

DATABASE SYSTEMS (CS F212)

Second Semester 2021-2022

Project
Group 10

ACADEMIC MANAGEMENT SYSTEM

Members:

Aditha Venkata Animesh (2020A7PS0193H)
Ayush Agarwal (2020A7PS0160H)
Manan Mayur Popat (2020A7PS0029H)
Vibhum Raj Tripathi (2020A7PS0247H)

ABSTRACT

Domain Description

This project is a general-purpose Academic Management System that a college can employ, in order to ensure smooth functioning and keep its students updated. It can be used by the students on a daily basis to view and manage the courses in which they are enrolled. It can also serve as the primary platform for student-faculty communication, where the faculty shares the required resources with the students. And the administration staff is responsible for keeping the faculty, course, and student information up to date.

Functionalities supported

At the start of each semester, the course basket shall be cleared for every student. Then using the AMS, all the students can manage their enrolled courses throughout the semester. It shall serve as the main platform where the students can see all their enrolled courses, news, and resources shared by the faculty. It also serves as a communication channel between the student and the faculty by means of announcements that the faculty issues. While simultaneously providing the professors with the option to see all the information regarding the enrolled students, i.e., a professor only has access to the details of the students enrolled in his course. And can only issue announcements and share files with those students. Besides that, as a whole, it will be managed by the admin staff. Their role shall be to list all the available courses at the start of each semester. And to clear the course basket of each student once the semester ends. Admins are also responsible for updating or deleting the course and student details. If a student or a faculty drops out or another student or faculty joins, they shall also keep track of the login information.

Constraints

Here are all the entities that are present:

- Student: Attributes include StudentID (primary key, regex check), Name (FirstName, LastName), Password, Batch (derived), and Email (derived). This represents a student, each student can enroll under any section of any course.
- Course: Attributes include CourseID, CourseName, Instructor-in-Charge (IC), Semester (derived), and DepartmentCode (derived).
- Section: This represents the section of a course (Ex. L1, L2, L3, etc.). Attributes include Type (L, P, or T), SectionNumber, Username (this is the username of the professor taking the section), StudentID (IDs of all the students taking up this enrolled in this course). Type and SectionNumber constitute the primary key.
- Professor: Attributes are ProfessorID (primary key), Email, Password, Name (FirstName, LastName), and MobileNumber (multivalued). Each professor can take up any number of Sections under any course.

- Topic extends Section: These will be the topics that will be listed under a section. Attributes include string Heading, Type (whether it's an announcement or just a topic), TopicID (this is an auto-generated primary key). Each topic may include any number of Items with it.
- Item: This is just an attachment for an issued topic. Attributes include ItemID (primary key), Description, and FileLink (attachment).
- Admin: Attributes include Username (primary key), Password, and Name (FirstName, LastName). Admins have complete control over the entire database. They can update, add, and delete any of the Course, Professor, and Student information.

