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# Software Requirements Specification

for

## ARPO(Academic Issues Redressal Portal)

Version 1.0

Prepared By

Group: 14

Group Name: Anonymous

Shubhan R	200971	shubhan.ravi@gmail.com
Akansh Agrawal	180050	akanshcs2020@gmail.com
Jahnavi Kairamkonda	200482	jahnavi26k@gmail.com
Akshan Agrawal	180061	akshancs2020@gmail.com
Pranav Singh	190622	pranavsingh560@gmail.com
Manoj Kumar	180409	manojkumar.nvsd@gmail.com
Atharv Tyagi	170174	atharvlalittyagi@gmail.com
Keshav Kumar	180353	keshavkr54321@gmail.com
Piyush Senwar	180512	psenwar@gmail.com
Lakshay Rastogi	180378	rastogilakshay31@gmail.com

Course:

CS253

Mentor TA:

Shatroopa Saxena

Date:

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## Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Akansh Agrawal Jahn timer Kairamkonda Shubhan R Akshan Agrawal Pranav Singh Manoj Kumar Atharv Tyagi Keshav Kumar Piyush Senwar Lakshay Rastogi	First Version (Version 1.0): First SRS Draft for ARPO	01/02/2022

# 1 Introduction

## 1.1 Product Scope

Most of the communication related to academic related issues like course content queries, regrading requests, academic issues and so on, occurs in the form of electronic mail. It is a common observation that due to the ineffective management of emails, a lot of these queries of students get disregarded. Furthermore, the instructor too has to handle a lot of queries at the same time with no effective way to manage them. Our Academic Issues Redressal Portal aims to make handling such queries more efficient. Through our portal the students will be able to post their queries, either privately or start a discussion forum, with whomever they concern, and will also be able to check the status of the action taken on that query in real time. The instructors along with other academic staff will be able to effectively manage (categorize, sort, reply to, delete, forward etc.) these queries, preventing them from missing out on anyone. Along with this we intend to add additional capabilities to our portal, like showing institute notifications, checking marks to quizzes, assignments and exams through the same portal. Our portal hence, is trying to make the handling of academic related queries easier and effortless, along with providing additional related information.

## 1.2 Intended Audience and Document Overview

### Intended Audience

The intended audience for this documentation consists of developer, tester, clients/users (Institute Admins, Technical Staff Members, Students, Instructors and Tutors/TAs).

### Document Overview

#### Organisation of Various Sections:

The documentation starts with the product overview and the importance and usability of the web based academic portal. Then comes the functionality overview (explained via use case diagrams as well). Moving forward, the user-interfaces are being shown for better understanding of how the product looks like. Then at the end there are some non-functional requirements and future scope.

#### Sequence of Sections for various Readers:

- A developer or a tester should primarily focus upon overview of the product (section 2.1), functionality (section 2.2), design and implementation (section 2.3), knowledge of user-interfaces (section 3.1) and functional and non-functional requirements (sections 3.2 and 4).
- The marketing staff should focus on the scope (section 1), overview (section 2.1), functional and non-functional requirements (sections 2.2, 3.1, 3.2 and 4) and future scope of the product (section 5).

- Users should primarily focus upon the scope (section 1.1), overview (section 2.1) and functionality (2.2). The sections 3.1-3.2 lay a broad understanding for the users and should be treated as a part of the user manual to get started with the software.

## 1.3 Definitions, Acronyms and Abbreviations

### Definitions

- **Academic Admins:** The apex body that makes academic related decisions in the institute, and overall persons of authority in each department.
- **Mentor:** Instructors, teaching assistant and tutor.
- **Mookit:** Current academic portal of IIT Kanpur for lectures and general forums.
- **Parties:** refers to everyone who can access the software.

### Acronyms and abbreviations

- **API :** Application Programming Interface
- **ARPO :** Academic Issues Redressal Portal
- **CC :** Computer Centre, IIT Kanpur.
- **CSS :** Cascading Style Sheets
- **DOAA :** Dean of Academic Affairs, Indian Institute of Technology, Kanpur.
- **DPA :** Data Protection Authority Act, India (2019).
- **DPGC :** Department Postgraduate Convenor.
- **DUGC :** Department Undergraduate Convenor.
- **HDD :** Hard Disk Drive
- **HTML :** HyperText Markup Language
- **IT Act :** Information Technology Act, India (2000).
- **MySQL :** My Structured Query Language
- **TA :** Teaching Assistant.
- **TSM :** Technical Staff Member.

## 1.4 Document Conventions

This document uses Arial font size 11 throughout the document for text. Heading of various sections uses Arial font size 14 and size 18 in bold and heading of various subsections uses Arial font size 12 in bold. Commenting is done in italics. The document is single spaced and maintains 1" margins. Words are bolded or capitalized or quoted for emphasis accordingly.

## 1.5 References and Acknowledgments

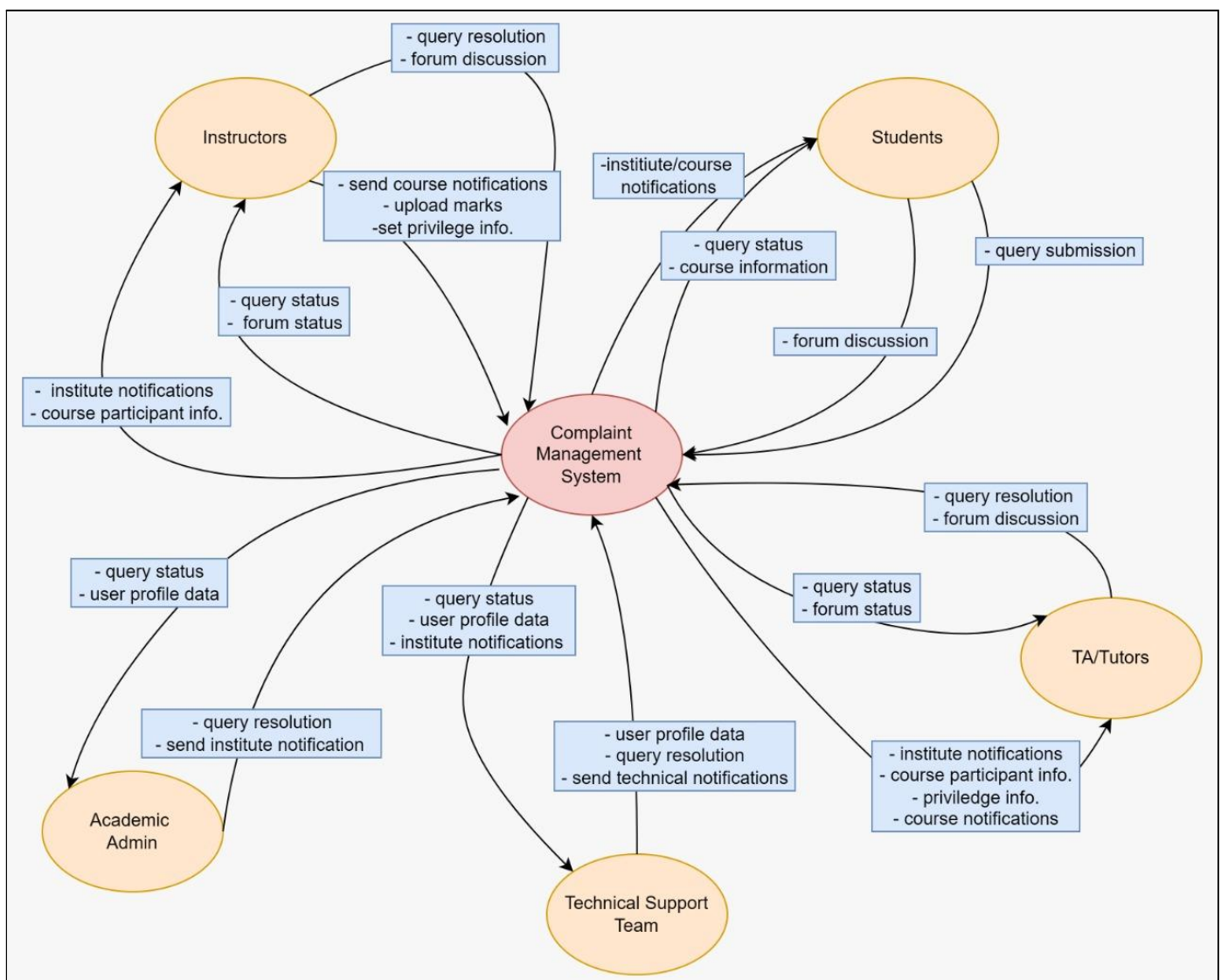
- [https://en.wikipedia.org/wiki/System\\_context\\_diagram](https://en.wikipedia.org/wiki/System_context_diagram)
- <https://app.diagrams.net/>
- <https://dribbble.com/search/complaint%20management%20system>
- <https://creately.com>
- [CS253A Notes](#)

## 2 Overall Description

### 2.1 Product Overview

This product is a new and self contained system. Information including course information of students, CC-ID of all registered students and mentors, roll numbers and employee identification numbers will be needed to authenticate the accounts. We intend to gather this information from the users themselves or allow the information to be fed by the technical staff into the software as and when needed. It is a replacement for the use of mails and Mookit to address academic queries. It helps to make the process of redressing academic queries more convenient for the mentors and students. One of the main aims is to reduce the load on the instructors of answering the queries posted by the students, mostly just after an exam and at the same maintain the privacy of the student while sending a query.

Students can post queries on the portal through their accounts, which will be resolved by mentors. The status of the query also will be shown. The queries are also categorized while sending them,



which makes it easier for the mentor to prioritize which categories to answer first. The software can also maintain the privacy of student queries. For common doubts, a common forum will be there where all students and mentors can discuss a particular topic. Even on common forums, the students can post/answer anonymously if they choose to. The Academic Admins and Technical Support Staff can also be contacted through the same portal for queries.

## 2.2 Product Functionality

- Private queries can be posted without others knowing.
- There will be functionality to categorize the queries to select while sending queries.
- There will be ways to sort, categorize and group the received queries so as to make their management more efficient.
- Status of queries will be shown to all the users involved in the query.
- Queries can be posted and answered with text, image and links.
- Public discussion forums for common queries will be available to facilitate discussion.
- Queries on public forums can be anonymously posted and answered.
- Mentors can accept, reject or delete a whole category of queries after they have been resolved.
- Academic Admins can also be contacted through the portal in the form of queries.
- Contact to the technical staff for technical issues can be made.

## 2.3 Design and Implementation Constraints

### Non-Technical:

- The portal will be running for 24x7 hours.
- The portal should be easy to use and compatible with all the devices including desktops, smartphones and tablets.
- The portal should be able to handle multiple users interacting at the same time.
- Access permissions with other interfaces would be required to fetch data from them.

### Technical:

The technologies used should be in sync with the current standards so as to work properly with all the browsers.

The above technical requirements can be further classified into two ends:

#### User:

- **Hardware Requirements:**

- RAM - 2GB
- STORAGE - 2GB ( Minimum storage required for the browser)
- Network interface card

- **Software Requirements:**

- Modern version of browser

**Developer:**

- **Hardware Requirements:**

- RAM - Minimum 4GB
- STORAGE - Minimum 100GB (Developer would be responsible for storing all the database related data of user, so this would be subject to change as when required)
- Network interface card

- **Software Requirements:**

- Modern code editor like VSCode
- Postman for API development
- Modern version of browser
- Frontend - HTML, CSS, Javascript
- Backend - Java
- Database - MySQL

## **2.4 Assumptions and Dependencies**

- The user should have basic knowledge of the product to interact with the portal.
- The users only relating to IITK should be able to access the portal.
- Roles and privileges/tasks would be defined by technical staff for different actors accordingly.



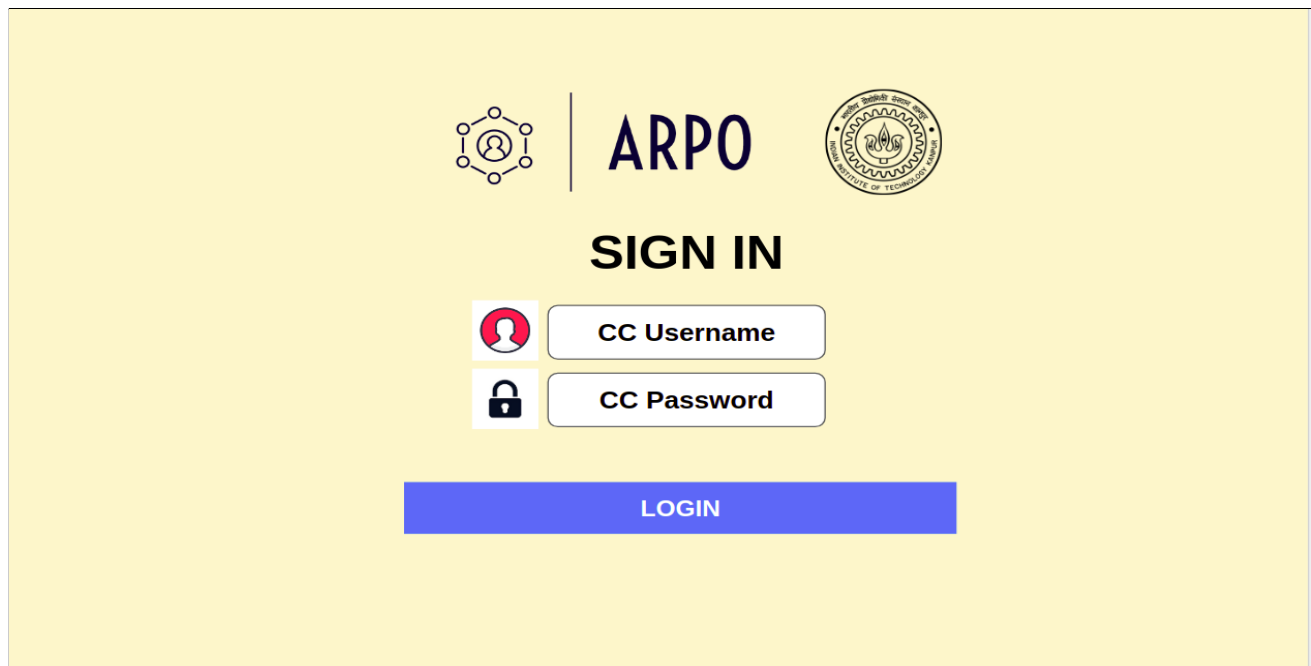
## 3 Specific Requirements

### 3.1 External Interface Requirements

#### 3.1.1 User Interfaces

##### LOGIN PAGE:

The first page of our platform is a login interface from where all the actors of the platform can login to their respective platform dashboards. This particular page may look something like as shown below.



