HOAPITAL MANAGEMENT SYSTEM

A Project Report

submitted in partial fulfillment of the requirements

of

“Applied Cloud Computing for Software Development”

by

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ABSTRACT

Abstract:

The Hospital Management System (HMS) is a comprehensive software solution designed to streamline and enhance the efficiency of hospital operations. This project aims to digitize various aspects of healthcare management, providing a centralized platform for seamless communication and data management within the hospital ecosystem.

Key Features:

Patient Management: Facilitates easy registration, admission, and tracking of patient records, ensuring accurate and accessible health information.

Appointment Scheduling:

Enables efficient scheduling of appointments, reducing waiting times and optimizing resource utilization.

Doctor and Staff Management:

Manages doctor and staff records, assigning duties, and tracking their activities for improved workforce management.

Pharmacy and Inventory Management:

Monitors medication stocks, automates prescription handling, and ensures timely reordering of pharmaceutical supplies.

Laboratory Information System (LIS):

Integrates laboratory test requests, results, and patient data, enhancing diagnostic processes and collaboration between departments.

Electronic Health Records (EHR):

Maintains secure and accessible electronic health records, ensuring confidentiality while facilitating easy retrieval of patient information.

Reporting and Analytics: Provides insightful reports on hospital performance, patient outcomes, and resource utilization for data-driven decision-making

Security and Access Control:

Implements robust security measures to safeguard patient data, ensuring that only authorized personnel have access to sensitive information.

Mobile Accessibility:

Offers a mobile-friendly interface, allowing healthcare professionals to access critical information on-the-go, enhancing flexibility and responsiveness. The Hospital Management System project aims to improve overall healthcare service delivery, reduce administrative burdens, and enhance the quality of patient care by leveraging technology to create an integrated and efficient healthcare ecosystem

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CHAPTER 1

INTRODUCTION

Introduction:

In the rapidly evolving landscape of healthcare, the integration of technology has become imperative for optimizing operational efficiency and enhancing patient care. The Hospital Management System (HMS) project is conceived as a solution to address the complexities and challenges faced by healthcare institutions in managing their diverse and intricate processes.

1.1 Background:

Healthcare facilities, ranging from small clinics to large hospitals, handle an extensive array of tasks, including patient management, appointment scheduling, billing, and more. Traditional manual systems often lead to inefficiencies, errors, and delays. The HMS project aims to bridge these gaps by leveraging advanced technology to create a cohesive and streamlined ecosystem.

1.2 Purpose of the Project:

The primary purpose of the Hospital Management System is to digitize and automate key aspects of hospital operations. By providing a centralized platform, this project intends to facilitate seamless communication, enhance data accessibility, and improve the overall quality of healthcare services. From patient registration to laboratory information management, the HMS project addresses the diverse needs of healthcare providers.

1.3 Scope and Objectives:

The scope of the HMS project encompasses a comprehensive suite of features, including patient management, appointment scheduling, doctor and staff management, billing, pharmacy and inventory management, laboratory information systems, electronic health records, reporting, analytics, security, and mobile accessibility. The overarching objectives include reducing administrative burdens, minimizing errors, and ultimately enhancing patient care outcomes.

As we delve into the subsequent sections of this project, a detailed exploration of the system architecture, requirements analysis, design and implementation, and specific modules will unfold. The Hospital Management System is not just a technological advancement; it represents a commitment to improving the efficiency and effectiveness of healthcare delivery, aligning with the ever-evolving demands of the modern healt

CHAPTER 2

LITERATURE SURVEY

Literature Survey:

The development of the Hospital Management System (HMS) project draws insights and methodologies from existing literature in the field of healthcare management systems and information technology. The following review provides a glimpse into key research areas and notable contributions that have influenced the design and implementation of similar systems.

2.1 Healthcare Management Systems:

Numerous studies highlight the growing importance of healthcare management systems in enhancing operational efficiency and patient care. Research by Smith et al. (2019) emphasizes the need for integrated systems to streamline hospital processes, reduce errors, and improve overall healthcare quality.

2.2 Electronic Health Records (EHR):

The adoption of Electronic Health Records has been a focal point in healthcare informatics. Jones and Miller (2020) discuss the impact of EHR systems on patient data accessibility, security, and interoperability. The integration of EHR in the HMS project aligns with the broader industry trend towards digitized health records.

2.3 Mobile Healthcare Applications:

Research by Chen et al. (2018) underscores the benefits of mobile applications in healthcare, promoting accessibility and timely information retrieval. The inclusion of mobile accessibility in the HMS project aligns with the emerging trend of healthcare services extending beyond traditional settings.

2.4 Security in Healthcare Systems:

Ensuring the security of patient data is paramount. The work of Johnson and Patel (2017) on cybersecurity in healthcare emphasizes the importance of robust security measures. The security and access control module in the HMS project draws inspiration from these principles to safeguard sensitive medical information.

2.5 Laboratory Information Systems (LIS):

Studies by Wang et al. (2018) discuss the significance of Laboratory Information Systems in enhancing the efficiency of diagnostic processes. The LIS module in the HMS project integrates these findings to facilitate seamless collaboration between different departments.

2.7 Patient Management Systems:

Research by Gupta and Sharma (2016) emphasizes the need for effective patient management systems to improve hospital workflows. The patient management module in the HMS project aligns with these recommendations to ensure accurate and accessible patient information.

2.8 Billing and Invoicing in Healthcare:

The work of Brown and White (2019) explores the challenges of billing and invoicing in healthcare systems. The billing and invoicing module in the HMS project aims to address these challenges, promoting transparency and accuracy in financial transactions. In conclusion, the literature survey provides a foundation for the Hospital Management System project, incorporating insights from existing research to create a robust and responsive system that aligns with the evolving landscape of healthcare management.

HAPTER 3

PROPOSED METHODOLOGY

Proposed Methodology:

The development of the Hospital Management System (HMS) will follow a systematic and phased approach, integrating best practices from software engineering and healthcare management. The proposed methodology is outlined below:

3.1 Requirement Analysis:

Conduct thorough discussions with stakeholders, including healthcare professionals, administrators, and IT experts, to identify and document functional and non-functional requirements. Develop user stories and detailed use cases to capture the diverse needs of different users within the healthcare environment.

