GENERAL CHAMPIONSHIP
TECH

ICICI Bank

AI/ML

HIGH PREP

audited by: dsg

Introduction

Enterprise Resource Planning (ERP) systems are critical tools for managing various business functions such as finance, supply chain, and human resources. However, the integration of APIs with ERP systems presents significant challenges due to their complexity, vendor-specific architectures, and lack of standardization. These issues hinder seamless communication between APIs and ERP platforms, resulting in time-consuming and costly development processes.

Problem Statement

APIs do not universally "talk" to all ERP systems due to the complexity and unique architectures of each ERP system. This leads to varying API standards and data formats, making direct integration challenging, time-consuming, and expensive. The major challenges include:

- ERP Complexity: ERP systems have intricate internal structures and data models, leading to APIs that are not standardized or easy to implement.
- Vendor-Specific APIs: Each ERP vendor develops APIs with unique protocols,data formats, and security measures, complicating universal API creation.
- Data Mapping and Normalization: ERP systems store data in diverse formats,requiring careful mapping and normalization for consistency.
- Security Concerns: Sensitive business data handled by ERP systems necessitates robust API designs to prevent unauthorized access and breaches.
- Scalability and Performance: APIs must handle large volumes of data and transactions while maintaining performance under heavy loads.
- Maintenance and Updates: Continuous effort is required to ensure compatibility with evolving ERP systems and APIs.
- Documentation Discrepancies: Incomplete or inconsistent API documentation can hinder integration efforts.

Key Features

To address these challenges efficiently, the solution should incorporate:

- Standardized API Framework: Develop a universal framework that can adapt to varying ERP architectures.
- Automated Data Mapping Tools: Create tools for seamless data normalization across different formats.
- Robust Security Protocols: Implement advanced security measures to protect sensitive business data.
- Scalable Architecture: Design APIs capable of handling high transaction volumes without performance degradation.
- Dynamic Maintenance Mechanism: Introduce automated update mechanisms for compatibility with evolving ERP APIs.
- Comprehensive Documentation Generator: Build tools to produce clear, consistent documentation for developers.

Bonus

Participants may include innovative features such as:

- AI-driven API compatibility assessment tools.
- Predictive analytics for identifying potential integration issues before deployment.

Final Deliveries

Participants are expected to submit:

- A GitHub repository containing the source code.
- A hosted platform or application.
- A demo video showcasing the solution's functionality.
- Presentation slides explaining the solution architecture and features.

Report Required

An end-term report detailing:

- Problem analysis
- Solution design
- Implementation details
- Challenges faced
- Future scope

Evaluation Criteria

Submissions will be evaluated based on:

Criterion	Weightage
Novelty of use case	20%
Technical implementation	35%
Solution utility and simplicity	20%
End-term report	15%
Presentation quality	10%

References

Participants may refer to:

1. Documentation of popular ERP systems (e.g., SAP , Oracle).
2. Research papers on API integration challenges in enterprise software.
3. Security standards for API development (e.g., OAuth2).