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Review Of Student-Alumni Interactive Platform For Career Guidance And Networking

Dr. Rani M. Khandhare, Aastha A. Palaskar, Vedant S. Raut, Vikas S. Yadav, Kaushal S. Charthad

Department of Information Technology, PRMCEAM, Badnera, Maharashtra, 444701, India

ABSTRACT— An Alumni Management System plays a pivotal role in connecting past graduates with current students and the institution. This paper, developed using the Python Flask framework with SQLite database, provides a structured and interactive platform for seamless communication and management between colleges, students, and alumni. The system ensures that administrators can monitor and manage all profiles, batches, and branches effectively, enabling them to send targeted communications. Students benefit from browsing and searching alumni profiles based on batch, department, or company, thereby gaining valuable insights and guidance for career growth. Alumni, on the other hand, can interact with students through controlled communication channels, update their profiles after verification, and choose their privacy settings. With robust authentication measures like ERP-based login, email verification, and one-time user verification, the system ensures secure access. This paper bridges the gap between alumni and students, fostering mentorship, collaboration, and networking. Ultimately, it aims to create a sustainable ecosystem where students gain career guidance, alumni contribute back to their alma mater, and colleges maintain a thriving network of professionals connected to their institution.

Keywords - Alumni Management System, Python Flask Framework, SQLite Database, Authentication and Security, Student–Alumni Networking.

I. INTRODUCTION

Educational institutions often face challenges in maintaining long-term engagement with their alumni. Traditional methods such as occasional alumni meetups or static web pages fail to establish continuous interaction. In today's digital era, where networking is vital, an efficient and dynamic platform is necessary to connect alumni with students and administrators. The Alumni Management System (AMS) is designed to address this need by creating a centralized, interactive, and secure system.

This paper leverages the Flask framework in Python with a SQLite database, ensuring lightweight yet powerful backend support. The system incorporates three primary user views: Admin, Student, and Alumni. The Admin acts as a moderator, capable of managing user profiles, batches, and branches, while also broadcasting announcements to selected groups. Students can explore alumni profiles by filters such as batch, branch, and company, and initiate communication through requests. Alumni are given control over their profiles and can accept or reject student communication requests, maintaining professional boundaries.

The platform further integrates chatbot support for students, providing instant guidance and enhancing user experience. Security is a core feature, with ERP-based login, verified email authentication, and password protection ensuring that only authorized users access the system. This interactive system thus fosters continuous collaboration, mentorship opportunities, and networking between alumni and students.

By implementing AMS, institutions not only strengthen alumni relations but also create a knowledge-sharing ecosystem. This bridge between alumni and students helps in mentorship, internships, job opportunities, and overall career growth. The Alumni Management System is, therefore, a step toward modernizing alumni-student engagement in higher education.

II. LITERATURE REVIEW

- **Web Development**

Pranav Shende et al. "Intelligent Platform to Interconnect Alumni and Students for Educational Institutes". This research introduces an AL-driven alumni-student platform that uses smart matchmaking, event management, and a "give-and-take" model to incentivize alumni. It leverages modern technologies like Node.js, React, MongoDB, and cloud services. The platform includes role-based dashboards, secure login, and LMS integration. Evaluations highlight its strong architecture, security and relevance with future scope mobile apps and gamification to enhance engagement further. [1]

Leena Patil et al., "A Bridging Platform for Students and their Alumni using a Social Media Platform." (2025) This paper proposes a web-based platform modelled on social media to improve student–alumni interaction. It emphasizes real-time communication, event sharing, and networking features, enabling alumni to actively participate in institutional activities while helping students access mentorship and opportunities.[2]

Sarah Mae Rubejes-Silva "Bridging the Gap Between Universities and Alumni." This study presents the Alumni Tracer and Engagement Hub; a web and mobile platform developed with a focus on user experience. It was evaluated using McCall's Software Quality Model and ISO/IEC 25010, showing high scores in usability, security and code clarity. The platform facilitates profile updates, events and communication. Recommendations include UI improvements and better use awareness around data privacy. It stands out for its dual technical and user- centric evaluation approach.[6]