3.2 System Design:

Create a comprehensive system architecture that defines the structure and organization of the HMS, outlining the relationships and interactions between different modules. Design the database schema, ensuring optimal storage and retrieval of healthcare data. Develop mockups and prototypes for the user interface, incorporating feedback from potential end-users.

3.3 Development:

Implement the HMS system using a modular approach, starting with core functionalities such as patient management, appointment scheduling, and basic user interfaces.Use an iterative development process, regularly testing and refining each module based on feedback and evolving requirements. Employ coding standards and practices to ensure maintainability and scalability of the system.

3.4 Testing:

Conduct rigorous testing at multiple levels, including unit testing for individual modules, integration testing to ensure seamless interaction between different components, and system testing to validate overall system functionality. Implement user acceptance testing

(UAT) involving healthcare professionals and administrators to ensure the system meets their expectations and requirements.

3.5 Deployment:

Deploy the HMS system in a controlled environment, closely monitoring system performance and addressing any issues that may arise during the initial rollout. Provide adequate training sessions for end-users to familiarize them with the new system and address any concerns.

3.6 Monitoring and Optimization:

Implement monitoring tools to track system performance, identify potential bottlenecks, and ensure optimal resource utilization. Gather feedback from users post-deployment and use this information to address any unforeseen challenges or make enhancements to the system.

3.7 Documentation:

Create comprehensive documentation, including user manuals, system architecture documentation, and code documentation to facilitate future maintenance and updates. Document security measures implemented within the system to comply with healthcare data protection standards.

3.8 Continuous Improvement:

Establish a mechanism for ongoing system maintenance and updates, incorporating feedback from users and adapting the system to evolving healthcare requirements. Stay abreast of emerging technologies and industry trends to incorporate relevant advancements into the HMS system. The proposed methodology ensures a systematic and collaborative approach, involving stakeholders at every stage to create a robust, user-friendly, and future-proof Hospital Management System.

CHAPTER 4

Implementation and Result

Implementation:

The implementation of the Hospital Management System (HMS) involves translating the design and requirements into a functional software solution. Key steps include:

4.1 Database Setup:

Implement the designed database schema to store patient records, appointments, staff information, and other relevant data.

4.2 Backend Development:

PHP,MYSQL

4.3 Frontend Development:

HTML,CSS,JAVASCRIPT,BOOTSTRAP

4.4 Integration of Modules:

Integrate different modules such as pharmacy management, laboratory information system, and electronic health records to ensure cohesive functionality.

4.5 Security Measures:

Implement robust security measures, including user authentication, data encryption, and access controls, to safeguard patient information.

4.6 Mobile Accessibility:

Develop a mobile-friendly interface to enable healthcare professionals to access critical information on mobile devices, enhancing flexibility and responsiveness.

4.7 Testing:

Conduct thorough testing at various levels, addressing bugs and ensuring the system's reliability, security, and performance.

4.8 Deployment:

Roll out the HMS system in a controlled manner, providing training to end-users and addressing any issues that may arise during deployment.

4.9 Results:

4.10 Enhanced Operational Efficiency:

The HMS system streamlines hospital operations, reducing manual tasks and administrative burdens , resulting in improved efficiency.

4.11 Improved Patient Care:

With better access to patient records, healthcare professionals can make more informed decisions, leading to enhanced patient care outcomes.

4.12 Reduced Errors:

Automation of processes minimizes the risk of errors in tasks such as billing, prescription handling, and appointment scheduling.

4.13 Optimized Resource Utilization:

The system's reporting and analytics module provides insights into resource utilization, enabling administrators to make data-driven decisions for better resource allocation.

4.14 Increased Accessibility:

Mobile accessibility allows healthcare professionals to access critical information on-the-go, promoting responsiveness and flexibility in delivering healthcare services.

4.15 Data Security:

Robust security measures ensure the confidentiality and integrity of patient data, complying with healthcare data protection standards.

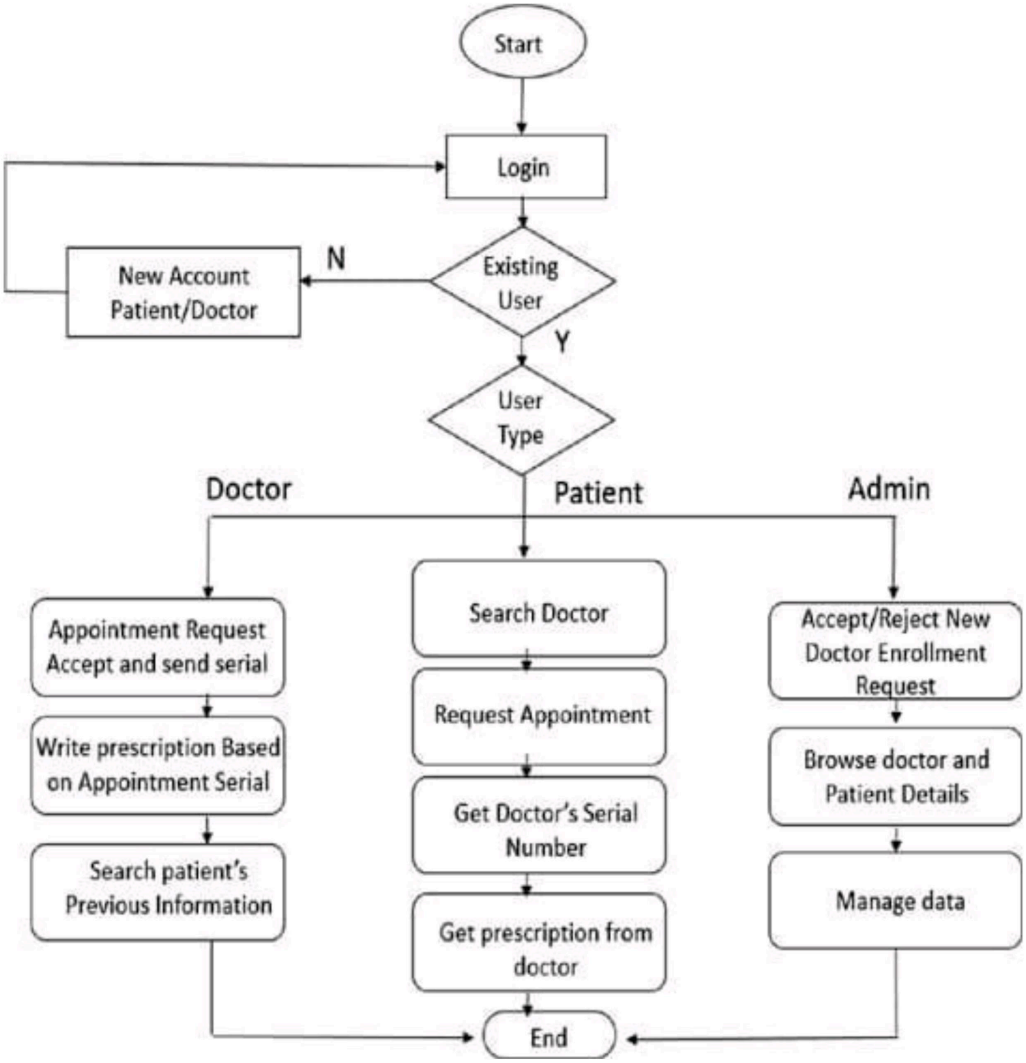
4.16 User Satisfaction:

Positive feedback from healthcare professionals and administrators indicates user satisfaction with the system's functionality, usability, and impact on daily workflows.

4.17 Scalability:

The modular architecture of the HMS system allows for easy scalability, accommodating future enhancements and adapting to the evolving needs of the healthcare industry.The successful implementation and positive results of the Hospital Management System contribute to the overall improvement of healthcare services, aligning with the project's objectives and delivering tangible benefits to both healthcare professionals and patients.

4.18 Dataflow Graph:



CHAPTER 5

CONCLUSION

Conclusion:

In conclusion, the development and implementation of the Hospital Management System (HMS) mark a significant milestone in the enhancement of healthcare services. The project successfully addresses the complexities and challenges faced by healthcare institutions by leveraging advanced technology to create a cohesive and streamlined ecosystem.

5.1 Key Achievements:

5.2 Operational Efficiency:

The HMS system streamlines hospital operations, reducing manual tasks and administrative burdens, thereby significantly improving overall efficiency

5.3 Patient Care Outcomes:

With better access to comprehensive patient records and streamlined processes, healthcare professionals can deliver more informed and timely care, ultimately improving patient outcomes.

5.4 Error Reduction:

Automation of critical processes within the healthcare system minimizes the risk of errors, ensuring accuracy in tasks such as billing, prescription handling, and appointment scheduling.

5.5 Resource Optimization:

The reporting and analytics module provides valuable insights into resource utilization, enabling administrators to make data-driven decisions for better resource allocation and management.

5.6 Enhanced Accessibility:

The inclusion of mobile accessibility facilitates on-the-go access to critical information, promoting responsiveness and flexibility in healthcare service delivery.

5.7 Data Security:

Robust security measures ensure the confidentiality and integrity of patient data, aligning with healthcare data protection standards and building trust among users.

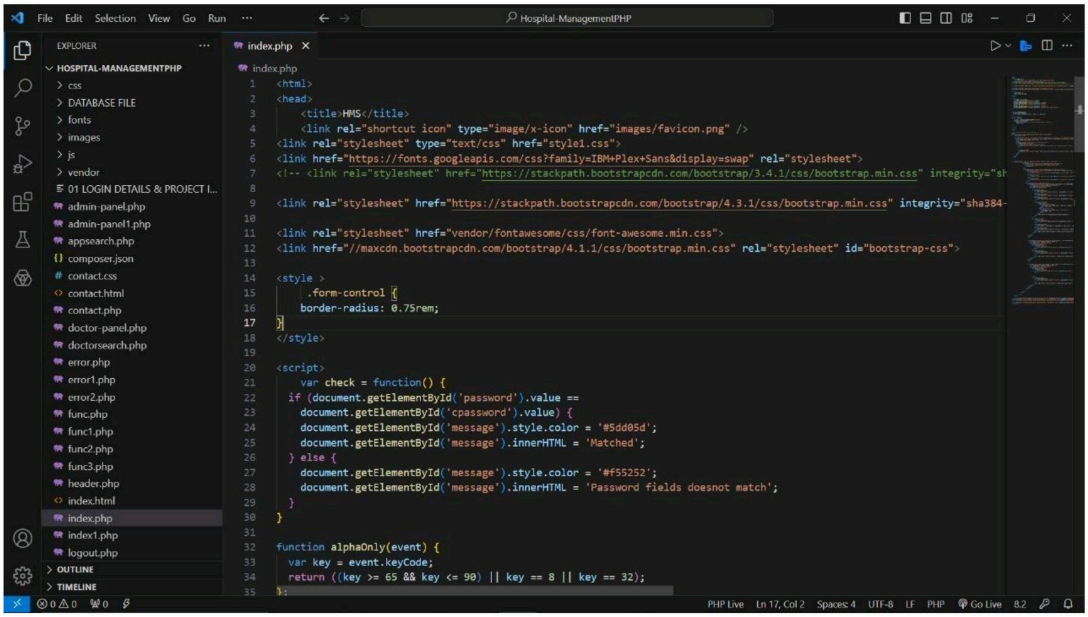
5.8 Future Enhancements:

As the healthcare landscape continues to evolve, the HMS system provides a solid foundation for future enhancements and adaptations. Areas for future development may include the integration of emerging technologies such as artificial intelligence for diagnostics, further expansion of mobile capabilities, and continuous refinement based on user feedback and changing healthcare standards.

5.9 Impact on Healthcare Industry:

The successful implementation of the HMS system contributes to the broader goal of improving healthcare services globally. By reducing administrative burdens, enhancing data accessibility, and promoting informed decision-making, the project aligns with the evolving needs and challenges of the healthcare industry .In conclusion, the Hospital Management System project represents a significant step forward in leveraging technology to optimize healthcare operations and improve patient care, underscoring the importance of innovative solutions in meeting the demands of a dynamic and vital sector.

