# Design Document

Team 33 **Arjun, Adarsh, Chaitanya, & Joseph**

***Problem Statement***

***The Development Team is required to design a Learning Management System. The Architecture is meant to be Head-Less to support deployment on both the Web and Mobile platforms. The LMS is driven by the idea of Communities giving it an essence of a permissioned subscription based social media platform. The Platform must provide a medium to facilitate collaboration within a community. Consider the Use Case Diagram to get an idea.***

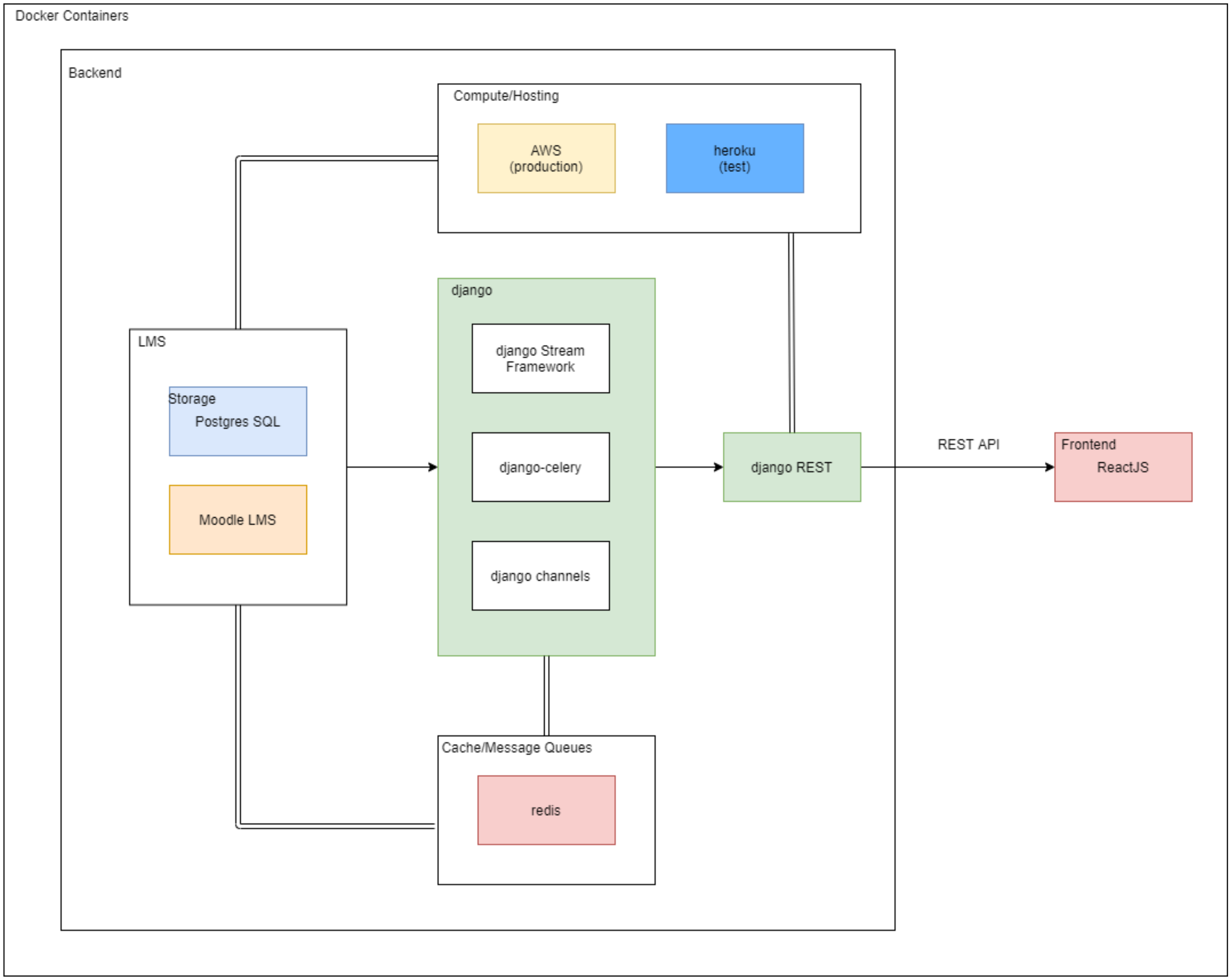
**Design Overview**

**Architectural design - The Head-Less Architecture hosts the backend as a RESTful Service. The LMS is built on top of an open source project, Moodle. Django REST is utilised to extend the functionalities provided by Moodle.**