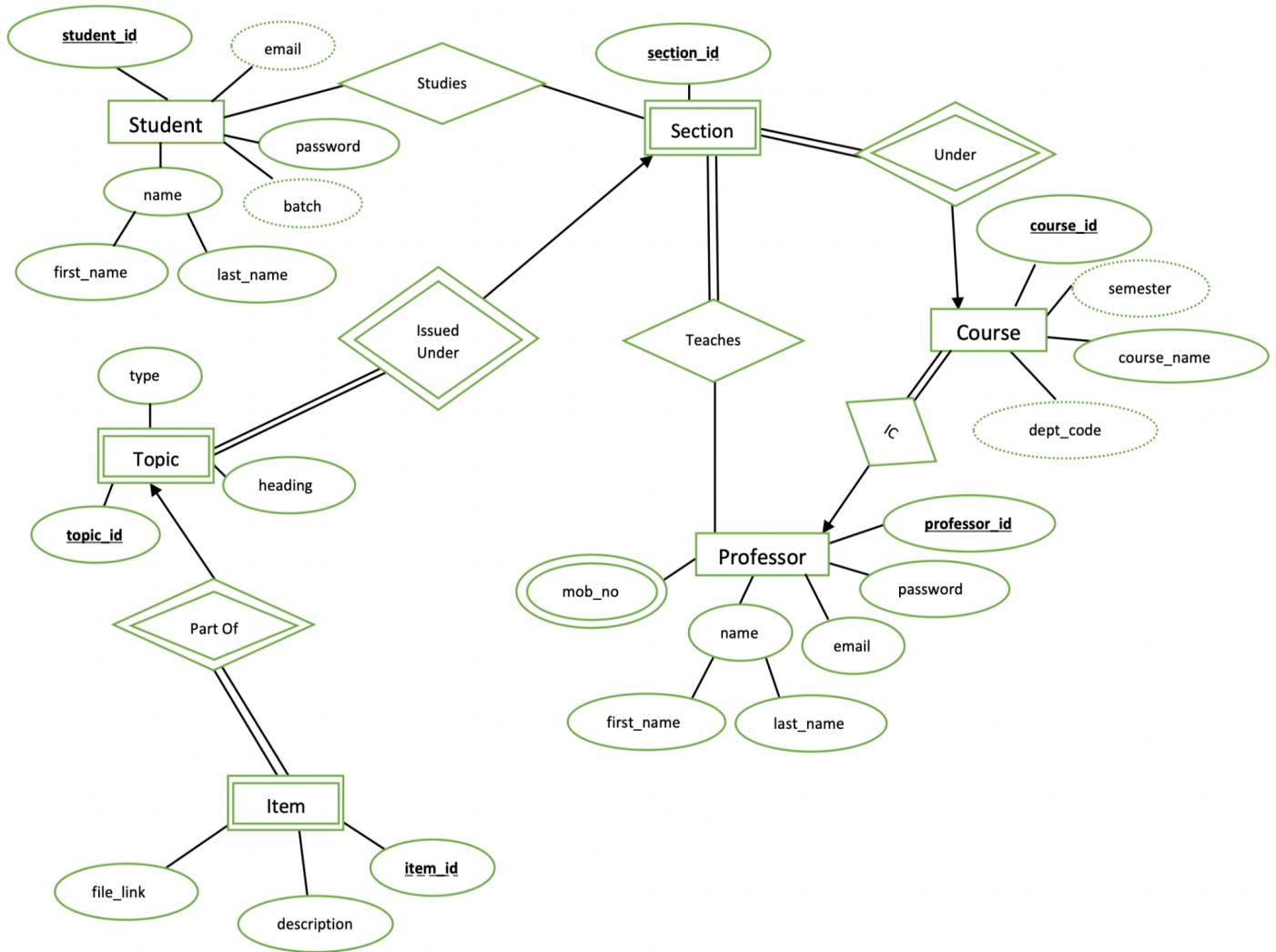
GUI Layout/Navigation

- Login Screen: Used by the student, faculty, or admin to access their dashboard.
- Enrollment Screen: All the available courses are displayed here, and the students can select and enroll themselves in.
- Student Dashboard
 1. News Screen: It is accessible only from a Student's dashboard, where all the announcements issued for the enrolled courses are displayed, sorted by date and time.
 2. Main Screen: Where all the enrolled courses are displayed and can be accessed.
 3. Course Screen: When the student selects a course, he will be transferred to the specific course screen, where all the files and announcements are displayed.
- Faculty Dashboard
 1. Student Information Screen: Here, the professor will be able to see all the information regarding the enrolled students.
 2. Main Screen: All the courses the faculty is teaching will be displayed.
 3. Course Screen: This is where the faculty can issue announcements and share the resources with the students for a particular course.
- Admin Dashboard
 1. Details Screen: Where the details of the students, faculty, and courses are displayed.
 2. Manage Screen: The admin(s) shall use this to add, delete or modify a new Student/Faculty/Course.

