Course and Grading Management System

A full-stack Course & Grading Management System designed for three user roles: Admin, Professor, and Student.

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Problem Statements

An online platform to automate and streamline the grading process for academic courses enabling instructors to define grading criteria, upload assessment scores, and automatically compute final grades, while students can securely access their course results in real time.

Interactive UI

Dashboard for course creation and grade matrix setup.

Grade Calculation

Automated Letter Grade assignment to students by calculating Z-score.

Secure Access

Role-based login for Students and Instructors

Toolkits and Utility
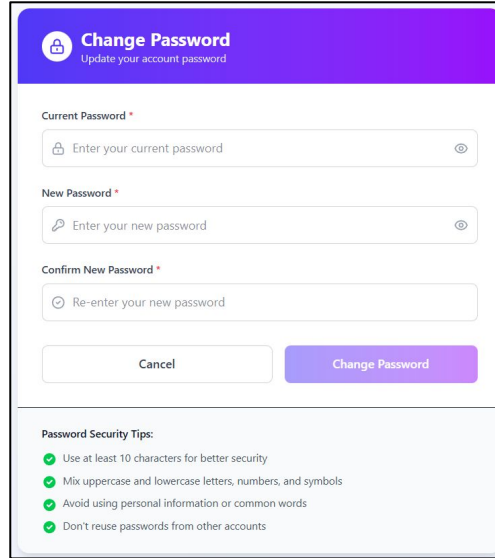
HTML, JavaScript, Node.js, MongoDB

Secure Login

Login Page

Change Password Page

Email notification for Forgot Password

Forgot Password Features:
- A randomly generated secure password is generated and sent to the linked email.
- The random password acts as the accounts original password for 60 minutes before expiry.
- On login with this secure password, the user is prompted to immediately and mandatorily change their password.

Super Admin Features

- Has access to every other utility on the management system
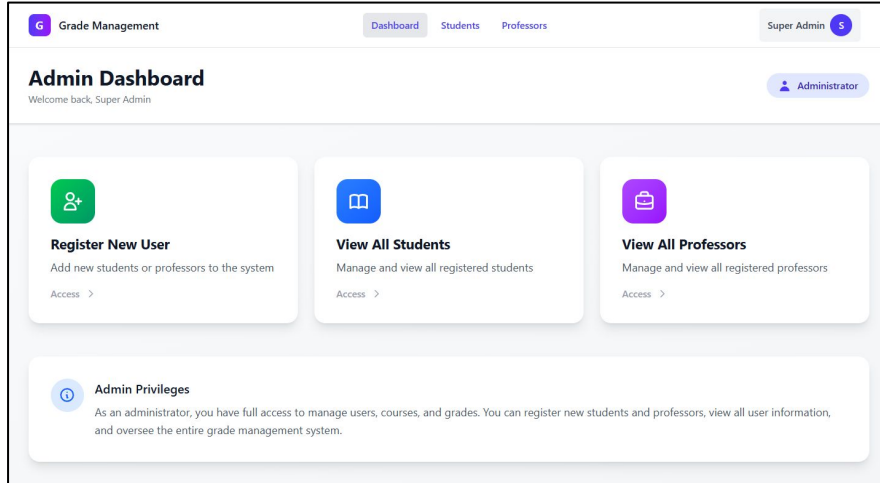
- Can register single or multiple students and professors using bulk CSV files
- On creation of multiple accounts, a random password is generated and sent to the linked email address

Professor Features

- Create and manage courses with custom grading policies

Create a New Course

Fill in the details below to create a new course

Course Name *

e.g., Computer Networks

Course Code *

e.g., CS301

Course Description *

Describe the course content and objectives...

Grading Policy * (Must total 100%)

Midsem (%)

0

Endsem (%)

0

Quizzes (%)

0

Project (%)

0

Assignment (%)

0

Attendance (%)

0

Participation (%)

0

Current total: **0%**

Create Course   Cancel

- Define weightages for mid-term, end-term, assignments, quizzes, attendance, participation grading policies
- Specify number of quizzes for each course
- Edit the course schema anytime

📋 Quiz Management

Configure the number of quizzes for this course. Each quiz will be weighted equally.

