

Complaint Management System

Anshul Maurya¹; Amit Gupta²; Aashutosh Singh³; Ayush⁴; Parag Rastogi⁵

^{1;2;3;4}Computer Science and Engineering, Raj Kumar Goel Institute of Technology, Ghaziabad, India

⁵Department of Computer Science Engineering, Assistant Professor,
Rajkumar Goel Institute of Technology Ghaziabad, India

Publication Date: 2026/05/01

Abstract: The mitigation of administrative bottlenecks in academic environments necessitates dedicated, rule-based technological interventions. This study details the architecture and deployment of a bespoke Web-Based Complaint Management System (CMS), engineered specifically to enforce accountability through a rigid 7-day resolution timeline and automated hierarchical escalation. Unlike conventional platforms that permit arbitrary ticket closure by administrators, this system introduces an immutable One-Time Password (OTP) verification matrix, transferring the final approval authority directly to the aggrieved user. The platform's security is anchored by a 'Secret Reference Key' requirement during the initial multi-role (Student, Employee, Admin) registration phase. Furthermore, the integration of personalized data grids—featuring dynamic 'Remaining Day' countdowns, smart categorical filters, and granular status tracking—transforms the grievance redressal pipeline into a fast, transparent, and secure operational framework

Keywords: Complaint Management System, Educational Institution, Grievance Redressal, OTP Verification, Web Application.

How to Cite: Anshul Maurya; Amit Gupta; Aashutosh Singh; Ayush; Parag Rastogi (2026) Complaint Management System. *International Journal of Innovative Science and Research Technology*, 11(4), 2678-2681.

<https://doi.org/10.38124/ijisrt/26apr2017>

I. INTRODUCTION

Effective communication and timely conflict resolution are the primary drivers of stakeholder trust within any educational or corporate ecosystem. Historically, academic institutions have relied heavily on decentralized, paper-based workflows or rudimentary email threads to manage internal grievances. These legacy protocols consistently suffer from severe structural deficiencies, including the obfuscation of accountability, unpredictable response intervals, and a total absence of real-time progress visibility for the complainant. To systematically eradicate these operational blind spots, this research presents the development of a highly customized, web-based CMS Portal. Marketed internally as a "Fast, Transparent, and Secure Complaint Handling Platform," the software enforces a strict digital chain of custody. By mathematically limiting the lifecycle of any given complaint to a maximum of seven days and requiring cryptographic confirmation (via OTP) from the user before a case can be officially classified as resolved, the system fundamentally shifts administrative behavior from passive observation to proactive resolution.

II. LITERATURE REVIEW

The digitization of grievance redressal has recently shifted from basic ticketing software to highly specialized, rule-bound web architectures. Previous empirical studies have demonstrated that transitioning to service-oriented, electronic complaint platforms drastically minimizes end-user

dissatisfaction while simultaneously providing institutional management with actionable, data-driven feedback regarding their internal service quality.

However, a persistent vulnerability in contemporary digital systems is the unilateral power held by the resolver; administrators often close tickets prematurely without confirming that the underlying issue was successfully mitigated to the user's satisfaction. The CMS proposed in this paper explicitly targets this flaw. By decoupling the "Resolved" status submitted by the staff member from the final "Approved" status which requires independent OTP validation from the student this architecture introduces a novel, user-centric fail-safe into the standard grievance lifecycle.

III. SYSTEM ARCHITECTURE AND DESIGN

The CMS is constructed upon a secure, multi-tiered web architecture designed to isolate user privileges while maintaining a unified, centralized database for all institutional grievances.

➤ Authentication and 'Secret Reference Key' Protocol

To safeguard the portal against external spam and unauthorized access, the authentication matrix employs a rigid Role-Based Access Control (RBAC) mechanism. During account creation via the Sign-Up interface, a prospective user must first select their specific identity type from a primary dropdown menu, restricted exclusively to "Student," "Employee," or "Admin."

Crucially, the creation of a new account is physically impossible without the possession of a predefined "Secret Reference Number." This alphanumeric string acts as a

secondary layer of institutional verification, ensuring that only actively enrolled students or officially recognized staff members can interface with the internal portal.