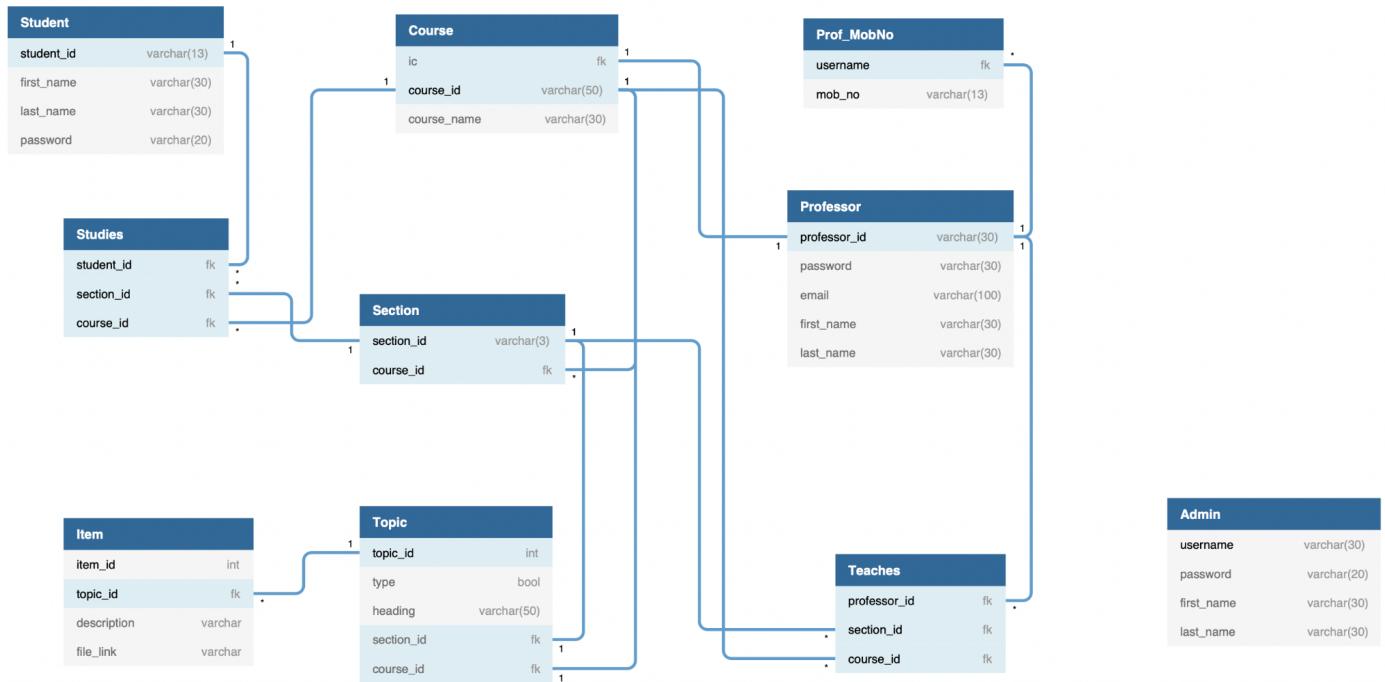
Technology Used

We used Node.js to integrate and build this project. The final UI developed is a web-based application running locally on a machine. The backend uses MySQL for the storage and retrieval of data. The application also makes use of the necessary APIs like multer and MySQLx as well, mostly for handling the SQL queries and file uploading.

ER Diagram



Relational Schema



Functional Dependencies

Student:

student_id → first_name, last_name, password

Course:

course_id → course_name, ic

Professor:

professor_id → password, email, first_name, last_name

Topic:

topic_id → type, heading, section_id, course_id

Item:

item_id, topic_id → description, file_link

Admin:

username → password, first_name, last_name

Prof_MobNo:

professor_id, mob_no → professor_id, mob_no

Teaches:

professor_id, section_id, course_id → professor_id, section_id, course_id

Studies:

student_id, section_id, course_id → student_id, section_id, course_id

Screenshots capturing tables data through select queries

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

username	password	first_name	last_name
admin	admin	admin	admin
admin1	admin1	Nathan	Andrew
admin2	admin2	Polo	Holland
admin3	admin3	Ron	Ronchuck
admin4	admin4	Geralt	Dijkstra
admin5	admin5	Vi	Johnny
admin6	admin6	Iwill	Win
admin7	admin7	Lov	Kumar
admin8	admin8	Errichto	A
admin9	admin9	Tony	Stark

admin 1 × Apply Revert

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

course_id	ic	course_name
CS F111	Lov_Kumar	Computer Programming
CS F211	C_Hota	Data Structures And Algorithms
CS F212	Lov_Kumar	Database Management System
CS F213	DVN_Siva_Kumar	Object Oriented Programming
CS F214	V_Ramaswamy	Logic In Computer Science
CS F222	Raghunath_Reddy	Discr Struc For Comp Sci
CS F320	NL_Bhanu_Murthy	Foundations Of Data Science
CS F372	Nikumani_C	Operating Systems
CS F407	C_Hota	Artificial Intelligence
CS F415	Apurba_Das	Data Mining
*	NULL	NULL

course 1 × Apply Revert

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

item_id	topic_id	description	file_link
2	2	Assignment 2 is to be submitted on or before 02...	www.google.co.in
3	3	The Mid-Semester Examination for this course is...	www.google.co.in
92	4	The Comprehensive Examination for this course...	www.google.co.in
93	5	Assignment 2 is to be submitted on or before 02...	www.google.co.in
94	6	The Mid-Semester Examination for this course is...	www.google.co.in
95	7	The Comprehensive Examination for this course...	www.google.co.in
96	8	Assignment 2 is to be submitted on or before 02...	www.google.co.in
97	9	The Mid-Semester Examination for this course is...	www.google.co.in
98	10	The Comprehensive Examination for this course...	www.google.co.in
99	11	Assignment 2 is to be submitted on or before 02...	www.google.co.in
100	12	The Mid-Semester Examination for this course is...	www.google.co.in
101	13	The Comprehensive Examination for this course...	www.google.co.in
102	14	Assignment 2 is to be submitted on or before 02...	www.google.co.in
103	15	The Mid-Semester Examination for this course is...	www.google.co.in
104	16	The Comprehensive Examination for this course...	www.google.co.in
105	17	Assignment 2 is to be submitted on or before 02...	www.google.co.in

item 1 × Apply Revert

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

Form Editor | Field Types | Query Stats

prof_mobno 1 ×

	username	mob_no
▶	Apurba_Das	1234567890
	Apurba_Das	2345678901
	Apurba_Das	3456789012
	Barsha_Mitra	3456789012
	Barsha_Mitra	4567890123
	Barsha_Mitra	5678901234
	C_Hota	2345678901
	C_Hota	4567890123
	C_Hota	5678901234
	DVN_Siva_Kumar	5678901234
	DVN_Siva_Kumar	6789012345
	DVN_Siva_Kumar	8901234567
	Lov_Kumar	0123456789
	Lov_Kumar	6789012345
	Lov_Kumar	7890123456
	Manik_Gupta	3456789012

Apply | Revert

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

Form Editor | Field Types | Query Stats

professor1 1 ×

	professor_id	password	email	first_name	last_name
▶	Apurba_Das	passp	apurba@hyderabad.bits-pilani.ac.in	Dr. Apurba	Das
	Barsha_Mitra	passp	barsha.mitra@hyderabad.bits-pilani.ac.in	Dr. Barsha	Mitra
	C_Hota	passp	hota@hyderabad.bits-pilani.ac.in	Prof. Chittaranjan	Hota
	DVN_Siva_Kumar	passp	sivakumar@hyderabad.bits-pilani.ac.in	Dr. D V N Siva	Kumar
	Lov_Kumar	passp	lovkumar@hyderabad.bits-pilani.ac.in	Dr. Lov	Kumar
	Manik_Gupta	manik	manik@hyderabad.bits-pilani.ac.in	Prof. Manik	Gupta
	Nikumani_C	passp	nikumani@hyderabad.bits-pilani.ac.in	Dr. Nikumani	Choudhury
	NL_Bhanu_Murthy	passp	bhanu@hyderabad.bits-pilani.ac.in	Prof. N.L.Bhanu	Murthy
	Raghunath_Reddy	passp	raghunath@hyderabad.bits-pilani.ac.in	Dr. Raghunath	Reddy M
	V_Ramaswamy	passp	venkat@hyderabad.bits-pilani.ac.in	Dr. Venkatakrishnan	Ramaswamy
*	NULL	NULL	NULL	NULL	NULL

