

Heaven's Light is Our Guide

Rajshahi University of Engineering & Technology



Department of Computer Science & Engineering
24 Series

Course No.: 1100

Course Title: Computer Fundamentals and Ethics

Assignment No. : 01

**Assignment Title : Creative Software Concept and Licensing
Analysis**

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Imagine waking up every day and then having to manually check multiple platforms for the latest updates of the day. Or probably after a long, busy day of completing all those assignments and lab reports at night, you finally lie down in bed, feeling sleepy and about to close your eyes, but then suddenly you remember you have to check your phone for tomorrow's updates. You need to go through every single app- Messenger (for group chats), WhatsApp (for CR notices), Telegram (for announcements from the course advisors), Google Classroom (for the materials/lecture sheets provided by the teachers), and even visit the RUET website to see if the class routine has changed. Going through all these apps one after another is pretty annoying right? Feels like a huge waste of time and energy? But what if all of these could be combined into a single and easy to use platform? Something less distracting and more compact. No, it is not about creating a 'mega combo' app that copies all the features of these platforms, but rather a web app that is going to work like a dashboard, integrating all the essential updates and resources on a single page... **A central hub that makes staying informed effortless**

“CampusOS”

Purpose

CampusOS is a web-based platform which is designed to simplify the way students and staff access and manage campus information. Rather than having to jump between a series of apps, users get everything they need in a single and organized dashboard. Here are few key points about the platform:

- Combines academic and administrative updates, eliminating fragmented notifications across different apps
- Automated reminders and notifications to help students meet deadlines and focus on studying efficiently
- Role-specific message filtering ensures that right users get the right messages
- CRs, Advisors, Teachers and Head of Departments can pin and monitor posts, keeping everyone informed
- Supports direct preview of files, images, and presentations, with alerts for important deadlines.
- Scalable architecture that supports all departments, series and future administrative roles, enabling long term implementation university wide

Overall, **CampusOS** puts an end to the campus communication chaos, consolidates resources, boosts student productivity and offers a scalable, organized solution for all stakeholders at the university

Target Users

1. Students
2. CRs
3. Teachers
4. Advisors
5. Head of Departments

***Future Extension:** Other authorities like Registrar/Library Staff/Exam Controller can be added later with modular updates for broader campus operations*