The login page has a light yellow background. At the top center, there is a network icon on the left, the text 'ARPO' in a large, dark blue serif font in the middle, and a circular institutional seal on the right. Below this header, the text 'SIGN IN' is centered in a bold, black sans-serif font. Underneath, there are two input fields: the first is preceded by a red circular icon with a white person silhouette and is labeled 'CC Username'; the second is preceded by a black padlock icon and is labeled 'CC Password'. At the bottom center, there is a solid blue rectangular button with the word 'LOGIN' in white, uppercase, sans-serif font.

Here, participants or actors can login using their CC username and password. Major actors here are Students, Mentors, Academic Admins and Technical Support Staff.

**STUDENTS' INTERFACE:**

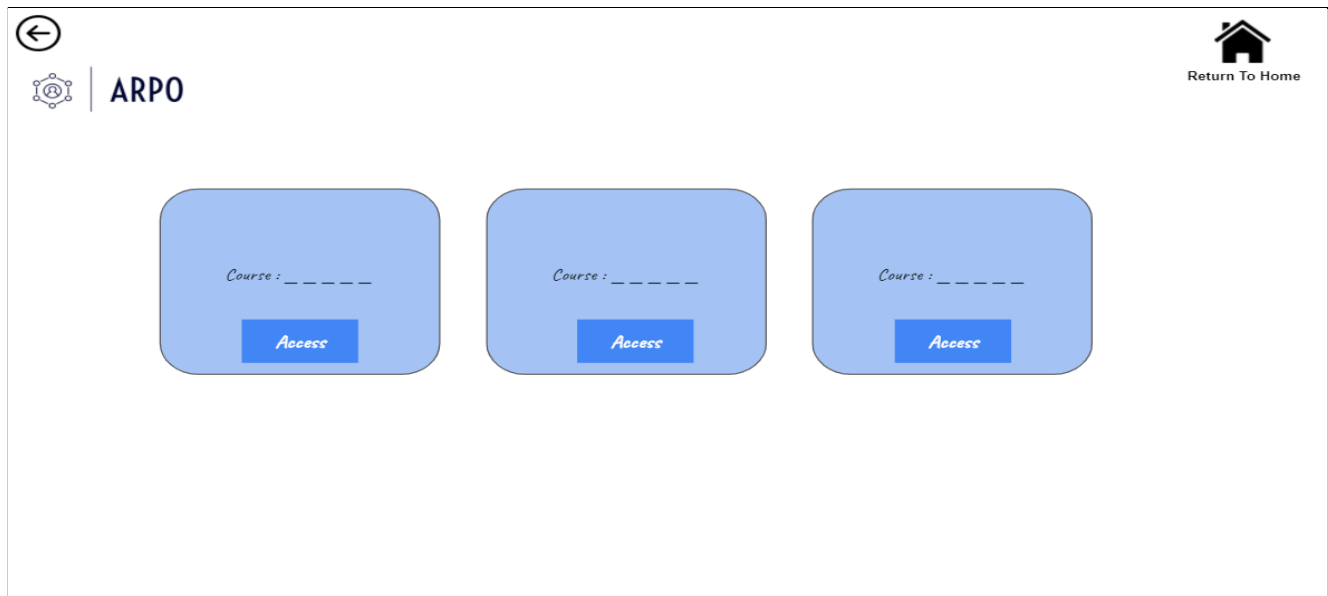
After a student logs into the platform, she enters his "Home Page" or "Dashboard" as shown below.



The student profile home page displays some general information like Notifications, Important Links and News from the Institute. These are not course specific, rather more institute level relevant information.

From options given in top right, the student can access

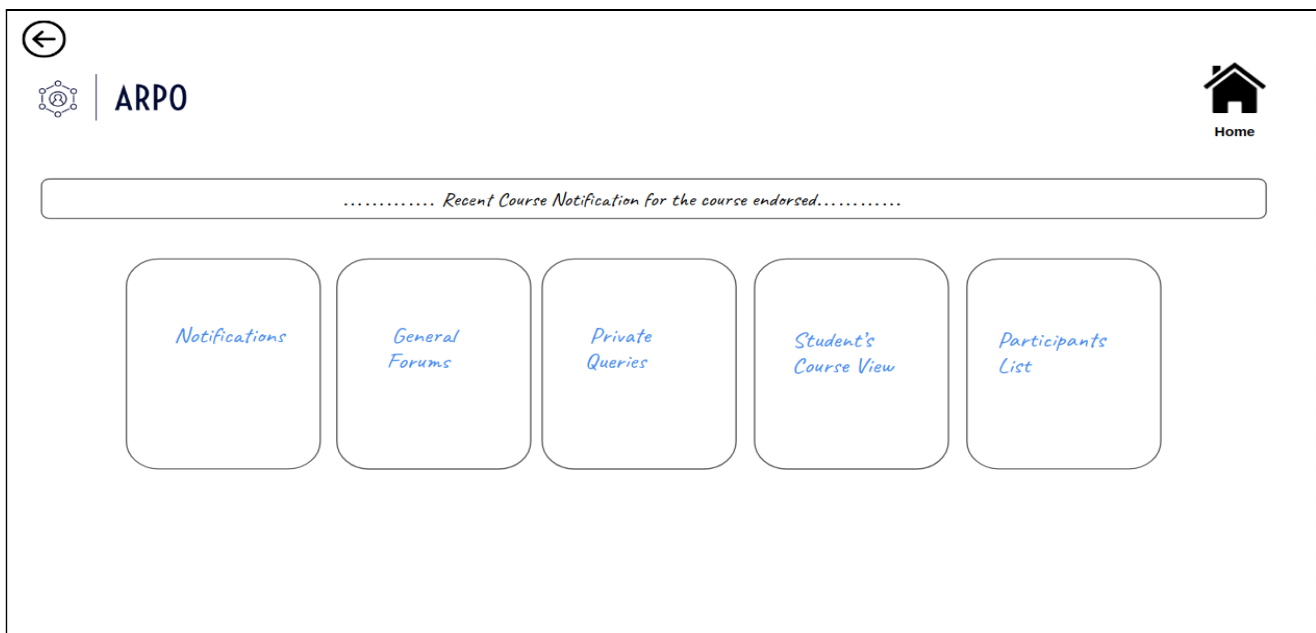
- The courses he/she is enrolled in.
- The personal student profile.
- The Academic Admins list and send queries to them.
- The technical support staff.

**Courses Tab:**

This is how the courses section in the student dashboard looks like. She can access any of the courses she's enrolled in from here and it displays the following view.

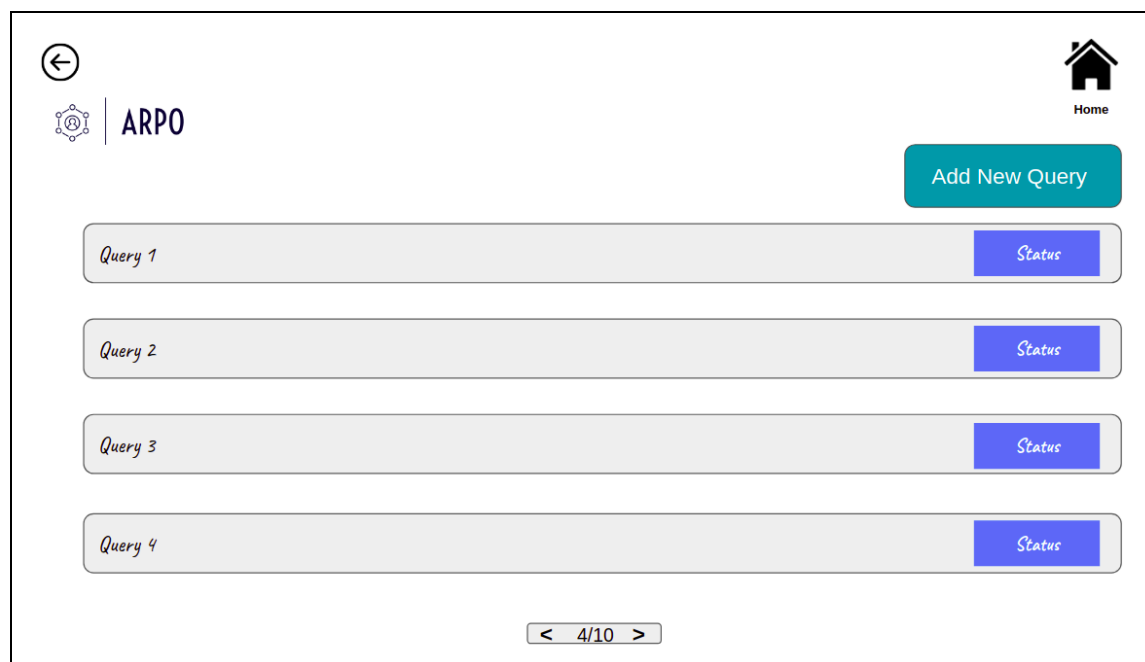
**Course Home Page:**

After entering in any of the courses, the student can access the course notifications, General Forums, Private Queries and her Course Profile. The following pictures show views of each of these interfaces.



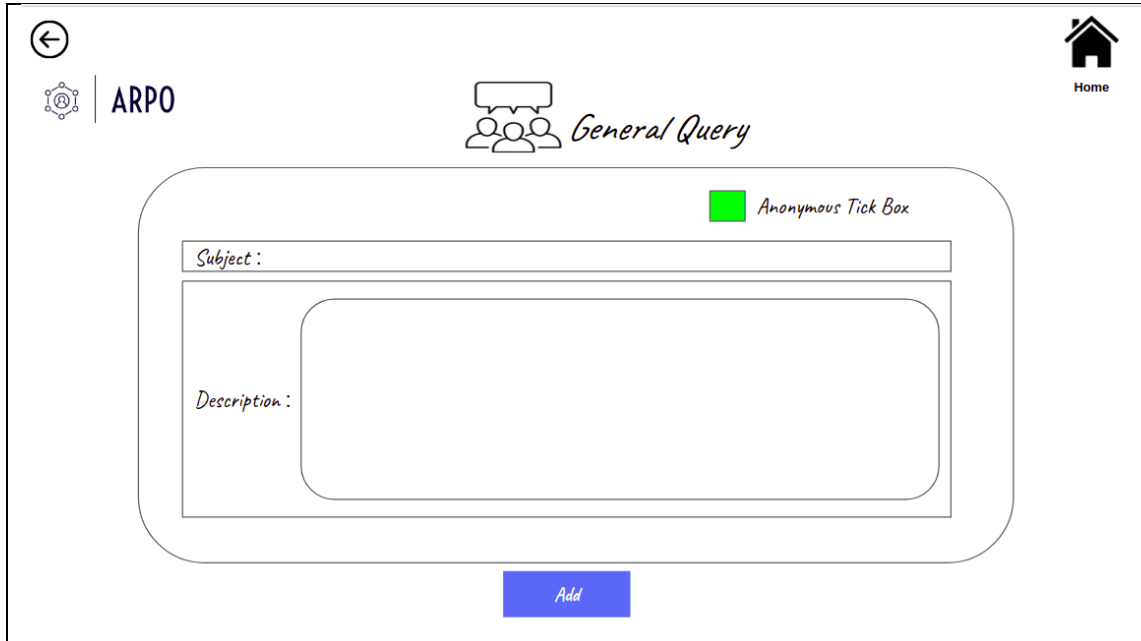
**Notifications Tab:**

The overall course announcements and query notifications have been separated as shown.

**General Forum/ Private Query Tab:**

**Add Query tab for General Queries:**

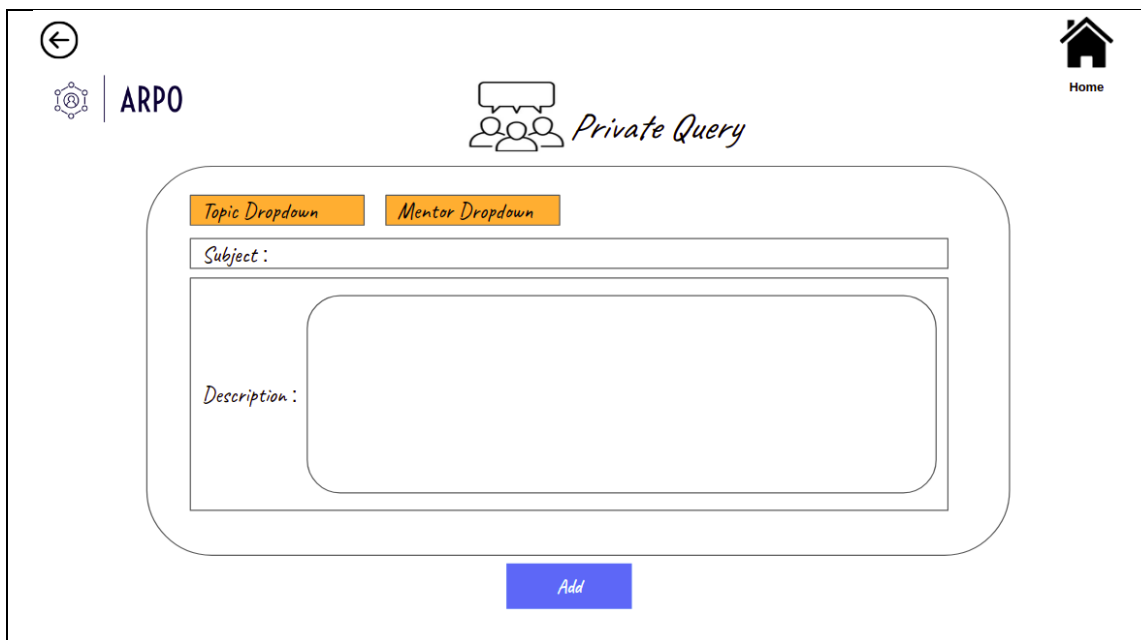
There is an anonymous tick box also to hide identity.



The mockup shows a web interface for adding a general query. At the top left is a back arrow icon and a gear icon next to the text 'ARPO'. At the top right is a home icon labeled 'Home'. In the center, there is a header with an icon of three people and a speech bubble, followed by the text 'General Query'. Below this is a form container with a green square labeled 'Anonymous Tick Box' in the top right corner. The form has a 'Subject :' label and a text input field. Below the subject field is a 'Description :' label and a larger text area. At the bottom of the form is a blue button labeled 'Add'.

