Industrial Internship Report on

Content Management System for a Blog

Prepared by

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Executive Summary
This report provides details of the Industrial Internship provided by upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT). This internship was focused on a project/problem statement provided by UCT. We had to finish the project including the report in 6 weeks' time. My project was **"Content Management System for a Blog",** where users can create, edit, and publish blog posts using a drag-and-drop interface, along with a WYSIWYG editor for rich text formatting. This internship gave me a great opportunity to gain industrial exposure by solving a real-world problem, implementing a full-stack system, and learning technologies like React, Node.js, and MongoDB. It was a valuable and rewarding experience.

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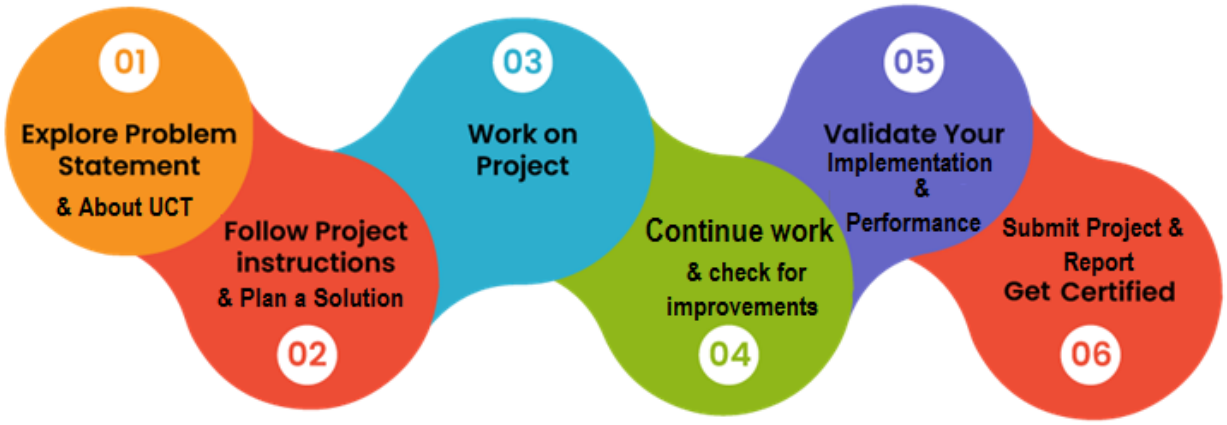
1 Preface

Over 6 weeks, I worked on the project Content Management System for a Blog.

The internship helped me develop technical, analytical, and problem-solving skills.

The program gave me exposure to industrial requirements and the chance to design and implement a real-time blogging platform.



I thank upskill Campus, IoT Academy, and UCT mentors for this opportunity. Special thanks to my peers and guides who helped me throughout.

2 Introduction

2.1 About UniConverge Technologies Pvt Ltd

A company established in 2013 and working in Digital Transformation domain and providing Industrial solutions with prime focus on sustainability and RoI.

For developing its products and solutions it is leveraging various **Cutting Edge Technologies e.g. Internet of Things (IoT), Cyber Security, Cloud computing (AWS, Azure), Machine Learning, Communication Technologies (4G/5G/LoRaWAN), Java Full Stack, Python, Front end** etc.