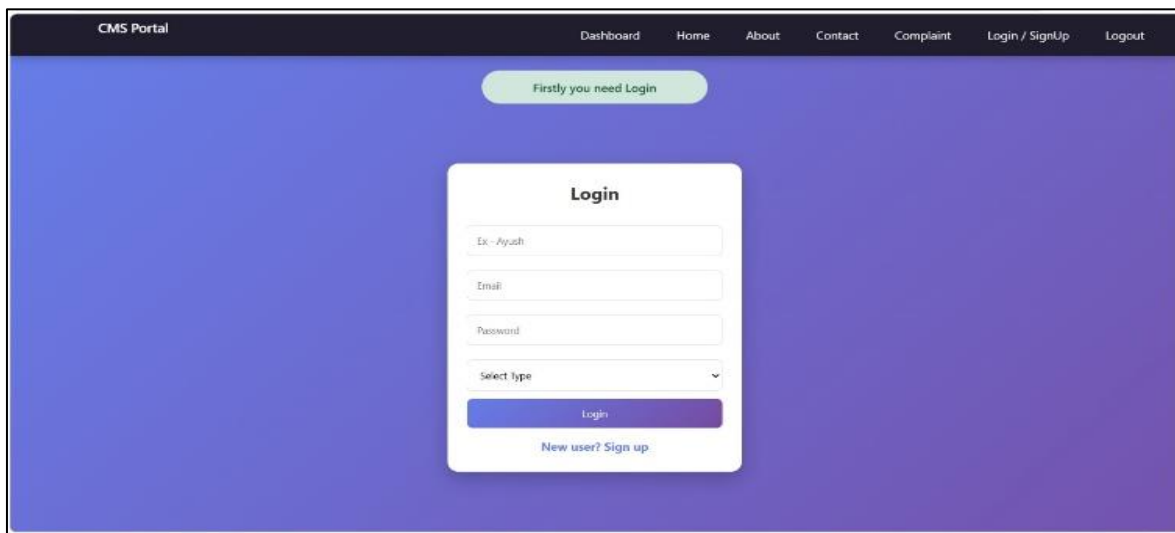


Fig 1 The Unified CMS Portal Authentication Interface Demonstrating the Role-Based Access Control Dropdown and Secret Reference Key Requirement.

➤ *The Grievance Lifecycle Matrix*

To eliminate procedural ambiguity, every submitted complaint is bound to an unalterable chronological sequence:

- Created: The complaint payload is successfully injected into the database.
- Pending: The data awaits initial triage by the assigned personnel.
- In Progress: Active remediation efforts are underway by the designated staff member.
- Resolved: The technical or administrative work is completed, triggering the final user-verification phase.

IV. CORE FEATURES AND IMPLEMENTATION

The digital framework integrates several specialized operational modules, meticulously designed to track variables ranging from the user's academic department to the exact temporal decay of the resolution window.

➤ *Granular Complaint Generation*

When initiating a new grievance, users bypass generic text boxes in favor of a highly structured submission form. The system requires the input of specific demographic and routing data, including the "Student Department" (e.g., CSE), "Student Section" (e.g., A), and "Mobile Number." Most importantly, the user utilizes an "Assign Resolver" dropdown to directly route the ticket to a specific, relevant faculty or staff member (e.g., "Ayush - Computer science"), establishing an immediate, undeniable chain of responsibility.

