



Shahjalal University of Science and Technology, Sylhet

LAB REPORT ON

Bangabandhu Hall Automation System

Submitted by:
Omar Faruk
Roll:2019831055
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Submitted to:
Dr. Ahsan Habib
Associate Professor
IICT, SUST

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ID	Task Name		Duration	Start	Finish	Predecessors
1	Scope	Determine Project Scope	1 days	Thu 8/24/23	Fri 8/24/23	-
2		Define Preliminary Resources	1 days	Thu 8/24/23	Fri 8/24/23	-
3		Secure Core Resources	1 days	Fri 8/25/23	Fri 8/25/23	3
4		Scope Complete	0 days	Fri 8/25/23	Fri 8/25/23	4
5	Analysis	Requirement Gathering	7 days	Mon 8/28/23	Tue 9/5/23	5
6		Draft Preliminary Software Specification	3 days	Mon 8/28/23	Tue 9/5/23	7
7		Develop Preliminary Budget	2 days	Wed 9/6/23	Fri 9/8/23	8
8		Develop Delivery Timeline	1 days	Mon 9/11/23	Tue 9/12/23	9
9		Analysis Complete	0 days	Wed 9/13/23	Wed 9/13/23	10
10	Design	System Architecture Design	3 days	Thu 9/14/23	Mon 9/18/23	11
11		Database Design	5 days	Tue 9/19/23	Mon 9/25/23	13
12		UI/UX Design	7 days	Tue 9/19/23	Wed 9/27/23	13
13		Design Complete	0 days	Wed 9/27/23	Wed 9/27/23	15
14	Implementation	Review Functional Specification	1 days	Thu 9/28/23	Thu 9/28/23	16
15		Assign Development Staff	1 days	Fri 9/29/23	Fri 9/29/23	18
16		Frontend Development	12 days	Mon 10/2/23	Tue 10/17/23	19
17		Backend Development	7 days	10/13/23	10/12/23	21
18		Development Testing (Preliminary Debugging)	5 days	10/24/23	10/30/23	26
19		Development Complete	0 days	10/30/23	10/30/23	27

ID	Task Name		Duration	Start	Finish	Predecessors
20	Testing	Unit Testing	5 days	Tue 10/31/23	Mon 11/6/23	28
21		Integration Testing	3 days	Tue 11/7/23	Thu 11/9/23	30
22		System Testing	2 days	Fri 11/10/23	Mon 11/13/23	31
23		User Acceptance Testing	3 days	Tue 11/14/23	Thu 11/16/23	32
24		Testing Complete	0 days	Thu 11/16/23	Thu 11/16/23	33
25	Documentation	Documentation	5 days	Fri 11/17/23	Wed 11/22/23	24
26		Documentation Complete	0 days	Wed 11/22/23	Wed 11/22/23	26
27	Deployment	Determine Final Deployment Strategy	1 days	Thu 11/23/23	Thu 11/23/23	26
28		Secure Deployment Resources	1 days	Fri 11/24/23	Fri 11/24/23	27
29		Deploy Software	1 days	Mon 11/27/23	Mon 11/27/23	28
30		Deployment Complete	0 days	Mon 11/27/23	Mon 11/27/23	29
31	Post implementation	Document Lessons Learned	1 days	Tue 11/28/23	Tue 11/28/23	30
32		Distribute to Team Members	1 days	Wed 11/29/23	Wed 11/29/23	31
33		Create Software Maintenance Team	1 days	Thu 11/30/23	Thu 11/30/23	32
34		Post Implementation Review Complete	0 days	Thu 11/30/23	Thu 11/30/23	32
35	Software Development Complete	Software Development Complete	0 days	Thu 11/30/23	Thu 11/30/23	34

1 Scope

The scope section outlines the boundaries and key resources of the Bangabandhu Hall Management System project. This section details the determination of the project scope, preliminary and core resource definitions, and the completion of the scope process. The entire process was completed within 3 days.

1.1 Determine Project Scope

- **Duration:** 1 day
- **Description:** The project scope was determined through initial meetings with stakeholders, including students and administrative staff. The primary focus was on identifying the essential functionalities required, such as student account creation, seat application, complaint registration, and administrative control by the provost. The scope also included defining the system's boundaries to ensure clarity and prevent scope creep.

1.2 Define Preliminary Resources

- **Duration:** 1 days
- **Description:** Preliminary resources, such as the technologies and tools required for the project, were identified. This included selecting a web development framework, database systems, and project management tools. Additionally, preliminary human resources, including roles like developers, designers, and project managers, were outlined.