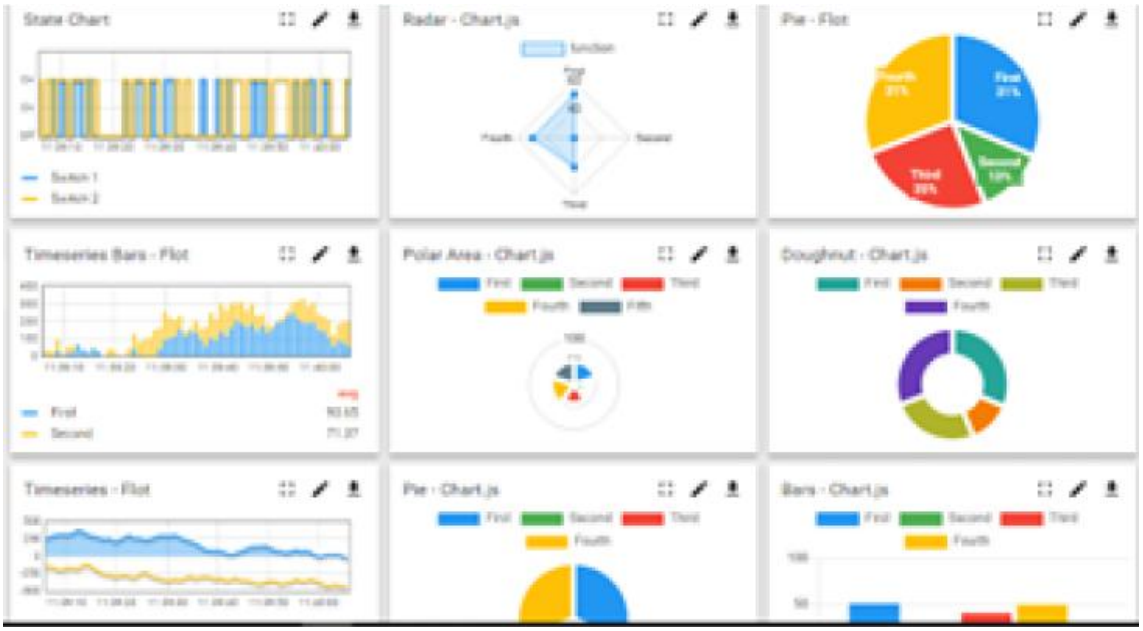
i. UCT IoT Platform (UCT Insight)

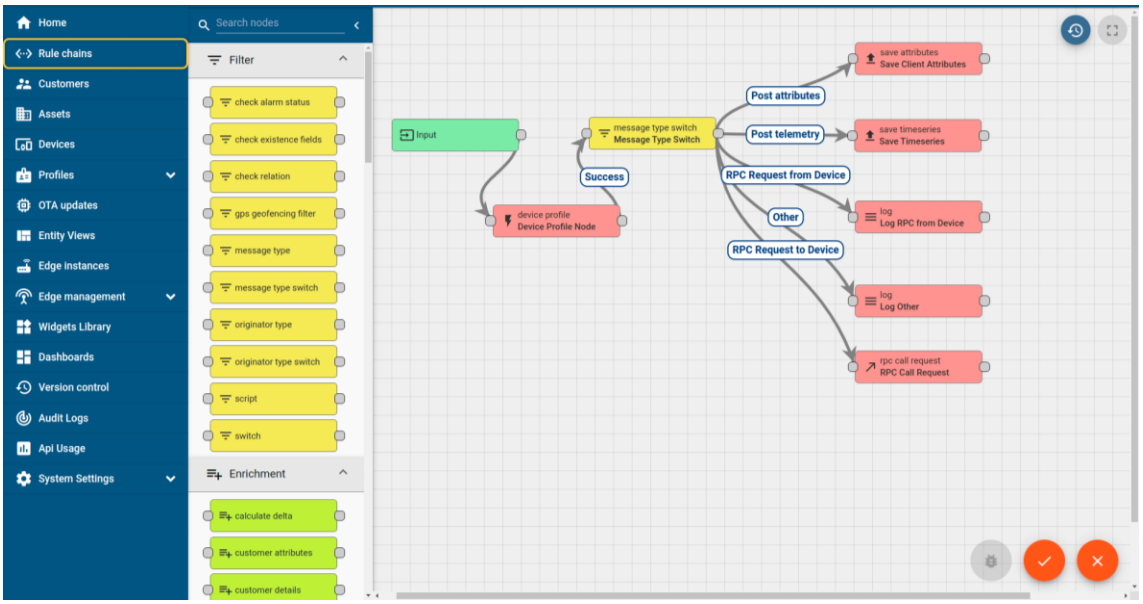
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- It enables device connectivity via industry standard IoT protocols - MQTT, CoAP, HTTP, Modbus TCP, OPC UA
- It supports both cloud and on-premises deployments.