**Add Query tab for Private Queries:**

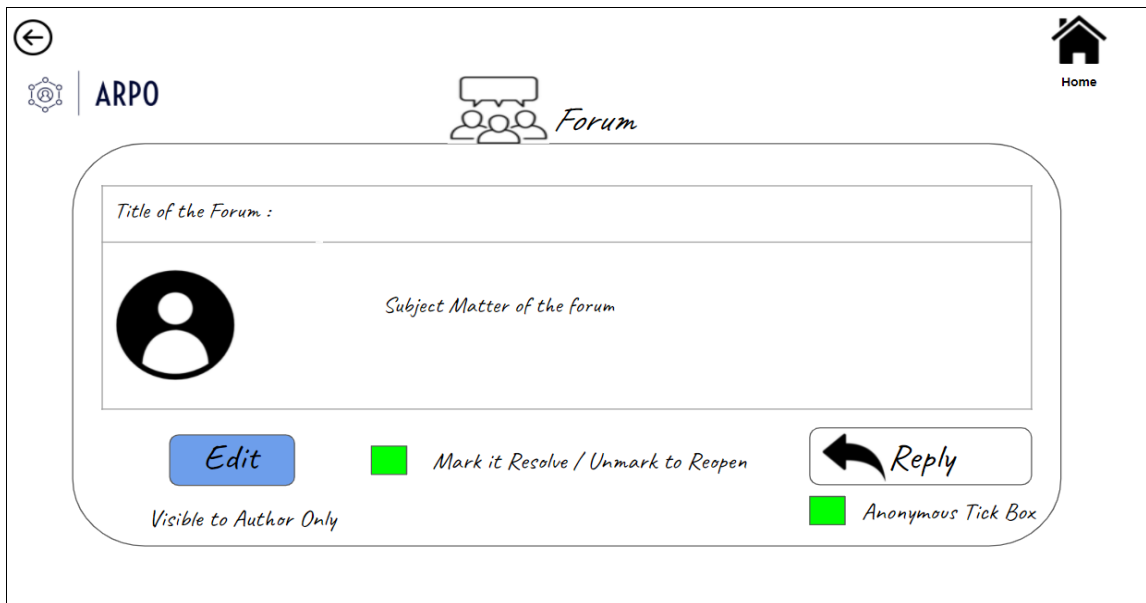
There is a topic dropdown and mentor dropdown menu to directly classify queries.



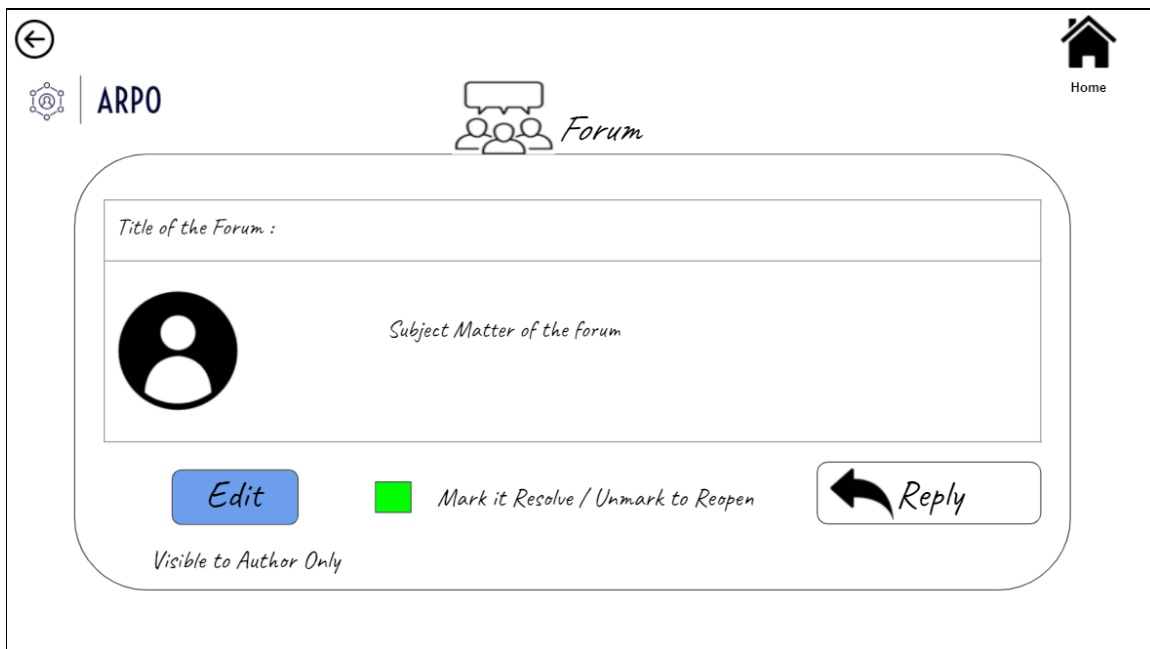
The mockup shows a web interface for adding a private query. At the top left is a back arrow icon and a gear icon next to the text 'ARPO'. At the top right is a home icon labeled 'Home'. In the center, there is a header with an icon of three people and a speech bubble, followed by the text 'Private Query'. Below this is a form container. At the top of the form are two orange dropdown menus labeled 'Topic Dropdown' and 'Mentor Dropdown'. Below these is a 'Subject :' label and a text input field. Below the subject field is a 'Description :' label and a larger text area. At the bottom of the form is a blue button labeled 'Add'.

**View of Received/Posted Query Forum (General/Private):**

Only the author of the post can edit the forum posted. The viewers can reply to it anonymously or with their original identity as they wish. The query posted can be checked to resolve or can be reopened as per the author's or the viewer's wish.

**General:**

The General Forum View UI mockup shows a header with a back arrow, a settings icon, the text 'ARPO', a home icon labeled 'Home', and a 'Forum' section with a group icon. The main content area contains a 'Title of the Forum :' field, a user profile picture, and a 'Subject Matter of the forum' field. Below these are three buttons: a blue 'Edit' button, a green 'Mark it Resolve / Unmark to Reopen' button, and a 'Reply' button with a back arrow. At the bottom, there is a green 'Anonymous Tick Box' and the text 'Visible to Author Only'.

**Private :**

The Private Forum View UI mockup is identical to the General view, showing a back arrow, settings icon, 'ARPO' text, home icon labeled 'Home', and a 'Forum' section with a group icon. The main content area contains a 'Title of the Forum :' field, a user profile picture, and a 'Subject Matter of the forum' field. Below these are three buttons: a blue 'Edit' button, a green 'Mark it Resolve / Unmark to Reopen' button, and a 'Reply' button with a back arrow. At the bottom, there is a green 'Anonymous Tick Box' and the text 'Visible to Author Only'.

**Students Course Profile:**

It displays statistics of queries like number of queries asked etc. and marks of assessments.

ARPO

Profile

Home

Username(Student)

**Details**

Name:-----

Roll No:-----

Department:-----

Member for:--

**Marks**

Title	Marks
Quiz1	---
Quiz2	---
Midsem Exam	---

**Technical Support Query:**

From the Dashboard, students can also ask queries or can raise technical issues to the technical staff team.

ARPO

Help Desk

Home

Title of the Forum :

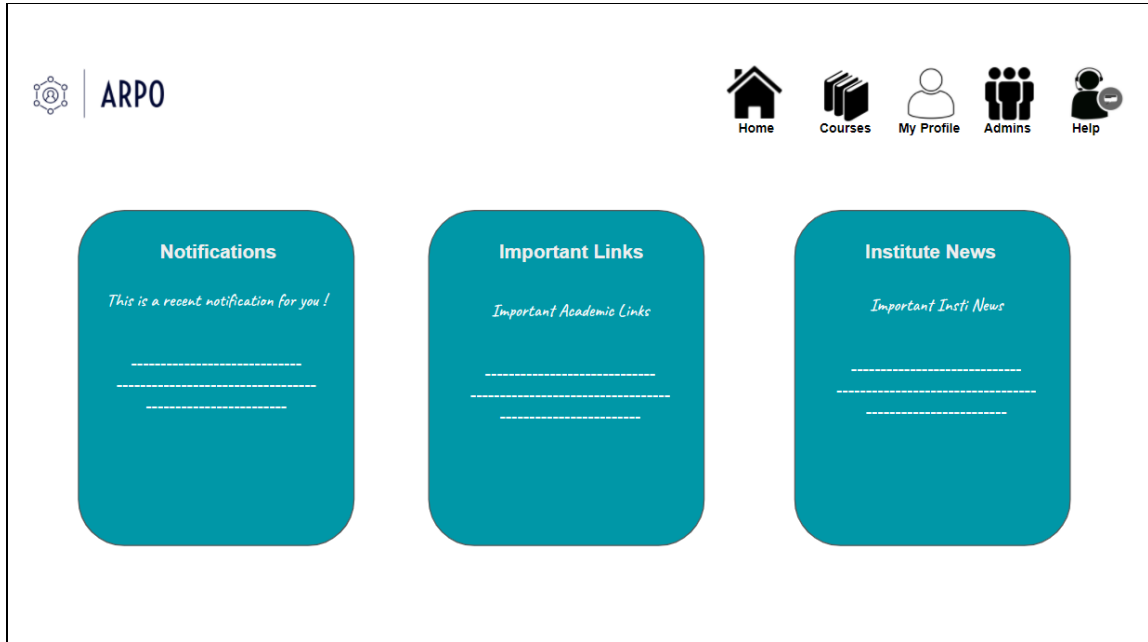
Subject Matter of the forum

Post

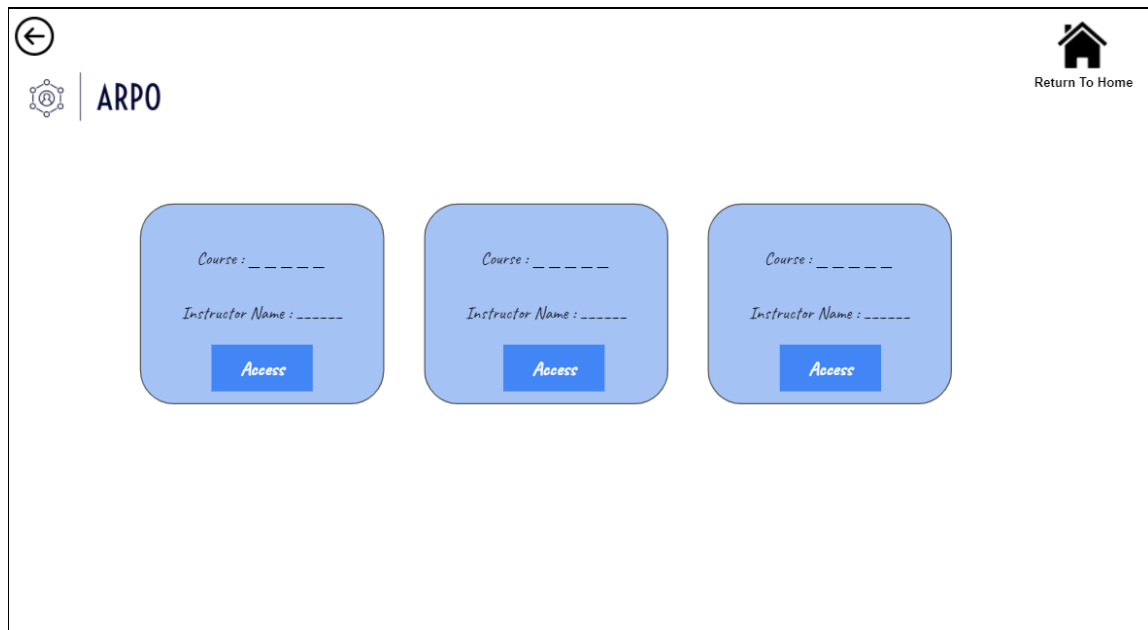
Contact Details : -----

**INSTRUCTORS' INTERFACE:**

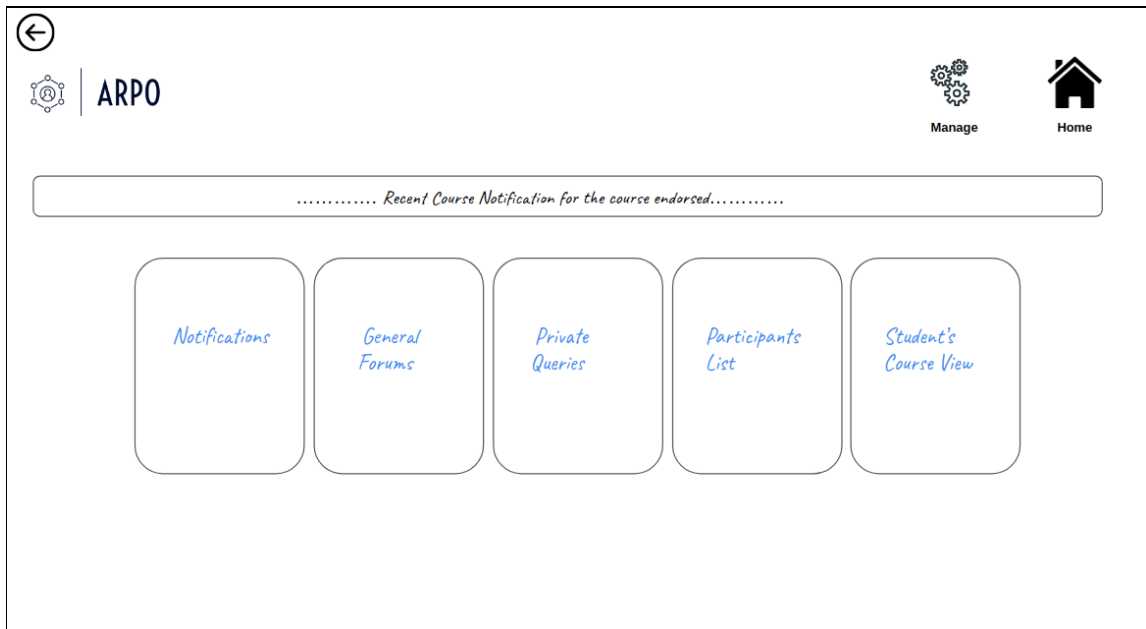
The instructor's Dashboard looks very similar to the students' dashboard as shown below.