Parth P. Sawai "Alumni Connect Hub: A Comprehensive Alumni Management System." (2024) This paper introduces Alumni Connect Hub, a modern web-based platform that connects alumni, students, and faculty in a centralized digital space. Unlike fragmented or manual approaches (spreadsheets, email groups, etc.), the Hub offers a structured way to manage alumni engagement.[7]

Abhishek Barkade et al., "AlmaHub: An Engaging, Supportive Alumni–Students Interaction Platform".(2023) AlmaHub introduces a supportive web portal designed to strengthen alumni–student bonds. The platform integrates AI features for better interaction, discussion forums, virtual meetups, and expert talks. It focuses on making alumni engagement more interactive, secure, and beneficial for students' career growth.[11]

Leonard L. Occiano "Web-based Alumni Management Information System: Its Efficiency and Usability in Reaching out to Graduates."(2023) This study presents the design and implementation of a web-based information system specifically for managing alumni data and interactions. It focuses more on efficiency, usability, and record management compared to modern AI-driven systems.[12]

Md. Habibullah Belali et al. "An Enhanced Communication Platform Between Alumni and Existing Students".This paper proposes a smart web application to strengthen communication between alumni and current students using features like messaging, job posting and Q&A forums. Built with PHP, MySQL, and JavaScript, the platform offers admin moderation and role-based access. It emphasizes creating social networking-style connections for mentorship and career guidance. The system received positive user feedback for being easy to use and technically sound, although it lacks mobile support and advanced features.[14]

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
1	Intelligent Platform to Interconnect Alumni and Student for Educational Institutes	Pranav Shende et al.	2025	AI/ML, Web Systems	AI matchmaking, React + Node + MongoDB, LMS and chatbot	AI matching, fake profile detection, JWT Authentication	Secure, scalable, future-ready with mobile & gamification scope

2	A Bridging Platform for Students and their Alumni using a Social Media Platform	Leena Patil et al.	2025	Web Development	Social media–based web portal, real-time interaction	Basic social media integration	Good for networking, but lacks AI and structured mentorship

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
3	Bridging the Gap Between Universities and Alumni	Sarah Mae Rubejes-Silva	2024	Software Evaluation, Alumni Engagement	User-centered design, McCall's & ISO/IEC 25010 evaluation	None (focus on usability/security models)	High usability & security; UI needs improvement
4	Alumni Connect Hub: A Comprehensive Alumni Management System	Parth P. Sawai	2024	Web Development	System Architecture, Modules	None	Connect with Alumni's
5	Alma Hub: An Engaging, Supportive Alumni–Students Interaction Platform	Abhishek Barkade et al.	2023	Web Development	Web portal, AI features, discussion forums, virtual meetups, expert talks	AI Matching, Real-time DB	Secure and interactive platform, strong for engagement
6	Web Based Alumni Management system: Its Efficiency and usability is reaching	Leonard L. Occiano	2023	Web Development	Node js, React, MongoDB	None	Manages Alumni's Information and their Data
7	An Enhanced Communication Platform Between	Md. Habibullah Belali et al.	2022	Web Development Alumni	Smat web app using PHP, JS, MySQL with admin, alumni and student roles	Manual moderation, role-based control	Usable, modular; lacks AI and mobile app features

Table 1 :Web Development

● Mobile App Development (Realtime Chat)

Thomas Bieger et al., "The Role of Alumni in the Development of their University" (2025) This study highlights the importance of alumni contributions in academic and institutional development. It proposes a mobile application using Kotlin/Java, Node.js/React, and MySQL to allow alumni to share knowledge, provide mentorship, and support events. The app encourages alumni participation, improving student quality and institutional growth.[5]

S. Gupta et al., "Gamified Mobile App to Boost Alumni Participation in Institutional Development". This paper discusses involvement in fundraising, event participation, and mentorship. Features include leaderboards, achievement badges, and donation tracking. Built using Flutter and Firebase, the app was piloted in three universities and showed a 40% rise in alumni engagement metrics. Researchers recommend the integration of social media APIs and alumni challenges for continued growth. [8]