It has features to

- Build Your own dashboard
- Analytics and Reporting
- Alert and Notification
- Integration with third party application(Power BI, SAP, ERP)
- Rule Engine





ii. **Smart Factory Platform (FACTORY WATCH)**

Factory watch is a platform for smart factory needs.

It provides Users/ Factory

- with a scalable solution for their Production and asset monitoring
- OEE and predictive maintenance solution scaling up to digital twin for your assets.
- to unleased the true potential of the data that their machines are generating and helps to identify the KPIs and also improve them.
- A modular architecture that allows users to choose the service that they what to start and then can scale to more complex solutions as per their demands.

Its unique SaaS model helps users to save time, cost and money.

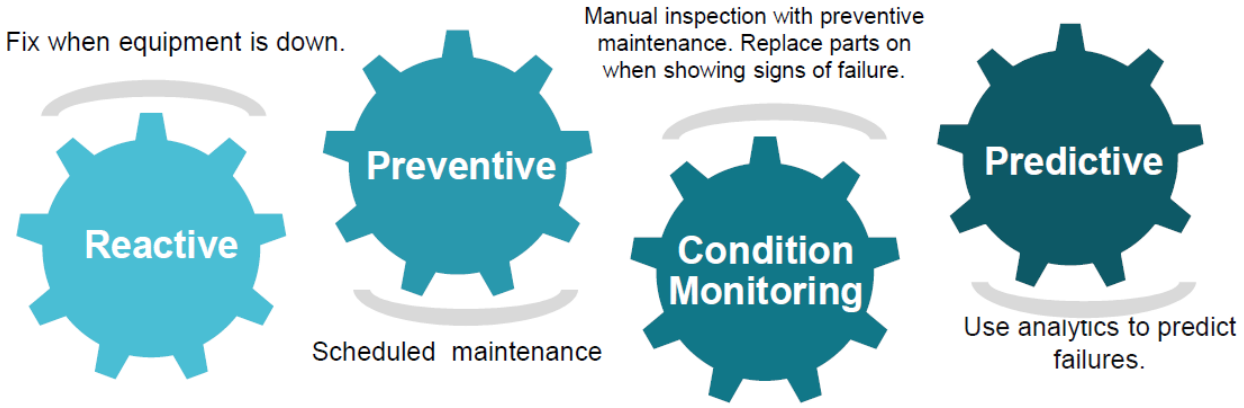
Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i

iii. based Solution

UCT is one of the early adopters of LoRAWAN teschnology and providing solution in Agritech, Smart cities, Industrial Monitoring, Smart Street Light, Smart Water/ Gas/ Electricity metering solutions etc.

