Interview Prep: A Self-Assessment Model

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Abstract — In the competitive landscape of modern job markets, interview readiness plays a critical role in determining the success of students transitioning into professional roles. However, many candidates face significant challenges in preparing effectively due to a lack of personalized guidance and relevant practice. Generic preparation resources often fail to address individual strengths, weaknesses, and job- role alignment, leading to uncertainty, low confidence, and underperformance. To address this gap, we propose an AI-powered self-assessment platform designed to assist students in preparing for job interviews through intelligent analysis of their resumes in comparison to job descriptions. Leveraging the capabilities of the LLaMA 8B large language model integrated with GROQ AI, our system rapidly computes a relevance score and generates a set of personalized interview questions tailored to each user's resume and the specified job role. Additional functionalities include chat history retention for tracking previous sessions, enabling continuous learning, and the implementation of natural language processing techniques for deeper analysis. The system also stores user interaction data securely in a MySQL database while offering a seamless experience through a Flask-based backend. This innovative approach not only helps users understand their job fit and likely interview content but also prepares them mentally and strategically by focusing on areas that need improvement. Ultimately, this platform aims to foster a more confident, well-prepared generation of job seekers by offering a smart, efficient, and tailored mock interview experience.

Keywords: AI Interview Preparation, Personalized Question Generation, LLaMA 8B, Natural Language Processing, GROQ AI, Self-Assessment System, MySQL, PDF Text Extraction

I. INTRODUCTION

Preparing effectively for job interviews is essential for students and job seekers aiming to secure employment. Traditional approaches like mock interviews and generic question banks often lack personalization and scalability. Recent advances in artificial intelligence (AI) offer more efficient and tailored solutions for interview readiness. This paper presents an AI-powered self-assessment platform that analyzes a user's resume and a job description to generate personalized interview questions and compute a relevance score. The system utilizes the LLaMA 8B model via GROQ AI for natural language understanding and operates through a secure, user-authenticated web interface. Unlike other systems that incorporate emotion recognition or speech analysis [1], this solution focuses solely on resume-job alignment and question generation using document analysis. Comparable systems have explored mock interview simulations and AI-generated feedback [2], [5], but our approach emphasizes efficient, personalized preparation through static input analysis. This lightweight, text-based system is suitable for use by placement cells and training institutes, aiming to improve interview preparedness through rapid, AI-driven feedback.

II. PROBLEM STATEMENT:

In today's competitive job market, students and job seekers often struggle to adequately prepare for interviews, facing challenges in obtaining personalized, role-specific feedback. Traditional methods, such as generic mock interviews and standard question banks, fail to align interview preparation with an individual's unique qualifications, experiences, and the specific demands of the job role they are targeting. These one-size-fits-all approaches lead to a lack of focus on key areas of improvement, reducing confidence and hindering interview performance. There is a need for a more personalized, scalable, and efficient solution to assist candidates in preparing for interviews by aligning their resumes with job descriptions and offering tailored feedback. Existing systems that incorporate AI in interview preparation either focus on generic simulations or on analyzing emotional cues and speech patterns, but few provide intelligent, resume-based question generation and personalized relevance scoring. This research addresses this gap by proposing an AI-powered self-assessment platform that combines resume analysis, job description alignment, and tailored interview question generation, aimed at improving job readiness and confidence for students and job seekers.

III. PROPOSED SYSTEM:

The proposed system is an AI-powered self- assessment platform designed to assist students in preparing for job interviews by analyzing their resumes against specific job descriptions. At its core, the system leverages the LLaMA 8B language model hosted via GROQ AI for rapid, low-latency natural language processing. Users interact with a web-based interface where they upload their resumes and input the desired job description. These inputs are processed by a Flask backend, which formats them into a structured prompt and forwards the request to the GROQ API. GROQ, optimized for transformer models like LLaMA, executes the LLaMA 8B model in real-time to generate two key outputs: a relevance score quantifying how well the user's resume aligns with the job description, and a set of personalized interview questions tailored to the candidate's profile. The results are then returned to the backend, stored in a MySQL database, and displayed to the user through the interface. This architecture ensures secure, efficient, and scalable performance, while also enabling the retention of session history to support continuous learning and iterative self-improvement. The integration of LLaMA 8B's deep language understanding and GROQ's high-speed inference infrastructure makes this system a powerful tool for interview preparation.