**One such functionality is that of a Social Feed which is satisfied by Django Stream Framework. The REST API is exposed on *https* and is utilised by the REACT frontend.**

**The API is hosted on Heroku and is currently active at http://inhobi.herokuapp.com/.**

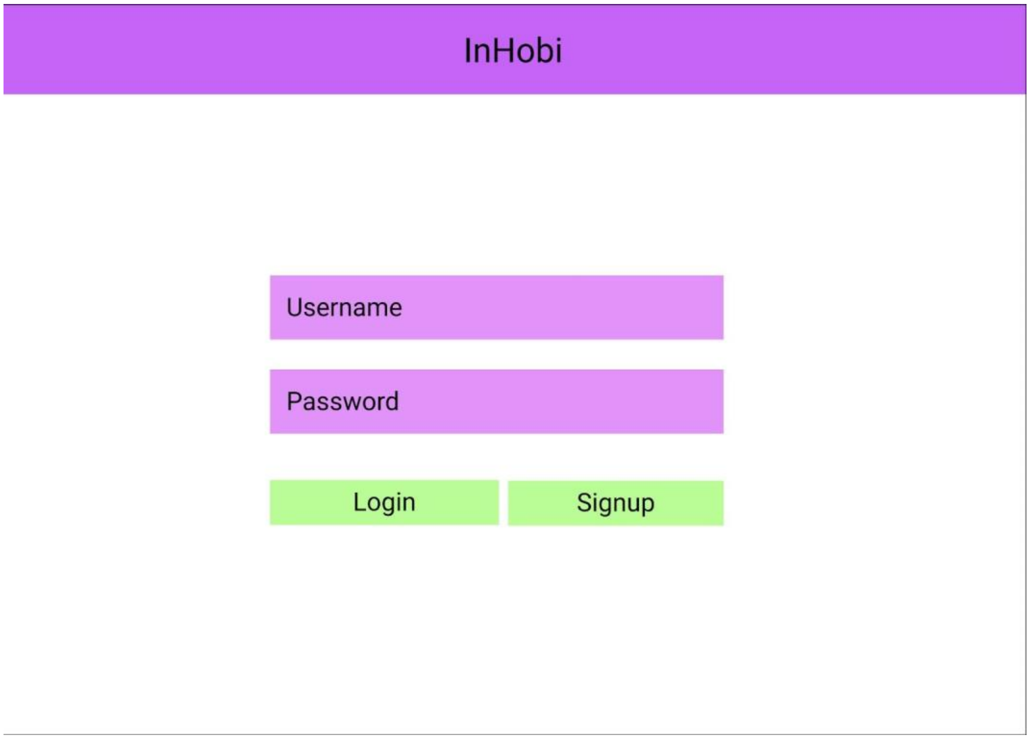
**We use Redis for caching, and for message queues for streaming content, and active notifications respectively. Every microservice is containerized using Docker. For Storage, we use PostGres hosted on Heroku for storing tables modelled on the schema Moodle provides.**


Docker Containers
Backend
Compute/Hosting
AWS
(production)
heroku
(test)
django
django Stream
Framework
django-celery
django channels
LMS
Storage
Postgres SQL
Moodle LMS
django REST
REST API
Frontend
ReactJS
Cache/Message Queues
redis