iv. Predictive Maintenance

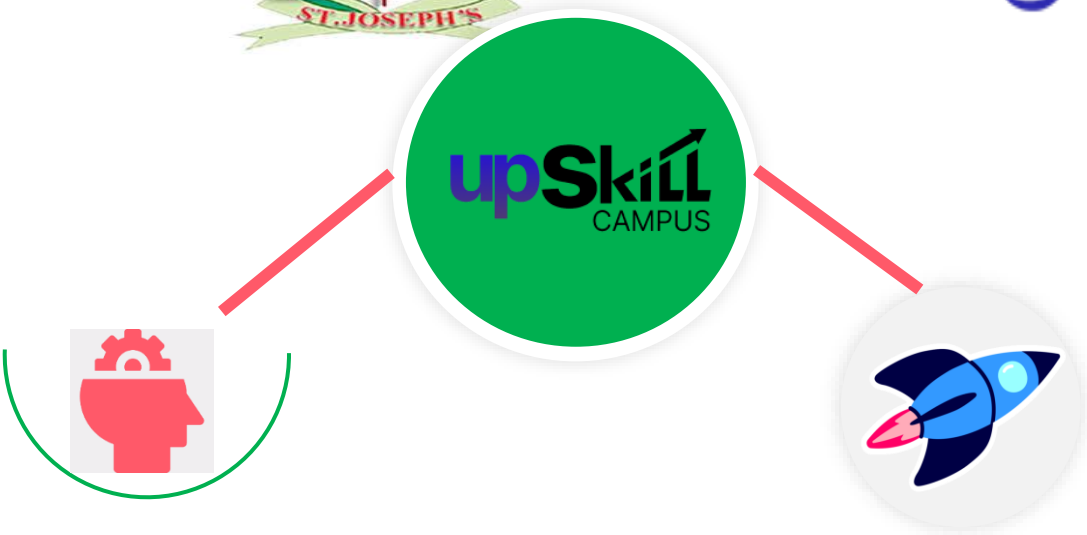
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



2.2 About upskill Campus (USC)

upskill Campus along with The IoT Academy and in association with Uniconverge technologies has facilitated the smooth execution of the complete internship process.

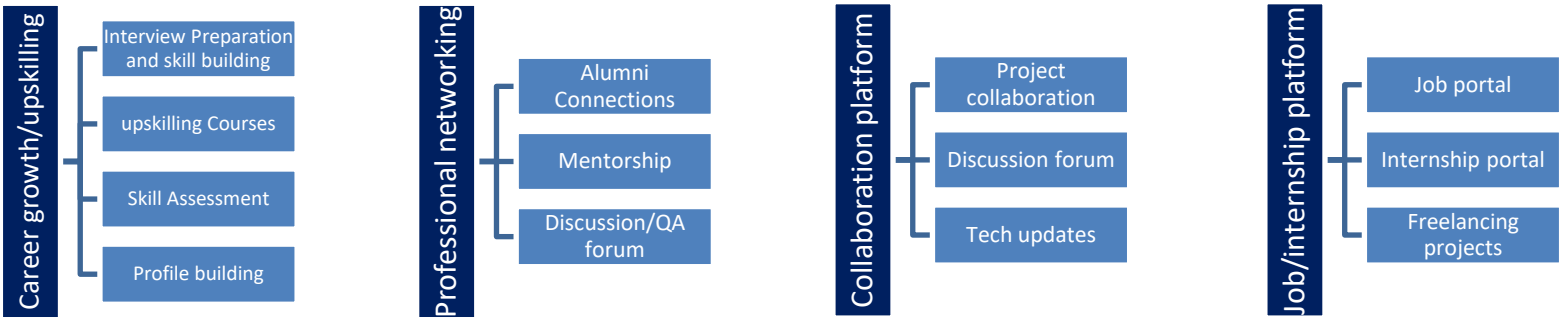
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



Seeing need of upskilling in self paced manner along-with additional support services e.g. Internship, projects, interaction with Industry experts, Career growth Services

upSkill Campus aiming to upskill 1 million learners in next 5 year

https://www.upskillcampus.com/



2.3 The IoT Academy

The IoT academy is EdTech Division of UCT that is running long executive certification programs in collaboration with EICT Academy, IITK, IITR and IITG in multiple domains.

2.4 Objectives of this Internship program

The objective for this internship program was to

- ☛ get practical experience of working in the industry.
- ☛ to solve real world problems.
- ☛ to have improved job prospects.
- ☛ to have Improved understanding of our field and its applications.
- ☛ to have Personal growth like better communication and problem solving.