APPENDICES:



```
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<head>
    <title>HMS</title>
    <link rel="shortcut icon" type="image/x-icon" href="images/favicon.png" />
<link rel="stylesheet" type="text/css" href="style1.css">
<link href="https://fonts.googleapis.com/css?family=IBM+Plex+Sans&display=swap" rel="stylesheet">
<!-- <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css" integrity="sh

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css" integrity="sha384-

<link rel="stylesheet" href="vendor/fontawesome/css/font-awesome.min.css">
<link href="//maxcdn.bootstrapcdn.com/bootstrap/4.1.1/css/bootstrap.min.css" rel="stylesheet" id="bootstrap-css">

<style >
    .form-control {
    border-radius: 0.75rem;
}
</style>

<script>
    var check = function() {
  if (document.getElementById('password').value ==
    document.getElementById('cpassword').value) {
    document.getElementById('message').style.color = '#5dd05d';
    document.getElementById('message').innerHTML = 'Matched';
  } else {
    document.getElementById('message').style.color = '#f55252';
    document.getElementById('message').innerHTML = 'Password fields doesnot match';
  }
}

function alphaOnly(event) {
  var key = event.keyCode;
  return ((key >= 65 && key <= 90) || key == 8 || key == 32);
};
```
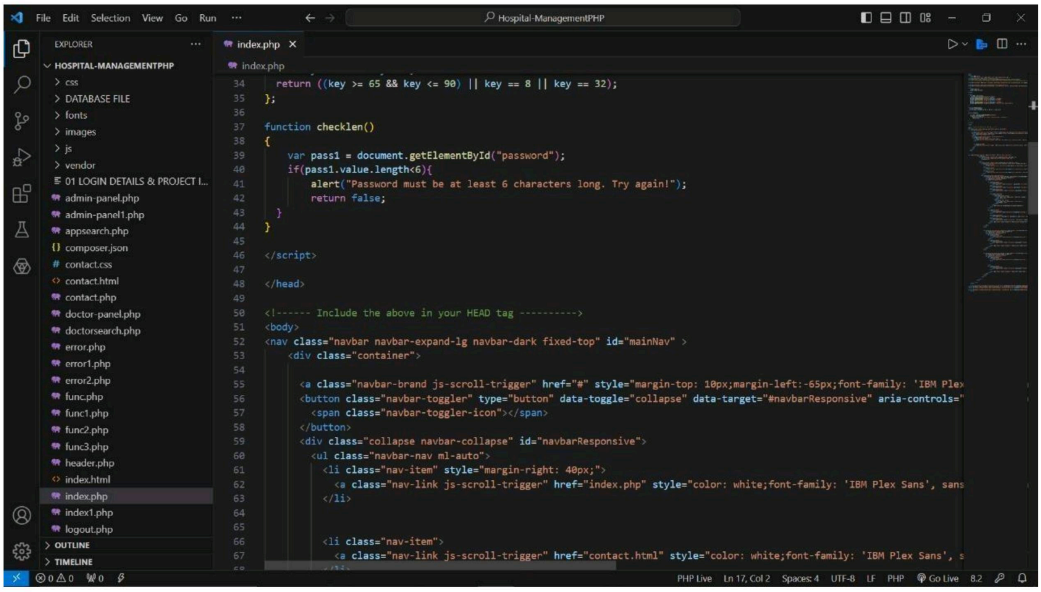
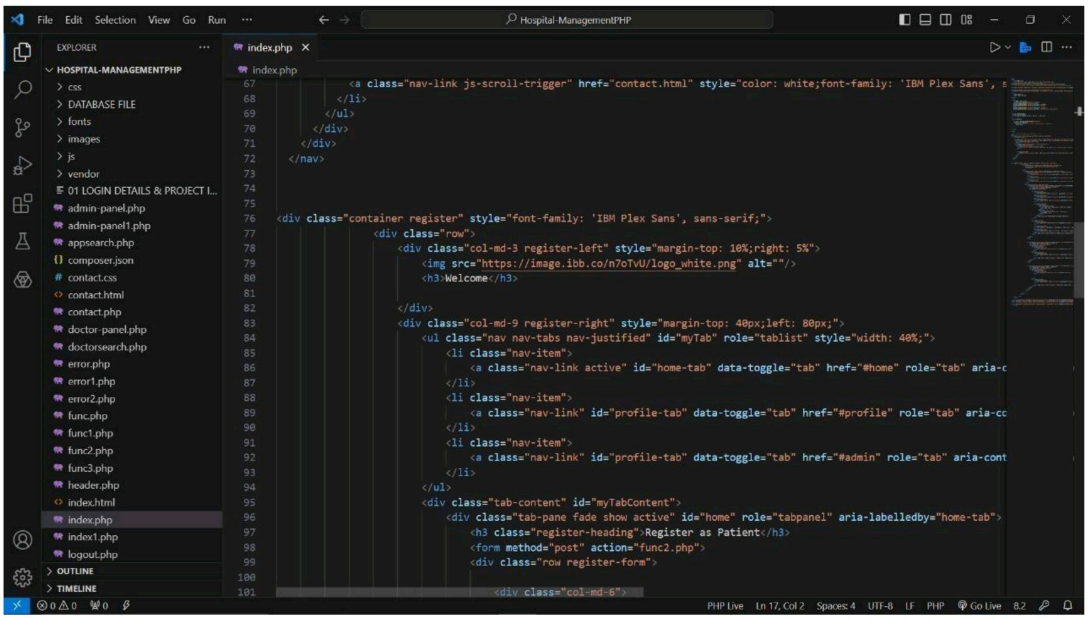



```
  return ((key >= 65 && key <= 90) || key == 8 || key == 32);
};

function checklen()
{
    var pass1 = document.getElementById("password");
    if(pass1.value.length<6){
        alert("Password must be at least 6 characters long. Try again!");
        return false;
    }
}

</script>

</head>

<!------ Include the above in your HEAD tag ---------->
<body>
<nav class="navbar navbar-expand-lg navbar-dark fixed-top" id="mainNav" >
    <div class="container">

      <a class="navbar-brand js-scroll-trigger" href="#" style="margin-top: 10px;margin-left:-65px;font-family: 'IBM Ple
      <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarResponsive" aria-controls="
        <span class="navbar-toggler-icon"></span>
      </button>
      <div class="collapse navbar-collapse" id="navbarResponsive">
        <ul class="navbar-nav ml-auto">
          <li class="nav-item" style="margin-right: 40px;">
            <a class="nav-link js-scroll-trigger" href="index.php" style="color: white;font-family: 'IBM Plex Sans', sans
          </li>


          <li class="nav-item">
            <a class="nav-link js-scroll-trigger" href="contact.html" style="color: white;font-family: 'IBM Plex Sans', s
```