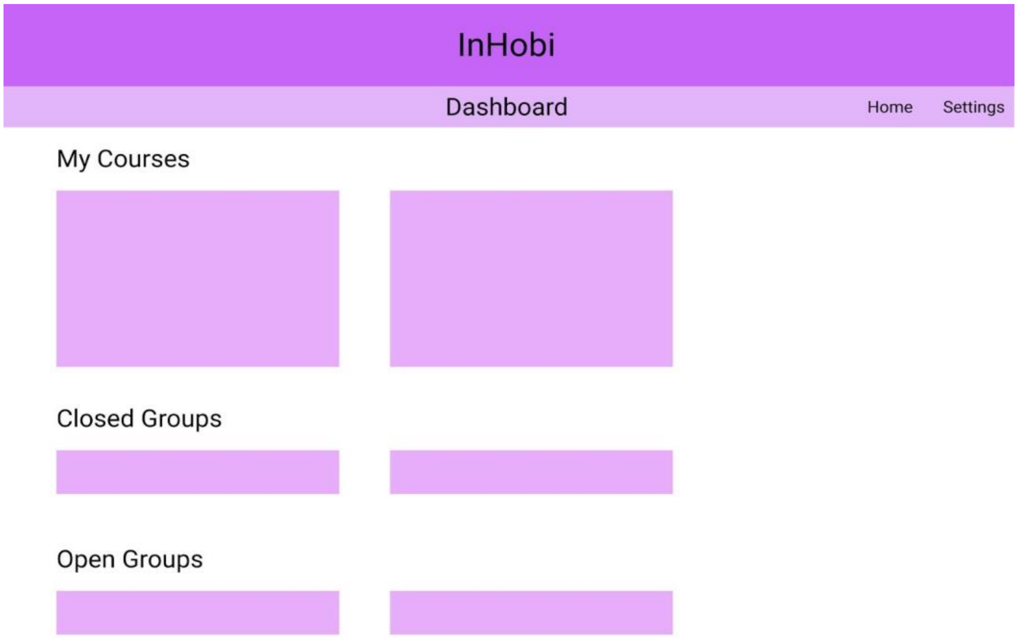
**System interfaces**

**User Interface Login**

**Page:**



This page leads to the main user **dashboard page:**



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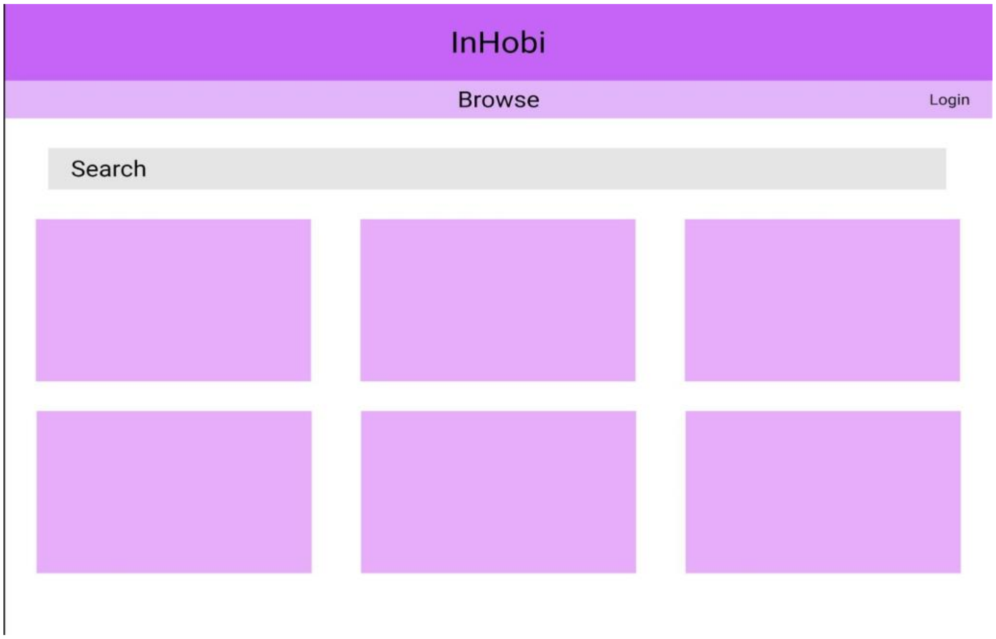