Apply | Revert

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

Form Editor | Field Types | Query Stats

section1 1 ×

	section_id	course_id
▶	L	CS F111
	L1	CS F111
	P1	CS F111
	T1	CS F111
	L	CS F211
	L1	CS F211
	P1	CS F211
	T1	CS F211
	L	CS F212
	L1	CS F212
	P1	CS F212
	T1	CS F212
	L	CS F213
	L1	CS F213
	P1	CS F213
	T1	CS F213

Apply | Revert

Result Grid | Filter Rows: [] | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

	student_id	first_name	last_name	password
▶	2020A7PS0003H	Tumu	Akshar	tumu
	2020A7PS0029H	Manan	Popat	passt
	2020A7PS0130H	Dhairya	Agrawal	dhairyra
	2020A7PS0160H	Ayush	Agarwal	passt
	2020A7PS0193H	Animesh	Aditha	passt
	2020A7PS0247H	Vibhum	Tripathi	one
	2020A7PS0284H	Akshat	Oke	akshat
	2020A7PS1291H	Ashwin	Arun	ashwin
	2020A7PS1890H	Rohit	Kotha	rohit
*	2020A7PS2079H	Shreyas	Dixit	shreyas
*	NUL	NUL	NUL	NUL

student 1 × Apply Revert

Result Grid | Filter Rows: [] | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

	student_id	section_id	course_id
▶	2020A7PS0003H	L	CS F111
	2020A7PS0160H	L	CS F320
	2020A7PS0247H	L	CS F111
	2020A7PS0247H	L	CS F212
	2020A7PS0003H	L1	CS F211
	2020A7PS0029H	L1	CS F212
	2020A7PS0029H	P1	CS F213
	2020A7PS0130H	P1	CS F214
	2020A7PS0130H	T1	CS F222
	2020A7PS0160H	T1	CS F320
*	NUL	NUL	NUL

