Municipal of Civil Registrar Records Management System

Submitted in Partial Fulfillment of the Requirements for the Course
System Analysis and Design

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BSIT 3A

Submitted To:
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December 2024

Requirement Specification Document

I. Functional Requirement

1. User Management

1.1 User Registration and Authentication

- The system must allow staff to create and manage user accounts, with the ability to assign roles (e.g., Administrator, Clerk, and Frontline Staff).
- The system must support role-based access control, ensuring that users can only access functionalities pertinent to their roles.
- Secure login and logout functionality with username and password, and the option for two-factor authentication (2FA) for higher security.

1.2 Role-Based Access Control (RBAC)

- The system must restrict access to sensitive information based on user roles, ensuring only authorized personnel can view or modify specific records.

1.3 Password Management

- Users should be able to reset their passwords securely via email or a password recovery process.

2. Record Management

2.1 Registration of New Civil Records

- The system must allow staff to enter new civil records (e.g., birth, marriage, and death records) into the system, with mandatory fields for required information.
- The system must validate input fields to ensure correct data is entered (e.g., valid date formats, required fields filled).
- The system must generate unique identifiers for each record for easy retrieval.

2.2 Updating and Editing Records

- Authorized staff should be able to update or edit existing records, such as correcting errors or adding additional information (e.g., name changes or address updates).
- The system must track and log all changes made to records for auditing purposes, with timestamps and user IDs.

2.3 Record Retrieval

- The system must allow staff to search for records by different parameters such as name, record type (e.g., birth, marriage, death), date, or record number.
- Search results must be displayed quickly, and the system should support filtering options for faster access to specific records.

2.4 Deleting Records

- Only authorized users (e.g., administrators) should be able to delete records, and this function must be safeguarded with appropriate confirmation steps to prevent accidental deletions.
- The system must maintain a deletion log for auditing purposes.

3. Document Generation and Management

3.1 PDF Generation

- The system must integrate with **iTextSharp** to generate PDF versions of civil documents (e.g., birth certificates, marriage contracts, death certificates).
- PDF templates must be customizable to accommodate various document formats, and the system must automatically populate templates with the appropriate data.
- Generated PDFs should be encrypted and digitally signed, ensuring the document's authenticity and integrity.

3.2 Document Distribution

- The system must allow documents to be distributed directly to citizens via email or be available for download from a secure portal.
- The system should support printing of documents directly from the interface.

4. Reporting and Analytics

4.1 Report Generation

- The system must allow staff to generate various reports, including:
    - Total number of records registered (by type, date, etc.).
    - Records retrieved within a specific period.
    - Changes and updates made to records.
- Reports should be exportable in multiple formats such as PDF, Excel, or CSV.

4.2 Real-Time Dashboard

- The system must include a dashboard that displays real-time data on system usage, including number of active users, pending tasks, and recent document generation requests.

5. Data Security and Backup

5.1 Data Encryption

- All sensitive data (e.g., citizen records, personal information) must be encrypted both in transit (using HTTPS) and at rest (within the database).

5.2 Backup and Recovery

- The system must automatically back up data at regular intervals and allow administrators to initiate manual backups if needed.
- The backup process should ensure that records are recoverable in case of a system failure or data loss.

5.3 Audit Logs

II. The system must maintain an audit log of all actions performed, including who accessed or modified records, what changes were made, and when these actions took place.

III. Non-Functional Requirement

1. Performance Requirements

1.1 Response Time

- The system should have a maximum response time of 2 seconds for searching and retrieving records, ensuring fast and efficient interactions for both staff and citizens.

1.2 Transaction Processing Speed

- The system should handle at least 100 transactions per minute for simultaneous record updates and document generation without degradation in performance.

1.3 Document Generation Speed

- PDF document generation should take no more than 5 seconds per document request, ensuring minimal delays in issuing civil records.

2. Scalability Requirements

2.1 Horizontal Scalability

- The system must be scalable to accommodate increasing data volumes and user demand. This includes adding additional servers or expanding the infrastructure to handle a growing number of citizens and records without impacting system performance.

2.2 User Load

- The system should support at least 200 concurrent users (staff and citizens) accessing the system simultaneously without performance degradation.

2.3 Database Scalability

- The MySQL database should be able to handle a growing number of records, supporting an increase in registered citizens and documents over time, while ensuring quick access to large datasets.

3. Security Requirements

3.1 Data Protection

- Sensitive data (e.g., personal records) should be encrypted using industry-standard encryption algorithms (e.g., AES-256) both in transit and at rest.
- The system must implement secure communication protocols (e.g., HTTPS) for transmitting sensitive information.