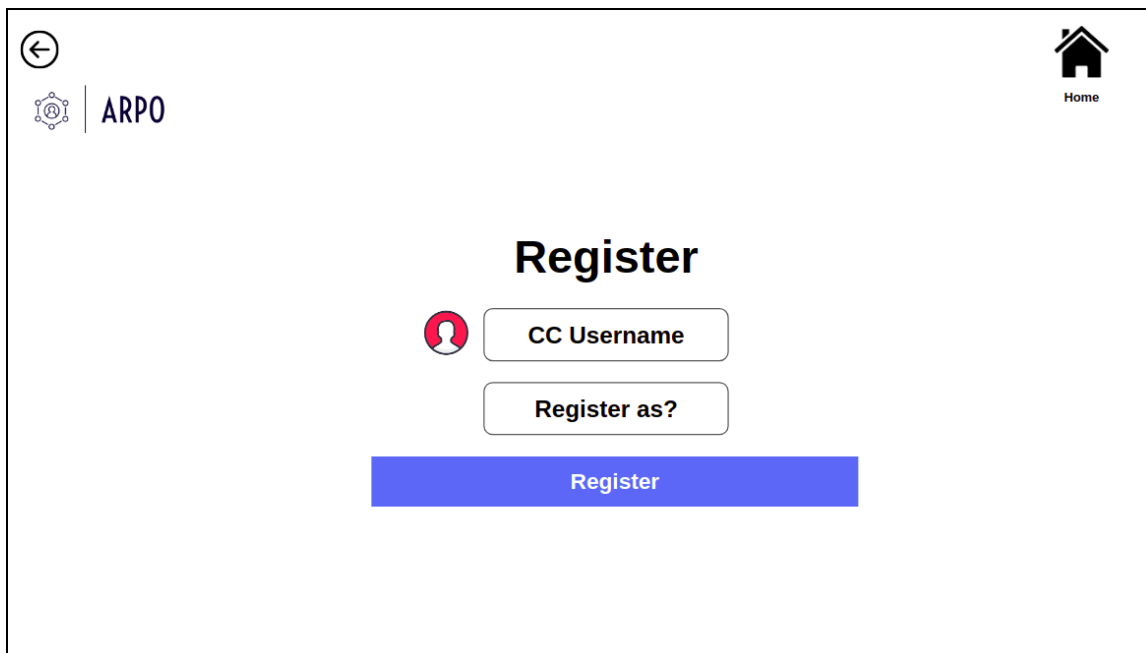
The courses section in the top right corner in the instructor's profile offers more authorities which are not provided to the students. To see this, look at the following images which shows the all courses page and course home page for an instructor.

**Courses Page:**



**Course Home Page:****Manage :**

In addition to having access to the course view from students' side, instructors are also allowed to manage people in the course including both TAs and Students. Instructors can also register a new person in the course, either as a student or a TA/Tutor.





**Notifications Tab:**


The notifications section offers **additional authority** to mentors for adding any new course announcements.

The screenshot displays the ARPO Notifications Tab interface. At the top left, there is a back arrow icon and a gear icon. The text "ARPO" is prominently displayed. In the top right corner, there is a home icon labeled "Home". The main section is titled "Post New Notification" and contains two input fields: "Subject :" and "Description :". To the right of these fields is a blue "Post" button. Below this section, the title "Old Notifications" is centered. There are four notification entries, each consisting of a text box and a blue "View" button. The entries are labeled "Notification 1", "Notification 2", "Notification 3", and "Notification 4". At the bottom center, there is a pagination control showing "< 4/10 >".

For general forums as well as private queries, the interface is mostly the same where instructors can answer and resolve the query, the status of which will also be reflected in the student profile. They can also answer/resolve a general or private forum to a student. The interface for this is shown in the following images.

**General query tab:**

 ARPO

 Home

General Forum

Resolve Selected

Reject Selected

☐

Query 1

Open

☐

Query 2

Open

☐

Query 3

Open

☐

Query 4



Open


Select All

< 4/10 >

Add New Post

**Private Query tab:**

 ARPO

 Home

Lecture 1 doubts

Quiz 1 doubts

Quiz 2 doubts

FCH Queries

Resolve Selected

Reject Selected

☐

Query 1

Open

☐

Query 2

Open

☐

Query 3

Open

☐

Query 4

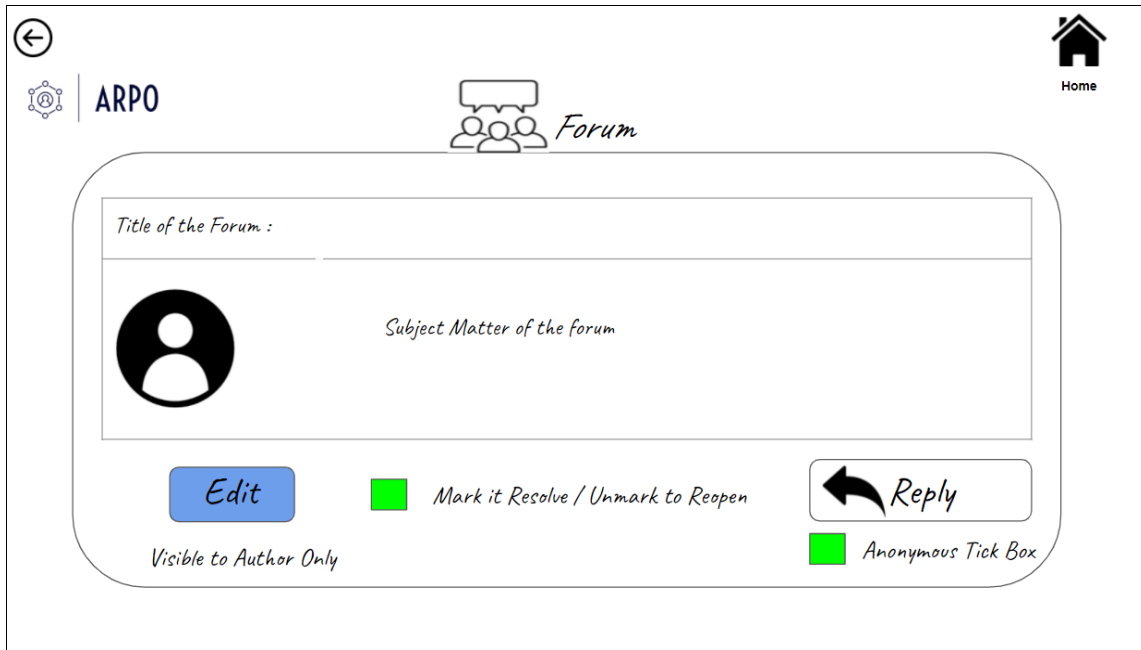
Open

Select All

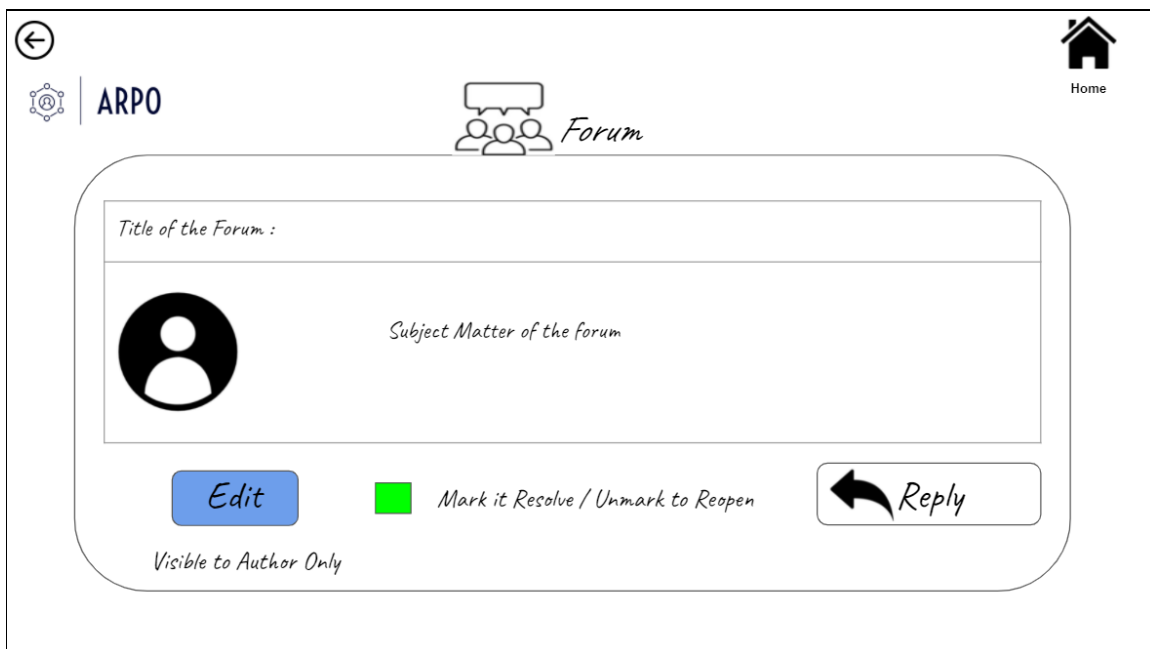
< 4/10 >

**View of Received/Posted Query Forum:**

Only the author of the post can edit the forum posted. The viewers can reply to it anonymously or with their original identity as they wish. The feature of anonymity won't be available in private forums. The query posted can be checked to resolve or can be reopened as per the author's wish.

**General:**

The General Forum View UI mockup shows a mobile application interface. At the top left is a back arrow icon. Next to it is a gear icon with a registered trademark symbol, followed by the text "ARPO". In the top right corner is a home icon labeled "Home". Below the "ARPO" text is a forum icon (three people with a speech bubble) and the word "Forum". The main content area is a rounded rectangle containing a text input field labeled "Title of the Forum :". Below this is a profile picture placeholder (a black circle with a white person icon) and a text input field labeled "Subject Matter of the forum". At the bottom of the main area are three buttons: a blue "Edit" button, a green square button labeled "Mark it Resolve / Unmark to Reopen", and a button with a left arrow icon labeled "Reply". Below the "Edit" button is the text "Visible to Author Only". Below the green square button is the text "Anonymous Tick Box".

**Private :**

The Private Forum View UI mockup is identical to the General Forum View. It features a back arrow icon, a gear icon with a registered trademark symbol, the text "ARPO", a home icon labeled "Home", a forum icon, and the word "Forum". The main content area contains a text input field labeled "Title of the Forum :", a profile picture placeholder, and a text input field labeled "Subject Matter of the forum". The bottom buttons are "Edit", "Mark it Resolve / Unmark to Reopen", and "Reply". The text "Visible to Author Only" is present below the "Edit" button, and "Anonymous Tick Box" is present below the green square button.

## Participants List:

Instructors can also access the participants list, which consists of all the members related to the course including students as well as TAs.

The screenshot shows the 'Registered Participants' page. At the top left is a back arrow icon. Below it is the ARPO logo. At the top right is a home icon labeled 'Home'. The main content area is titled 'Registered Participants' and contains a table with two columns: 'UserName' and 'Role'. The table has 8 rows, each with dashed lines for input.

UserName	Role
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----

## Technical Support Queries:

Instructors can also raise queries/concerns to the technical staff team in a manner very similar to students as shown below.

The screenshot shows the 'Help Desk' page. At the top left is a back arrow icon. Below it is the ARPO logo. At the top right is a home icon labeled 'Home'. The main content area is titled 'Help Desk' and contains a form for raising a query. The form has a text input field for 'Title of the Forum :', a user profile icon, and a text input field for 'Subject Matter of the forum'. A blue 'Post' button is located at the bottom right of the form. At the bottom of the page is a 'Contact Details : -----' field.

Title of the Forum :

Subject Matter of the forum

Post

Contact Details : -----

**TUTORS'/TAs' INTERFACE:**

The initial dashboard for TAs is similar to students as well.

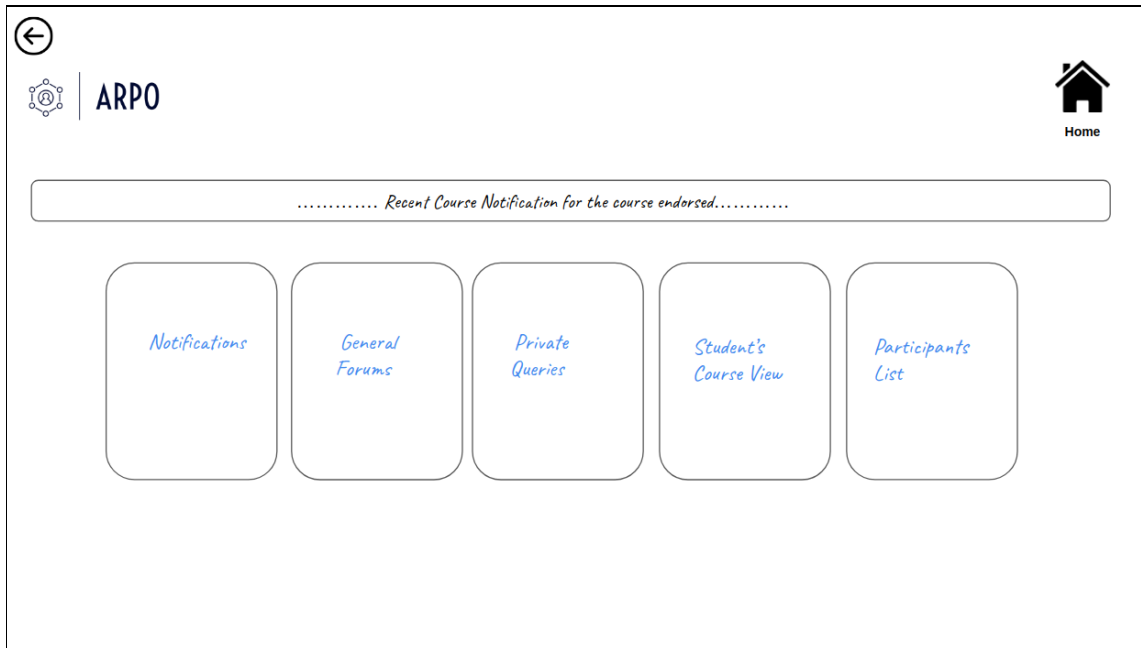


Most of the functionalities here are similar to an instructor except the fact that TA/Tutors are not allowed to manage other TA/Tutors in the course. The courses section in the TA's profile looks like the following.