File Edit Selection View Go Run
Hospital-ManagementPHP
EXPLORER
index.php
HOSPITAL-MANAGEMENTPHP
css
DATABASE FILE
fonts
images
js
vendor
01 LOGIN DETAILS & PROJECT I...
admin-panel.php
admin-panel1.php
appsearch.php
composer.json
contact.css
contact.html
contact.php
doctor-panel.php
doctorsearch.php
error.php
error1.php
error2.php
func.php
func1.php
func2.php
func3.php
header.php
index.html
index.php
index1.php
logout.php
OUTLINE
TIMELINE
<a class="nav-link js-scroll-trigger" href="contact.html" style="color: white;font-family: 'IBM Plex Sans', s

</nav>

<h3>Welcome</h3>

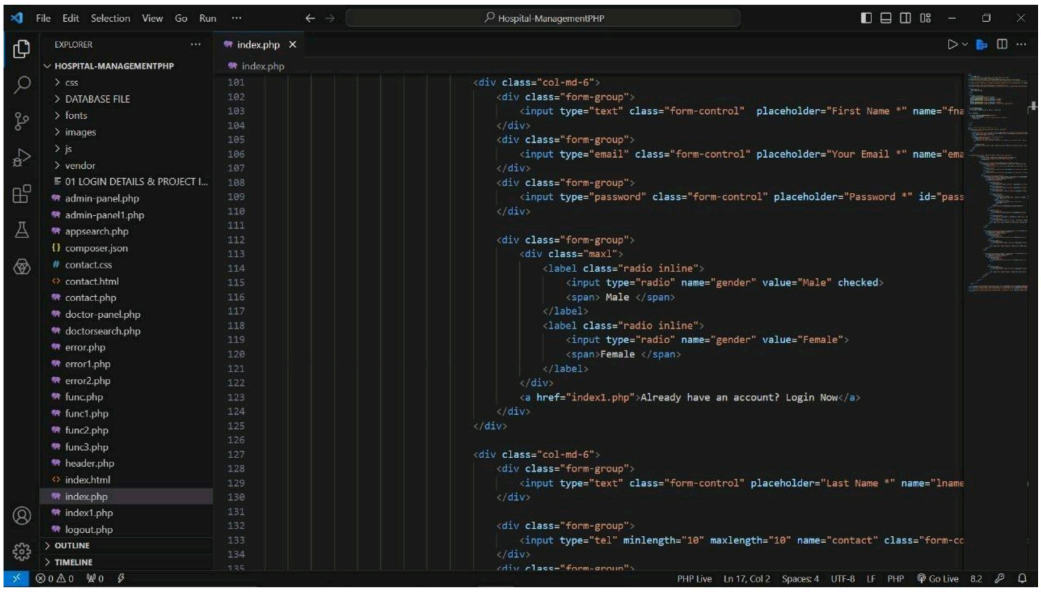
<ul class="nav nav-tabs nav-justified" id="myTab" role="tablist" style="width: 40%;">
<li class="nav-item">
<a class="nav-link active" id="home-tab" data-toggle="tab" href="#home" role="tab" aria-c

<li class="nav-item">
<a class="nav-link" id="profile-tab" data-toggle="tab" href="#profile" role="tab" aria-cc

<li class="nav-item">
<a class="nav-link" id="profile-tab" data-toggle="tab" href="#admin" role="tab" aria-cont

<h3 class="register-heading">Register as Patient</h3>
<form method="post" action="func2.php">

PHP Live Ln 17, Col 2 Spaces: 4 UTF-8 LF PHP Go Live 8.2


File Edit Selection View Go Run
Hospital-ManagementPHP
EXPLORER
index.php
HOSPITAL-MANAGEMENTPHP

<input type="text" class="form-control" placeholder="First Name *" name="fna

<input type="email" class="form-control" placeholder="Your Email *" name="ema

<input type="password" class="form-control" placeholder="Password *" id="pass

<label class="radio inline">
<input type="radio" name="gender" value="Male" checked>
 Male
</label>
<label class="radio inline">
<input type="radio" name="gender" value="Female">
Female
</label>