3.2 Authentication and Authorization

- The system must support multi-factor authentication (MFA) for users with administrative roles to enhance security.
- Role-based access control (RBAC) should restrict user actions according to assigned roles and permissions, ensuring users can only access information relevant to their role.

3.3 Data Integrity

- The system should prevent unauthorized modifications or deletions of records, using validation checks and access control mechanisms.
- Changes to records must be logged with timestamps and user IDs for audit purposes, ensuring traceability of data modifications.

3.4 Backup and Recovery

- The system must perform automated backups daily, and these backups should be stored securely with encrypted data.
- A recovery plan should be in place to restore the system to its latest backup state in case of a system failure or data loss.

4. Availability and Reliability

4.1 System Availability

- The system must have an uptime of 99.9% over the course of a year, ensuring reliable access for staff and citizens. This translates to no more than 8 hours of downtime per year.

4.2 Fault Tolerance

- The system must be fault-tolerant, meaning that if a component fails (e.g., a server), it should seamlessly switch to a backup system without causing service interruptions or data loss.

4.3 Disaster Recovery

- In the event of a disaster or catastrophic failure, the system must have a recovery time objective (RTO) of 4 hours and a recovery point objective (RPO) of 1 hour, ensuring minimal data loss and rapid restoration of service.

5. Usability Requirements

5.1 User Interface (UI) Design

- The system's interface must be intuitive, easy to navigate, and accessible to both technical and non-technical staff members.
- The interface should be responsive, adapting to various devices (e.g., desktops, tablets) to ensure ease of use in different office environments.

5.2 Accessibility

- The system should comply with accessibility standards such as WCAG 2.0, ensuring that users with disabilities can interact with the system using assistive technologies (e.g., screen readers, voice commands).

5.3 Training and Documentation

IV. Comprehensive user manuals, online help resources, and video tutorials must be provided for staff training and troubleshooting.
V. The system should offer a contextual help feature, allowing users to access guidance relevant to the task they are performing.

VI. User Story

1. User Story: Inefficiency in Document Retrieval

As a staff member of the Municipal Civil Registrar, I want a digital system to retrieve documents quickly and efficiently, So that I can reduce processing times and provide faster service to citizens.

Acceptance Criteria:

- The system should allow staff to retrieve requested documents (e.g., birth certificates, marriage contracts) within 5 seconds.
- The search feature should be capable of filtering documents by multiple parameters (e.g., name, date, document type).
- The system must be capable of handling a database with at least 100,000 records without significant slowdowns.
- Users must be able to easily access the digital version of the document, and it should be displayed or available for download in PDF format.

2. User Story: Storage Limitations and Record Deterioration

As a Municipal Civil Registrar, I want to store all records digitally in a centralized database, So that physical records are preserved and accessible without the risk of deterioration or damage.

Acceptance Criteria:

- The system must store all documents in digital format (PDF) and avoid physical storage requirements.
- A secure backup system should be in place, with daily backups and the ability to restore records in case of system failure.
- The system must protect records from data corruption, ensuring the integrity and accessibility of stored documents.
- The records should be organized in a way that allows staff to easily locate and retrieve them with a minimum number of steps.

3. User Story: Time-Consuming and Redundant Efforts

As a staff member, I want a system that automates the search and retrieval process, So that I can reduce the time spent on manual searches and eliminate redundant efforts.

Acceptance Criteria:

- The system must automate the process of document search based on user input, reducing the need for manual lookups.
- The system should notify staff when required documents are incomplete and prompt for resubmission or additional information.
- The system should provide a user-friendly interface with an intuitive layout for staff to quickly navigate through tasks without needing additional training.
- The system should eliminate redundant manual work, reducing processing time by at least 50% compared to the old manual process.

4. User Story: Cost of Damage and Replacement

As a citizen, I want my documents to be stored securely and accessed digitally, So that I do not have to bear the cost of replacement when records are lost or damaged.

Acceptance Criteria:

- The system must store records in a centralized database that ensures minimal risk of misplacement or damage.
- Citizens should be able to request and receive their documents digitally, reducing the need for physical handling.
- The system should allow for a secure and easy document retrieval process, ensuring that citizens can access their documents without the need to go through a third-party agency like PSA.
- The system should automatically generate documents such as birth certificates and marriage contracts in PDF format, which can be printed or emailed to the citizen.
- The system should log and track all document requests to ensure they are completed promptly and accurately.