TOTAL WEIGHTAGE	ACTIVE QUIZZES	WEIGHT PER QUIZ
15%	**3**	**5.00%**

＋ Add Quiz   **— Remove Quiz**

Professor Features

- Bulk grade entry interface

Student	MIDSEM (52%) Max: 100	ENDSEM (21%) Max: 100	Quiz 1 (13.50%) Max: 100	Quiz 2 (13.50%) Max: 100
test_student t@iitgn.ac.in ID: 93b600	0	0	0	0

Bulk Upload Grades
Upload a CSV file to update grades for multiple students at once

[⬇ Download Sample CSV]   [⬆ Upload CSV]

- Individual student grade updates

Student	MIDSEM (52%) Max: 100	ENDSEM (21%) Max: 100
test_student t@iitgn.ac.in ID: 93b600	030	0

Professor Features

- Automatic overall as well as assessment wise statistics calculation

- View and respond to student grade challenges
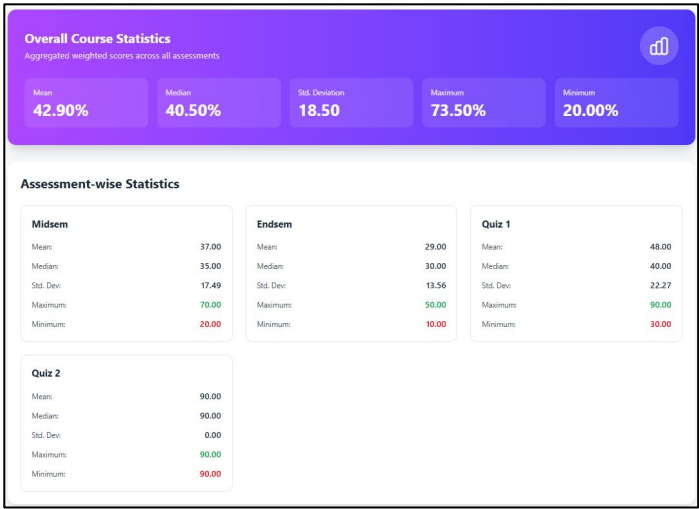
Professor Features