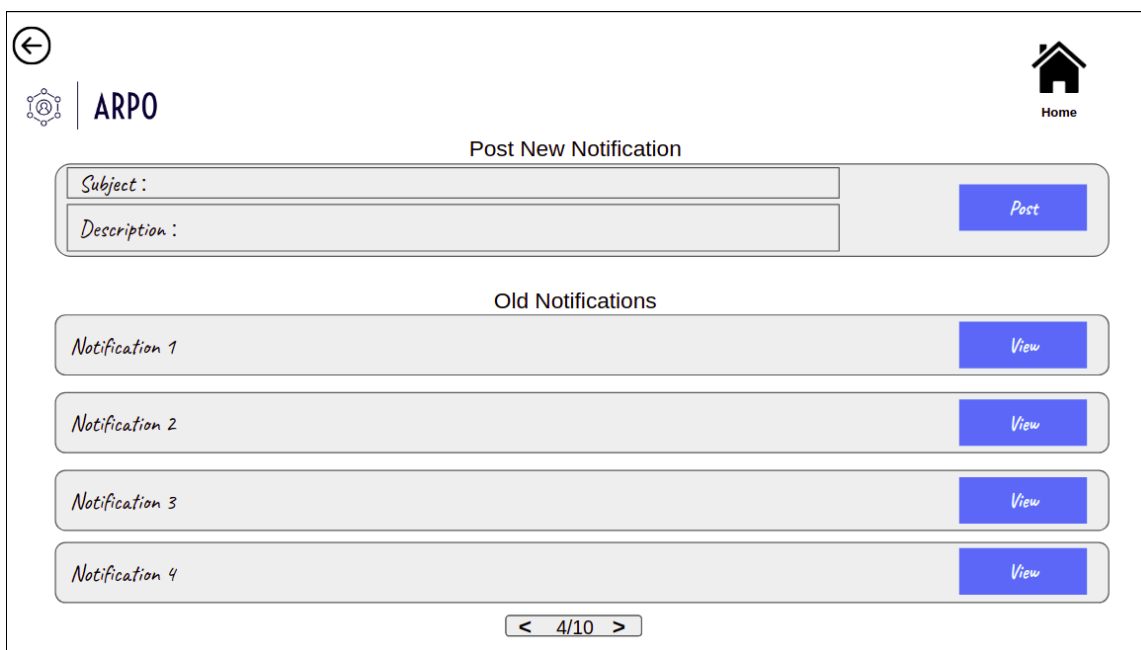
**Courses Page:**

**Course Home Page:**

On the inside of a particular course module, we see the following view(similar to what an instructor sees, but with certain functionalities like manage users removed)

**Notifications Tab:**

They can view and add new notifications regarding the course.



Similar to an instructor, they can also respond to general and private queries and resolve them, the status of which will be reflected on the student's profile.

ARPO

General Forum

Resolve Selected

Reject Selected

Home

Query 1

Open

Query 2

Open

Query 3

Open

Query 4

Open

Select All

< 4/10 >

Add New Post

ARPO

Lecture 1 doubts

Quiz 1 doubts

Quiz 2 doubts

FCH Queries

Resolve Selected

Reject Selected

Home

Query 1

Open

Query 2

Open

Query 3

Open

Query 4

Open

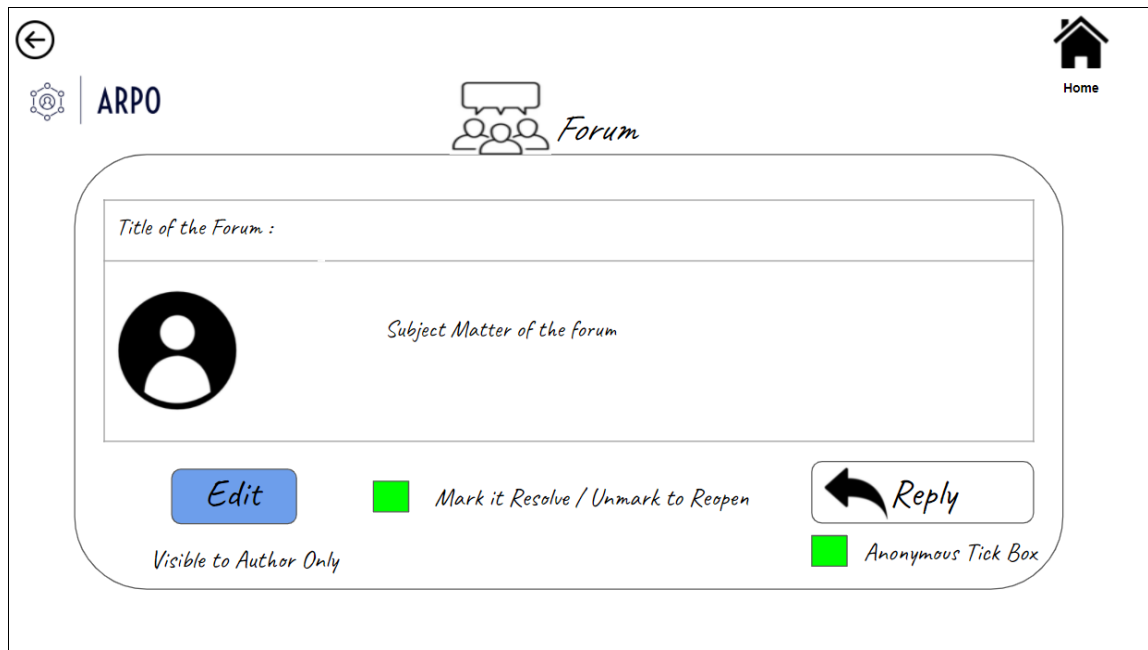
Select All

< 4/10 >

#### View of Received/Posted Query Forum :

Only the author of the post can edit the forum posted. The viewers can reply to it anonymously or with their original identity as they wish but this feature is available only for general forums/queries. The query posted can be checked to resolve or can be reopened as per the author's wish.




**General:**

The General Forum UI mockup features a top navigation bar with a back arrow, a settings icon, the text "ARPO", a "Forum" header with a group icon, and a "Home" button with a house icon. The main content area is a rounded rectangle containing a "Title of the Forum :" input field, a user profile picture placeholder, and a "Subject Matter of the forum" input field. Below these are three buttons: a blue "Edit" button, a green "Mark it Resolve / Unmark to Reopen" button, and a "Reply" button with a curved arrow icon. At the bottom, there is a "Visible to Author Only" label and an "Anonymous Tick Box" represented by a green square.

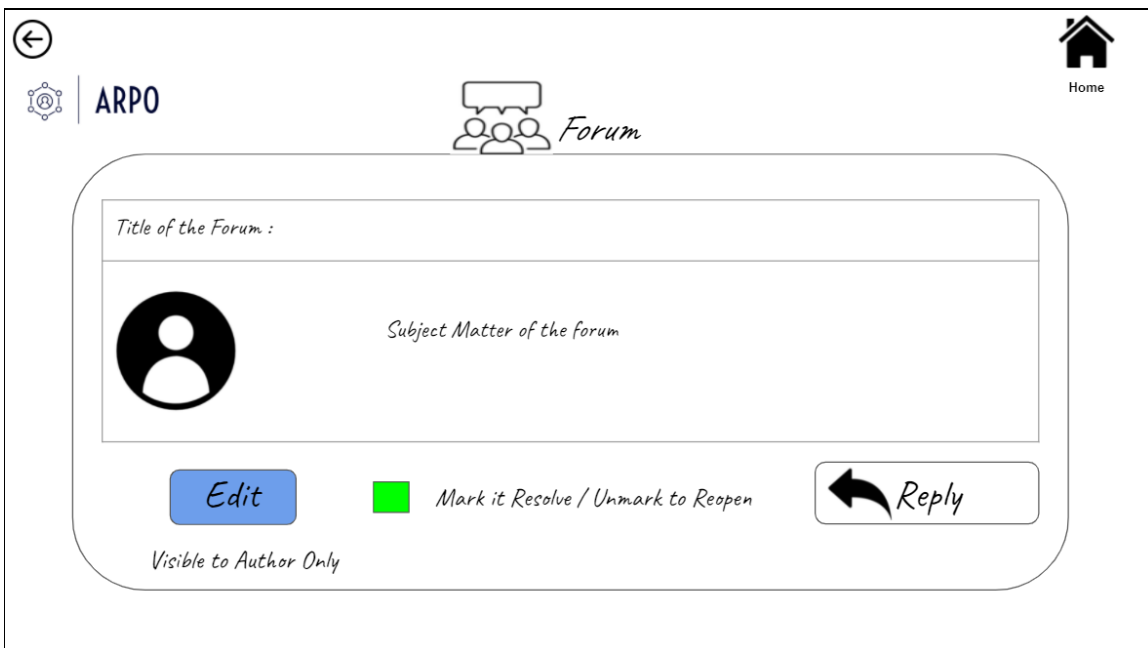
← | ARPO | Forum | Home

Title of the Forum :

 Subject Matter of the forum

Edit Mark it Resolve / Unmark to Reopen Reply


Visible to Author Only Anonymous Tick Box

**Private:**

The Private Forum UI mockup is identical to the General Forum UI mockup, featuring the same top navigation bar, input fields, buttons, and labels.

← | ARPO | Forum | Home

Title of the Forum :

 Subject Matter of the forum

Edit Mark it Resolve / Unmark to Reopen Reply

Visible to Author Only Anonymous Tick Box

**Participants List:**

TAs can also see the participants' list of the course to access information about a particular student or a fellow TA.

The screenshot shows a web interface for 'Registered Participants'. At the top left is a back arrow icon. Below it is a gear icon and the text 'ARPO'. At the top right is a home icon labeled 'Home'. The main content area is titled 'Registered Participants' and contains a table with two columns: 'UserName' and 'Role'. The table has 8 rows, each with dashed lines for input.

UserName	Role
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----

**Technical Support Queries:**

TAs can also contact the technical system staff for any concerns.

The screenshot shows a web interface for the 'Help Desk'. At the top left is a back arrow icon. Below it is a gear icon and the text 'ARPO'. At the top right is a home icon labeled 'Home'. The main content area is titled 'Help Desk' and contains a form for posting a query. The form has a text input field for 'Title of the Forum :', a profile picture placeholder (a black circle with a white person icon) and a text input field for 'Subject Matter of the forum', and a blue 'Post' button. At the bottom, there is a 'Contact Details : -----' field.

Title of the Forum :

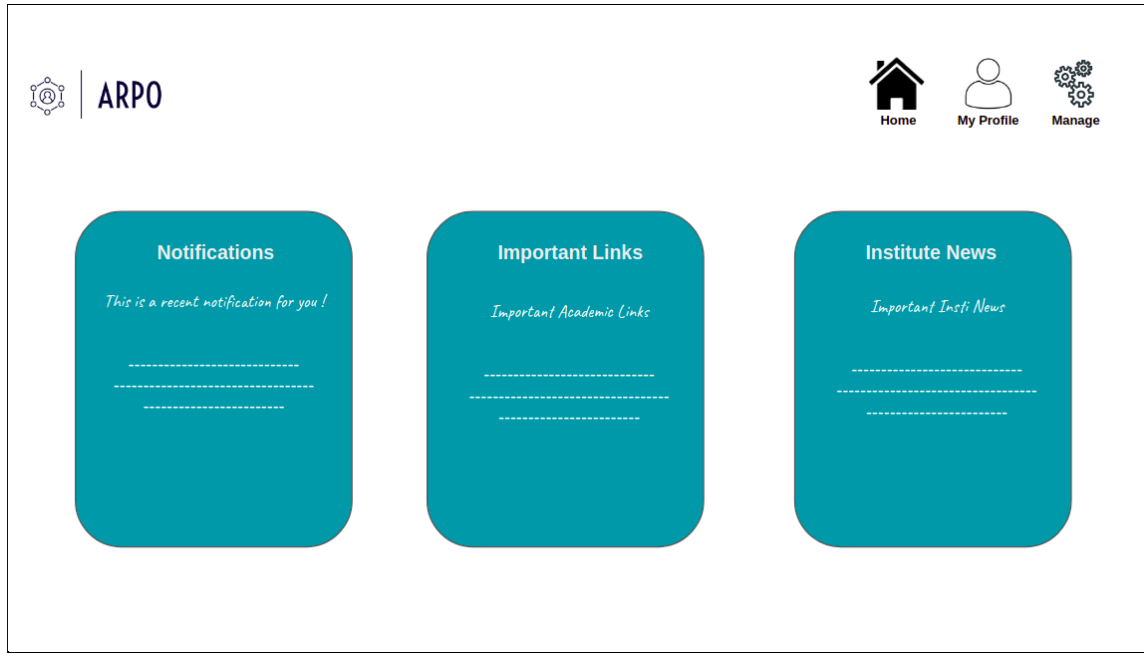
Subject Matter of the forum

Post

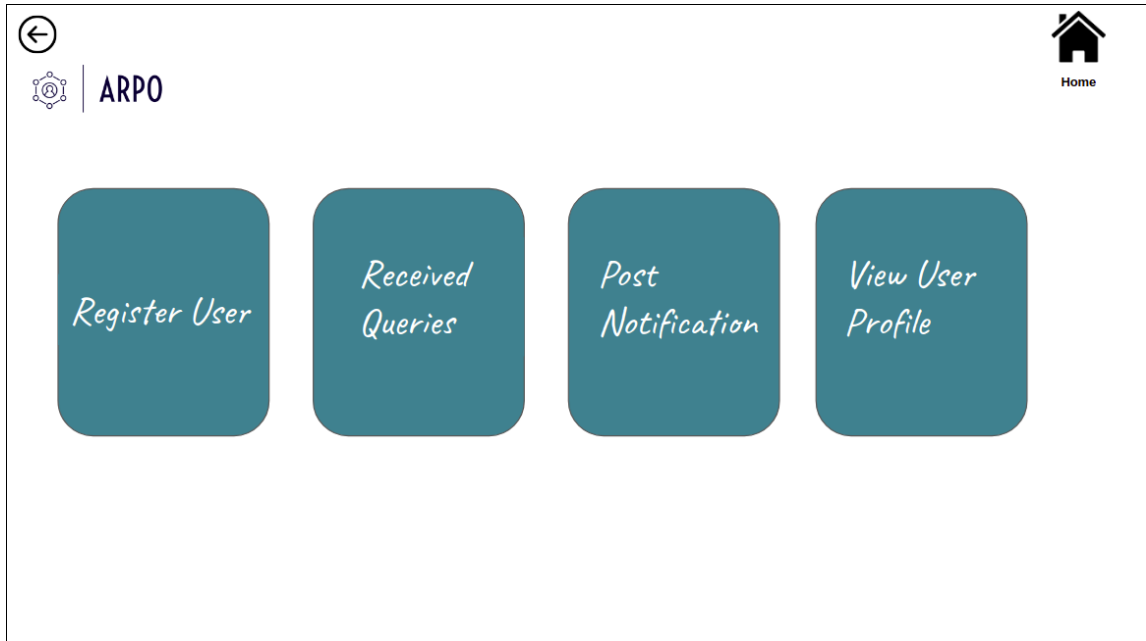
Contact Details : -----

**TECHNICAL STAFF'S INTERFACE:**

The system dashboard for technical staff members (TSM) looks like the following. All the institute level notifications, links and news is also accessed by TSM.



