School registration system: requirements

Version	Description of Change	Author	Date
1	Initial draft	Ines	04/02/2025
2	Updated requirements	Team	06/02/2025

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1. INTRODUCTION

1.1 Purpose

Define the functional requirements for the school registration system of a primary school, providing an online platform for parents to submit student registration applications, receive confirmation emails, and store data securely in a MySQL database on a physical server. The goal is to streamline and digitalize the school registration process while ensuring minimal costs by using only free resources.

1.2 Scope

This document outlines the scope of the school registration system by describing its functional requirements, user roles, system interactions, and key features. The system will include:

- A web-based registration form for parents
- Automatic email confirmation upon successful submission
- Secure storage of student data in a database on a physical server
- Data utilization for invoicing, classroom organization, and administrative tasks (Note: These activities will not be performed within this application)
- Compliance with minimal cost requirements (only free resources)
- Scalability considerations to support future growth

1.3 Background

The school is committed to modernizing administrative processes. In pursuit of this goal, the school registration system is being developed to replace manual registration methods, reducing paperwork, improving data accuracy, and enhancing user experience.

1.5 Assumptions and Constraints

Assumptions

- The system will be web-based and accessible via desktop and mobile devices.
- Internet connectivity is required for form submission.
- User authentication is required for parents and school administrators.
- The project is publicly funded, so the cost must be minimized by using only free resources.
- The system must be operational by the end of April, in time for the registration season.
- The system should be written in Python.

Constraints

- Data privacy and security measures will be implemented following regulatory standards.
- Data must be retained until the enrolled child is 25 years old, and then deleted.

1.6 Document Overview

This document is organized into the following sections:

- Introduction: Provides an overview of the system and its context.
- Methodology: Describes the approach used to determine the functional requirements.
- Functional Requirements: Details the functional requirements of the system.
- Other Requirements: Describes non-behavioral requirements such as interface, hardware/software, operational, security, and performance requirements.
- Appendices: Includes a glossary of terms.

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2. METHODOLOGY

2.1 Approach

The functional requirements outlined in this document have been determined using a structured approach to ensure clarity and comprehensibility for both technical and non-technical stakeholders. The approach includes:

- Stakeholder Consultation: Gathering requirements from school administrators, IT personnel, and end-users (parents) to understand system needs.
- Process Modeling: Utilizing data flow and process descriptions to illustrate system interactions and user workflows.

- Best Practices Review: Incorporating security, accessibility, and scalability standards to ensure regulatory compliance and operational efficiency.
- Iterative Refinement: Validating requirements through multiple feedback loops with stakeholders to ensure alignment with business and user needs.

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3. FUNCTIONAL REQUIREMENTS

3.1 Context

Allow parents to submit student registration forms online, replacing paper-based applications. Upon submission, generate a confirmation email and securely store the data in a database for school administration use.

3.2 User Requirements

User Roles:

1. Parents:
    - Create an account to submit.
    - Authenticate.
    - Fill in/modify registration forms.
    - Receive email confirmation upon successful submission.
    - Receive a second email with an autogenerated PDF attestation upon approval (proof of registration).
    - Receive an email informing them if their registration is rejected, without generating a PDF.
2. School Administrators:
    - Log in to manage submitted applications.
    - Verify, accept, or reject student information.
    - View a table with all the children and column with the status (pending, accepted, rejected, terminated).

3.3 Data Flow

- Step 1: Parent accesses the online registration form.
- Step 2: Parent creates an account, authenticate and fills in required student information.

- Step 3: Parent submits the form.
- Step 4: System sends a confirmation email.
- Step 5: Data stored in the database.
- Step 6: Administrators review applications and accept or reject them.
- Step 7: System sends a second email with an autogenerated PDF attestation upon approval or an email informing of rejection.