Core Features

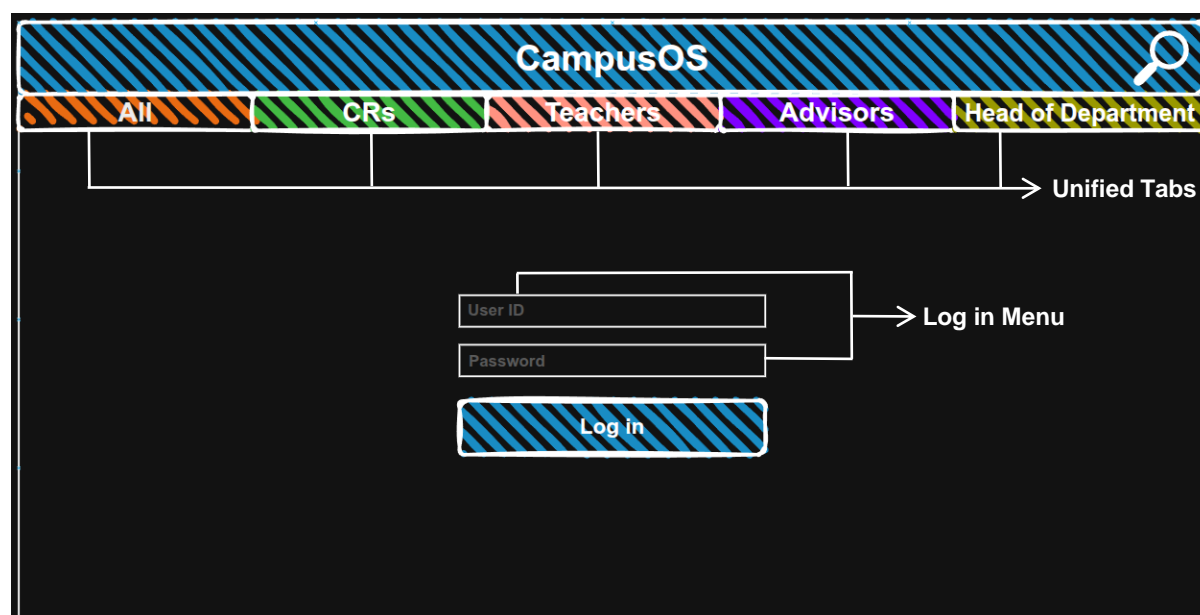
A. Dashboard Structure

The main interface consists of five tabs: All, CR, Teachers, Advisors and Head of Department

1. **All Tab:** Shows pinned messages from all other tabs at the top, followed by all other messages sorted by latest timestamp
2. **CR Tab:** Class Representatives post class specific notes, announcements, schedules and decisions.
3. **Teachers Tab:** Teachers upload course materials, lecture sheets, deadlines and class notices for multiple series and departments relevant to them
4. **Advisors Tab:** Advisors of the same series of a department share access to the Advisors tab, allowing any of them to post exam updates, notices and important materials visible to all sections of the department
5. **Head of Department Tab:** Department heads post department wide updates and manage communication across all series and sections

B. Login and Access System

- **Students:**
 - Log in with university roll number (as user id) and password
 - The system detects series and department from the roll (e.g. for roll no 2403179, here 24 means 24 series and 03 means CSE department), so the system will automatically redirect the student to the dashboard of the CSE department of 24 series
- **CR (Class Representatives):**
 - Log in with university roll number (as user id) and password
 - The system will automatically grant authority on the CR tab based on the roll number list, allowing them to post notices, schedules or class updates.
- **Other Authorities (Advisors, Teachers and Head of Departments):**
 - Log in with RUET email (as user id) and password
 - The system will automatically grant them access to their respective dashboards



C. Main Features

1. Multi Series and Department Scalability

- Each user sees a dashboard customized for their role
- Only authorized users can post messages in their own tabs (CRs for CR tab, Advisors for Advisors tab, Teachers for Teachers tab and Head of Departments for Head of Departments tab)

2. Unified Message Tabs

- Users are able to organize messages by tab to easily find the source of information
- Messages can be pinned at the top of each tab to highlight important announcements

3. Notifications and Alerts

- Users will receive notifications when a new message is posted
- Reminder of deadlines will trigger again 1 hour before submission/events so that students and staff stay informed in real time

4. File Preview and Download Functionality

- Materials (photos, PDFs, docs, PPTs) can be previewed directly in the dashboard
- Users also have a choice of downloading those if needed