IRJET Team "Alumni-Student Interactive Messaging." This paper presents an Android-based chat application that enables real-time communication between students, alumni & teachers using Google Firebase. The system supports messaging through text, audio, video and PDF's and includes chatrooms, filters, ratings, and notifications via Firebase Cloud for others based on skill, company or tech stack. It uses Firebase Firestore for login/authentication, Realtime DB for messages and storage for multimedia. The app improves engagement, especially in institutions with weak alumni networks Future work includes gamification, faster file uploads and smarter ML-based onboarding. [15]

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
1	The Role of Alumni in the Development of their University	Thomas Bieger	2025	Mobile App Development	Mobile app with Kotlin/Java, Node.js, React, MySQL	Mobile + Web Hybrid Stack	Encourages alumni participation, supports institutional growth
2	Gamified Mobile App to Boost Alumni Participation in Institutional Development	S. Gupta et al.	2024	Mobile App Development	Flutter, Firebase, gamification (leaderboards, badges, donation tracking)	Gamification Algorithms (Scoring, Reward System)	Boosts alumni participation by 40%, effective for fundraising & events
3	Alumni-Student Interactive Messaging	IRJET Team	2022	Mobile App Development	Firebase-based real-time chat app	Realtime DB, FCM, filters	Effective for direct engagement, plans ML/ gamification

Table 2 : Mobile App Development

● Educational Research

Rahmawati et al. "Strengthening the Role of Alumni in Improving Student Quality". This study explores how alumni contribute to improving both the quality of students at an Islamic boarding school (pesantren) in Indonesia. Using a Participatory Action Research (PAR) approach, the authors engaged alumni, students and administration in mentoring, skill-building and recruitment programs. The research shows that 90% of new admissions were due to referrals, proving their critical role in promotion and outreach. Alumni also supported financial needs and skill-based mentoring. However, lack of communications, structured networks and geographical distance were found to be major harriers. The study recommends digital platforms and formal alumni organizations to overcome these challenges and ensure long-term institutional growth.[3]

Sr. No	Paper Name	Author Name	Published	Domain	Methodology	Algorithm	Our Finding

			Year				
1	Strengthening the Role of Alumni in Improving Student Quality	Rahmawati et al.	2025	Educational Research	Participatory Action Research (PAR) with real student-alumni mentoring	None	90% new admissions via alumni; recommends structured digital platform

Table 3 : Educational Research

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
1	Blockchain-Based System for Secure Alumni Verification and Networking	A. Kumar et al.	2023	Blockchain, Alumni Verification	Hyperledger Fabric & IPFS: credential access management	Blockchain ledger, distributed storage	Highly secure, tamper-proof scalable: adoption hindered by infra cost

Table 4 : Blockchain Technology

- **Blockchain Technology**

A. Kumar et al., "A Blockchain-Based System for Secure Alumni Verification and Networking". This paper presents a blockchain-powered platform that enables secure verification of alumni credentials while facilitating decentralized networking. Built using Hyperledger Fabric and IPFS, the system ensures data immutability, reducing fraud in academic and professional verification processes. Alumni can control access to their credentials and connect through verified nodes. Evaluations show enhanced data security, trust, and scalability, though adoption challenges remain due to infrastructure costs. [13]

- **Data Analytics**

L. Chen et al., "Integrating Alumni Feedback into Curriculum Design: A Data-Driven Approach." This study examines how alumni feedback can be incorporated into academic curriculum reforms through structured surveys and analytics dashboards. Using Python-based analytics, sentiment analysis, and curriculum mapping tools, the paper demonstrates how alumni experiences in the workforce can guide course relevance and industry alignment. The platform improved the responsiveness of academic departments to industry changes and fostered stronger alumni engagement. [9]

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
1	Integrating Alumni Feedback into Curriculum Design: A Data-DrivenApproach	L. Chen et al.	2024	Data Analytics, Curriculum Development	Surveys, sentiment analysis, curriculum mapping	Python-based sentiment analysis	Improved academic relevance: better industry alignment

Table 5 : Data Analytics

- **Virtual Reality (VR) Applications**

J. Roberts et al., "Virtual Reality (VR) for Alumni-Student Career Mentorship". This paper proposes the use of immersive VR environments to simulate career mentoring sessions between alumni and students. Built with Unity and integrated with Oculus devices, the platform recreates career fairs, mock interviews, and collaborative projects in 3D. Early trials indicated higher student engagement and deeper interaction quality compared to traditional video calls. Future developments will explore AI-driven avatars for alumni with limited availability. [10]

