System Analysis and Design Project

PROJECT NAME: Online Registrar
PHASE: System Design

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1. Introduction

1.1 Purpose

Our system aims to improve the process of obtaining birth certificates, marriage certificates and death certificates from the Divisional Secretariat. The current system is for this, people physically visit the Divisional Secretariat, wait and fill out paper forms and request needed certificates. So this process is time consuming. And if the branch's system doesn't contain proper details and updated information about the certificates, they are unable to issue the requested certificates.

We propose a website to overcome these challenges and improve the process. This website allows users to check the availability of their certificates at the certain branch and then users can fill out the required forms and other details. Finally users can place the order for the certificates by specifying the amount of copies they need and get them through a courier service.

This approach will enhance the efficiency, significantly reduce the waiting time and allow people to go through this process seamlessly.

2. System Architecture

2.1 Client Side

- **Web Interface:** This is the user-facing part of the system where users can interact with the application. It includes pages for browsing certificates, selecting options, making payments, and tracking orders.
- **Client-Side Scripting:** JavaScript frameworks like React or Angular can be used for dynamic content and user interactions.
- **User Authentication:** Implement a secure login system for users to access their accounts and make purchases securely.

2.2 Server Side:

- **Web Server:** Hosts the application and serves web pages to clients.
- **Application Logic:** Implements the business logic of the system, including processing orders, generating certificates, and interacting with the database.
- **REST API:** Provides endpoints for client-server communication, allowing the front-end to send requests for data and actions.
- **Middleware**: May include components for request handling, authentication, logging, and error handling.

2.3 Database Layer:

- **Database Management System (DBMS):** Choose a suitable DBMS like PostgreSQL, MySQL, or MongoDB to store application data.
- **Database Schema:** Design the database schema to store information about users, orders, certificates, payments, and other relevant data.
- **Data Access Layer:** Implements data access logic, including CRUD (Create, Read, Update, Delete) operations and database interactions.

2.4 External Integrations:

- **Payment Gateway:** Integrate with a payment gateway like visa, master or a local payment provider for secure online transactions.
- **Courier Services:** Integrate with courier services to manage order shipments and provide tracking information to users.

2.5 Security Layer:

- **Authentication and Authorization**: Implement secure authentication mechanisms to authenticate users and authorize access to resources.
- **Data Encryption:** Use encryption techniques to secure sensitive data, such as user credentials, payment information, and personal details.
- **Input Validation and Sanitization:** Validate and sanitize user input to prevent common security vulnerabilities.

3. System Design

3.1 Database Design

The database design of the "Online-Registrar" system will consist of three interconnected tables:

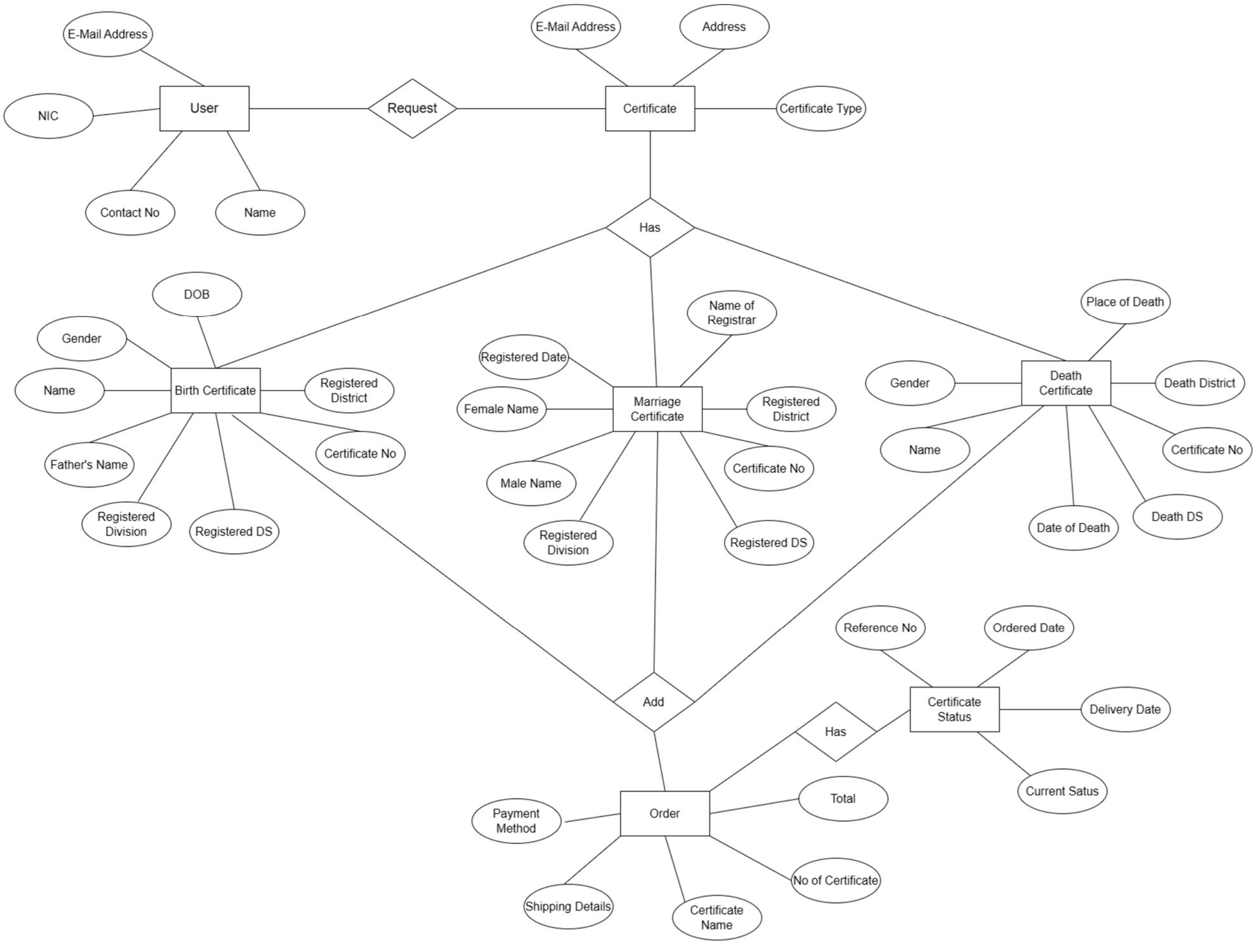
1. **User:** Attributes include Contact_No, Email Address, Name, and NIC. Users can make multiple Certificate Requests.
2. **Certificate:** Attributes include Email Address, Address and Certificate Type
3. **Birth_Certificate:** Attributes include Certificate No, Name, Date of Birth, Gender, Father's Name, Registered District, Registered DS and Registered Division
4. **Marriage_Certificate:**Attributes include Certificate No, Male Name, Female Name, Registered Date, Name of Registrar, Registered District, Registered DS and Registered Division
5. **Death_Certificate:**Attributes include Certificate No, Name, Date of Death, Gender, Death District, Death DS and Place of Death
6. **Order:** Attributes include Payment Method, Certificate Name, No of Certificate, Total, Shipping Details
7. **Certificate_Status:** Attributes include Reference No, Ordered Date, Delivery Date and Current Status.