IV. OVERVIEW:

A. GROQ AI:

It is a high-performance inference engine designed to run large language models (LLMs) with ultra- low latency. It uses a specialized tensor streaming processor (TSP) that delivers deterministic performance, allowing for rapid execution of complex models without the traditional bottlenecks of general-purpose GPUs. GROQ is particularly optimized for workloads involving transformer- based models like LLaMA.

B. LLaMA 8B (Large Language Model Meta AI):

It is a transformer-based generative language model developed by Meta AI. With 8 billion parameters, LLaMA 8B balances high performance and manageable compute requirements, making it ideal for applications requiring powerful yet efficient language understanding and generation capabilities.

C. Relationship Between GROQ and LLaMA 8B:

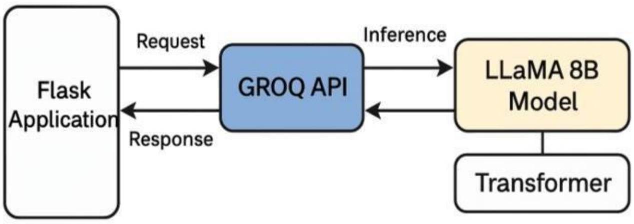

Fig. 1: Architecture and Communication Flow between GROQ AI and LLaMA 8B

GROQ provides the inference infrastructure on which LLaMA 8B operates in real-time, as seen in Fig 1. While LLaMA 8B handles natural language processing tasks (like analyzing resumes and generating interview questions), GROQ ensures that these computations are performed rapidly and reliably. When integrated, GROQ runs the LLaMA model as a hosted API, enabling developers to send input prompts and receive results with minimal latency, thus enabling real-time applications like your AI-powered interview assistant platform. A transformer is a type of neural network architecture that was introduced in the 2017 paper "Attention Is All You Need" by Vaswani et al. It revolutionized natural language processing (NLP) by replacing older models like RNNs and LSTMs.

V. WORKING:

A. Basic Flow/High Level design of the system:

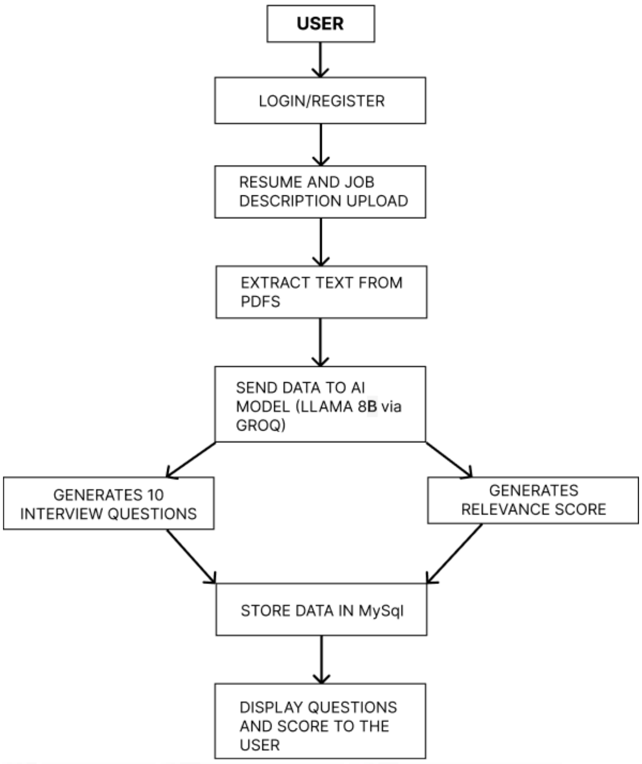

Fig. 2: Basic Flow of the system

The overall system flow begins with the user either logging in or registering on the platform. After authentication, the user uploads their resume and the relevant job description in PDF format. Marker- PDF is then used to extract textual content from these uploaded documents. Once the text extraction is complete, the data is sent to the LLaMA 8B language model via Groq's inference engine. The AI model processes the extracted information to generate two key outputs in parallel: a set of ten personalized interview questions and a calculated relevance score indicating how well the resume matches the job description. Both outputs are stored in a MySQL database. Finally, the generated questions and relevance score are displayed back to the user through the interface, enabling them to assess their interview preparedness based on personalized insights.

