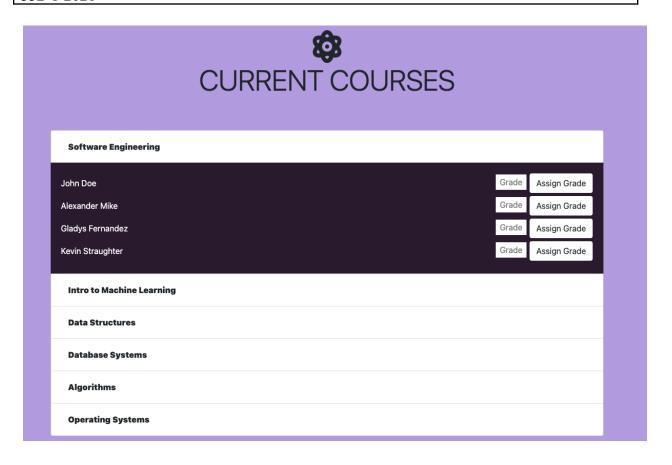


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Instructor Dashboard:



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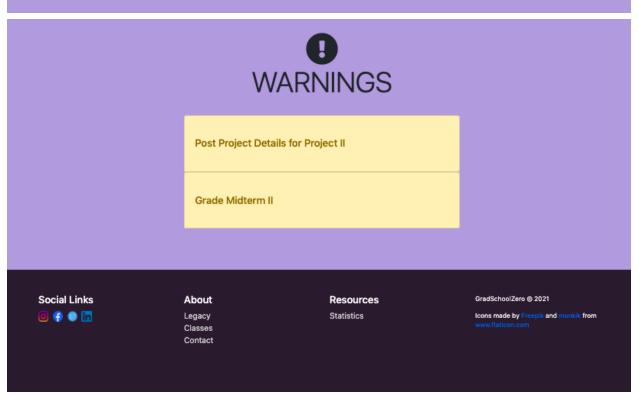
HIGHEST RATED	RATE
Computer Science	99%
Discrete Math	98%
Algorithms	98%
Data Structures	97.5%

LOWEST RATED COURSES	RATE
Artificial Intelligence	96%
Database Systems	95%
Intro to Machine Learning	95%
Intro to Theoretical Computer Science	93.5%

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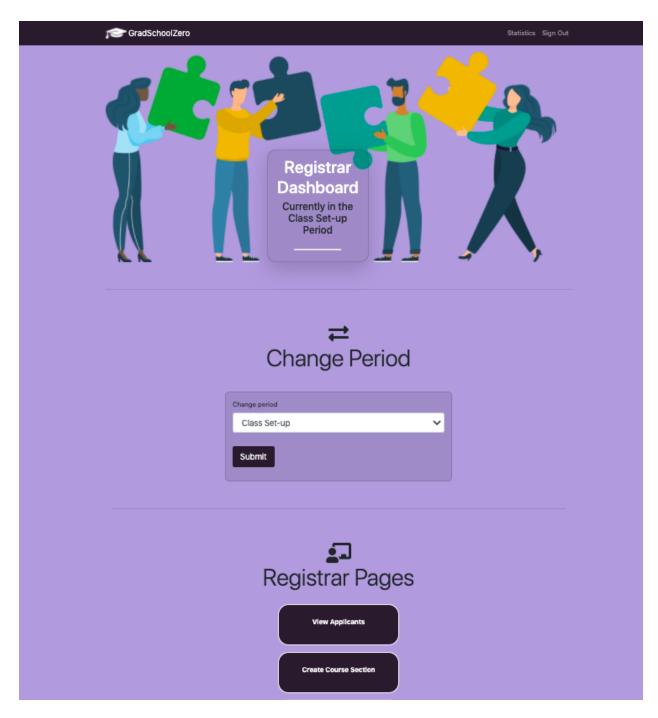


STUDENT NAME	GPA	MAJOR	COURSE ENROLLED
John Doe	99.5%	COMPUTER SCIENCE	CSC 32200
Tamara Eisenberg	99.5%	COMPUTER SCIENCE	CSC 32200
Jacquline Fernandez	99.4%	COMPUTER SCIENCE	CSC 32200