1.3 Secure Core Resources

- **Duration:** 1 day
- **Description:** Core resources necessary for the project's success were secured. This included finalizing the development team, acquiring necessary software licenses, and ensuring the availability of hardware resources like servers. Key team members were briefed on their roles and responsibilities to ensure alignment with project objectives.

1.4 Scope Complete

- **Duration:** 0 days
- **Description:** The scope was reviewed and finalized. This involved consolidating all the information gathered, confirming resource availability, and obtaining stakeholder approval on the defined scope. A scope statement document was created, summarizing the agreed-upon deliverables, timelines, and resource allocations, marking the completion of the scope phase.

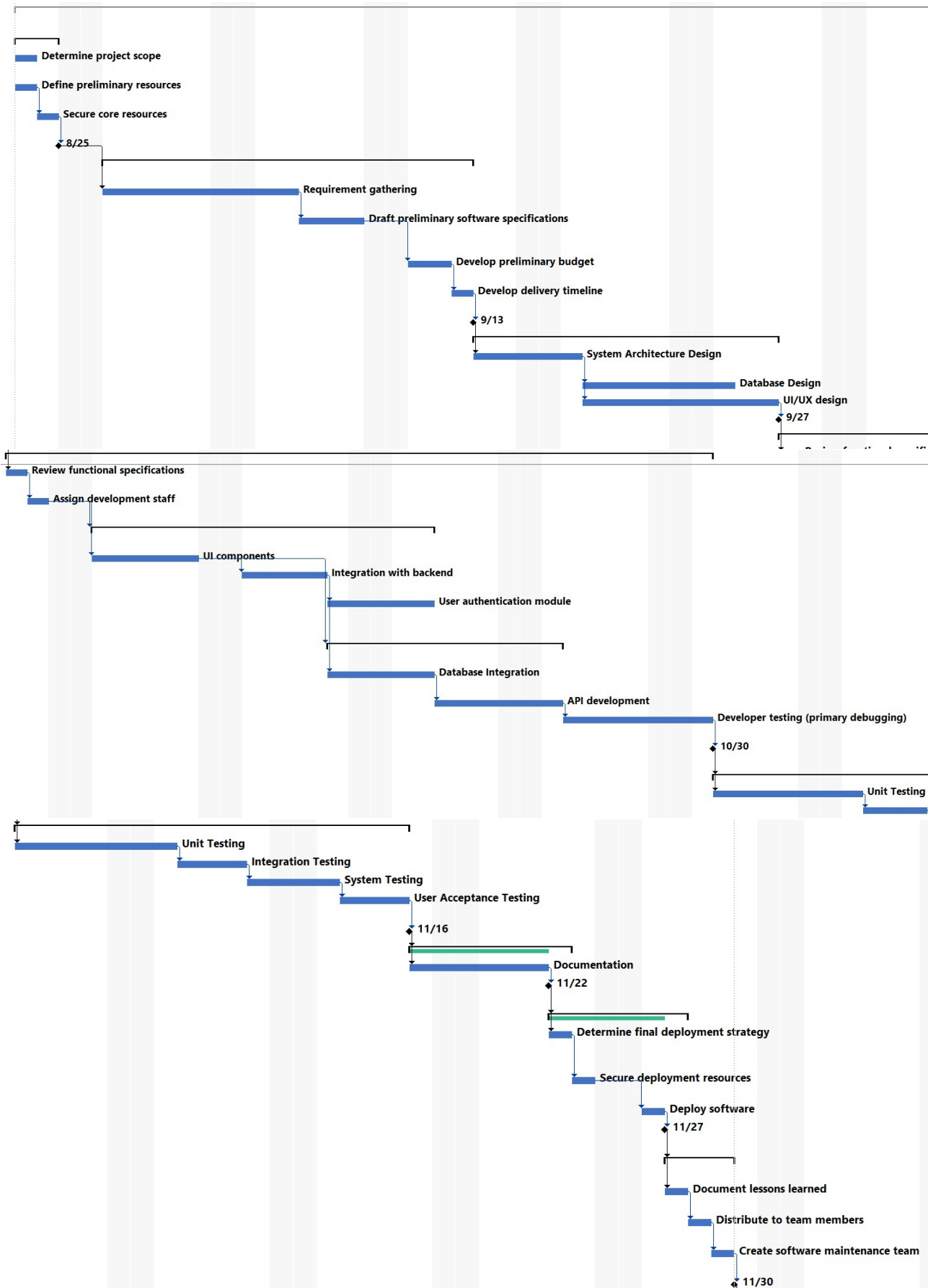


Figure 1: Example Image

2 Analysis/Software Requirement

This section details the analysis and software requirements for the Bangabandhu Hall Management System. The activities include requirement gathering, drafting preliminary software specifications, developing a preliminary budget, creating a delivery timeline, and concluding the analysis phase. This phase took a total of 13 days to complete.