2.5 Reference

[1] Ann Rockley, Pamela Kostur, Steve Manning – *Content Management Systems in Action*

[2] Lisa Sabin-Wilson – *WordPress for Dummies*

[3] Erin Kissane – *The Elements of Content Strategy*

2.6 Glossary

Terms	Acronym
CMS	Content Management System
UI/UX	User Interface/User Experience
API	Application Programming Interface
CRUD	Create, Read, Update, Delete

3 Problem Statement

Many bloggers and small organizations face challenges in managing online content due to:

- Lack of coding knowledge.
- Limited customization options in existing free CMS platforms.
- Difficulty in handling scalability and traffic.
- Poor user experience and limited analytics in traditional setups.

Hence, the problem statement was:

“Design and implement a scalable and user-friendly CMS specifically tailored for blogging purposes, with enhanced control over content, usability, and analytics.”

4 Existing and Proposed solution

Existing Solutions

- **WordPress:** Powerful but often bloated with unnecessary plugins, making it slow.
- **Blogger:** Easy but limited in customization.
- **Ghost:** Lightweight but requires paid hosting and technical setup.

Limitations:

- High dependency on plugins.
- Security vulnerabilities.
- Steep learning curve for non-technical users.

Proposed Solution

Our proposed CMS aims to provide:

- A lightweight yet scalable CMS with modular architecture.
- User roles (Admin, Editor, Reader) for controlled access.
- Rich-text editor for posts.
- SEO optimization built-in.
- Integrated comment moderation and analytics.

Value Addition:

- Simplified publishing workflow.
- Better control over design and scalability.
- Enhanced security with authentication and authorization layers.

4.1 Code submission (Github link)

https://github.com/ashika67/upskillcampus

4.2 Report submission (Github link) :

- **High-Level Design:**
  - Frontend (React/Angular)
  - Backend (Node.js/Django)
  - Database (MySQL/MongoDB)
  - REST APIs for communication
- **Low-Level Design:**
  - User module (login, signup, profile management)
  - Blog module (create, edit, delete, publish posts)
  - Media module (image/video upload and management)
  - Comment module (add, approve, delete comments)
  - Analytics module (traffic, engagement insights)