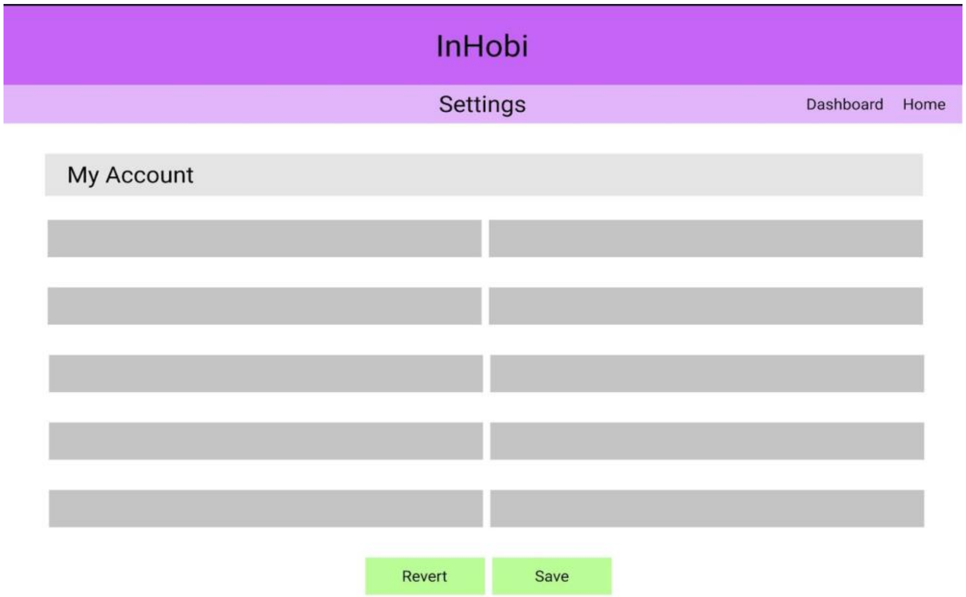
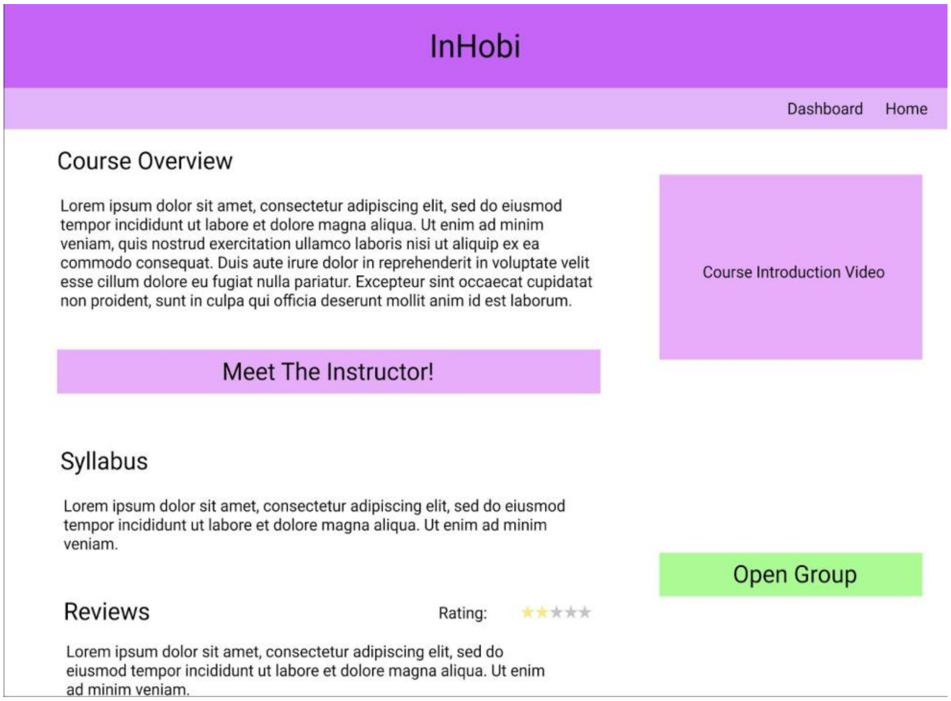
From here, the user can browse courses on the **browse page**:



Or access the user's settings on the **settings page**:



From the browse page, you can access each unique **course page**:



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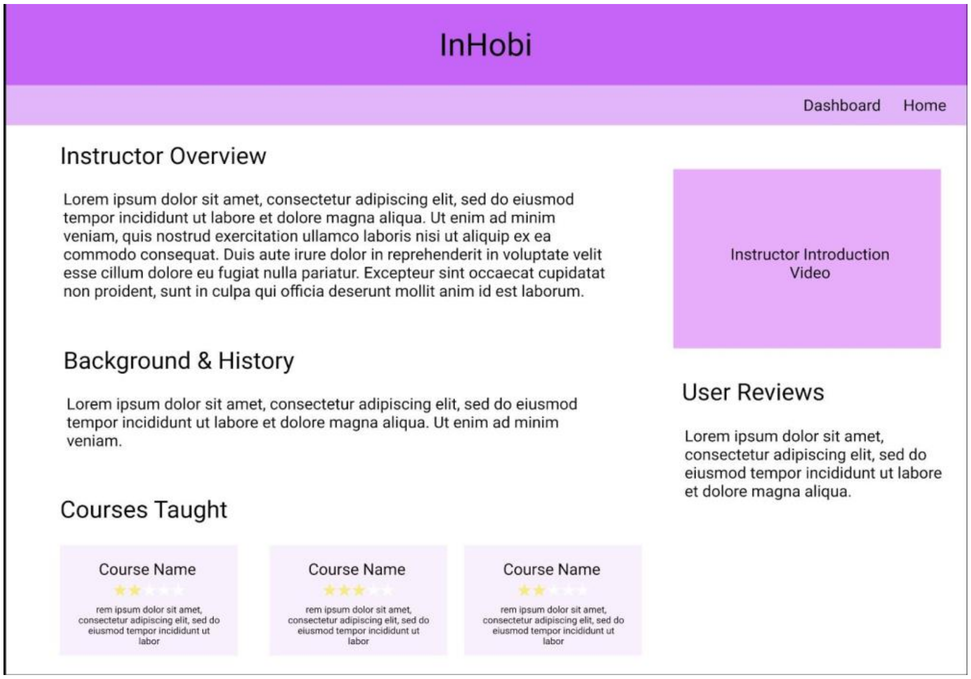
You can also access the **instructor page** from the browse or course pages:



InHobi

Dashboard Home

Instructor Overview

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Instructor Introduction Video

