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**IS 699 – Information Systems Project**

**Project: HOSPITAL MANAGEMENT SYSTEM**

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## General Information

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| --- | --- | --- | --- |
| Project Title: | Hospital Management System (HMS) | | |
| Project Description: | The Hospital Management System (HMS) is designed to streamline patient data management, billing, appointments, and healthcare analytics. It integrates various healthcare operations into a unified system, improving efficiency, reducing errors, and enhancing patient care. The system will handle electronic health records (EHR), hospital billing, and scheduling while ensuring compliance with healthcare standards such as HIPAA. | | |
| Prepared By: | Nagarjun Chidaravalli Shanthakumar  Rakshith Suresh  Vishwanath Bhat | | |
| Date: | 9/15/2024 | Version**:** | 1.0 |

1. **Project Objective:**

**Objective:** The primary objective of the Hospital Management System (HMS) is to improve healthcare service delivery by streamlining and automating various administrative and clinical processes. The system will ensure efficient patient data management, reduce administrative burdens, enhance data security, and provide better insights through healthcare analytics.

**Value to the Organization:** The project adds significant value by improving operational efficiency, reducing the likelihood of errors in patient records and billing, and enabling seamless communication between departments and healthcare professionals. Additionally, the system helps healthcare providers comply with regulatory requirements, such as HIPAA.

**Expected Results:**

* A fully functional and user-friendly Hospital Management System that manages electronic health records (EHR), appointments, billing, and analytics.
* Improved patient satisfaction due to more efficient appointment scheduling and billing processes.
* Enhanced data security and compliance with healthcare regulations.

**Deliverables:**

* HMS Software (web-based or mobile-enabled).
* Secure database integration for patient records.
* Real-time reporting and analytics dashboard for hospital administrators.
* Automated appointment booking and billing systems.

1. **Assumptions**
2. **Resource Availability**: Adequate resources (technical staff, financial budget, hardware, and software tools) will be available throughout the project lifecycle.
3. **Stakeholder Support**: Key stakeholders, including hospital staff and management, will provide timely feedback and approvals when needed.
4. **Data Security Compliance**: All required data protection measures (e.g., HIPAA compliance) will be implemented without unforeseen delays.
5. **Technology Integration**: The existing IT infrastructure will support the new system without significant upgrades or changes.
6. **Training & Adoption**: Hospital staff will adopt the new system efficiently, and necessary training will be completed within the allotted time.

1. **Project Scope** Describe the scope of the project. The project scope establishes the boundaries of the project. It identifies the limits of the project and defines the deliverables.

**Project Scope:** The Hospital Management System (HMS) will manage patient data, billing, appointment scheduling, and healthcare analytics for hospitals and clinics. It will include:

* **Electronic Health Records (EHR)**: A secure system for storing and retrieving patient data.
* **Billing System**: Automation of hospital billing processes, including insurance claims.
* **Appointment Scheduling**: Streamlining of patient appointments with real-time availability tracking.
* **Analytics Dashboard**: Providing real-time insights into hospital performance and patient care.

The system will be accessible via web and mobile platforms, ensuring compliance with data security standards (e.g., HIPAA).

## Project Milestones

List the major milestones and deliverables of the project.

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|  |  |  |
| --- | --- | --- |
| **Milestones** | **Deliverables** | **Date** |
| Project Kickoff | |  | | --- | | Initial project plan and team assignments |  |  | | --- | |  | | 09/12/24 |
| |  | | --- | | Requirement Gathering & Analysis |  |  | | --- | |  | | |  | | --- | | Documented system requirements |  |  | | --- | |  | | 09/14/24 |
| |  | | --- | | System Design & Architecture |  |  | | --- | |  | | |  | | --- | | Detailed design documents and  system diagrams |  |  | | --- | |  | | 09/20/24 |
| |  | | --- | | Development Phase Completion |  |  | | --- | |  | | |  | | --- | | Functional modules (EHR, billing,  scheduling) |  |  | | --- | |  | | 10/20/24 |
| |  | | --- | | Testing & Quality Assurance |  |  | | --- | |  | | |  | | --- | | Tested and validated system |  |  | | --- | |  | | 11/05/24 |
| |  | | --- | | Final Deployment & Go-Live |  |  | | --- | |  | | |  | | --- | | Fully deployed HMS ready for use |  |  | | --- | |  | | 12/01/24 |

1. **Roles and Responsibilities** Describe the roles and responsibilities of project team members followed by the names and contact information for those filling the roles. The table below gives some generic descriptions. Modify, overwrite, and add to these examples to accurately describe the roles and responsibilities for this project.

|  |  |  |  |
| --- | --- | --- | --- |
| Role | Name | Email / Phone | Responsibilities |
| Project Manager | Vishwanath Bhat | Vishwanathbhat.padukudru01@student.csulb.edu | Oversee the project, coordinate tasks among team members, gather business requirements, ensure milestones are met, and liaise with stakeholders. |
| |  | | --- | | **Lead Developer** |  |  | | --- | |  | | Nagarjun Chidaravalli Shanthakumar | Nagarjun.chidaravallishanthakumar01@student.csulb.edu | Develop and implement the core system, manage the technical aspects of the project, ensure code quality, and lead the technical team. |
| Business Analyst & Quality Assurance Lead | Rakshith Suresh | Rakshith.suresh01@student.csulb.edu | Conduct testing, ensure the system meets quality and security standards (e.g., HIPAA compliance), and handle risk management. |

**Project Charter**

**H. Resources**

Identify the initial funding, personnel, and other resources committed to this project by the project sponsor.