The main section for TSM is the manage section where they can register a new user for the platform, manage received queries, post notifications regarding the platform which will be reflected to every user on their Dashboard and view any user's profile, as shown below.

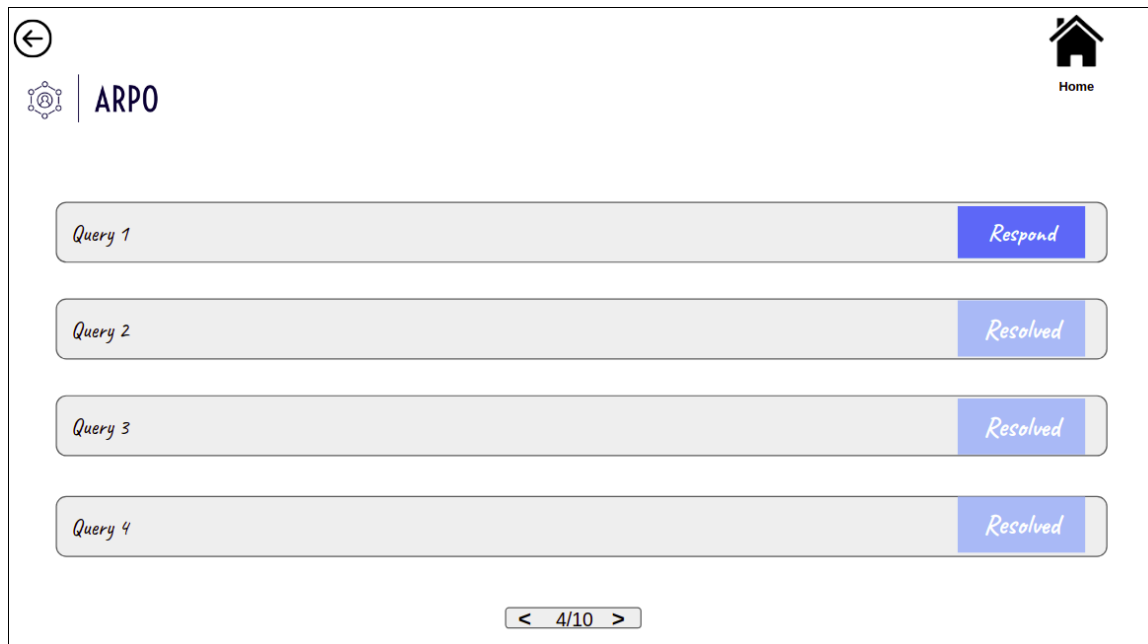
**Manage:**

All these different functionalities of the technical staff members are shown below in their respective interfaces.

**Register User Tab:**

The image shows a mobile application interface for 'ARPO' with a yellow background. At the top left is a back arrow icon, and at the top right is a home icon labeled 'Home'. Below the back arrow is a gear icon and the text 'ARPO'. To the right of 'ARPO' is a circular logo of the Rajiv Gandhi Institute of Technology. The main heading is 'Register'. Below the heading is a red circular profile icon. To the right of the profile icon is a text input field labeled 'CC Username'. Below the profile icon and 'CC Username' are three text input fields: 'Department', 'Register as?', and 'Course (Optional)'. At the bottom center is a blue rectangular button labeled 'Register'.

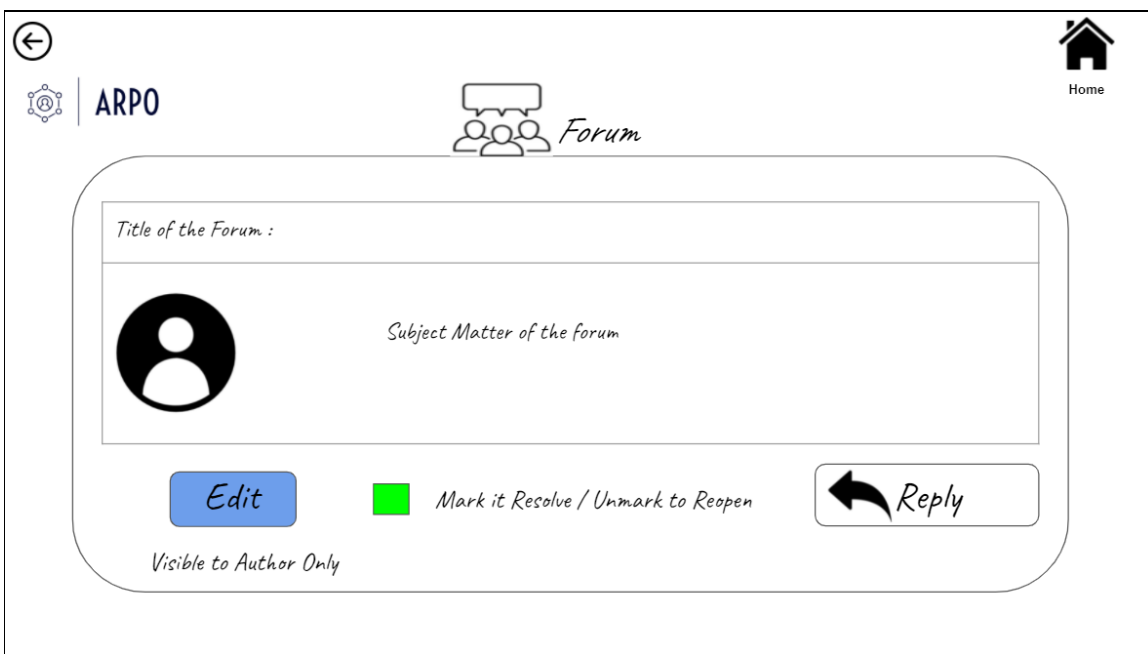
Here, TSM can register any new user on the platform, be it instructor or a student or admin member(course is an optional field for this reason).

**Received Queries Section :**

The image shows a web interface for the 'Received Queries Section'. At the top left is a back arrow icon. Next to it is a gear icon and the text 'ARPO'. At the top right is a home icon with the text 'Home' below it. The main area contains four query entries, each in a light gray box. The first entry is 'Query 1' with a blue 'Respond' button. The second is 'Query 2' with a blue 'Resolved' button. The third is 'Query 3' with a blue 'Resolved' button. The fourth is 'Query 4' with a blue 'Resolved' button. At the bottom center is a pagination control showing '< 4/10 >'.

**View of Received Query Forum :**

Only the author of the post can edit the forum posted. The viewers can reply to it anonymously or with their original identity as they wish. The feature for anonymity won't be available for private forums. The query posted can be checked to resolve or can be reopened as per the author's or the viewer's wish.



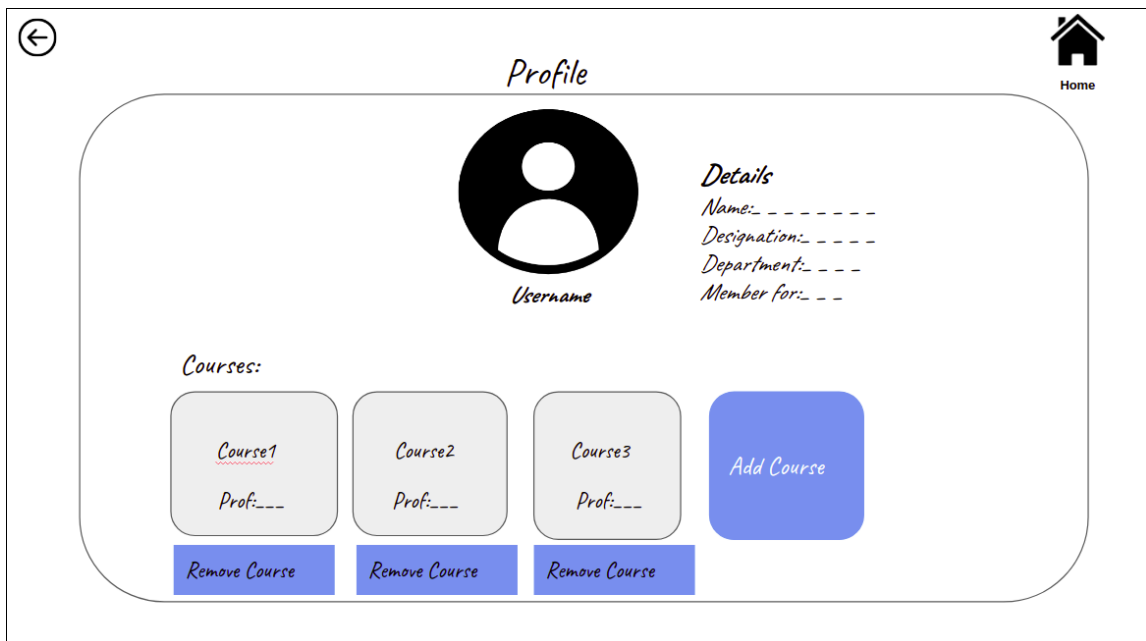
The image shows a web interface for the 'View of Received Query Forum'. At the top left is a back arrow icon. Next to it is a gear icon and the text 'ARPO'. At the top right is a home icon with the text 'Home' below it. In the center, there is an icon of three people with a speech bubble and the text 'Forum'. Below this is a large rounded rectangle containing a text input field labeled 'Title of the Forum :'. Below the input field is a profile picture placeholder (a black circle with a white person icon) and the text 'Subject Matter of the forum'. At the bottom of the rounded rectangle are three buttons: a blue 'Edit' button, a green square button labeled 'Mark it Resolve / Unmark to Reopen', and a blue button with a left arrow and the text 'Reply'. Below the rounded rectangle is the text 'Visible to Author Only'.

**Post Notifications Section :**

The 'Post Notifications' section features a top navigation bar with a back arrow, a gear icon, the text 'ARPO', a group of three people icon, the title 'Notification', and a home icon labeled 'Home'. The main content area is a rounded rectangle containing a text input field labeled 'Title of the Notification :'. Below this is a row with a circular profile icon placeholder and the text 'Subject Matter of the Notification'. At the bottom of the rounded rectangle is a blue button labeled 'Post'.

**User Profile Section:**

TSM can also view and edit profiles (with the features shown below) of **other users** and also add/remove their course modules.



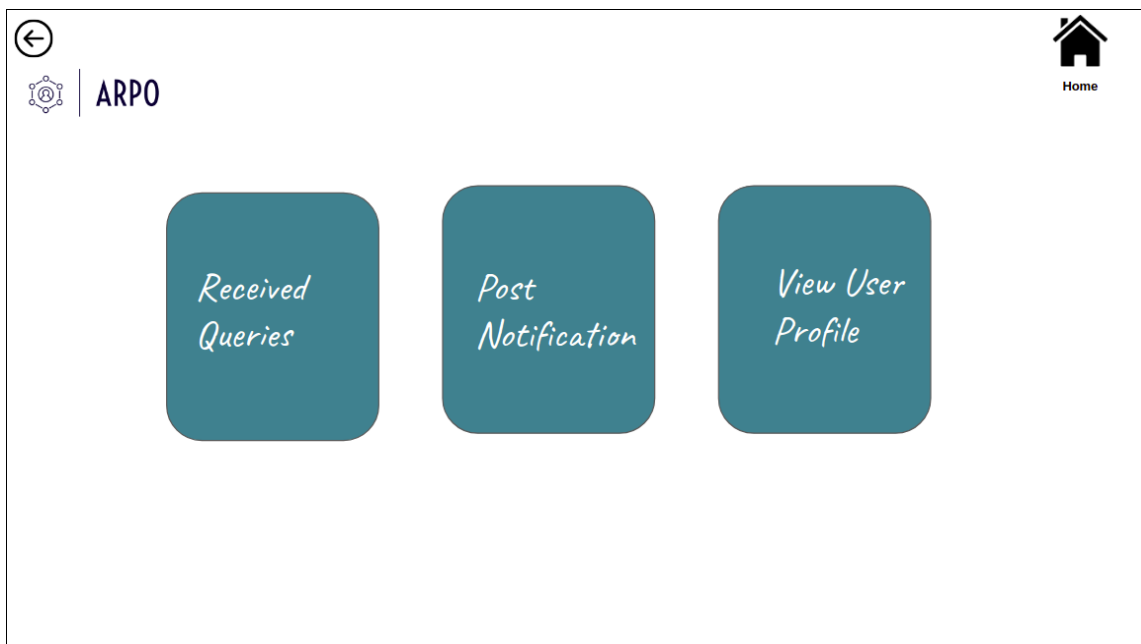
The 'User Profile' section features a top navigation bar with a back arrow, a home icon labeled 'Home', and the title 'Profile'. The main content area is a rounded rectangle. At the top center is a circular profile icon placeholder with the label 'Username' below it. To the right of the profile icon is a 'Details' section with four lines of text: 'Name:-----', 'Designation:-----', 'Department:-----', and 'Member for:--'. Below the profile icon is a 'Courses:' section containing three course cards. Each card displays a course name (Course1, Course2, Course3) and a professor name (Prof:---). Below each course card is a blue button labeled 'Remove Course'. To the right of the course cards is a blue button labeled 'Add Course'.

**ADMIN'S INTERFACE:**

Initial dashboard for Admins look like the following.



Admins can answer to received queries, post notifications and view user profiles from “manage” section which can be seen below.

**Manage:**

The interfaces for all these functionalities are shown below.