- Review student submissions with attachments

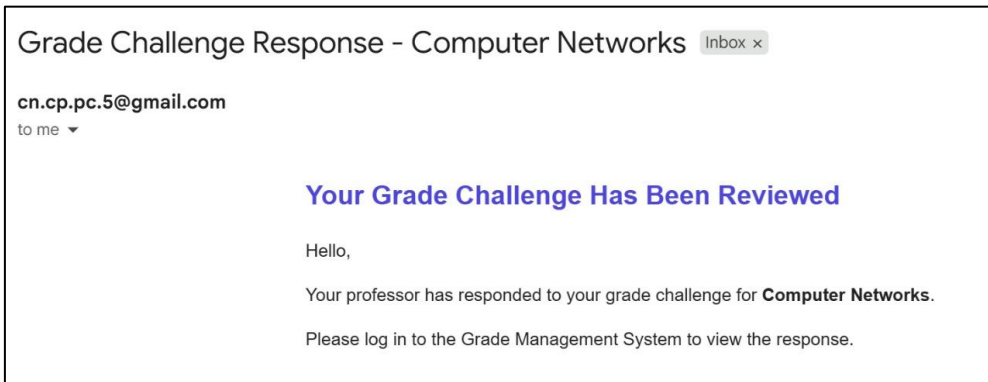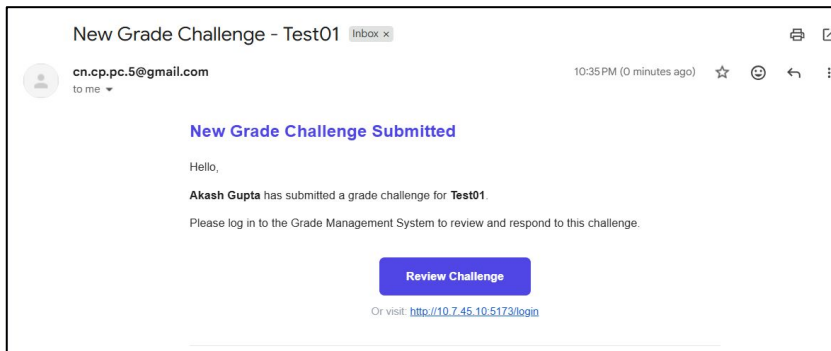- Respond with detailed feedback and optional attachments
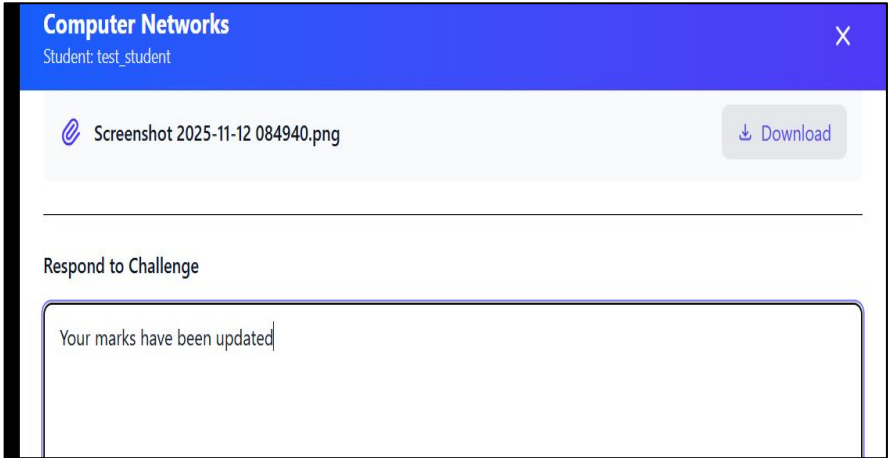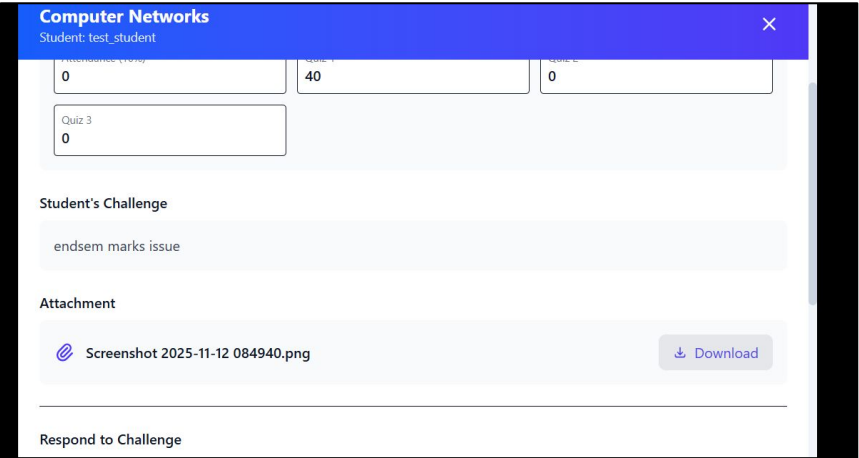
- Track challenge resolution status

Professor Features

- Automatic notifications for new challenges and responses

Professor Features

- Automated Letter Grade calculation from mean and z-score.
- Option to publish/unpublish grades on demand.

Computer Networks - Grade Management
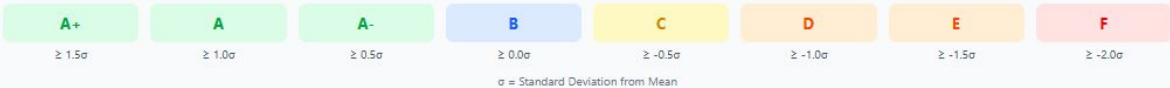
<table>
<tr><td>👁 Publish Grades</td><td>📊 View Statistics</td><td>⚙ Set Max Marks</td></tr>
</table>

Grade Distribution (Gaussian Curve)