studies 1 × Apply Revert

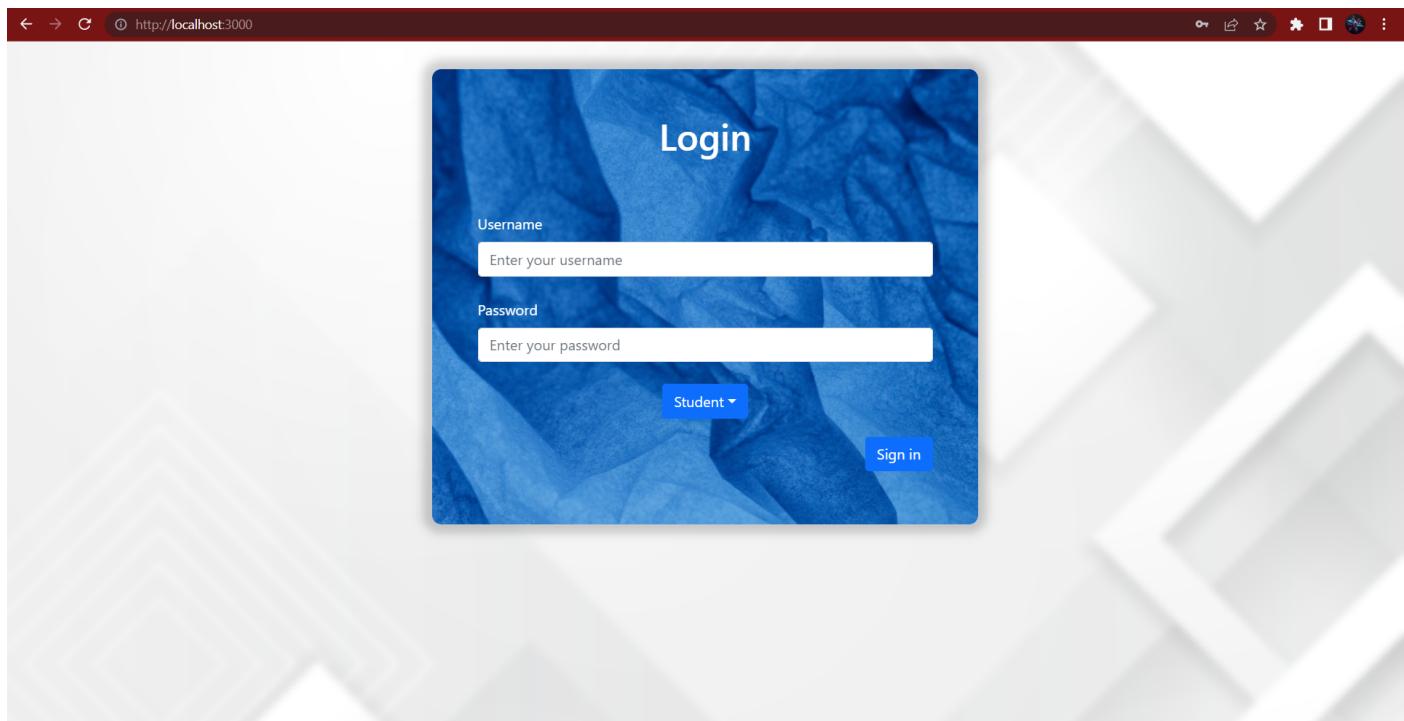
Result Grid | Filter Rows: [] | Edit: | Export/Import: | Wrap Cell Content: | Result Grid

	professor_id	section_id	course_id
▶	Apurba_Das	L	CS F415
	C_Hota	L	CS F211
	C_Hota	L	CS F407
	DVN_Siva_Kumar	L	CS F213
	Lov_Kumar	L	CS F111
	Lov_Kumar	L	CS F212
	Nikumani_C	L	CS F372
	NL_Bhanu_Murthy	L	CS F320
	Raghunath_Reddy	L	CS F222
	V_Ramaswamy	L	CS F214
	Apurba_Das	L1	CS F214
	Barsha_Mitra	L1	CS F111
	Barsha_Mitra	L1	CS F211
	C_Hota	L1	CS F211
	C_Hota	L1	CS F372
	C_Hota	L1	CS F407

teaches 1 × Apply Revert

Frontend screenshots

Login Page:



Admin Dashboard:

Hello, admin

Logout

[View Students](#)

[View Professors](#)

[View Courses](#)

[Add Students](#)

[Add Professors](#)

[Add Courses](#)

[Update Password](#)

Search Students Search

2020A7PS0003H	Tumu	Akshar	View	Delete
2020A7PS0029H	Manan	Popat	View	Delete
2020A7PS0130H	Dhairyा	Agrawal	View	Delete
2020A7PS0160H	Ayush	Agarwal	View	Delete
2020A7PS0193H	Animesh	Aditha	View	Delete
2020A7PS0247H	Vibhum	Tripathi	View	Delete
2020A7PS0284H	Akshat	Oke	View	Delete
2020A7PS1291H	Ashwin	Arun	View	Delete

Hello, admin

Logout

[View Students](#)

[View Professors](#)

[View Courses](#)

[Add Students](#)

[Add Professors](#)

[Add Courses](#)

[Update Password](#)

Search Students Search

Apurba_Das	Dr. Apurba	Das	View	Delete
Barsha_Mitra	Dr. Barsha	Mitra	View	Delete
C_Hota	Prof. Chittaranjan	Hota	View	Delete
DVN_Siva_Kumar	Dr. D V N Siva	Kumar	View	Delete
Lov_Kumar	Dr. Lov	Kumar	View	Delete
Manik_Gupta	Prof. Manik	Gupta	View	Delete
Nikumani_C	Dr. Nikumani	Choudhury	View	Delete
NL_Bhanu_Murthy	Prof. N.L.Bhanu	Murthy	View	Delete