2.1 Requirement Gathering

- **Duration:** 7 days
- **Description:** Comprehensive requirement gathering was conducted through interviews, surveys, and workshops with stakeholders, including students, hall staff, and the provost. The goal was to collect detailed information on user needs, functional requirements, and system expectations. This phase ensured a thorough understanding of what the system should achieve and provided a solid foundation for the subsequent stages.

2.2 Draft Preliminary Software Specification

- **Duration:** 3 days
- **Description:** Based on the information gathered, a preliminary software specification document was drafted. This document outlined the key features and functionalities of the system, such as user registration, seat application processing, complaint management, and administrative controls. It also included initial design concepts and system architecture to provide a clear vision of the end product.

2.3 Develop Preliminary Budget

- **Duration:** 2 days
- **Description:** A preliminary budget was developed to estimate the financial resources required for the project. This included costs for software development, hardware acquisition, personnel, and other operational expenses. The budget provided a financial framework to ensure that the project could be completed within the allocated resources.

2.4 Develop Delivery Timeline

- **Duration:** 1 day
- **Description:** A detailed delivery timeline was created, outlining the key milestones and deadlines for each phase of the project. This timeline included all critical activities, from design and development to testing and deployment, ensuring that the project stayed on schedule. The timeline helped in setting realistic expectations for stakeholders and provided a roadmap for the project team.

2.5 Analysis Complete

- **Duration:** 0 days
- **Description:** The analysis phase concluded with a comprehensive review of all gathered information and documentation. Stakeholders reviewed and approved the preliminary software specifications, budget, and delivery timeline. This final step ensured that all aspects of the analysis were complete, validated, and ready for the next phase of the project.

3 Design

The design phase of the Bangabandhu Hall Management System focuses on creating the blueprint for the system's architecture, database, and user interface. This phase ensures that the system is well-structured, efficient, and user-friendly. The design phase took a total of 15 days to complete.

3.1 System Architecture Design

- **Duration:** 3 days
- **Description:** The system architecture design involved outlining the overall structure of the system, including the major components and their interactions. This phase included the creation of high-level diagrams such as system context diagrams, component diagrams, and deployment diagrams. The goal was to ensure a scalable and robust architecture that could support current and future needs of the hall management system.

3.2 Database Design

- **Duration:** 5 days
- **Description:** The database design phase focused on defining the database schema, including tables, relationships, and constraints. Entity-Relationship (ER) diagrams were created to visualize the data model, ensuring data integrity and efficient access. This phase also involved determining the data storage requirements and indexing strategies to optimize performance. The database design was aligned with the system requirements to support functionalities such as user registration, seat applications, and complaint management.

3.3 UI/UX Design

- **Duration:** 7 days
- **Description:** The User Interface (UI) and User Experience (UX) design phase was dedicated to creating intuitive and engaging interfaces for the system. Wireframes and mockups were developed to visualize the layout and navigation of the system. User flows were designed to ensure a seamless experience for both students and the provost. This phase involved iterative feedback sessions with stakeholders to refine the designs and ensure they met user expectations.

3.4 Design Complete

- **Duration:** 0 days
- **Description:** The design phase concluded with a comprehensive review of the system architecture, database schema, and UI/UX designs. All design documents and artifacts were finalized and approved by the stakeholders. This step ensured that the design was complete and ready for the implementation phase, providing a clear and detailed blueprint for the development team to follow.

4 Implementation

The implementation phase of the Bangabandhu Hall Management System involves translating the design into a functional system through coding and integration. This phase ensures that the system is developed according to specifications and is ready for deployment. The implementation phase took a total of 26 days to complete.

4.1 Review Functional Specification

- **Duration:** 1 day
- **Description:** This step involved a thorough review of the functional specification document by the development team. The goal was to ensure that all team members understood the requirements and design specifications clearly. Any ambiguities or uncertainties were clarified to prevent issues during the development process.

4.2 Assign Development Staff

- **Duration:** 1 day
- **Description:** Development tasks were assigned to team members based on their expertise and the project requirements. Roles and responsibilities were clearly defined to ensure efficient collaboration and progress tracking. This step was crucial for organizing the development effort and ensuring that all aspects of the system were covered.