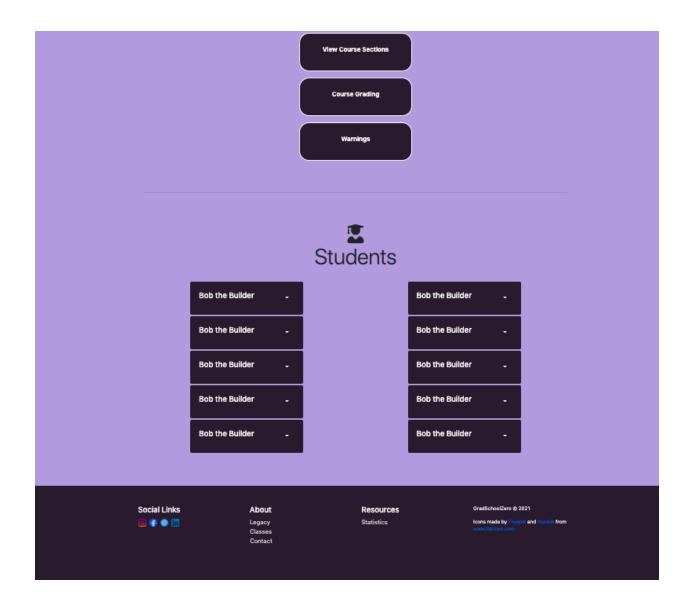


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Registrar Dashboard:

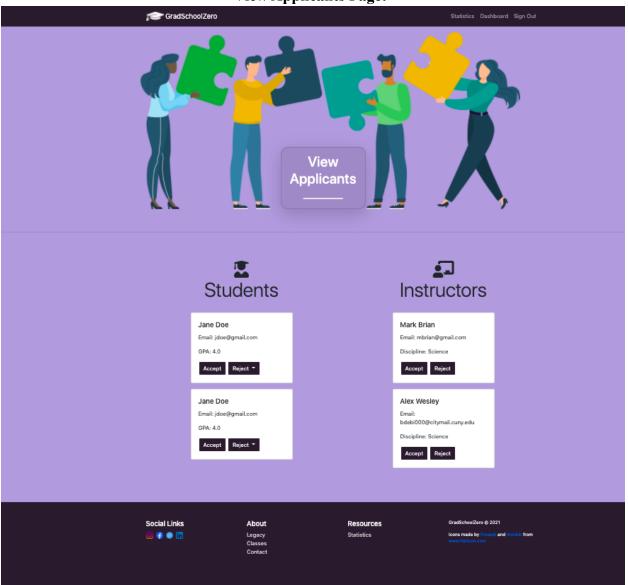


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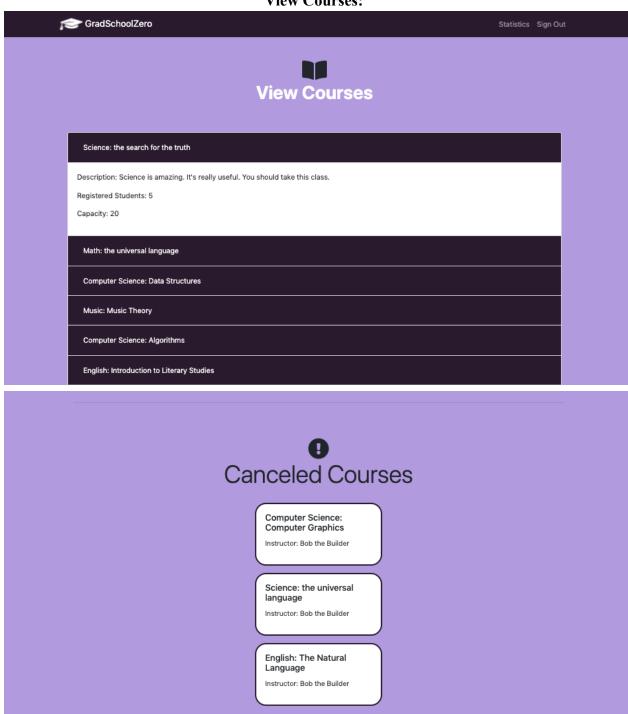
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View Applicants Page:



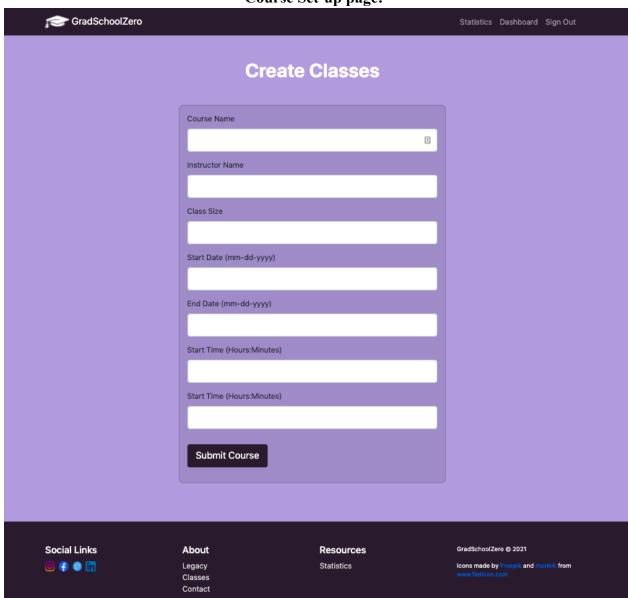
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View Courses:



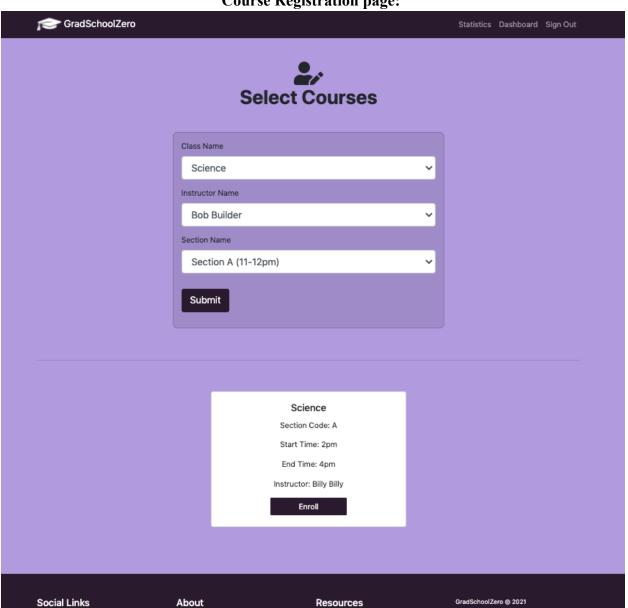
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Course Set-up page:



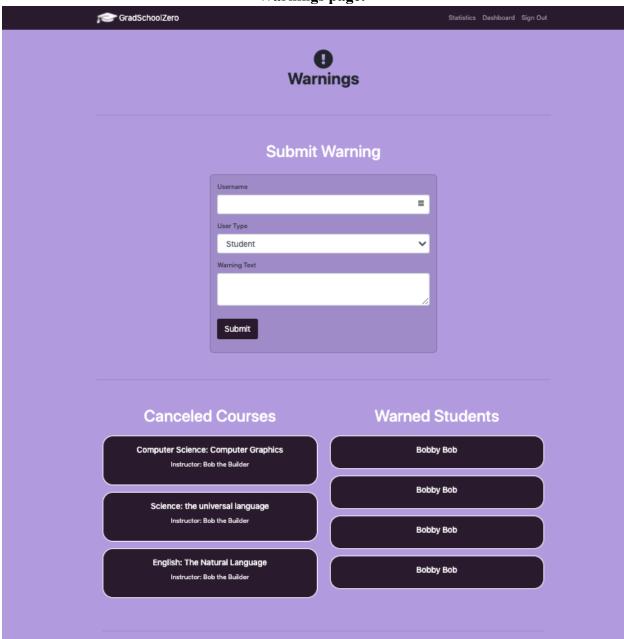
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Course Registration page:



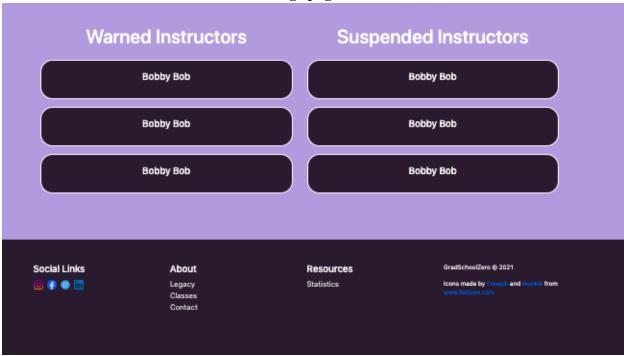
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Warnings page:



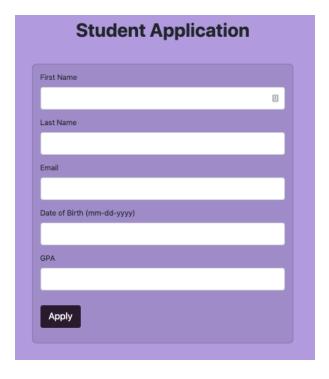
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Warnings page contd:



Prototype of Functionality: Acceptance/Rejection of Applicants

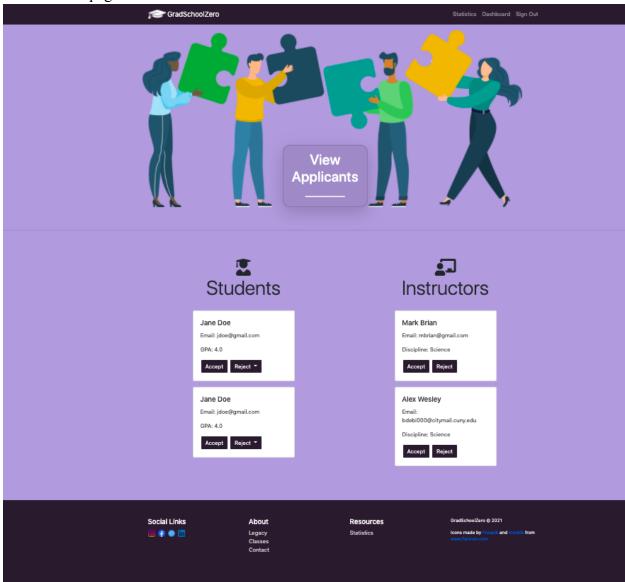
1. Student/Instructor applicants fill out their respective application forms and submits



First Name	E
Last Name	
Email	
Lindii	
Discipline	
Date of Birth (mm-dd-yyyy)	

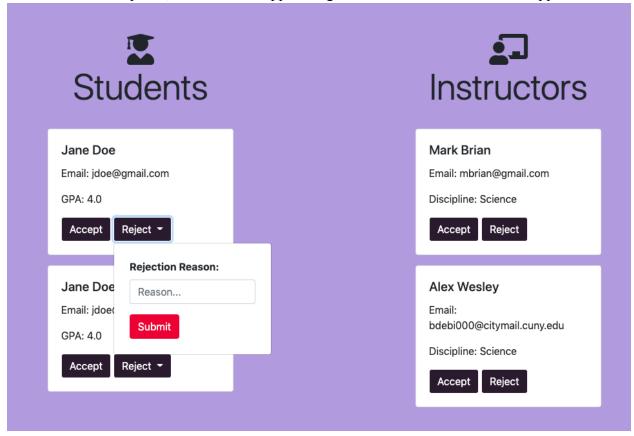
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- 2. Student/instructor applicants get added to StudentApplicant and InstructorApplicant tables in the databases respectively
- 3. The StudentApplicant and InstructorApplicant tables get queried and the applicants' information are displayed on the "View Applicants Page" which the registrar can access by clicking the "View Applicants" button on the registrar dashboard; **only** the registrar can view this page.



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4. Registrar either accepts or rejects an applicant. If the registrar rejects a student, there is a form they must fill out to provide the student with the reason for rejection in the "View Applicants" page. The reason is sent to the student applicant via email and the applicant gets deleted from the StudentApplicant table. If the registrar rejects an instructor, no reason is required; the instructor applicant gets deleted from the InstructorApplicant table



- 5. If the registrar accepts a student applicant, the student applicant gets added to the Student table in the database and they are notified via email of their acceptance and their credentials to sign-in into the site (via the sign-in page). The student applicant's information gets deleted from the StudentApplicant table. The process is similar for accepted Instructor applicants except Instructor applicants get added to the Instructor table rather than the Student table and their information is deleted from the InstructorApplicant table
- 6. Once the registrar has made a decision on an applicant and the applicant's information is deleted from their respective applicant tables, they are deleted from the "View Applicants" page (since the route function for the "View Applicants" page queries the applicant tables)

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Memos

Meeting 11/16/21

Changed data storage from JSON files to SQLAlchemy (Danny A. Concerns rendering database tables to the website (Danny A.)

Meeting 11/21/21

ER Diagram first pass (Julia B. + help from teammates) Use cases discussion (Julia B. + teammates)

Meeting 11/23/21

Most UI done for complaint form Instructor dashboard in progress (minor changes) Concerns hooking database to drop-down for complaint form

Meeting 11/25/21

Finalizing PETRI-NET diagram before submission Additional pushes to repository

Git Repo and Other Supporting Information

Miro Board | Functionality Outline

GitHub Repository

Wireframe Draft

Home Page Draft