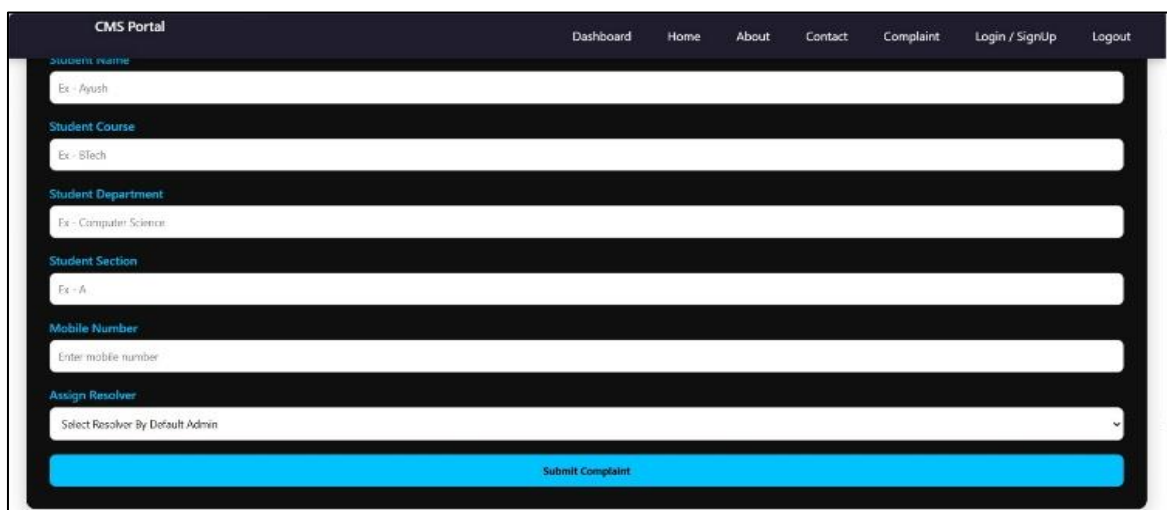


Fig 2 The Complaint Submission Interface Detailing Required Fields Such as Student Department, Section, and the Specific Assigned Resolver.

➤ *7-Day Automated Escalation*

To permanently resolve the issue of ticket stagnation, the application logic enforces a mandatory 7-Day Resolution policy. The moment a complaint is generated, a countdown timer is initiated. If the assigned resolver fails to rectify the situation before this seven-day temporal threshold expires, a background chain-processing algorithm automatically escalates the ticket directly to the overarching Admin accounts, bypassing the unresponsive staff member entirely.

➤ *Cryptographic Closure Via OTP*

The most critical innovation of this platform is the OTP Verification System. When a staff member alters a complaint's status to "Resolved," the system does not immediately close

the ticket. Instead, it automatically dispatches a unique One-Time Password to the complainant's registered email address. The complainant must manually supply this OTP to the resolver. The system database will only flag the complaint as fully "Approved" and finalized once this exact cryptographic match is verified, guaranteeing absolute user consensus.

➤ *Analytical Dashboards and Smart Filtering*

All users are granted access to a "Your Total Complaints" data grid, which serves as a personalized, real-time audit trail. To manage high volumes of data, the interface is equipped with a Smart Filter dropdown, allowing users to instantly isolate tickets based on parameters such as "All," "Solved," "Unsolved," and "Delay."