4.3 Frontend Development

- **Duration:** 12 days
- **Description:** Frontend development focused on creating the user-facing part of the system, ensuring a responsive and intuitive interface for users.

4.3.1 UI Component

Duration: 5 days

Description: Development of individual UI components such as forms, buttons, and navigation elements. These components were designed to be reusable and consistent across the system. This phase also included styling and ensuring that the UI was aligned with the UX designs.

4.3.2 Integration with Backend

Duration: 4 days

Description: Integration of the frontend components with backend services. This involved setting up API calls, handling responses, and ensuring smooth data flow between the frontend and backend. This step was crucial for enabling dynamic functionalities such as form submissions and data retrieval.

4.3.3 User Authentication Module

Duration: 3 days

Description: Implementation of the user authentication module, allowing users to register, log in, and manage their sessions. This included creating secure login forms, handling authentication tokens, and ensuring proper access control for different user roles.

4.4 Backend Development

- **Duration:** 7 days
- **Description:** Backend development focused on building the server-side logic, database interactions, and API services required to support the frontend functionalities.

4.4.1 Database Integration

Duration: 3 days

Description: Integration of the database with the backend logic. This involved setting up database connections, writing queries, and ensuring data integrity and security. This phase ensured that all data-related operations were efficient and reliable.

4.4.2 API Development

Duration: 4 days

Description: Development of APIs to handle various functionalities such as user management, seat applications, and complaint processing. These APIs served as the bridge between the frontend and the backend, enabling seamless communication and data exchange.

4.5 Development Testing (Preliminary Debugging)

- **Duration:** 5 days
- **Description:** Preliminary debugging and testing of the developed components to identify and fix any issues. This phase included unit testing, integration testing, and initial system testing to ensure that all parts of the system worked together as expected. Early identification and resolution of bugs were critical to maintaining the quality of the system.

4.6 Development Complete

- **Duration:** 0 days
- **Description:** The development phase concluded with a review of all implemented features and functionalities. All code was finalized, documented, and prepared for the testing phase. This step marked the transition from development to comprehensive system testing and deployment preparation.

5 Testing

The testing phase of the Bangabandhu Hall Management System ensures that the developed system meets the required standards and functions correctly. This phase includes various levels of testing to identify and resolve issues before deployment. The testing phase took a total of 13 days to complete.

5.1 Unit Testing

- **Duration:** 5 days
- **Description:** Unit testing involved testing individual components and modules of the system to ensure they function correctly in isolation. Each unit was tested for expected outputs, edge cases, and error handling. This step was crucial for identifying and fixing issues at the earliest stage, ensuring the reliability of the smallest parts of the system.

5.2 Integration Testing

- **Duration:** 3 days
- **Description:** Integration testing focused on verifying the interactions between different components and modules. This phase ensured that the various parts of the system worked together seamlessly. It included testing the data flow between the frontend and backend, the interaction between different services, and the integration of external systems if any.

5.3 System Testing

- **Duration:** 2 days

- **Description:** System testing involved testing the entire system as a whole to ensure it met the specified requirements. This phase included end-to-end testing of all functionalities, performance testing, and security testing. The goal was to identify any issues that could arise in a real-world environment and to ensure the system was robust and reliable.

5.4 User Acceptance Testing

- **Duration:** 3 days
- **Description:** User Acceptance Testing (UAT) involved real users testing the system to ensure it met their needs and expectations. Stakeholders, including students and administrative staff, used the system to perform typical tasks and provided feedback. This phase was essential for verifying that the system was user-friendly and met the requirements from an end-user perspective.

5.5 Testing Complete

- **Duration:** 0 days
- **Description:** The testing phase concluded with a review and documentation of all testing activities and results. All identified issues were addressed, and the system was verified to be stable and ready for deployment. This step marked the transition from testing to deployment, ensuring that the system was fully prepared for live use.

6 Documentation

The documentation phase of the Bangabandhu Hall Management System involves creating comprehensive guides and manuals that detail the system's functionality, usage, and maintenance. Proper documentation is crucial for ensuring that all stakeholders, including developers, administrators, and users, can effectively use and maintain the system. The documentation phase took a total of 4 days to complete.

6.1 Documentation

- **Duration:** 4 days
- **Description:** This phase involved creating various types of documentation necessary for the project. The key documents included:
 - User Manuals: Detailed guides for students and administrative staff on how to use the system, including account creation, seat application, complaint registration, and administrative functions.
 - Technical Documentation: Comprehensive documentation for developers and IT staff, covering system architecture, database schema, API endpoints, and integration details. This also included setup and configuration instructions for deployment and maintenance.