Hello, admin

Logout

- [View Students](#)
- [View Professors](#)
- [View Courses](#)
- [Add Students](#)
- [Add Professors](#)
- [Add Courses](#)
- [Update Password](#)

Search Students Search

CS F111	Computer Programming	View	Delete
CS F211	Data Structures And Algorithms	View	Delete
CS F212	Database Management System	View	Delete
CS F213	Object Oriented Programming	View	Delete
CS F214	Logic In Computer Science	View	Delete
CS F222	Discr Struc For Comp Sci	View	Delete
CS F320	Foundations Of Data Science	View	Delete
CS F372	Operating Systems	View	Delete

Hello, admin

Logout

- [View Students](#)
- [View Professors](#)
- [View Courses](#)
- [Add Students](#)
- [Add Professors](#)
- [Add Courses](#)
- [Update Password](#)

New Student Form

Student ID :

Password :

First Name :

Last Name :

[Add Student](#)



Hello, admin

Logout

[View Students](#)

[View Professors](#)

[View Courses](#)

[Add Students](#)

[Add Professors](#)

[Add Courses](#)

[Update Password](#)

New Professor Form

Professor ID :

Password :

First Name :

Last Name :

E-Mail :

[Add Professor](#)



Hello, admin

Logout

[View Students](#)

[View Professors](#)

[View Courses](#)

[Add Students](#)

[Add Professors](#)

[Add Courses](#)

[Update Password](#)

New Course Form

Course ID :

Course Name :

Instructor In Charge (IC) : 

[Add Course](#)

Hello, admin

Logout

[View Students](#)

[View Professors](#)

[View Courses](#)

[Add Students](#)

[Add Professors](#)

[Add Courses](#)

[Update Password](#)

Update Password Form

New Password :

Student Dashboard:

Hello, Manan

Logout

[View Courses](#)

[Your Sections](#)

[View Professors](#)

[Update Password](#)

Courses		
CS F111	Computer Programming	<input type="button" value="View"/>
CS F211	Data Structures And Algorithms	<input type="button" value="View"/>
CS F212	Database Management System	<input type="button" value="View"/>
CS F213	Object Oriented Programming	<input type="button" value="View"/>
CS F214	Logic In Computer Science	<input type="button" value="View"/>
CS F222	Discr Struc For Comp Sci	<input type="button" value="View"/>
CS F320	Foundations Of Data Science	<input type="button" value="View"/>
CS F372	Operating Systems	<input type="button" value="View"/>

Hello, Manan

Logout

- [View Courses](#)
- [Your Sections](#)
- [View Professors](#)
- [Update Password](#)

CS F212 Database Management System L1

Professors:

Dr. D V N Siva Kumar

Prof. Manik Gupta

[View](#)

[Unenrol](#)

CS F213 Object Oriented Programming P1

Professors:

Prof. Chittaranjan Hota

[View](#)

[Unenrol](#)

Professor Dashboard:

Hello, Dr. Lov

Logout

- [IC Courses](#)
- [Your Sections](#)
- [View Students](#)
- [Update Password](#)
- [Add Mobile Number](#)

CS F111 Computer Programming [View](#)

CS F212 Database Management System [View](#)



Hello, Dr. Lov

Logout

IC Courses

Your Sections

View Students

Update Password

Add Mobile Number

CS F111 Computer Programming L

Professors:

Dr. Lov Kumar

[View](#)

[Delete](#)

CS F212 Database Management System L

Professors:

Dr. Lov Kumar

[View](#)

[Delete](#)

CS F415 Data Mining L1

Professors:

Dr. Lov Kumar

[View](#)



Hello, Dr. Lov

Logout

IC Courses

Your Sections

View Students

Update Password

Add Mobile Number

Add Mobile Number

Mobile Number :

[Add](#)