|  |  |
| --- | --- |
| **Resource** | **Constraints** |
| |  | | --- | | Project Budget |  |  | | --- | |  | | $500 (covers development, testing, and deployment costs, with limited contingency funds) |
| Personnel | 3 team members working part-time (approx. 20 hours/week each) |
| Development Tools | |  | | --- | |  |   Limited access to premium tools (e.g., Snowflake, Tableau Desktop, AWS for cloud infrastructure) |
| Time | 3 months (deadline constrained by academic project timeline) |

**I. Project Risks**

Identify the high-level project risks and the strategies to mitigate them.

|  |  |
| --- | --- |
| **Risk** | **Mitigation Strategy** |
| |  | | --- | | Data Security Breaches |  |  | | --- | |  | | |  | | --- | | Implement encryptions for all sensitive data and ensure  compliance with HIPAA regulations. |  |  | | --- | |  | |
| |  | | --- | | Limited Budget |  |  | | --- | |  | | |  | | --- | | Prioritize essential features for initial release and seek  cost-effective development tools. |  |  | | --- | |  | |
| |  | | --- | | Delays in Development |  |  | | --- | |  | | |  | | --- | | Implement Agile development practices and set clear  milestones with regular progress checks. |  |  | | --- | |  | |
| |  | | --- | | User Adoption Challenges |  |  | | --- | |  | | |  | | --- | | Provide comprehensive training for hospital staff and  ongoing support post-deployment. |  |  | | --- | |  | |

**Project Charter**

**Project Overview and Plan**

The **Hospital Management System (HMS)** aims to streamline healthcare operations, including patient data management, billing, appointment scheduling, and healthcare analytics. The system will ensure compliance with healthcare standards such as HIPAA.

**Agile Approach**

The project follows an **Agile development methodology**, focusing on iterative progress and continuous feedback. Below is a detailed breakdown of the project tasks and milestones, with more detailed planning for the initial phases.

**Major Tasks and Milestones**

**Phase 1: Initial Planning and Setup**

* **Milestone: Project Kick-off** (9/12/2024)
  + Tasks:
    - Initial project briefing.
    - Team assignments and setup.
    - Selection of development tools and cloud infrastructure setup (AWS for cloud, limited access).
  + Deliverables:
    - Initial project plan, team assignments.
    - Tool selection and setup.
* **Milestone: Requirement Gathering & Analysis** (9/14/2024)
  + Tasks:
    - Gather business and technical requirements.
    - Engage stakeholders (hospital staff and management) for feedback.
    - Analyze integration with existing IT infrastructure.
  + Deliverables:
    - Documented system requirements.
    - Stakeholder approval on gathered requirements.

**Phase 2: Design and Architecture**

* **Milestone: System Design & Architecture** (9/20/2024)
  + Tasks:
    - Create system architecture, including data flow and security measures.
    - Design user interfaces for patient management, billing, and appointment systems.
    - Ensure compliance with HIPAA and data encryption standards.
  + Deliverables:
    - Detailed design documents, system diagrams.

**Phase 3: Development and Coding**

* **Milestone: Development Phase Completion** (10/20/2024)
  + Tasks:
    - Sprint 1 (2 weeks): Develop core modules for EHR (Electronic Health Records).
    - Sprint 2 (2 weeks): Build billing system and insurance claims automation.
    - Sprint 3 (2 weeks): Develop appointment scheduling module with real-time availability tracking.
    - Weekly sprint reviews with stakeholders.
  + Deliverables:
    - Functional modules for EHR, billing, and scheduling.

**Phase 4: Testing and Quality Assurance**

* **Milestone: Testing & Quality Assurance** (11/05/2024)
  + Tasks:
    - Conduct unit, integration, and system testing.
    - Test security features, including data encryption.
    - Conduct user acceptance testing (UAT) with hospital staff.
  + Deliverables:
    - Tested and validated system.
    - Approval from quality assurance team.

**Phase 5: Final Deployment and Go-Live**

* **Milestone: Final Deployment & Go-Live** (12/01/2024)
  + Tasks:
    - Final system deployment in hospital IT infrastructure.
    - Train hospital staff on system usage.
    - Post-deployment support and monitoring.
  + Deliverables:
    - Fully deployed Hospital Management System.
    - Completed training sessions for hospital staff.

**Sprint Breakdown (First Few Weeks)**

**Sprint 1 (9/15 - 9/28)**

* Focus: **Requirement Analysis and Basic EHR Setup**
* Tasks:
  + Interview hospital staff for finalizing requirements.
  + Begin development on the Electronic Health Records (EHR) module.
  + Initial UI development for EHR data entry and retrieval.
* Expected Deliverables:
  + Completed EHR data structure.
  + Basic EHR interface.

**Sprint 2 (9/29 - 10/12)**

* Focus: **Billing System Development**
* Tasks:
  + Develop core features for billing and insurance claims.
  + Integrate billing features with EHR for seamless data access.
  + Establish HIPAA-compliant encryption protocols for billing data.
* Expected Deliverables:
  + Functional billing system.
  + Encryption protocols for sensitive data.

**Sprint 3 (10/13 - 10/20)**

* Focus: **Appointment Scheduling**
* Tasks:
  + Implement real-time scheduling and availability tracking.
  + User interface for booking appointments.
  + Notifications and calendar sync features.
* Expected Deliverables:
  + Fully functional appointment scheduling system.

**High-Level Future Tasks (Post-Development)**

1. **Post-Deployment Support** (December 2024)
   * Ensure system stability and address any post-launch issues.
   * Ongoing training and support for hospital staff.
2. **Maintenance and Iteration** (January 2025 onwards)
   * Regular updates for security and feature enhancement.
   * Gather user feedback for future system iterations.