5. Global Search Across All Tabs

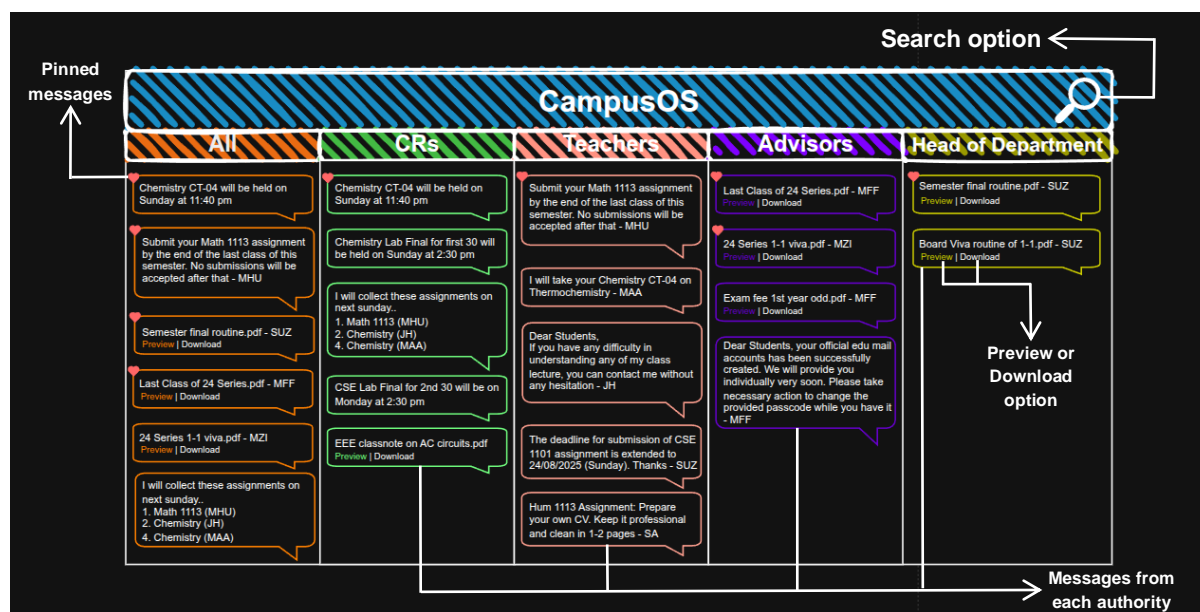
- Anyone can search for messages across any tab with a common search bar using keywords
- Filters available by date, tab and content type, making it easy to find any information

6. Analytics and Insights

- Authorities (CRs, Advisors, Teachers, Head of Departments) can track who viewed every message and at what time

7. User Friendly Interface

- Clean and organized dashboard for easy navigation.
- Streamlined process for posting, viewing and managing messages and materials



Technical Specifications

- **Platform:** As a web-based application, it can run on any modern browser (Windows, Linux, macOS) and mobile devices
- **Technologies used:**
 - Frontend: HTML, CSS and JavaScript
 - Backend: Node.js
 - Database: MySQL
 - Notifications: WebSockets

Justification

Currently, universities like RUET depend on scattered multiple platforms like WhatsApp, Telegram, and Google Classroom for communication. This actually leads to missed updates, accountability gaps, wastage of time and energy for both students and authorities. **CampusOS** directly addresses this gap by centralizing all academic and administrative communication into one structured and role aware system. Unlike third party tools, it is tailored to departmental and university wide needs while remaining modular for future expansion

Type of Software

1. Application Software

- **CampusOS** is meant to provide instant user functionality like handling messages, notifications, files and dashboards to Students, CRs, Advisors, Teachers and Head of Departments
- It is not a program at operating system level nor is it a system resource manager. It is basically used for academic and administrative communication, scheduling notices, materials and due dates and providing analytics for authorities

2. Freeware (with optional commercial licensing)

- The core platform is completely free for RUET students and staff to encourage universal adoption and simplify academic communication across all series and departments. Sustainability is maintained through university IT cell and future optional upgrades funded by the department
- For other universities wishing to use the platform, a paid license can be offered which will provide revenue for maintenance and scaling. As a result, **CampusOS** will be inclusive for its primary users while remaining sustainable and expandable for wider adoption

3. Closed-source

CampusOS contains sensitive and personal information. As security and integrity of data are a very major concern. Closed-source guarantees the system and its data cannot be manipulated by anyone without valid authority, thereby blocking unauthorized changes or data spills

Software Licensing: Proprietary

CampusOS manages confidential academic data, including student records, notices, course materials, and internal information. So a proprietary license will ensure that only authorized members can operate, modify and update the system to protect data integrity and confidentiality

- It is not designed for open collaborative development but is managed centrally by the university IT cell for uniform performance and accountability
- The aim is community development within the university, not profit. Still, a proprietary license gives the university the ability to manage expansion to other institutions, if required, in a safe manner while ensuring intellectual property protection
- Proprietary licensing enhances security and maintenance by preventing unauthorized alterations, reducing potential errors and insisting on university policy compliance