B. Marker PDF processing workflow;

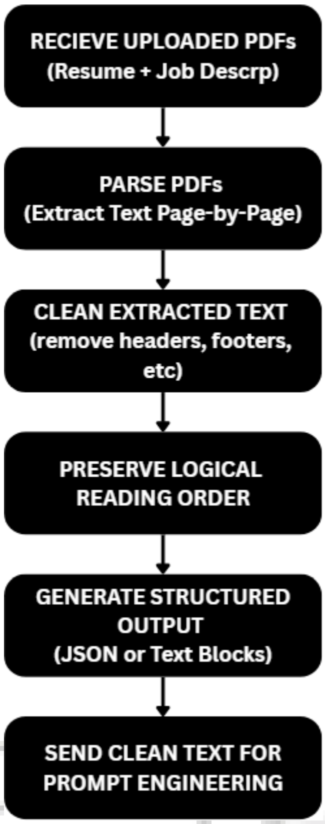

Fig. 3: Flow of Text Extraction and Preparation using marker-pdf

1) Receive Uploaded PDFs (Resume + Job Description): The system accepts user- uploaded PDF files containing their resume and a target job description.
2) Parse PDFs (Extract Text Page-by-Page): The marker-pdf tool processes each page, detecting and extracting visible text elements while keeping the reading sequence intact.
3) Clean Extracted Text: After extraction, the raw text is cleaned by removing noise like headers, footers, watermarks, and fixing any broken lines or formatting inconsistencies.
4) Preserve Logical Reading Order: Text blocks are arranged according to their visual layout on the page, ensuring the content flows naturally as intended by the original document.
5) Generate Structured Output (JSON or Text Blocks): The cleaned, ordered text is compiled into a structured format (usually JSON or clean text), making it easy to feed into the AI model.
6) Send Clean Text for Prompt Engineering: The final structured text from both the resume and job description is passed into the prompt sent to LLaMA 8B via Groq for further processing (scoring + question generation).

C. Groq Ai and Llama 8B Workflow:

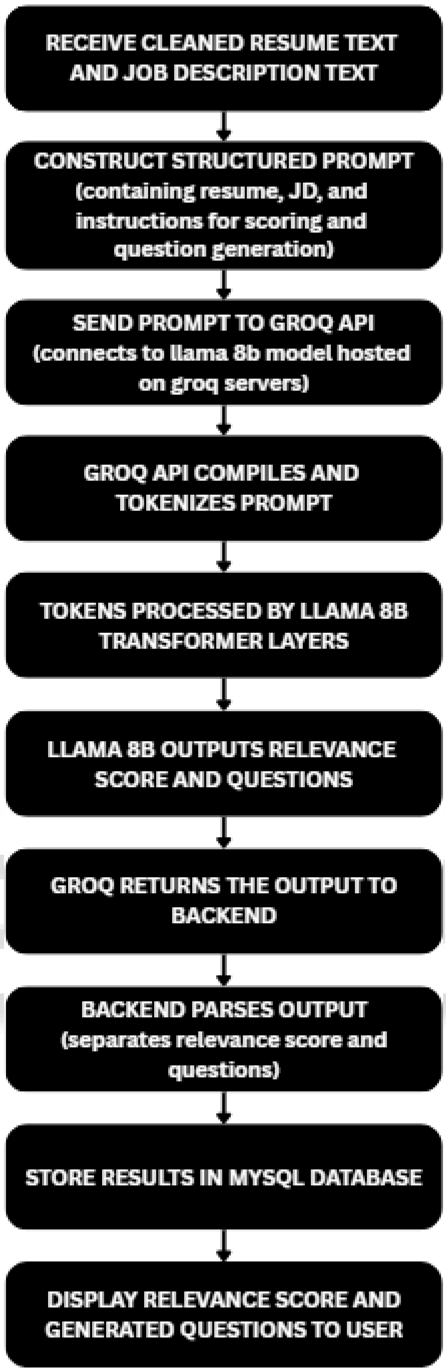

Fig. 4: Groq Ai and Llama 8B workflow

1) Receive Cleaned Resume Text and Job Description Text: The system collects the extracted and cleaned text data from the user's uploaded files.
2) Construct Structured Prompt: A formatted prompt is created, combining resume text, job description text, and specific model instructions.
3) Send Prompt to GROQ API: The structured prompt is sent over an API request to Groq's hosted LLaMA 8B model.
4) GROQ API Compiles and Tokenizes Prompt: Groq hardware compiles the input and breaks it into tokens suitable for LLaMA 8B processing