Letter grades assigned using standard deviation from mean

Student Name	Weighted Score	Z-Score	Letter Grade
k	29.50%	-0.72	D
test_student	20.00%	-1.24	E
Akash Gupta	40.50%	-0.13	C
Rachit	73.50%	1.65	A+
Prat	51.00%	0.44	B

Grading Scale (Based on Standard Deviation)

A+	A	A-	B	C	D	E	F
$\geq 1.5\sigma$	$\geq 1.0\sigma$	$\geq 0.5\sigma$	$\geq 0.0\sigma$	$\geq -0.5\sigma$	$\geq -1.0\sigma$	$\geq -1.5\sigma$	$\geq -2.0\sigma$

σ = Standard Deviation from Mean

Student Features

- Can register for one or more of the available courses.
- On successful registration, students can see the grades assigned to them
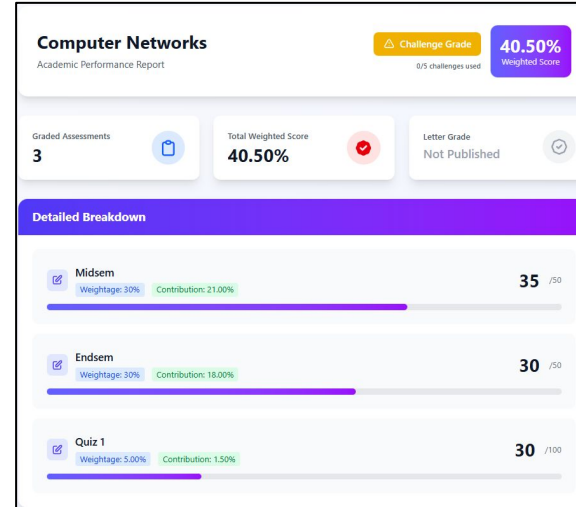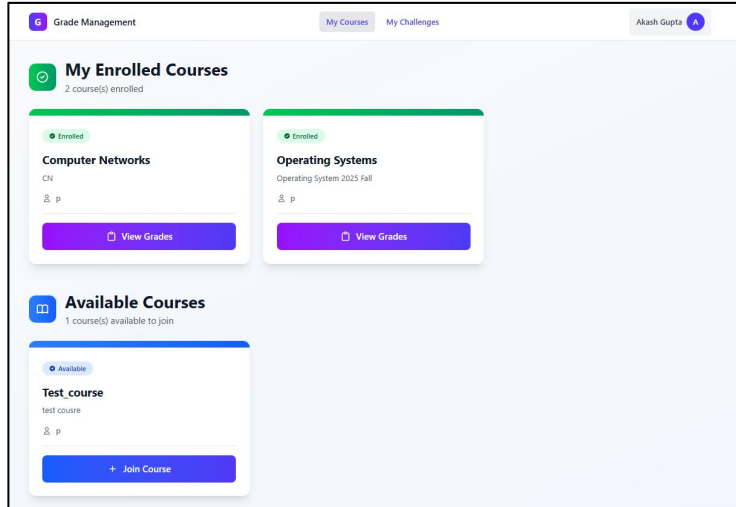
- Automated weighting and aggregation of scores received as per the weightage of each assessment defined by the instructor
- Section to view automated letter grades once published by the instructor

Student Features

- Option to challenge received grades upto a total of 5 times per course
- Students can describe their grievances and attach necessary attachments for the same
- Dashboard to view feedback on challenges submitted by the student.

Challenges Faced

- Handling incomplete/partial marks while computing means, standard deviations, and z-scores without skewing the distribution

- Marks of one student are getting allocated to all.

- Keeping grading policy totals at exactly 100% while allowing dynamic quiz/assignment counts and per-component max marks.

- Developing on a shared network with specific IPs required careful CORS whitelisting.

Future Work

- Enable Two-factor Authentication for even secure login

- Create a new role/privilege - Teaching Assistant (TA)

- Ensure TAs and multiple professors can manage a single course.

- Cache expensive statistics and add background jobs for heavy CSV imports.

- Add pagination and server-side filtering for large user/course lists.