**Received Queries Section :**

The screenshot shows a mobile application interface for the 'ARPO' app. At the top left is a back arrow icon, and at the top right is a home icon labeled 'Home'. Below the back arrow is a gear icon and the text 'ARPO'. The main content area displays a list of four queries, each in a light gray rounded rectangle. The first query is labeled 'Query 1' and has a blue 'Respond' button. The second, third, and fourth queries are labeled 'Query 2', 'Query 3', and 'Query 4' respectively, each with a blue 'Resolved' button. At the bottom center, there is a pagination bar showing '< 4/10 >'.

**View of Received Query Forum:**

This is similar to that of TSM's interface.

The screenshot shows a mobile application interface for the 'ARPO' app, specifically the 'Forum' view. At the top left is a back arrow icon, and at the top right is a home icon labeled 'Home'. Below the back arrow is a gear icon and the text 'ARPO'. In the center, there is a 'Forum' header with an icon of three people. Below this is a large rounded rectangle containing a form. The form has a text input field labeled 'Title of the Forum :'. Below the input field is a section for the 'Subject Matter of the forum', which includes a circular profile picture placeholder and a text area. At the bottom of the form, there are three buttons: a blue 'Edit' button, a green square button labeled 'Mark it Resolve / Unmark to Reopen', and a white button with a curved arrow icon labeled 'Reply'. Below the form, the text 'Visible to Author Only' is displayed.

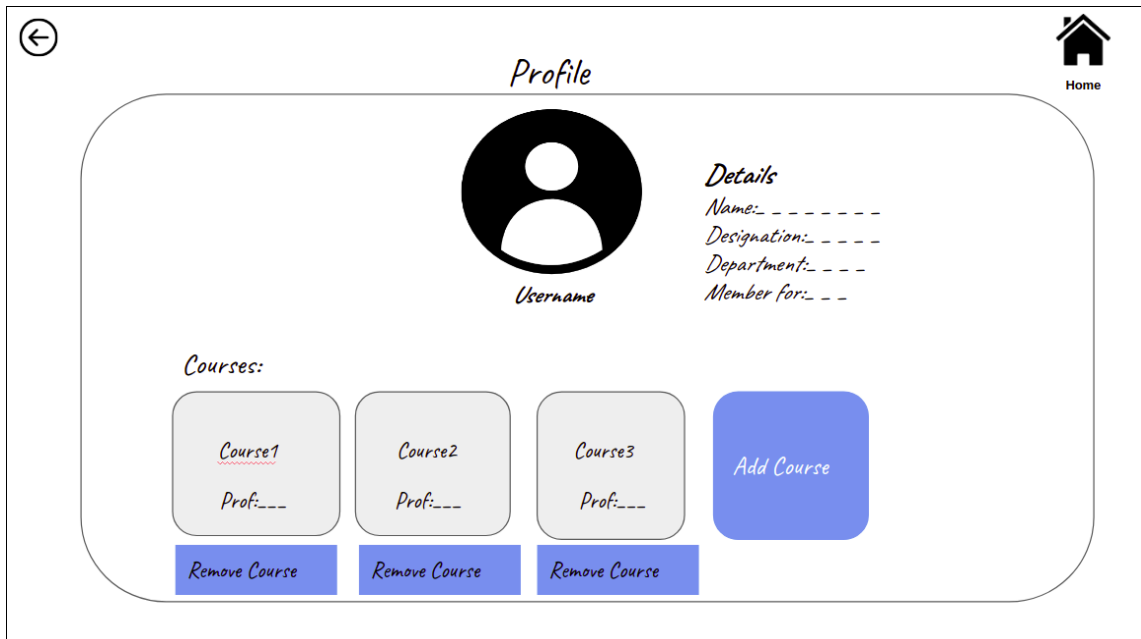


**Post Notifications Tab:**

The 'Post Notifications Tab' UI mockup features a top navigation bar with a back arrow, a gear icon, the text 'ARPO', a home icon labeled 'Home', and a 'Notification' header with a speech bubble icon. The main content area contains a form with a text input field labeled 'Title of the Notification :', a profile picture placeholder, and a text input field labeled 'Subject Matter of the Notification'. A blue 'Post' button is located at the bottom of the form.

**User Profile Section:**

They can view and edit profiles of other users (Student, TA, Tutor, Instructor).



The 'User Profile Section' UI mockup features a top navigation bar with a back arrow, a home icon labeled 'Home', and a 'Profile' header. The main content area displays a large profile picture placeholder labeled 'Username'. To the right of the profile picture is a 'Details' section with fields for 'Name: \_ \_ \_ \_ \_', 'Designation: \_ \_ \_ \_ \_', 'Department: \_ \_ \_', and 'Member for: \_ \_'. Below the profile picture is a 'Courses:' section containing three course cards labeled 'Course1', 'Course2', and 'Course3', each with a 'Prof: \_ \_ \_' field. A blue 'Add Course' button is located to the right of the course cards. Below each course card is a blue 'Remove Course' button.

### Technical Support Query:

Admins can also contact the technical staff for any technical queries and concerns like everyone else.

### 3.1.2 Hardware Interfaces

Any device with an Internet is a must (ie; network card/connection is required). Memory constraints won't matter, since this is a web based application.

### 3.1.3 Software Interfaces

It is a web based application (no dependence on OS) so any web browser (with any version) should work.

## 3.2 Functional Requirements

There should be an interface for each of the five types of users: Students, Instructors, TAs/Tutors, Academic Admins, Technical Support Team with following functional requirements:

### 3.2.1 Students

- Each student logs in with a unique ID with access restricted to current course modules.
- Students are able to post a query in the general course forum with an option of posting anonymously.
- They can post a query in private to the TAs/Tutors and instructors.

- They can write a query to the Academic Admins and Technical Support Team as well for academic template issues and technical glitches respectively.
- They can view the status of the query and view announcements.
- They can reopen a query again.
- They can check their own personal profile.

### 3.2.2 Instructors

- Each instructor has its own unique login ID with access to the current and previous courses taken
- Instructors can post in the course's general forum and reply in it.
- Instructors can address the query asked by a student in private or general query.
- Instructors can answer, accept or reject any queries categorically.
- Instructors have the right to manage students, TAs/Tutors.
- Instructors can post course announcements.
- Instructors can upload assessment marks.
- Instructors can redirect any regrading query to the concerned TAs/Tutors.

### 3.2.3 TAs/Tutors

- Each TA/Tutor has access to its own unique login ID with course access granted by the instructor.
- Each TA/Tutor can initiate a query or reply to the user of concern.
- Each TA/Tutor can post in the course general forum and reply in its thread.
- TAs/Tutors can address the query asked by a student in person or general.
- TAs/Tutors can post course announcements.
- TAs/Tutors can upload exam marks.

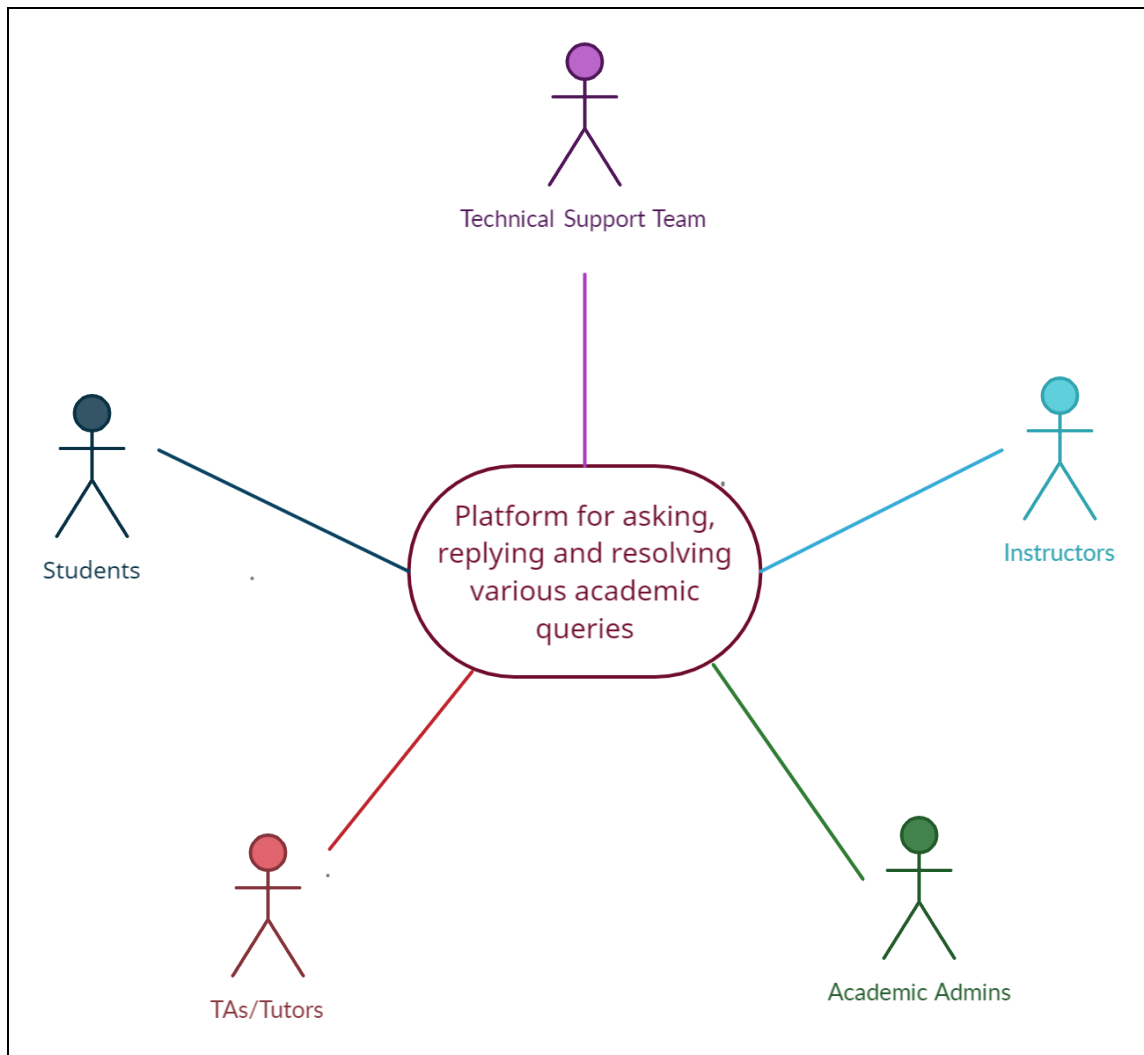
### 3.2.4 Academic Admins

- Academic Admins have a unique login ID.
- They have information about all the students enrolled in a course and instructors and TAs/Tutors teaching involved in the course.
- They can post announcements, information and notify important news on the portal.
- They can post and initiate a technical query.
- They can reply to queries and change the status of the queries.

### 3.2.5 Technical Support Team

- Each member of a Technical support team has a unique login ID.
- They are responsible for data handling/book-keeping.
- They can post announcements and any important news on the portal.
- They can respond to and change the status of the concerned query.
- They can manage all the users.

### 3.3 Use Case Model

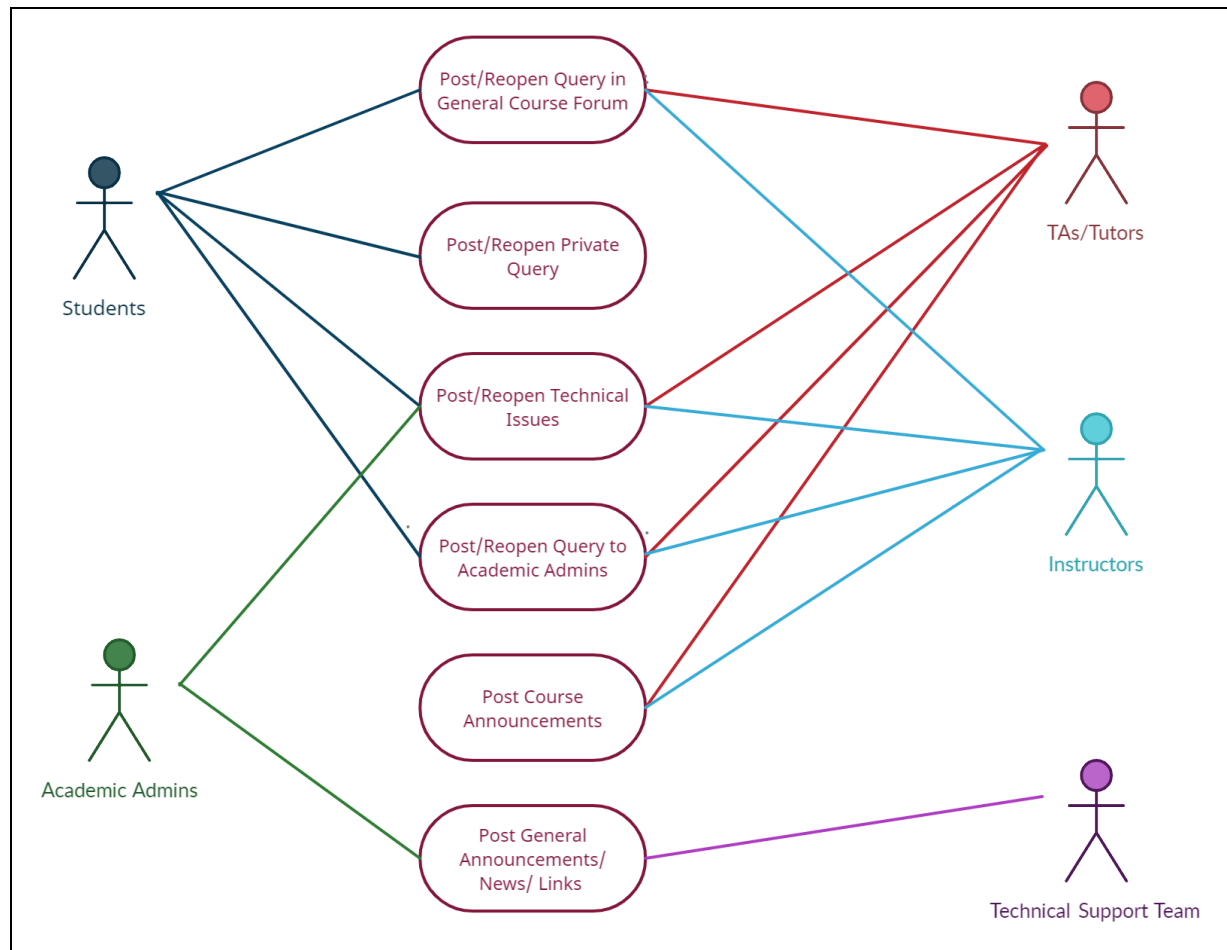


Use case diagram U0 encapsulating the entire system and all the five actors

The five actors involved are: Students, Instructors, TAs, Academic Affairs Admins, Technical Support Team.