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
1	Virtual Reality (VR) Alumni-Student Career Mentorship	J. Roberts et al.	2024	VR, Career Guidance	Surveys, sentiment analysis, curriculum mapping	Unity, Oculus integration, 3D care simulations	Higher engagement; promising AI avatar future scope

Table 6: Virtual Reality (VR) Applications

- **Artificial Intelligence (AI) Systems**

D. Williams et al., "AI-Powered Career Pathway Recommendation System Using Alumni Trajectories". This research develops an AI recommendation engine that suggests career paths to current students based on alumni success data. Using machine learning models trained on alumni job titles, industries, and growth rates, the system tailors personalized suggestions and skill gap analyses. Deployed in a university's career services platform, the tool improved job placement accuracy by 30% and reduced decision-making stress among final-year students. [4]

Sr. No	Paper Name	Author Name	Published Year	Domain	Methodology	Algorithm	Our Finding
1	AI-Powered Career Pathway Recommendation System Using Alumni Trajectories	D. Williams et al.	2025	Al, Career Recommend ation	Machine learning on alumni success data	ML-based predictions, skill gap analysis.	+30 % placement accuracy: lower decision stress

Table 7: Artificial Intelligence (AI) System

III. MOTIVATION OF THE STUDY

The motivation for developing the Alumni–Student Interactive Platform arises from the growing need for structured and continuous alumni engagement in educational institutions. Alumni play an important role as mentors, career guides, and industry connectors, yet existing engagement methods such as annual reunions, social media groups, or static portals fail to provide meaningful and long-term interaction. These methods are often unorganized, lack authentication, and cannot ensure professional networking.

Students frequently struggle to reach the right alumni for career guidance, internships, or job opportunities. At the same time, alumni often lack recognition or structured channels to contribute effectively to their alma mater. Institutions too face difficulties in tracking alumni achievements and building a strong alumni network that adds value to students and the institution alike.

- **SYSTEM ARCHITECTURE DIAGRAM**

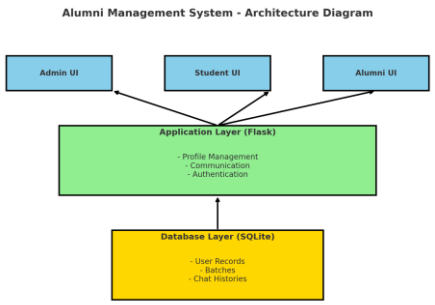

Fig. 1 Shows the System Architecture Diagram

The architecture follows a three-tier design:

1] Presentation Layer – User interfaces for Admin, Student, and Alumni.

2] Application Layer – Flask-based logic handling communication requests, profile updates, and admin operations.

3] Database Layer – SQLite managing all user records, batches, and chat histories.

4] Testing is conducted iteratively, ensuring system reliability and identifying bugs. The final deployment integrates chatbot support to provide instant guidance to student.

- **Block Diagram**

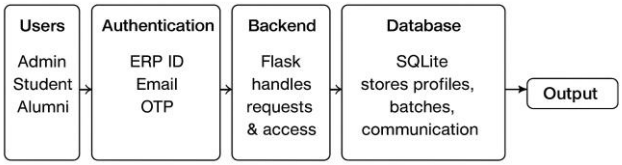

Fig. 2 Shows the Block Diagram of the System

Block Diagram Description

• Users – The system has three types of users: Admin, Student, and Alumni.

• Authentication – Secure login is ensured through ERP ID, email verification, and OTP validation.

• Backend (Flask) – Handles user requests, role-based access, and system logic.

• Database (SQLite) – Stores alumni profiles, student data, batches, branches, and communication records.

• Admin Features – Manage profiles, batches, branches, and send announcements.

• Student Features – Search alumni by batch/branch/company and request guidance.

• Alumni Features – Update profiles, manage privacy, and connect with students.

• Output – Provides secure communication, career guidance, and networking.