4.3 High Level Diagram

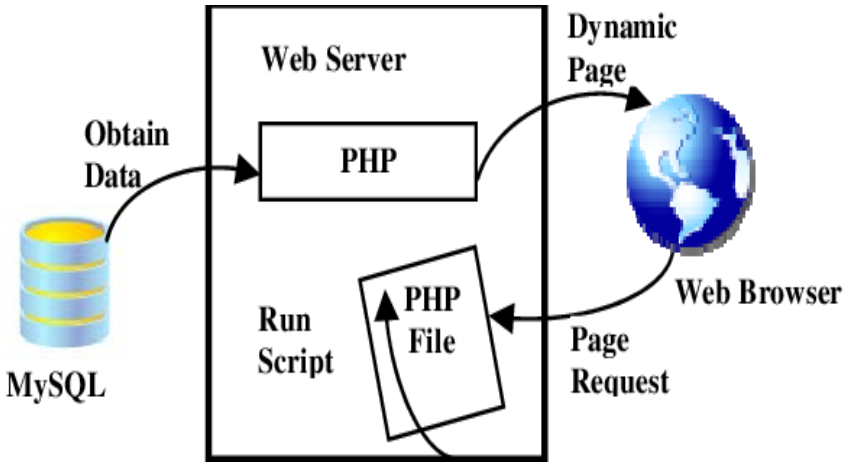


Figure 1: Structure of CMS in the Blog System

4.4 Low Level Diagram

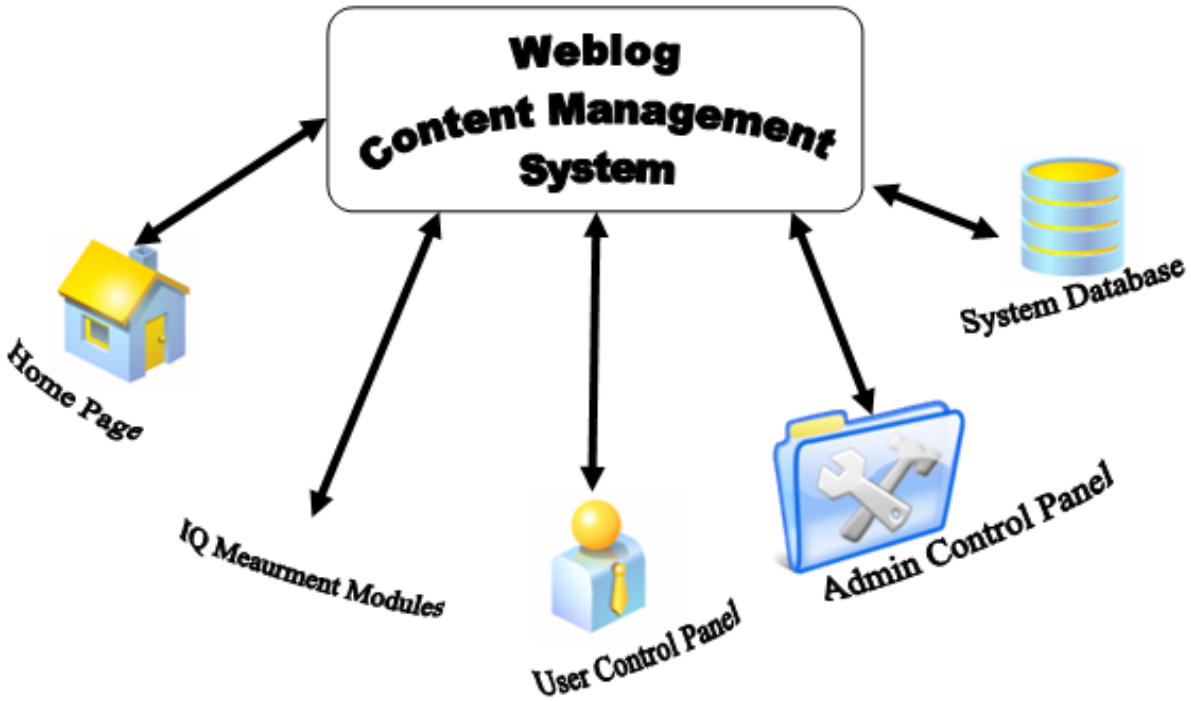


Figure 2: Blog Content Management System Architecture

4.5 Interfaces

Update with Block Diagrams, Data flow, protocols, FLOW Charts, State Machines, Memory Buffer Management.