**Remarks:** The above use case is differentiated into three prime use cases: U1, U2 and U3 on the basis of functionalities involved in the system.

### 3.3.1 Use Case #1 (U1)



Use case diagram U1 encapsulating the query directing system

Refer Next page for Use Case Details.

**Purpose:** Sending the queries and posting relevant information by all the concerned actors.

**Requirements Traceability:** Students' access to course forums, Instructors' access to course forum and registered students' course profile, TAs/Tutors' access as granted by Instructors, Academic Admins have access to students and instructors list and Technical Support Team have access to all users IDs'.

**Priority:** High. This is kept at high priority as the prime goal of this platform is to handle each query or announcement with utmost priority in order in an efficient manner.

**Preconditions:** Each actor is a registered member of the institute and is logged into the platform with a unique ID.

**Post conditions:** Each query has reached the designated actor for further process in exact form.

**Actors:** Students, Instructors, TAs/Tutors, Academic Admins, Technical Support Team.

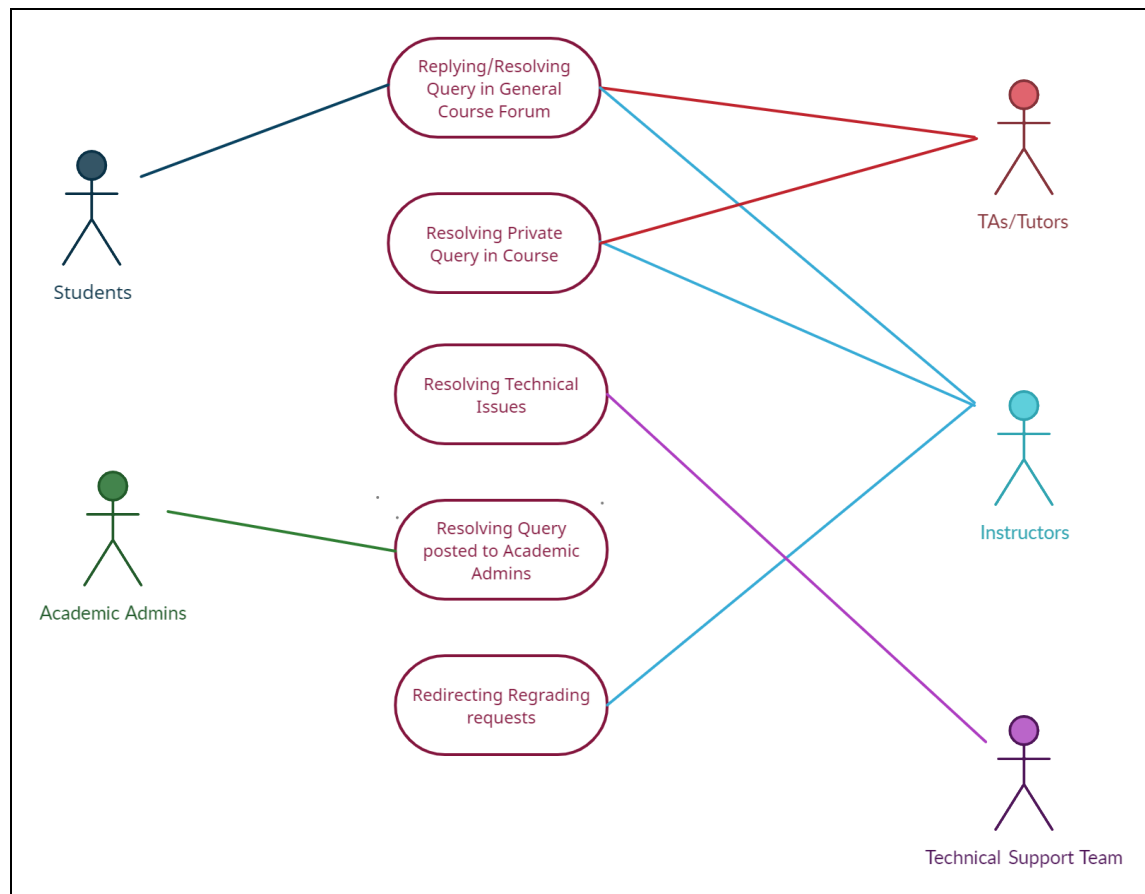
**Exceptions:** The concerned query is sent to the wrong actor or major technical issues like unable to login or send messages should be handled via emails.

**Includes:** None.

**Notes/Issues:**

- (1) For unresolved queries, the query sent is visible to the actor and its status is kept in progress until addressed.
- (2) Instructors have the authority to manage TAs/Tutors.

### 3.3.2 Use Case #2 (U2)



Use case diagram U2 encapsulating the query replying and resolving system

Refer Next page for Use Case Details.

**Purpose:** Resolving the queries initiated to and delivered to all the concerned actors.

**Requirements Traceability:** Students' access to course forums, Instructors' access to course forum and registered students' course profile, TAs/Tutors' access as granted by Instructors, Academic Admins have access to students and instructors list and Technical Support Team have access to all users IDs'.

**Priority:** High. This is kept at high priority as the prime goal of this platform is to handle each query (here, resolving queries) with utmost priority in order to provide an efficient system to clarify any query.

**Preconditions:** Each actor is a registered member of the institute and is logged into the platform with a unique ID and the initiated query has reached the designated actor in exact form for further response.

**Post conditions:** Each resolved query is maintained on the portal.

**Actors:** Students, Instructors, TAs/Tutors, Academic Admins, Technical Support Team.

**Exceptions:** There may be a delay in response from an actor or a query replied or redirected to the wrong actor.

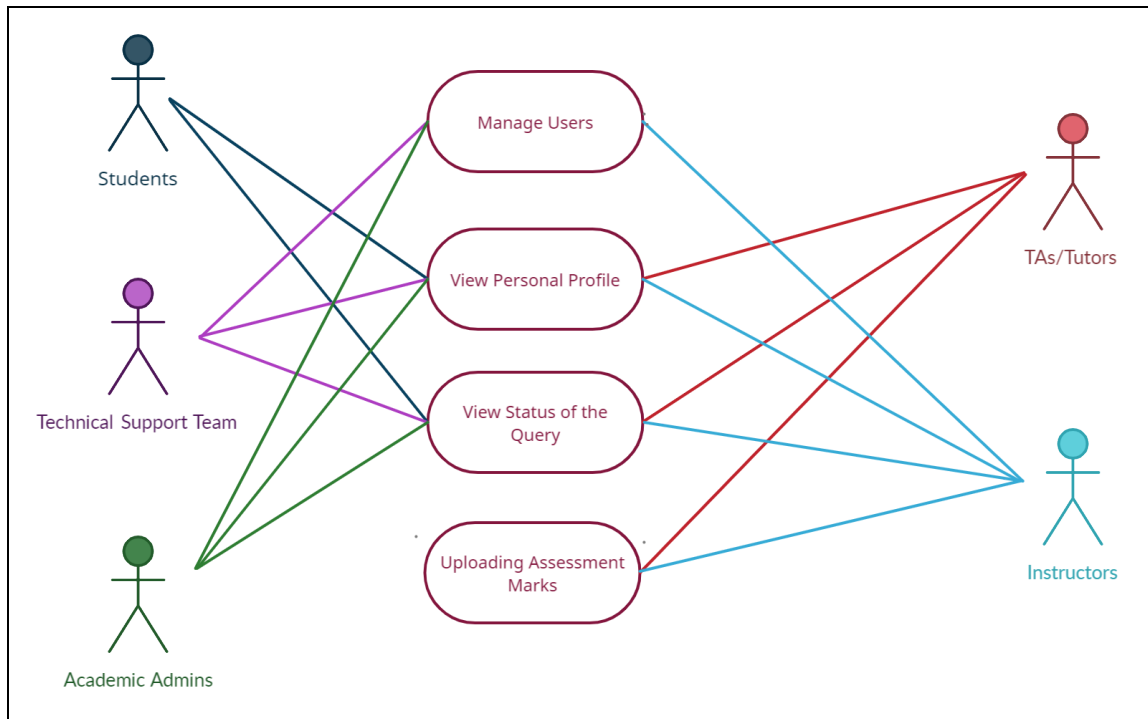
**Includes:** Use Case #1 (U1).

**Notes/Issues:**

- (1) All resolved queries are maintained and status is updated as closed.
- (2) Instructors have the authority to manage TAs/Tutors.



### 3.3.3 Use Case #3 (U3)



Use case diagram U3 encapsulating the handling of technicalities in actors' interfaces

Refer Next page for Use Case Details.

**Purpose:** Providing all other functionalities other than posting information, sending or replying queries.

**Requirements Traceability:** Students' access to course forums, Instructors' access to course forum and registered students' course profile, TAs/Tutors' access as granted by Instructors, Academic Admins have access to students and instructors list and Technical Support Team have access to all users IDs'.

**Priority:** Medium. The proper handling of the platform without any technical issue enables each actor to perform its duty effectively.

**Preconditions:** Each actor is a registered member of the institute and is logged into the platform with a unique ID.

**Post conditions:** Not Applicable.

**Actors:** Students, Instructors, TAs/Tutors, Academic Admins, Technical Support Team.

**Exceptions:** None.

**Includes:** None.

**Notes/Issues:**

- (1) All unresolved queries' status is "in progress", while destination actors can update the status accordingly as they progress and all resolved queries are marked as accepted/closed.
- (2) Instructors have the authority to manage TAs/Tutors.

## 4 Other Non-functional Requirements

### 4.1 Performance Requirements

Some performance requirements include:

- **Latency** : There should not be much delay while interacting with the interface in any form. The request made should be immediately reflected (within one second).
- **User Traffic** : The software should be able to support all the authorised users of IITK campus. The figure of this traffic is planned to be not more than 10k and APIs should be scalable to handle this much traffic at a time.

### 4.2 Safety and Security Requirements

#### 4.2.1 Safety Requirements :

- **Authorised Login** : Each user has to login to the portal with registered CC User ID and password, which need to be kept confidential.
- **Privacy** : The TSM/Admins or any body of the institute, should not ask for any personal info and this info must not be shared by any user at any cost. The misconduct of any type should be reported to the Institute Authorities immediately.

#### 4.2.2 Security Requirements :

- **Encryption** : The confidential (sensitive) information needs to be kept encrypted under the guidelines of Encryption laws (IT Act 2000 and related) which comes under the jurisdiction of the cyber security department of the country.
- **Confidentiality** : The private/personal information needs to be kept confidential and only the authorised user can view his/her personal info under DPA Act of India (2019).

### 4.3 Software Quality Attributes

#### 4.3.1 Availability

The application would be made available 24\*7 to everyone registered on the platform. Should be an accessible web based application from any place with internet at all times.

#### 4.3.2 Portability

Should be web based application (not dependent on OS), so as to access it from any web browser with almost no constraints on any hardware requirements. Thus, it should be able to be accessed from anywhere, making it excellent in terms of portability.

**4.3.3 Testability**

The software should be easily testable with less effort as it is a web based application. Should be fast and secure to use.

**4.3.4 Usability**

Should have a user-friendly interface, where even a layman can learn to use it in no amount of time. The interface should consist of features which are self-explanatory and supported by a help desk team (or technical support team) to handle technical concerns of any user.

## 5 Future Scope

The future scope for this project includes the integration with Pingala or Hello IITK Portal, thus enabling the formation of a single robust platform with user-friendly interactive interface for all authorized CC users. The assurance of these factors would lead to having a common list of CC users without having a separate database for the login credentials.

## **Appendix A – Data Dictionary**

The list of various actors includes: Students, Instructors, Tutors/TAs, Technical Support Team and Admins. The details of the section will be updated in the future versions of this documentation once the outline for the class diagram is prepared.

## Appendix B - Group Log

There has been a continuous interaction among the team members in formal meets as well as informally through whatsapp group/calls. The team members were also in direct touch with the assigned TA through official Whatsapp Group and various zoom meetings.

We have also done 2 group meetings with the Instructor In-charge as well. Also our group had a conversation with Mr. Jitendra Kumar Sir (DOAA Office) regarding the user-interface as well. The tabular detail of some official group meets are indicted as follows:

Meeting Minutes	Agenda
Jan 9, 2022 03:15 PM-04:00 PM	First Group Meet, discussed bringing on various ideas for a project . Each member was given the task to bring a project idea for the next Meet.
Jan 12, 2022 10:00 PM-12:00 PM	Group Meet in which each member gave a short presentation about their project idea. Finalized two ideas 1. ARPO & 2. Local Service Provider
Jan 14, 2022 10:00 PM-11:15 PM	Group Meet for formalizing the project brief and freezing the project idea. Finalized idea of ARPO
Jan 18, 2022 09:00 PM-09:25 PM	Group Meet to discuss upon SRS
Jan 21, 2022 08:00 PM-08:50 PM	First Meet with the Instructor and assigned TA for the understanding of the SRS document
Jan 22, 2022 05.00 PM-06:00 PM	Meet with the assigned TA for further guidelines on SRS
Jan 24, 2022 06:00 PM-07:00 PM	Group Meet for the presentation of use case ideas brought by each member
Jan 25, 2022 05.00 PM-07:00 PM	Meet with the assigned TA for feedback on use case diagram
Jan 25, 2022 10:30 PM-11:30 PM	Group Meet to discuss on the feedback received from the TA in the last Meet.
Jan 27, 2022 06:00 PM-07:30 PM	Meet with the assigned TA to discuss upon SRS and functionalities.

Jan 28, 2022 12:15 PM-01:00 PM	Meet with the Instructor for feedback on user interfaces.
Jan 28, 2022 5:00 PM-5:30 PM	Conversation with Mr. Jitendra Kumar (DOAA Office) for user interface from Admin and Technical team end.
Jan 29, 2022 08:00 PM-09:30 PM	Meet with the assigned TA for feedback of user interfaces and SRS presentation.
Jan 30, 2022 04:00 PM-04:40 PM	Meet with the assigned TA for the SRS documentation prepared for first version submission.