- **Flow Chart**

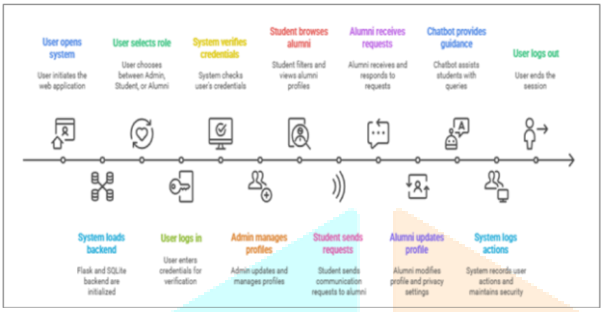

Fig. 3 Flow Chart of the Approach

Working

The Alumni Management System works in a simple and user-friendly flow, starting with role-based registration where users sign up as students or alumni using their ERP ID and email. After login, students verify their email and set up their profile with academic and personal details. Once inside the dashboard, students can explore alumni profiles, view job opportunities posted by alumni, and send message requests to connect or apply for jobs. Alumni, on the other hand, can manage their profiles, post job openings, and accept or reject communication requests from students. The admin plays a central role by managing user data, monitoring activities, and sending important announcements that are also delivered via email. Additionally, an AI chatbot is integrated to assist users with queries related to academics and careers. Overall, the system creates a smooth and secure interaction between students, alumni, and administrators, making networking and communication more effective and organized.

IV. IMPLEMENTATION

Step 1 : Admin Dashboard

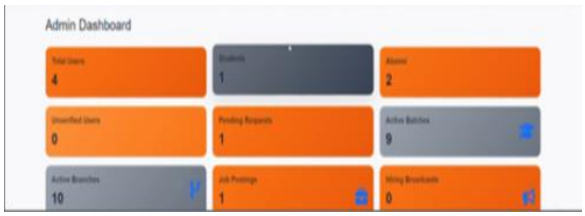

Fig. 4 Shows the Admin Dashboard

The admin dashboard provides a centralized interface for managing the entire system. It allows the administrator to monitor user activities, manage student and alumni records, and control system operations. The admin can approve or reject user registrations, create events, and send announcements to selected groups. This module ensures smooth functioning and maintains the overall integrity of the platform.

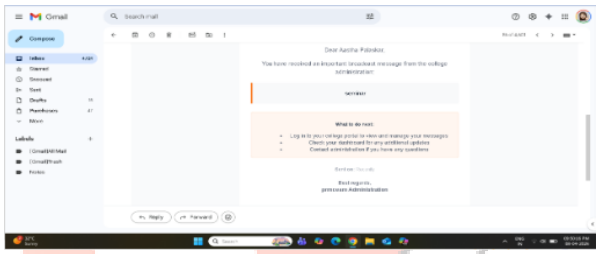

Fig. 5 Shows the Received Email

Whenever the admin posts a message, it is automatically delivered to the students through email, ensuring timely communication.

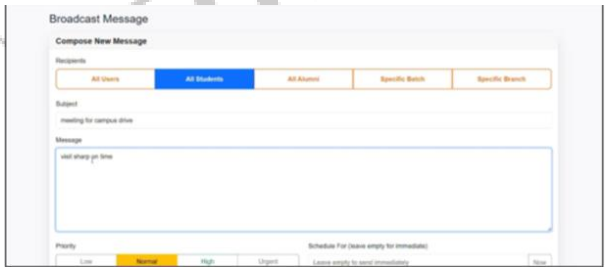

Fig. 6 Shows the Broadcast Message Interface

Admin can post messages to all users or to all students or to all alumni or to a specific batch or a specific branch. Messages can be viewed by students/users within the system.

Step 2: Alumni Dashboard

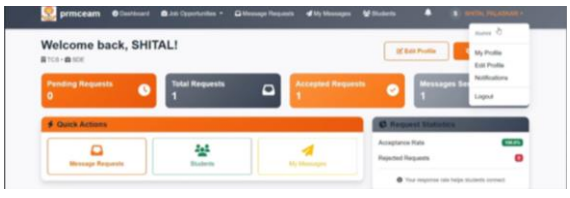

Fig. 7 Shows the Alumni Dashboard

Alumni can login using ERP ID and password which will be redirected to the dashboard. If the user forgets the password then they can reset the password by entering OTP which will send to the registered email address. Alumni can manage pending requests, total requests, accepted requests and messages sent by the student on posted job opportunities. It also displays request statistics in percentage. Alumni can edit their profile.