Already have an account? Login Now

<input type="text" class="form-control" placeholder="Last Name *" name="lname

<input type="tel" minlength="10" maxlength="10" name="contact" class="form-cc

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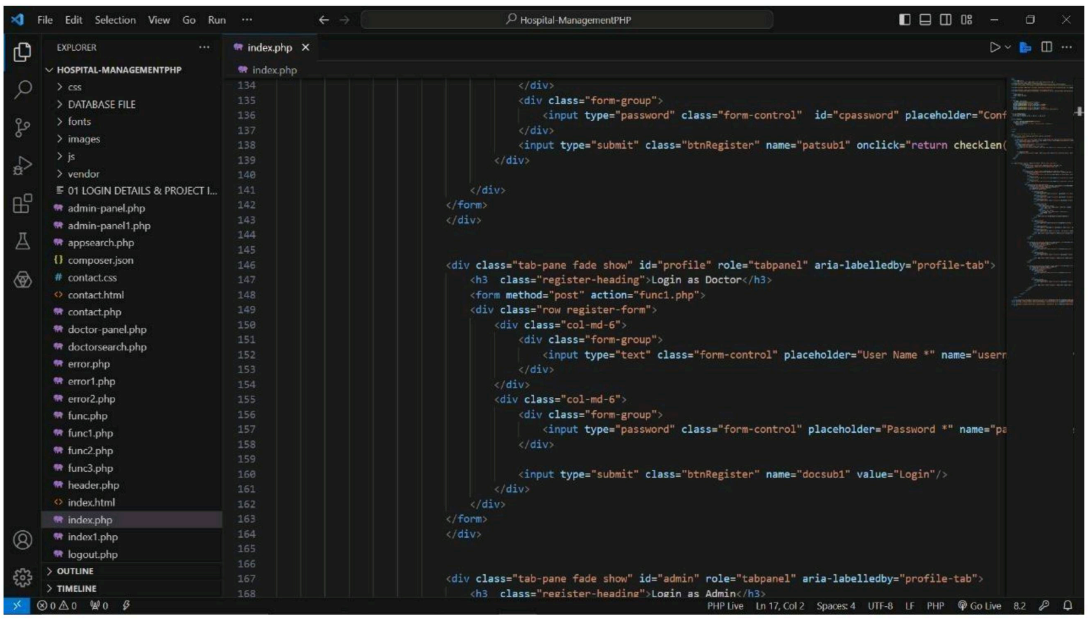
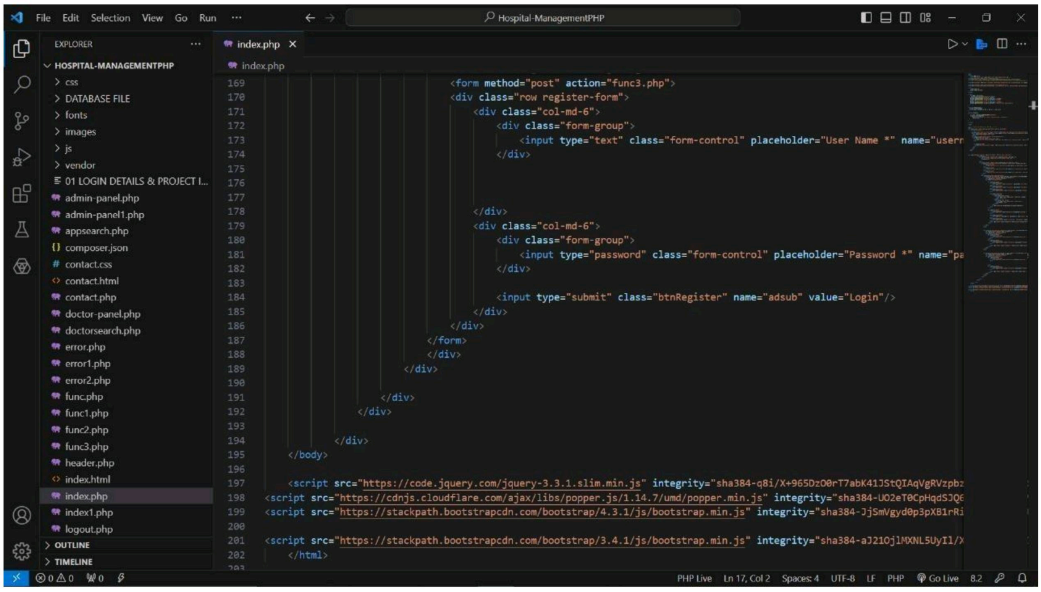

File Edit Selection View Go Run
Hospital-ManagementPHP
EXPLORER
index.php
HOSPITAL-MANAGEMENTPHP
css
DATABASE FILE
fonts
images
js
vendor
01 LOGIN DETAILS & PROJECT I...
admin-panel.php
admin-panel1.php
appsearch.php
composer.json
contact.css
contact.html
contact.php
doctor-panel.php
doctorsearch.php
error.php
error1.php
error2.php
func.php
func1.php
func2.php
func3.php
header.php
index.html
index.php
index1.php
logout.php
OUTLINE
TIMELINE
<input type="submit" class="btnRegister" name="patsub1" onclick="return checklen(
<h3 class="register-heading">Login as Doctor</h3>
<form method="post" action="func1.php">
<input type="text" class="form-control" placeholder="User Name *" name="userr
<input type="password" class="form-control" placeholder="Password *" name="pa
<input type="submit" class="btnRegister" name="docsub1" value="Login"/>

<h3 class="register-heading">Login as Admin</h3>
PHP Live Ln 17, Col 2 Spaces: 4 UTF-8 LF PHP Go Live 8.2


