Construction Worker Hiring Management System

Dr R Premsudha[1], Pon Rathanvel[2], Santhoshkumar G[3], Kathiravan[3], Harish[3], Karthikeyan[3]

Professor, Department of Civil Engineering[1]
Assistant Professor, Department of Civil Engineering[2]
Final year Students, Department of Civil Engineering[3]
Akshaya College of Engineering , Kinathukadavu, Coimbatore, India
rpremsudha@gamil.com

Abstract: *The Integrated Construction Management System (ICMS) is a sophisticated web-based application developed to optimize the management processes associated with construction projects. Leveraging a technology stack that includes HTML, CSS, Bootstrap, PHP, and MySQL, this system aims to streamline communication, collaboration, and resource management within construction teams, ultimately contributing to the successful and efficient completion of projects. One of the primary features of ICMS is its robust user authentication and authorization system. The application implements a secure login mechanism that authenticates users while assigning distinct access levels based on their roles within the construction project. This ensures that project managers, architects, engineers, and other stakeholders have tailored access to relevant information and functionalities. The project dashboard serves as a centralized hub, providing a comprehensive overview of the project's status, milestones, and critical updates. Through real-time tracking of project progress, ICMS facilitates effective decision-making by offering stakeholders immediate insights into the current state of affairs. This dynamic approach extends to task and resource management, where tasks can be created, assigned, and tracked in real time, ensuring optimal workforce utilization*

Keywords: Construction management, Worker Hiring, ,ICMS, HTML, MySQL

I. INTRODUCTION

ICMS stands as a sophisticated solution tailored for the complexities of construction projects, offering seamless communication, collaboration, and resource allocation. Powered by HTML, CSS, Bootstrap, PHP, and MySQL, it promises to revolutionize project management. ICMS provides a user-friendly platform to navigate the intricacies of construction tasks and timelines efficiently. ICMS revolutionizes construction project management through real-time communication and resource optimization. Its secure user authentication system tailors access for seamless collaboration among stakeholders. With a user-friendly interface crafted with HTML, CSS, and Bootstrap, ICMS ensures accessibility across devices, empowering construction teams in diverse conditions.ICMS stands as a comprehensive solution for construction project management, catering beyond project managers' needs. Enabling dynamic task creation and real-time progress tracking, it fosters effective collaboration and informed decision-making. Its communication module promotes open dialogue and knowledge sharing, nurturing a conducive teamwork environment. In essence, the Integrated Construction Management System aspires to be more than just a project management tool; it is a catalyst for efficiency, transparency, and collaboration in construction projects. By harnessing the power of modern web technologies, ICMS seeks to redefine how construction teams approach and execute their projects, ultimately contributing to the success of construction endeavour in today's rapidly evolving landscape.

II. PROPOSED SYSTEM

The proposed Integrated Construction Management System (ICMS) aims to revolutionize construction project management by addressing the limitations of existing systems and introducing a comprehensive, technology-driven approach. Here are the key features and improvements offered by the proposed system:

Real-time Communication Platform:
- Feature: ICMS incorporates a real-time communication module that facilitates instant messaging, notifications, and discussion forums.

- Benefits: This ensures prompt and accurate communication among team members, reducing delays, minimizing miscommunications, and providing a centralized platform for discussions.

Dynamic Scheduling and Planning:
- Feature: ICMS incorporates dynamic scheduling tools, including Gantt charts and visual timelines, for efficient project planning and tracking.
- Benefits: This ensures better project visibility, facilitates real-time updates, and enables proactive management of project schedules, critical paths, and potential changes.

Advanced Reporting and Analytics:
- Feature: The proposed system includes customizable reports and visual analytics tools for real-time insights into project progress, budget adherence, and resource utilization.
- Benefits: Stakeholders can make informed, data-driven decisions, leading to improved project management and overall project success.

Technology Stack:
- Feature: ICMS is built on a modern technology stack, including HTML, CSS, Bootstrap, PHP, and MySQL, ensuring a responsive and user-friendly interface accessible from various devices.
- Benefits: This provides a scalable, adaptable, and versatile platform, accommodating the diverse needs of construction teams operating in different environments.

In summary, the proposed Integrated Construction Management System aims to overcome the limitations of traditional construction project management systems by introducing advanced features, real-time collaboration, and a user-friendly interface. By leveraging modern technologies, ICMS seeks to enhance communication, streamline processes, and ultimately contribute to the successful and efficient completion of construction projects in today's dynamic landscape.