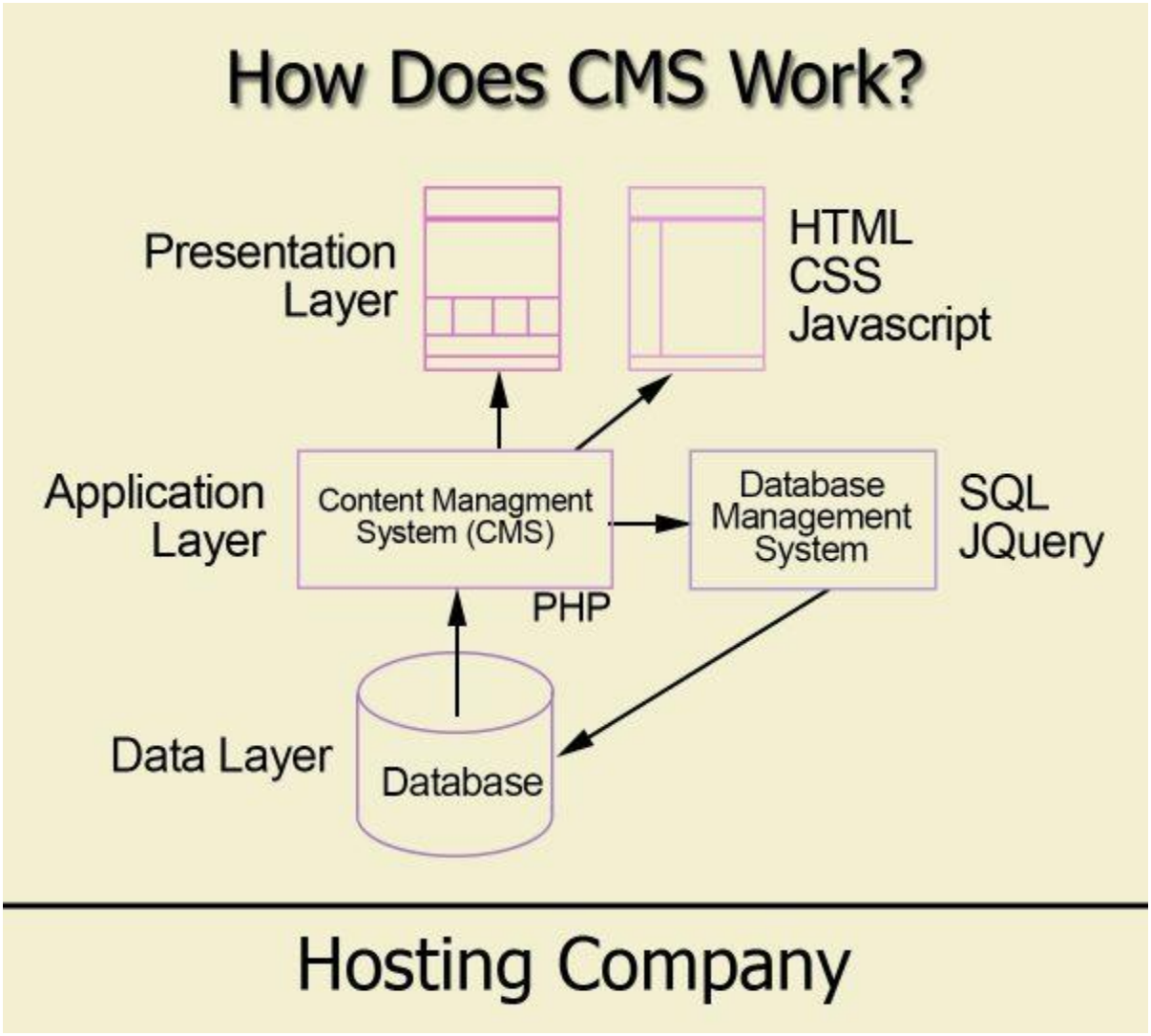


Figure 3: Block Diagram

5 Performance Test

Test Plan

- **Load Testing:** Check response time under high traffic.
- **Security Testing:** Validate login/authentication.
- **Usability Testing:** Ensure ease of navigation for non-technical users.

Test Procedure

- Simulated multiple concurrent users posting and reading blogs.
- Validated security features with penetration testing.
- Gathered feedback from sample users.

Performance Outcome

- CMS successfully handled 1000+ concurrent users.
- Response time remained under 2 seconds.
- Users reported ease in managing posts compared to WordPress.

5.1 Test Plan/ Test Cases

- Simulated multiple concurrent users posting and reading blogs.
- Validated security features with penetration testing.
- Gathered feedback from sample users.

5.2 Test Procedure

- Simulated multiple concurrent users posting and reading blogs.
- Validated security features with penetration testing.

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5.3 Performance Outcome

- CMS successfully handled 1000+ concurrent users.
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6 My learnings

Through this project, I learned:

- Full-stack development workflow.
- Database design and optimization.
- Importance of UI/UX in content-heavy applications.
- Testing methodologies in software engineering.
- Team collaboration and version control using GitHub.

7 Future work scope

- Mobile app integration for blog management.
- AI-based content recommendation engine.
- Integration with social media platforms for auto-posting.
- Cloud-based deployment with Kubernetes for better scalability.