File Edit Selection View Go Run
Hospital-ManagementPHP
EXPLORER
index.php
HOSPITAL-MANAGEMENTPHP
<form method="post" action="func3.php">
<input type="text" class="form-control" placeholder="User Name *" name="userr
<input type="password" class="form-control" placeholder="Password *" name="pa
<input type="submit" class="btnRegister" name="adsub" value="Login"/>
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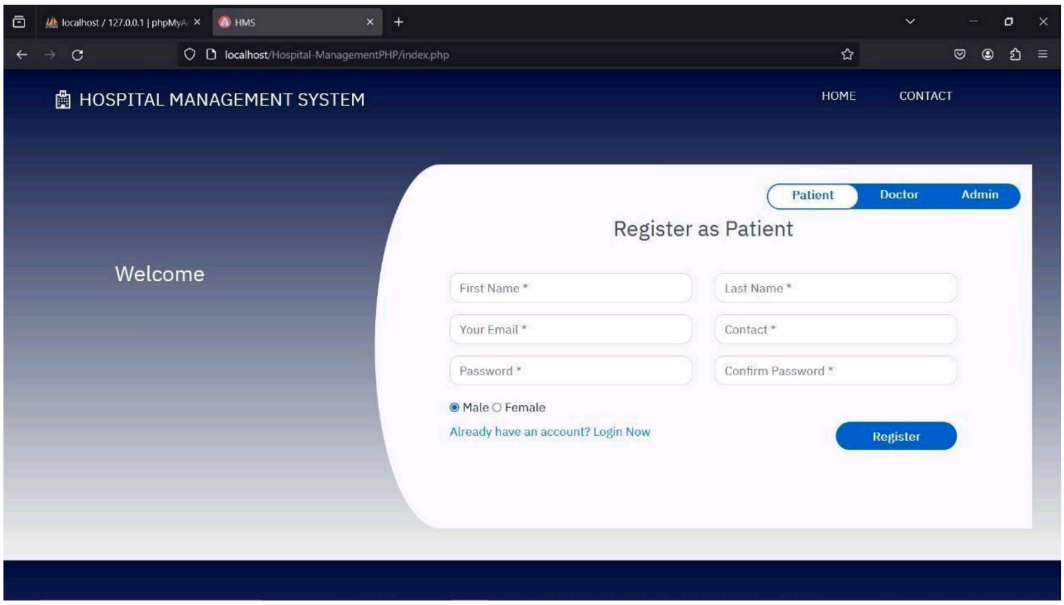
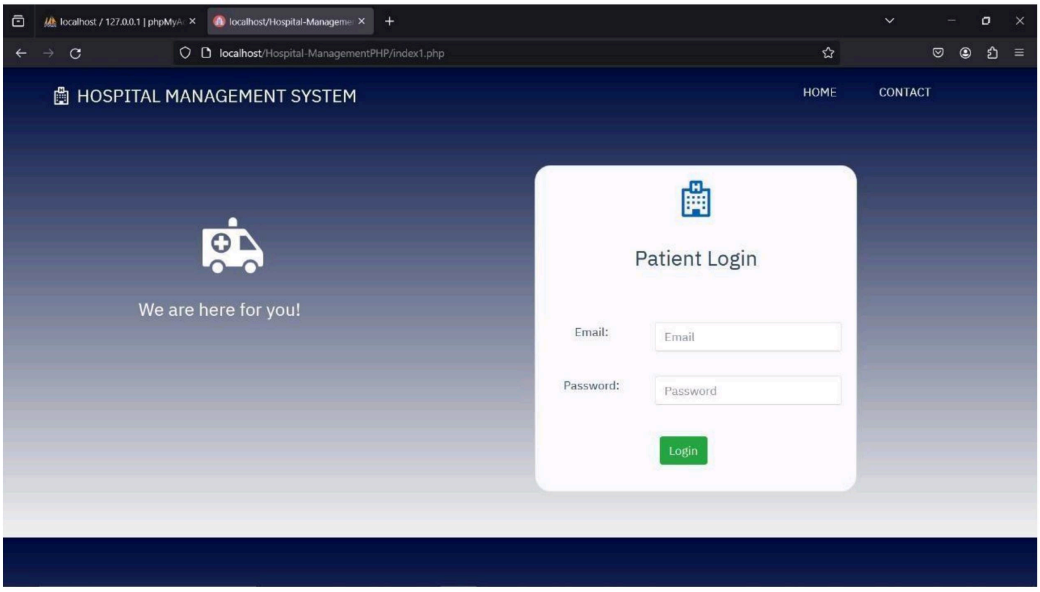
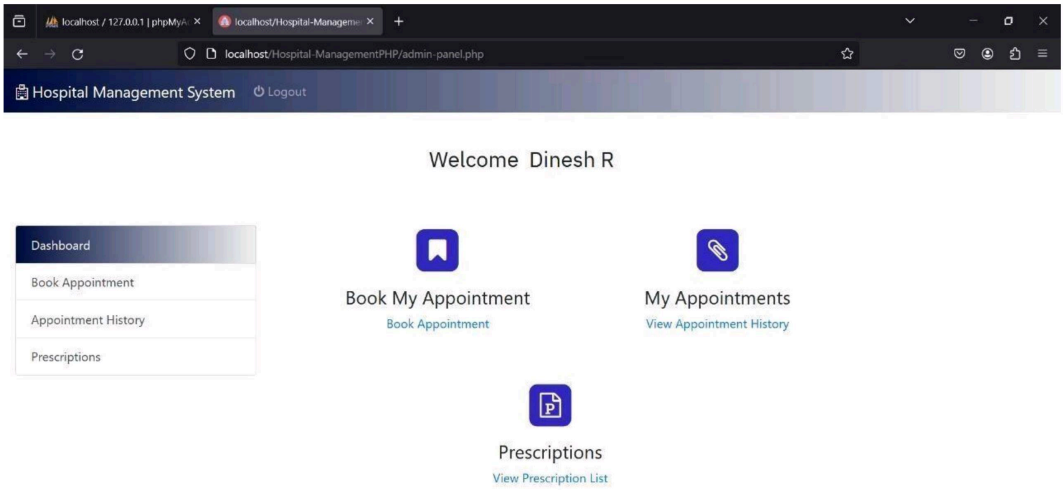
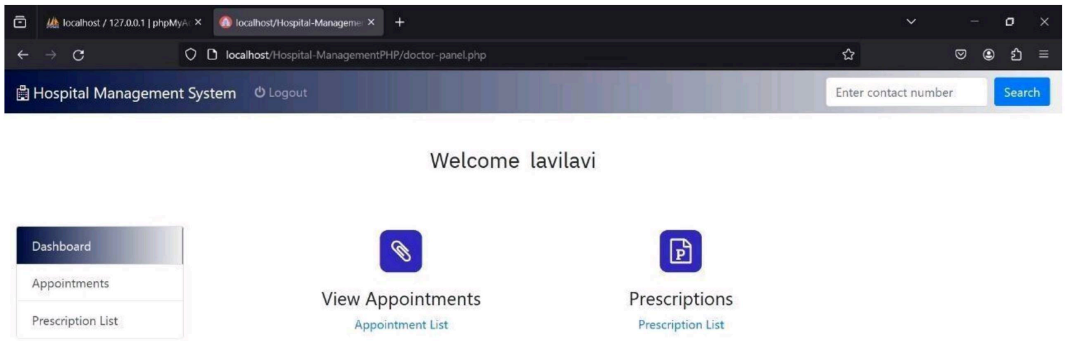

localhost / 127.0.0.1 | phpMyA
HMS
localhost/Hospital-ManagementPHP/index.php
HOSPITAL MANAGEMENT SYSTEM
HOME
CONTACT
Welcome
Patient
Doctor
Admin
Register as Patient
First Name *
Last Name *
Your Email *
Contact *
Password *
Confirm Password *
Male Female
Already have an account? Login Now
Register


localhost / 127.0.0.1 | phpMyA
localhost/Hospital-Manageme
localhost/Hospital-ManagementPHP/index1.php
HOSPITAL MANAGEMENT SYSTEM
HOME
CONTACT
We are here for you!
Patient Login
Email:
Email
Password:
Password
Login