III. MODULE DESCRIPTION:

1. User Authentication Module:..
2. Project Management Module:
3. Task and Resource Allocation Module
4. Timeline and Gantt Chart Module:
5. Communication Module
6. Document Management Module
7. Reporting and Analytics Module:
8. Security Module
9. Database Management Module

IV. SYSTEM SPECIFICATION
Table 4.1 HARDWARE SPECIFICATION

System	HP 15s
Processor	Ryzen 5 2.1 GHz
Storage	512 GB SSD
RAM	16 GB
Monitor	Integrated Monitor
Mouse	Integrated Trackpad
Keyboard	Integrated Keyboard

Table 4.2 OPERATING SYSTEM

Operating System	Windows 11
Front End	HTML, Bootstrap

Back End	PHP Version 8, MySQL Version 8
Server	XAMPP

V. SOFTWARE SPECIFICATION

XAMPP:

XAMPP is an open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, Maria DBdatabase, and interpreters for scripts written in the PHP and Perlprogramming languages. XAMPP stands for Cross-Platform (X), Apache (A), Maria DB (M), PHP (P), and Perl (P). It is a simple, lightweight Apache distribution that makes it extremely easy for developers to create a local web server for testing and deployment purposes.

Everything needed to set up a web server – server application (Apache), database (Maria DB), and scripting language (PHP) – is included in an extractable file. XAMPP is also cross-platform, which means it works equally well on Linux, Mac, and Windows.

XAMPP's designers intended it for use only as a development tool, to allow website designers and programmers to test their work on their computers without any access to the Internet.

CROSS-PLATFORM:

Cross-platform software is a type of software application that works on multiple operating systems or devices, which are often referred to as platforms. A platform means an operating system such as Windows, Mac OS, Android, or iOS. When a software application works on more than one platform, the user can utilize the software on a wider choice of devices and computers.

BENEFITS OF CROSS-PLATFORM:

The benefit of a cross-platform software app or program is that you can use the same program whether you're on a Windows PC or whether you're logging in from your laptop or smartphone. The Microsoft Office suite of applications, which includes Word, Excel, and PowerPoint, is available on Windows, Mac OS, iOS (iPhone/iPad), and Android. While there are differences based on how the platforms work, you'll have a similar experience within the application between all of your devices.

React Native:

React Native is an open-source JavaScript library developed by the new generation of React — Facebook, which was open to Github in 2013. Native application creation means writing applications only for a specific operating system. React Native helps developers reuse their code over the web and on mobile. Developers will not have to create the same app from scratch for iOS and Android. They will be able to reuse the code in each operating system. The great thing about React Native is that there is little difference between a finished application in Objective-C or Java and an application built using React Native. Android and iOS code development environments are very different. So it takes time to remove the application to two different platforms. However, with React Native, only one developer can write on different mobile operating systems.

Apache:

The Apache HTTP Server, colloquially called Apache is a free and open-source cross-platform web server software, released under the terms of Apache License 2.0. Apache is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation.

The vast majority of Apache HTTP Server instances run on a Linux distribution, but current versions also run on Microsoft Windows, OpenVMS, and a wide variety of Unix-like systems. Past versions also ran on NetWare, OS/2, and other operating systems, including ports to mainframes.

Originally based on the HTTP server, the development of Apache began in early 1995 after work on the NCSA code stalled. Apache played a key role in the initial growth of the World Wide Web, quickly overtaking NCSA HTTP as the

dominant HTTP server. In 2009, it became the first web server software to serve more than 100 million websites. As of January 2021, Netcraft estimated that Apache served 24.63% of the million busiest websites, while Nginx served 23.21% and Microsoft is in third place at 6.85% (for some of Netcraft's other stats Nginx is ahead of Apache), while according to W3Techs, Apache is ranked first at 35.0% and Nginx second at 33.0% and Cloudflare Server third at 17.3%.

MySQL Database:

MySQL is released under an open-source license. So you have nothing to pay to use it. MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.

MySQL uses a standard form of the well-known SQL data language. MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc. MySQL works very quickly and works well even with large data sets.

MySQL is very friendly to PHP, the most appreciated language for web development. MySQL supports large databases, up to 50 million rows or more in a table.

The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB). MySQL is customizable.

The open-source GPL license allows programmers to modify the MySQL software to fit their specific environments.

TABLE CREATION:

Name of the table

Names of fields

Definitions for each field

Field Attribute **NOT NULL** is being used because we do not want this field to be NULL. So if the user tries to create a record with a NULL value, then MySQL will raise an error.

Field Attribute **AUTO_INCREMENT** tells MySQL to go ahead and add the next available number to the id field.

Keyword **PRIMARY KEY** is used to define a column as the primary key. You can use multiple columns separated by a comma to define a primary key.