Background & History

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User Reviews

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Courses Taught

Course Name

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Course Name

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Course Name

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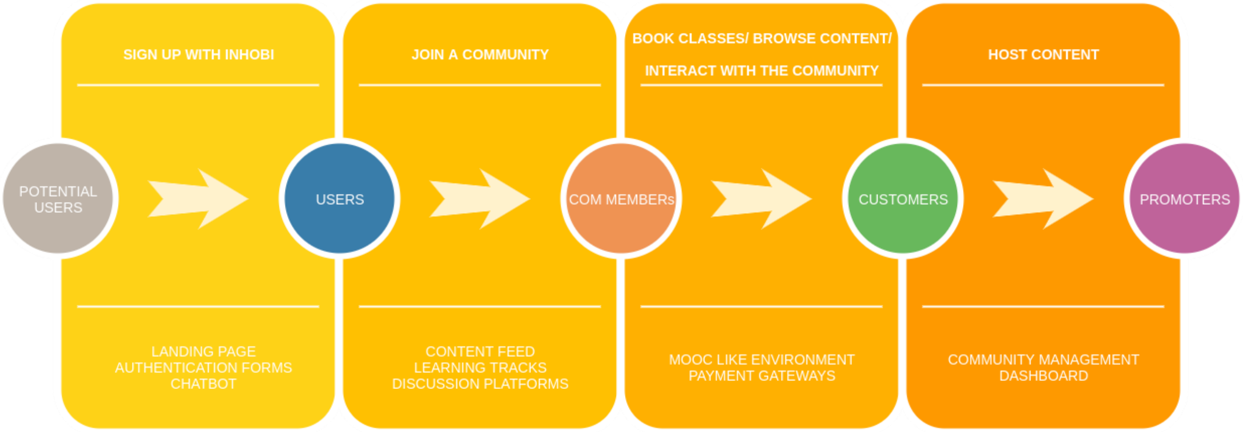
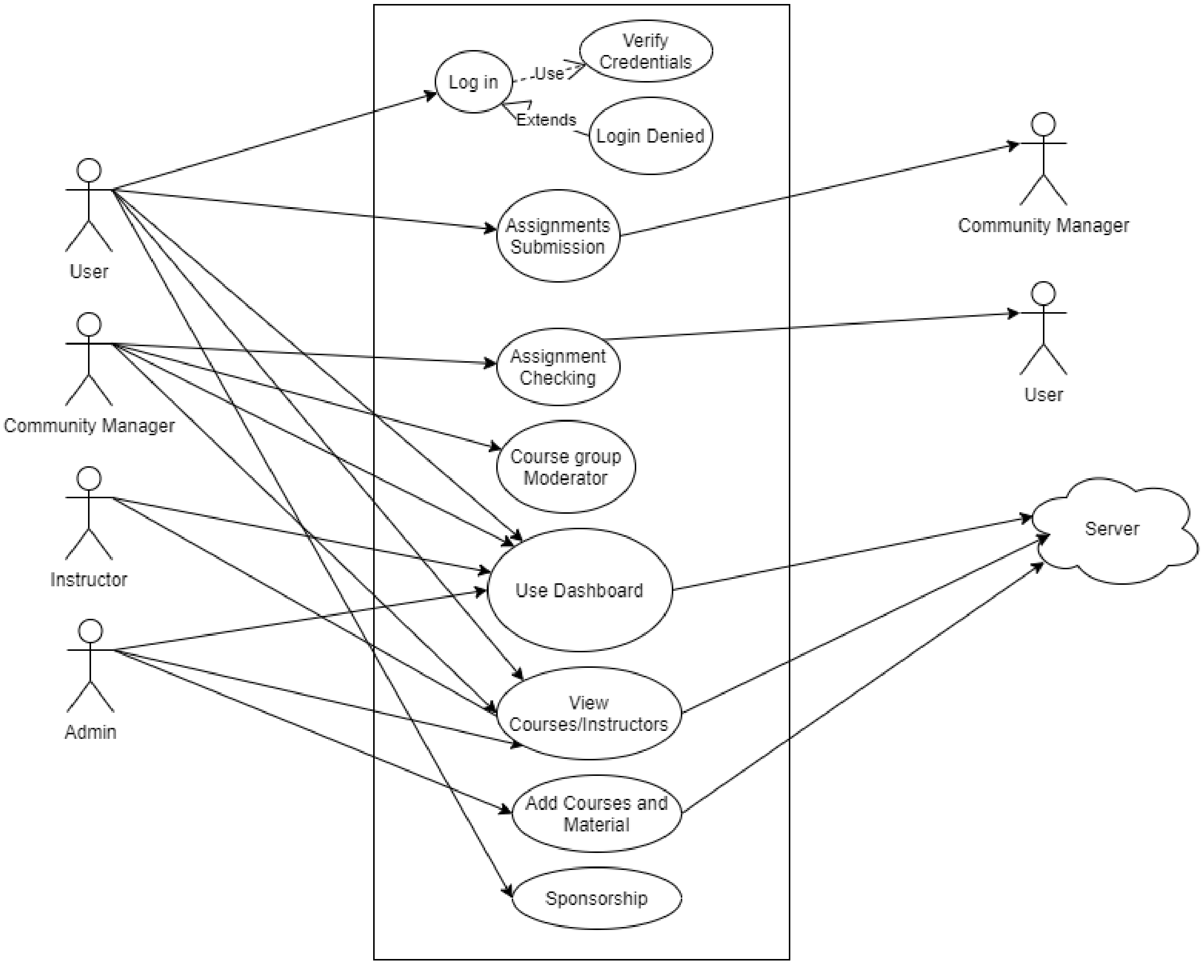
## APIs

- Moodle REST API to establish a basic LMS hosted at http://www.inhobi-moodle.herokuapp.com.
- Django REST API to map Moodle and to provide endpoints for the django Stream Framework hosted at http://www.inhobi.herokuapp.co m.

## Sequence Diagram



## Model



## Design Rationale

- Closed virtual community groups must be exclusive to course registrants as discussed.
- Use Python (Django more specifically) for all backend server handling instead of node & express JS due to environment variable requirements.
- Socket Programming will be favored for communication protocol between servers.
- Moodle will be integrated with the headless architecture stack, and whatever feasible modules are usable will be imported from it.