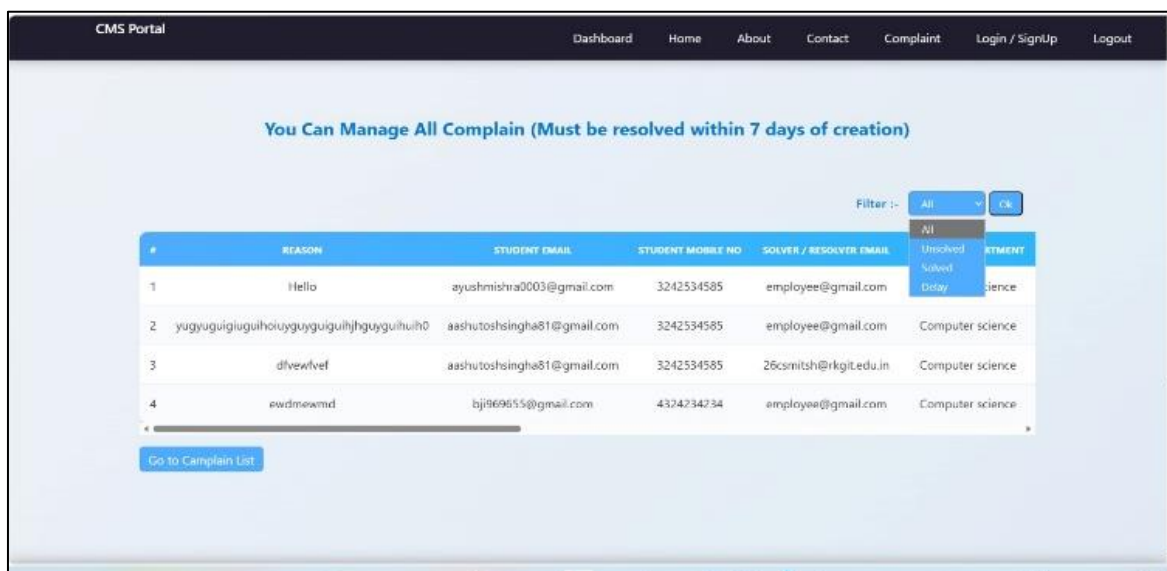


Fig 3 The Analytical User Dashboard Featuring Complaint History, Real-Time Status Tracking, Remaining Day Countdown, and Smart Filtering Capabilities

V. RESULTS AND DISCUSSION

The deployment of this web-based infrastructure fundamentally re-engineers how an institution processes internal friction. By replacing ambiguous, manual updates with automated email notifications triggered at every lifecycle phase (Signup, Creation, Status Update, Final Resolution), the cognitive load on both students and administrators is drastically reduced.

Table 1 provides a direct analytical breakdown of the internal data grid parameters utilized by the CMS to monitor active grievances.

As demonstrated by the architectural constraints outlined in Table 1, the system successfully strips away the administrative ambiguity that plagues traditional grievance handling. The visual integration of the "Remaining Day" metric creates immediate urgency for the resolver, while the "Approved" column ensures that power remains balanced between the institution and the student.

Table 1 The Visual Integration of the "Remaining Day"

Metric Parameter	Operational Function	System Constraint
Solver / Resolver Email	Identifies the exact staff member accountable for the issue.	Assigned directly by the user during the creation phase.
Status	Tracks the real-time stage of the grievance (Created, Pending, In Progress, Resolved).	Immutable without authorized action.
Remaining Day	A dynamic countdown of the mandatory 7-day resolution window.	Triggers automatic administrative escalation upon expiration.
Action	Dictates who is authorized to modify the complaint payload.	Strictly restricted via RBAC (e.g., displaying "Student Not Allowed").
Approved	Verifies final closure through user OTP validation.	Remains "Not Resolved" until the user's email OTP is processed.

VI. CONCLUSION

The designed Complaint Management System offers a highly optimized, digitally secure methodology for processing institutional grievances. By mandating the use of Secret Reference Keys for account generation, enforcing strict 7-day escalation protocols, and utilizing a user-driven OTP verification system for final ticket closure, the software eliminates the primary inefficiencies of legacy complaint handling. The resulting platform ensures that all student and staff voices are not only recorded but algorithmically guaranteed a timely and transparent resolution. Future iterations of this software could integrate natural language processing to automatically categorize complaint text and predict optimal resolver assignments based on historical data trends.

REFERENCES

- [1]. Y. Adekunle, U. R. Okoro, A. A. Abdulwahab, and A. N. Anya, "Students Complaints Management System," *American Scientific Research Journal for Engineering, Technology, and Sciences*, vol. 00, no. 1, pp. 1-12, 2026.
- [2]. Nandini, H. S. Mangala, C. G. Aishwarya, J. Abigail Judith, H. L. Deeksha, and C. Gowda Disha, "A Literature Review of a Web-Based Complaint Management System," *International Journal of Computer Application (IJCA)*, vol. 15, no. 3, pp. 71-74, 2025.
- [3]. Alifat Fabiyi, A. Biodun Olorunlomerue, A. Oluwatobi Oluwatosin, J. Ifeoma Ugwu, and T. Amosa Ramoni, "Web-based Campus Complaint Management System (WCCMS)," *International Journal of Computer Trends and Technology (IJCTT)*, vol. 70, no. 10, pp. 28-36, 2022.