3.2 Components Design

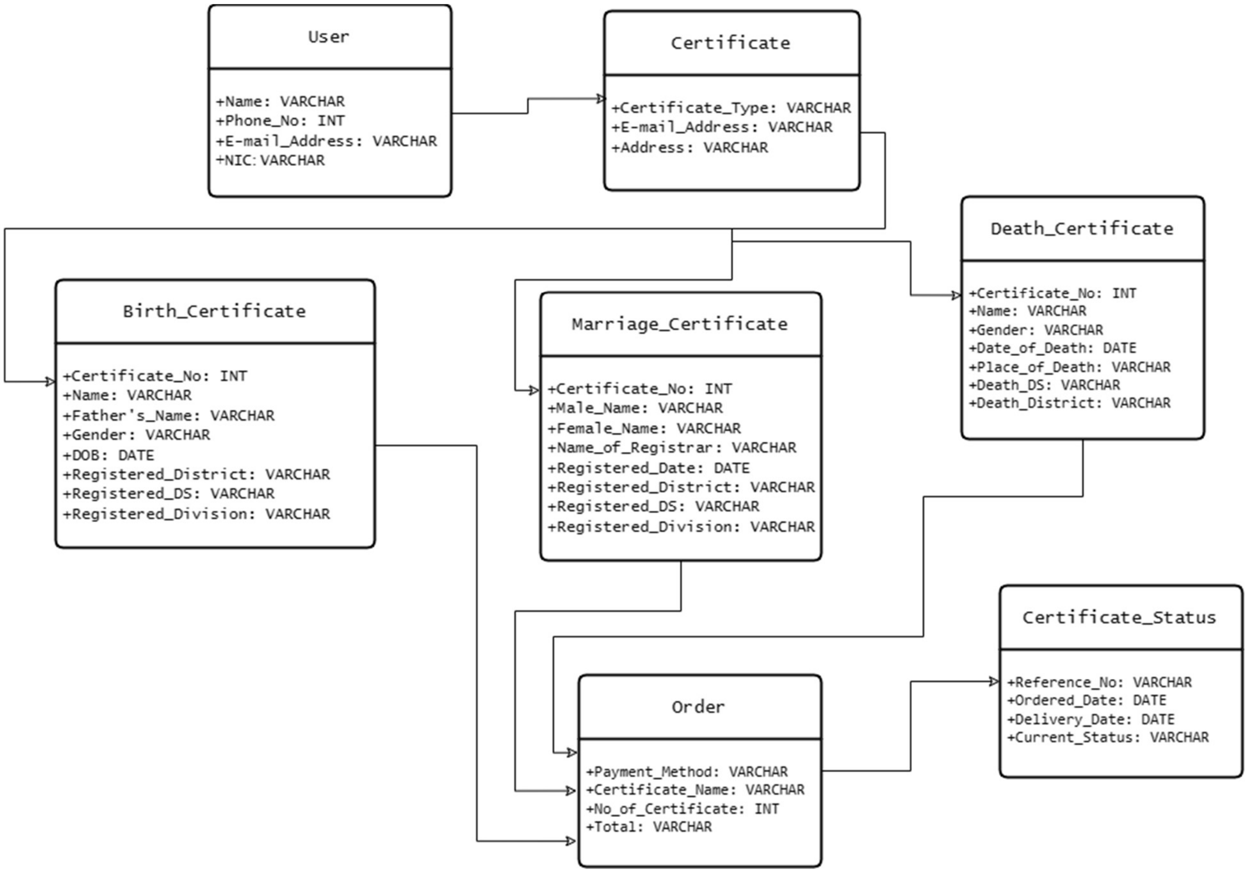
1. **User Registration and Verification:** This component will handle user registration and phone number verification. It will include fields for user details such as phone number, email, name, and address.
2. **Certificate Request Form:** This component will allow users to request a certificate. It will include fields for personal details and the type of certificate needed. Depending on the type of certificate, additional fields will be required (e.g., Registered District, Registered DS, DOB, Father's name, Gender, Registered Division for a birth certificate).
3. **Payment Processing:** This component will handle the processing of payments. It will include options for card payments and cash on delivery.
4. **Certificate Status Check:** This component will allow users to check the status of their certificate request using their reference number.

4. Data Model

4.1 ER Diagram



4.2 DB Diagram


User
+Name: VARCHAR
+Phone_No: INT
+E-mail_Address: VARCHAR
+NIC: VARCHAR
Certificate
+Certificate_Type: VARCHAR
+E-mail_Address: VARCHAR
+Address: VARCHAR
Death_Certificate
+Certificate_No: INT
+Name: VARCHAR
+Gender: VARCHAR
+Date_of_Death: DATE
+Place_of_Death: VARCHAR
+Death_DS: VARCHAR
+Death_District: VARCHAR
Birth_Certificate
+Certificate_No: INT
+Name: VARCHAR
+Father's_Name: VARCHAR
+Gender: VARCHAR
+DOB: DATE
+Registered_District: VARCHAR
+Registered_DS: VARCHAR
+Registered_Division: VARCHAR
Marriage_Certificate
+Certificate_No: INT
+Male_Name: VARCHAR
+Female_Name: VARCHAR
+Name_of_Registrar: VARCHAR
+Registered_Date: DATE
+Registered_District: VARCHAR
+Registered_DS: VARCHAR
+Registered_Division: VARCHAR
Certificate_Status
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+Current_Status: VARCHAR
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