5) Tokens Processed by LLaMA 8B Transformer Layers: The tokenized input passes through multiple transformer layers for deep contextual understanding.
6) LLaMA 8B Outputs Relevance Score and Questions: The model generates a relevance score along with a set of customized interview questions.
7) GROQ Returns the Output to Backend: The generated response containing the score and questions is sent back to the backend server.
8) Backend Parses Output: The backend separates and organizes the relevance score and questions from the response.
9) Store Results in MySQL Database: The final parsed data is stored securely into the MySQL database linked with the user's session.
10) Display Relevance Score and Generated Questions to User: The platform presents the results on the user dashboard for review and preparation.

VI. SUMMARY:

In short:

- marker-pdf → extracts clean, structured text from PDF.
- GROQ → accelerates the LLaMA 8B model inference extremely fast.
- LLaMA 8B → deeply analyzes text and generates relevance score + questions based on learned semantic patterns.

VII. RESULTS:

1) User can register or login into the system:

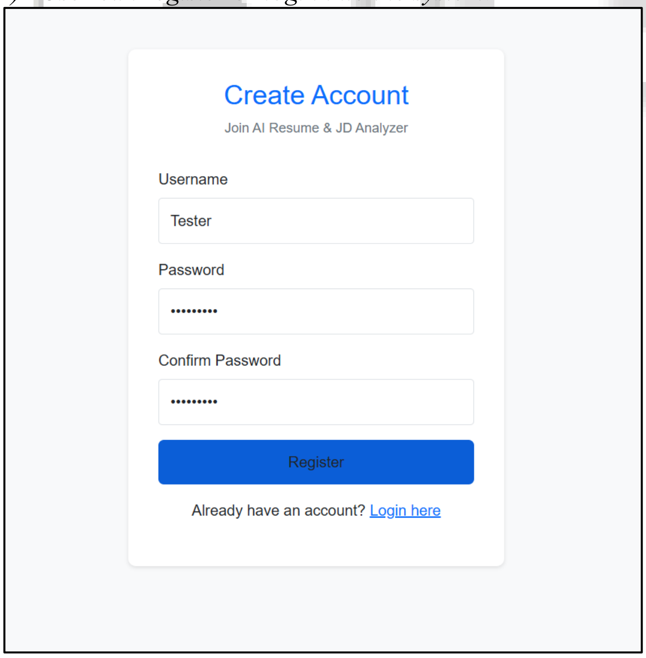

Fig. 5: Registration

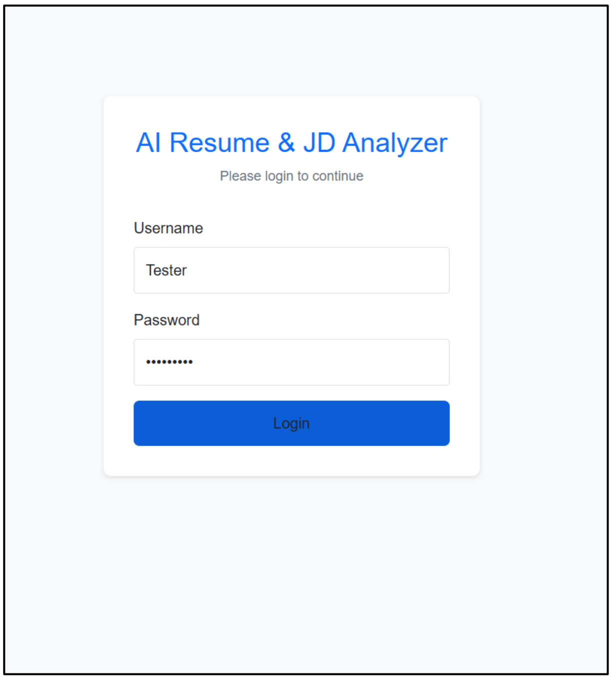

Fig. 6: Login

2) Here is where the user has to upload the Job description and Resume in pdf format:

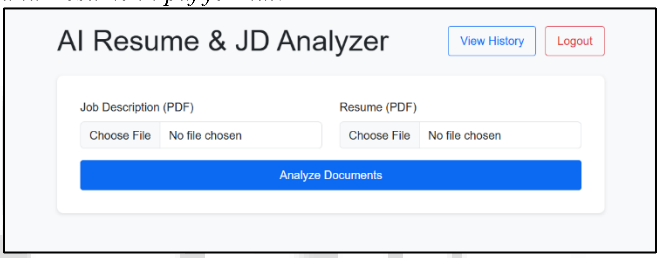

Fig. 7: Resume and Job Description Upload

3) Relevance Score and Relevance Analysis between the JD and Resume:

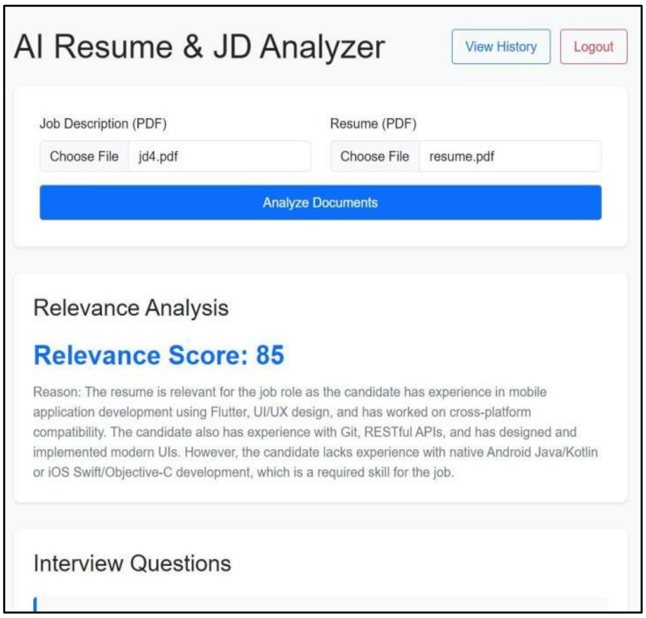

Fig. 8: Relevance Score & Analysis

4) 10 Interview Questions Generated considering the Job Description and Resume of the user.

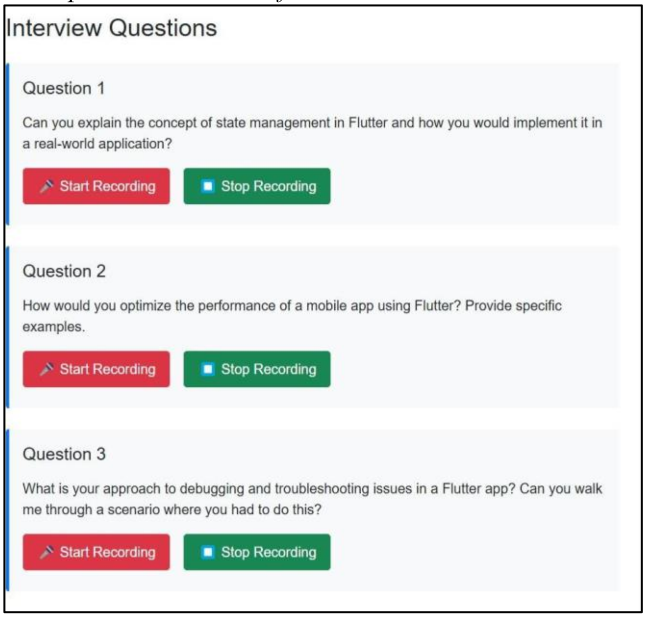

Fig. 9: Interview Questions

5) This is how the user records his answer and can replay it for self-assessment:

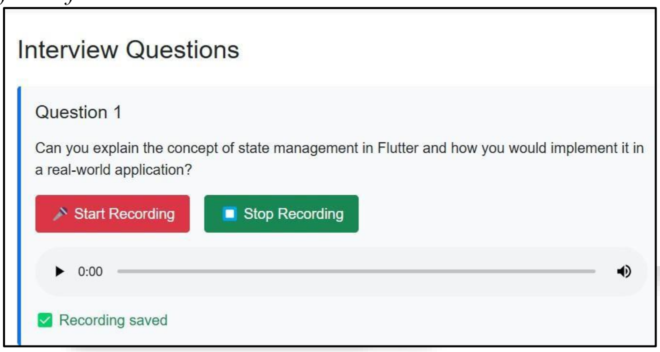

Fig. 10: User's Answers

6) History of the user's past JD uploads, relevance analysis and questions:

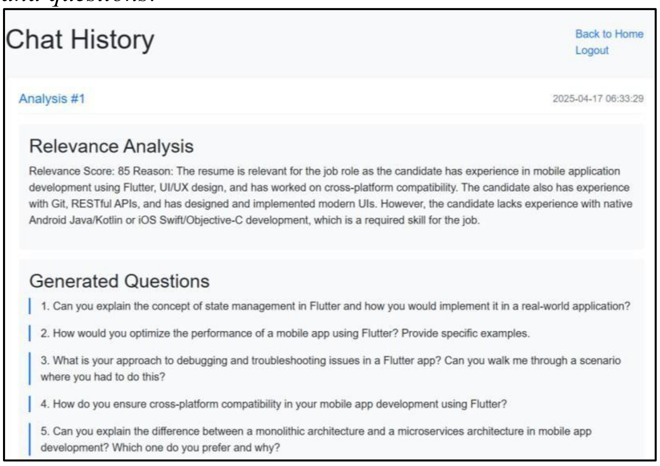

Fig. 11: Chat History

VIII. Conclusion:

This AI-powered self-assessment platform bridges a critical gap in modern job preparation by offering students a smart, efficient, and personalized way to evaluate their readiness for interviews. Unlike traditional, generic resources that often overlook individual strengths and weaknesses, this system empowers users to make precise, data-driven improvements by directly analyzing their resumes against specific job descriptions. Through personalized feedback, candidates can better understand how their profiles align with industry expectations, allowing them to tailor their preparation strategies effectively. Leveraging the LLaMA 8B model via GROQ AI ensures ultra-fast, highly accurate generation of relevance scores and interview questions, enabling users to anticipate real-world queries and approach interviews with greater clarity and confidence.

The project's robust architecture—built with a Flask-based backend, MySQL database for secure data storage, and enhanced by marker-pdf for efficient document parsing—ensures a seamless, scalable, and secure user experience. Complex processes such as resume parsing, text extraction, structured prompt generation, and result storage are streamlined to maintain high performance without sacrificing reliability. Moreover, the inclusion of chat history preservation supports continuous learning by allowing users to revisit previous sessions and monitor their progress over time. By thoughtfully integrating advanced AI capabilities with user-centric software design, the platform transforms traditional interview preparation into an adaptive, interactive, and empowering journey that builds both competence and communication skills.

In conclusion, this system stands as a highly practical and innovative solution to one of the most pressing challenges faced by students and job seekers today. It demonstrates that with the strategic application of cutting-edge technology, personalized learning and career readiness can be made both accessible and impactful, fostering a new generation of more confident, capable professionals.

IX. Future Scope:

A. Speech Confidence and Filler Word Analysis:

An advanced audio analysis module can be implemented to evaluate how confidently users speak during mock responses. By detecting the frequency of filler words such as "um," "uh," or "like," along with analyzing voice steadiness and hesitation patterns, the system can provide users with actionable feedback on their delivery and fluency. This would enable candidates to refine not only the content but also their communication style, aligning with techniques explored in filler word detection studies [3].

B. Emotion Detection Through Voice Tone and Sentiment Analysis:

Incorporating emotion recognition algorithms based on vocal tone, pitch modulation, and speech rhythm could help the system detect emotional states like anxiety, confidence, or enthusiasm. Providing real-time emotional insights would allow users to better understand how they are perceived during interviews, and to make adjustments to appear more composed and professional, building on concepts proposed in AI- based mock interview evaluators [2], [6].

C. Real-Time Mock Interview Mode with AI Feedback:

Introducing a live interview simulation mode would enable users to answer dynamically generated questions on the spot. The system could analyze responses in real time, offering immediate feedback on structure, clarity, delivery, and emotional cues, replicating the spontaneity and time pressure of actual interviews. Similar ideas have been explored in AI-driven interactive mock interview systems [7], [8], [9], and [10], highlighting the benefits of real-time, adaptive learning environments.

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