- Training Materials: Resources such as tutorials, FAQs, and video guides to help users quickly learn how to navigate and utilize the system effectively.
- Project Reports: Detailed reports on the project phases, including requirements, design, implementation, testing, and deployment, providing a complete overview of the project lifecycle.

6.2 Documentation Complete

- **Duration:** 0 days
- **Description:** The documentation phase concluded with a final review and approval of all created documents. This step ensured that all necessary information was accurately captured and effectively communicated. The completed documentation was distributed to the relevant stakeholders, marking the readiness of the system for deployment and use.

7 Deployment

The deployment phase of the Bangabandhu Hall Management System involves preparing and launching the system in the live environment. This phase ensures that the system is properly set up and accessible to end-users. The deployment phase took a total of 4 days to complete.

7.1 Determine Final Deployment Strategy

- **Duration:** 1 day
- **Description:** This step involved finalizing the deployment strategy, including decisions on the deployment environment, such as cloud or on-premises, and the deployment process. The strategy was designed to ensure minimal disruption and downtime during the transition to the live system. Key considerations included rollback procedures, user communication, and a timeline for the deployment.

7.2 Development Methodology

- **Duration:** 1 day
- **Description:** The development methodology was reviewed and documented to ensure consistency during the deployment process. This included defining the deployment workflow, version control practices, and continuous integration/continuous deployment (CI/CD) pipelines. The methodology ensured that the deployment process was systematic and adhered to best practices, reducing the risk of errors.

7.3 Secure Deployment Resources

- **Duration:** 1 day

- **Description:** Necessary resources for deployment were secured, including server infrastructure, network configurations, and security measures. This step involved ensuring that all hardware and software components were ready and that security protocols were in place to protect the system during and after deployment. Key resources included cloud service subscriptions, server instances, and backup systems.

7.4 Deploy Software

- **Duration:** 1 day
- **Description:** The actual deployment of the software to the live environment was carried out. This included transferring code, configuring databases, and setting up necessary services. Post-deployment checks were conducted to ensure that the system was functioning as expected. User access was enabled, and initial monitoring was established to quickly identify and resolve any issues that arose.

7.5 Deployment Complete

- **Duration:** 0 days
- **Description:** The deployment phase concluded with a final review and confirmation that the system was successfully deployed and operational. This step ensured that all deployment tasks were completed, and the system was ready for use by end-users. The successful deployment marked the transition to the maintenance and support phase.

8 Post Implementation Review

The post-implementation review phase focuses on evaluating the completed project to identify lessons learned, distribute findings, and set up a maintenance structure. This phase took a total of 3 days to complete.

8.1 Document Lessons Learned

- **Duration:** 1 day
- **Description:** This step involved a thorough review of the entire project to document lessons learned. Team members and stakeholders reflected on what went well, what challenges were encountered, and how they were addressed. The goal was to capture valuable insights that could improve future projects. Key areas of focus included project management practices, development processes, testing, and deployment.

8.2 Distribute to Team Members

- **Duration:** 1 day

- **Description:** The documented lessons learned were compiled into a comprehensive report and distributed to all team members and stakeholders. This step ensured that everyone involved in the project was aware of the insights gained and could apply them to future projects. A meeting or presentation was also held to discuss the findings and encourage feedback.

8.3 Create Software Maintenance Team

- **Duration:** 1 day
- **Description:** A dedicated software maintenance team was established to handle ongoing support, updates, and troubleshooting. This team included developers, IT support staff, and other relevant personnel. Their responsibilities were clearly defined, including monitoring system performance, addressing user issues, and implementing enhancements based on user feedback.

8.4 Post Implementation Review Complete

- **Duration:** 0 days
- **Description:** The post-implementation review phase concluded with a final meeting to confirm that all review activities were completed and that the maintenance team was operational. This step marked the official end of the project review and the transition to the maintenance phase.

9 Software Development Complete

The "Software Development Complete" section signifies the official end of the software development project. All planned activities, from initial scope determination to post-implementation review, have been completed. The system is now fully operational, and a maintenance structure is in place to ensure its continued success.

9.1 Software Development Complete

- **Description:** This final section of the report formally acknowledges the completion of all development phases. It summarizes the overall success of the project, highlights major achievements, and acknowledges the contributions of the project team. The system is now live and being used by the intended audience, with mechanisms in place for ongoing support and improvement.