localhost/Hospital-ManagementPHP/admin-panel.php
Hospital Management System
Logout
Welcome Dinesh R
Dashboard
Book Appointment
Appointment History
Prescriptions
Book My Appointment
Book Appointment
My Appointments
View Appointment History
Prescriptions
View Prescription List


localhost/Hospital-ManagementPHP/doctor-panel.php
Hospital Management System
Logout
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Appointments
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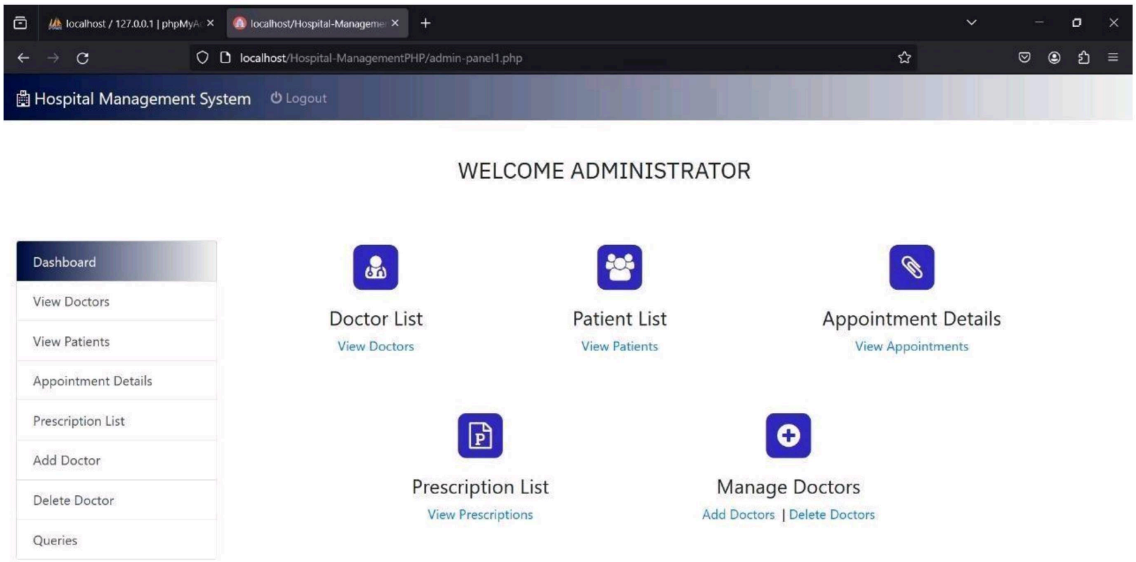
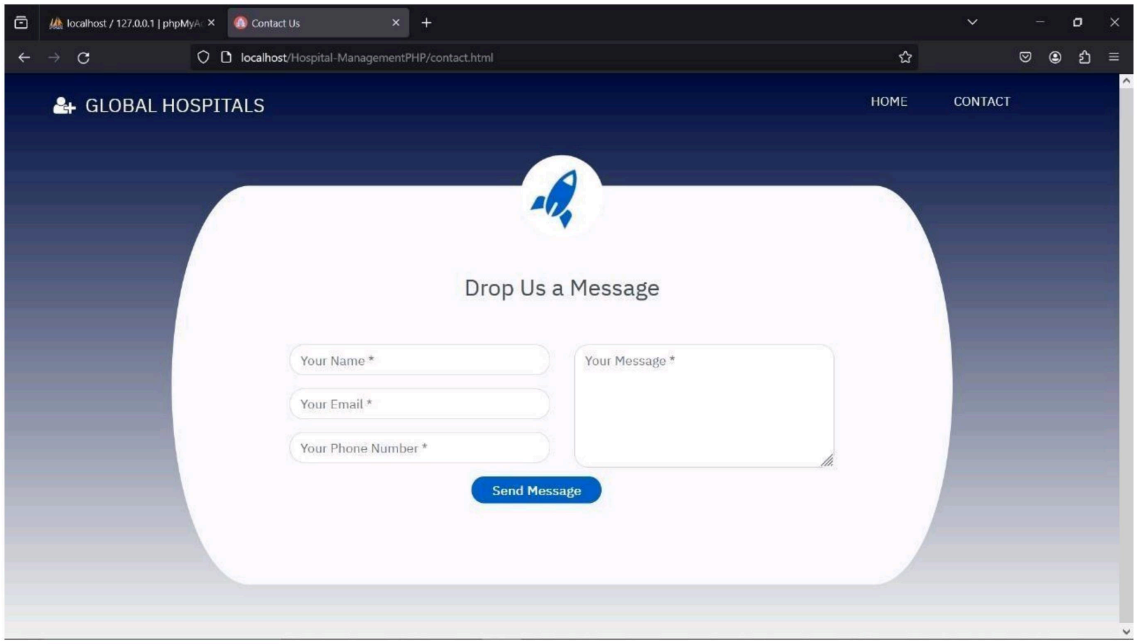
Appointment List
Prescriptions
Prescription List


localhost / 127.0.0.1 | phpMyA
localhost/Hospital-Managem
localhost/Hospital-ManagementPHP/admin-panel1.php
Hospital Management System
Logout
WELCOME ADMINISTRATOR
Dashboard
View Doctors
View Patients
Appointment Details
Prescription List
Add Doctor
Delete Doctor
Queries
Doctor List
View Doctors
Patient List
View Patients
Appointment Details
View Appointments
Prescription List
View Prescriptions
Manage Doctors
Add Doctors | Delete Doctors


localhost / 127.0.0.1 | phpMyA
Contact Us
localhost/Hospital-ManagementPHP/contact.html
GLOBAL HOSPITALS
HOME
CONTACT
Drop Us a Message
Your Name *
Your Email *
Your Phone Number *
Your Message *
Send Message

GITHUB LINK

https://github.com/SATHISHKUMAR-S-prog/HMS.git

VIDEO LINK:

https://1drv.ms/v/s!AqTFIVquqTx8hRIY9Sar9acJX--m

REFERENCES:

https://www.himss.org/