Step 3: Student Dashboard

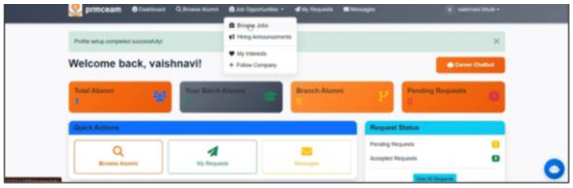

Fig. 8 Shows the Student Dashboard

After profile setup, the student is redirected to a dashboard which displays total number of alumni, batch mate alumni, branch alumni, pending request, request status. Student can view recent message post by admin. It has option "Job Opportunities", which has option of "Browse Job". Alumni can post any job opportunity which can be viewed by student in the "Browse Job" option.

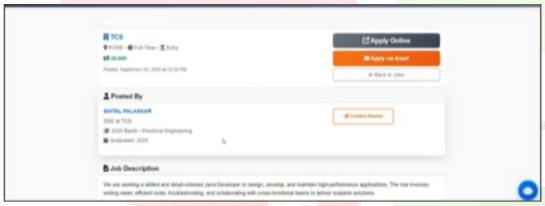

Fig. 9 Shows the Job Opportunity Interface

Alumni can post job opportunities along with the details of vacancy which includes company name, location, salary, date & time at which it is posted. It also displays the name of alumni, designation, job description, company name in which he/she is working. Students can apply online for the job via link or mail mentioned there.

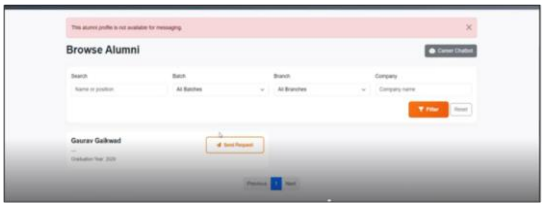

Fig. 11 Shows the Browse Alumni Interface

This interface allows students to browse and search for alumni based on various filters such as name, batch, branch, and company. The system displays alumni profiles with basic details, including name and graduation year. Students can send connection or message requests using the "Send Request" option. Additionally, the interface may restrict messaging if the alumni has disabled profile visibility, ensuring privacy control.

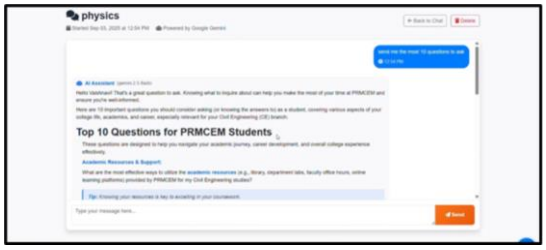

Fig. 10 Shows the AI Chatbot Assistant

Users can ask any question related to academics, career, internship opportunity, etc., using AI Chatbot.

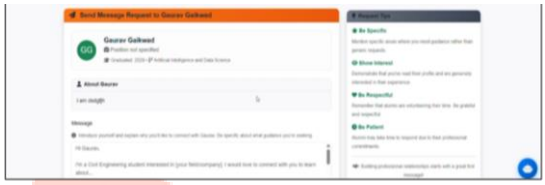

Fig. 11 Shows the Message Request Interface

Students can send message requests to alumni or jobs posted by alumni. He/she can send a message in description about interest in the job. Then the alumni can accept or reject the request.

V. CONCLUSION

The Alumni Management System bridges the existing gap between students, alumni, and administrators through a secure, interactive, and efficient digital platform. By integrating features such as profile management, structured communication, chatbot guidance, and authentication, the system fosters continuous engagement and professional networking. It ensures that students benefit from alumni mentorship, alumni remain connected to their alma mater, and administrators can manage data effectively. With lightweight implementation using Flask and SQLite, this paper is both scalable and cost-efficient. Ultimately, the system strengthens institutional ties, enabling a long-lasting and productive alumni-student relationship.

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