ADMINISTRATIVE MYSQL COMMAND:

- **Use database name**: This will be used to select a particular database in the MySQL work area.
- **Show databases:** Lists the databases that are accessible by the MySQL DBMS.
- **Show tables:** Shows the tables in the database once a database has been selected with the use command.
- **Show columns from Table name:** Shows the attributes, types of attributes, key information, whether NULL is permitted, defaults, and other information for a table.
- **Show index from Table name:** Presents the details of all indexes on the table, including the PRIMARY KEY

CREATING TABLES USING PHP SCRIPT:

To create a new table in any existing database you would need to use PHP function **mysqli_query()**.

DROPPING TABLES USING PHP SCRIPT:

Drop an existing table in any database, you would need to use the PHP function **mysqli_query()**.

DATABASE DESIGN:

The database is designed to manage large bodies of information. The management of data involves both the definitions of structures for the storage of information. In addition, the database system must provide for the safety of the information solved, despite system crashes or attempts at unauthorized access. For developing an efficient database users have to fulfilled certain conditions such as controlled redundancy.

- Defining the data
- Inputting the data
- Locating the data
- Accessing the data
- Communicating the data
- Revising the data

Objectives of Database Design

For designing a database design several objectives have to be met as follows:

- Ease of use
- Control of data integrity
- Control of redundancy
- Control of security
- Data independence (logical & physical)
- Data storage protection
- System performance

OUTPUT DESIGN:

A quality output is one, which meets the requirements of the end user and presents the information. In any system results of processing are communicated to the users and other systems through outputs. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source of information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making. Output design generally refers to the results and information that are generated by the system for many end-users; output is the main reason for developing the system and the basis on which they evaluate the usefulness of the application.

In this Online Repository System project output is to view customer details, employee lists, order tracking details, and attendance percentage results.
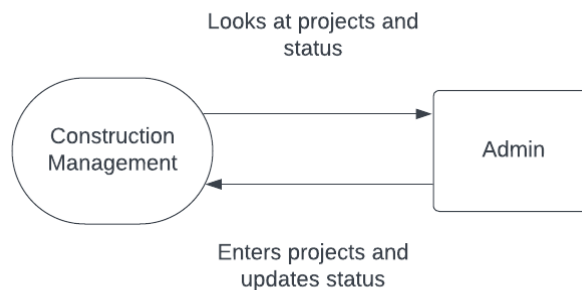
5.1 DATA FLOW DIAGRAM
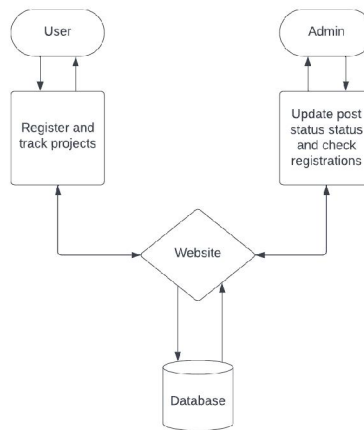
5.2 ER DIAGRAM

VI. CONCLUSION

In conclusion, the construction management project developed with HTML, CSS, Bootstrap, PHP, and MySQL demonstrates a robust and efficient system for overseeing and managing construction projects. The integration of these technologies has allowed for the creation of a user-friendly interface, seamless data handling, and real-time collaboration among project stakeholders.

The HTML and CSS components contribute to an intuitive and visually appealing user interface, ensuring an optimal user experience. Bootstrap's responsive design further enhances accessibility across various devices, promoting usability and convenience for users on desktops, tablets, and mobile devices.

The utilization of PHP facilitates dynamic content generation, enabling real-time updates and interactions within the system. This server-side scripting language plays a pivotal role in handling project-related data, ensuring smooth communication between the frontend and backend components. The incorporation of MySQL as the database management system provides a secure and scalable solution for storing, retrieving, and managing construction project data efficiently. The project successfully addresses key construction management requirements, including project planning, resource allocation, progress tracking, and communication. Users can easily input and retrieve information, monitor project timelines, and collaborate effectively with team members. The system's seamless integration of MySQL ensures data integrity, security, and reliability, essential for the successful management of construction projects.

In conclusion, the construction management project stands as a testament to the power of web development technologies in creating a comprehensive and functional solution for the construction industry. The combination of HTML, CSS, Bootstrap, PHP, and MySQL has resulted in a user-friendly, efficient, and scalable platform that meets the needs of construction professionals in planning, executing, and monitoring projects effectively. This project not only showcases the technical proficiency of web development but also addresses the practical challenges faced in the construction management domain.

VII. FUTURE SCOPE

- Building Information Model (BIM):.
- Internet of Things (IOT) and Sensors:.
- Project Management Software:
- Prefabrication and Modular Construction:
- Sustainability and Green Building Practices:
- Safety Management and Risk Mitigation:
- Supply Chain Optimization:
- Quality Control and Assurance:

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