3.4 Logical Data Model / Data Dictionary

=> 11 Student Data Fields:

- First name
- Last name
- Birthdate
- Name of the responsible adult (Mother/Father/...)
- Phone number of adult
- Email of adult
- Nationality
- Number of siblings
- Gender
- Grade level
- Allergies

3.5 Functional Requirements

Functional Requirements Group 1: Parents Interface

Requirement ID	Requirement Description
FR1.0	The system shall allow parents to create an account, authenticate and submit student registration forms online.
FR1.1	The system shall generate a confirmation email upon successful submission of the registration form.
FR1.2	The system shall send a second email with an autogenerated PDF (certificate of enrollment) when the school administrators approve the registration.
FR1.3	The system shall send an email informing parents if their registration is rejected, without generating a PDF.

Functional Requirements Group 2: School Administrators Interface

Requirement ID	Requirement Description
FR2.0	The system shall provide access to school administrators to manage submitted applications.
FR2.1	The system shall allow school administrators to verify, accept, or reject student information.
FR2.2	The system shall allow school administrators to view a table with all children, their data, and their status(pending, accepted, rejected, terminated).
FR2.3	The system shall require user authentication for school administrators on their user interface.

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4. OTHER REQUIREMENTS

4.1 Interface Requirements

4.1.1 User Interface

- Two user interfaces: one for parents and one for school administrators.
- Responsive web form compatible with desktops, tablets, and mobile devices.
- User-friendly layout with clear instructions and validation prompts.
- Simplified interface for non-tech-savvy users.
- Entirely in English.

4.1.2 Software Interfaces

- Integration with email services for confirmation emails with PDF attachments.
- Connection to a secure database for data storage.

4.2 Hardware/Software Requirements

4.2.1 Security and Privacy

- Data encryption for storage and transmission.
- Access controls for school administrators.
- Compliance with Belgian data protection and child protection laws.

- User access control to define who can view and modify data (parents, staff).
- Ensuring responsible data handling to protect student and family privacy.
- Use of HTTPS for secure communication.

4.2.2 Reliability

- Criticality: Loss of human life is not applicable.
- Minimum Acceptable Level of Reliability: The system must be highly reliable to ensure smooth operation during peak registration periods.
- Mean-Time-Between-Failure (MTBF): The system should operate for at least 1,000 hours before the first failure occurs.
- Mean-Time-To-Failure (MTTF): The system should have a high MTTF, indicating long periods of operation without failure.
- Mean-Time-To-Repair (MTTR): The system should be repairable within 1 week to minimize downtime.

4.2.3 Recoverability

- Database restored to its most recent state if corrupted.

4.2.4 General Performance

- Expected rate of user activity:
    - The registration period between April and September will see high usage.
    - The rest of the year will have significantly lower activity.

4.2.5 Capacity

- The system should be able to handle an expected enrolment of 300 new students per year.
- Scalability in storage and web requests to support future growth.

4.2.6 Data Retention

- Data retained indefinitely.

4.2.7 Error Handling

- Validation for required fields before form submission.
- Preventing duplicate or incorrect data entries.
- Clear error messages for incorrect inputs.

- Logging system for troubleshooting issues.
- Handling internet connectivity errors to prevent data loss.

4.3 Validation Rules

- Mandatory fields must be completed before form submission.
- Email and phone number formats must be validated.
- Date of birth must be in the format DD/MM/YYYY and within an acceptable range.
- Duplicate entries should be prevented by checking existing records.
- Error messages should clearly indicate required corrections.

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5. APPENDICES

Appendix A - Glossary

- **Parents:** Users who fill out and submit registration forms for their children.
- **School Administrators:** Users who manage and process the submitted registration forms.
- **Confirmation Email:** An email sent to parents to confirm the successful submission of a registration form.
- **Data Encryption:** The process of converting data into a code to prevent unauthorized access.
- **Access Controls:** Security measures that restrict who can view or modify data within the system.
- **Open-Source Technologies:** Software for which the original source code is made freely available.
- **HTTPS:** Hypertext Transfer Protocol Secure, used for secure communication over a computer network.
- **User Authentication:** The process of verifying the identity of a user before granting access to the system.
- **PDF Attestation:** A PDF document automatically generated and sent to parents as proof of registration.
- **Scalability:** The ability of the system to handle increased load or growth in the number of users.

- **Data Privacy:** Measures taken to protect personal data from unauthorized access or disclosure.
- **User Interface (UI):** The visual part of the application that users interact with.
- **Validation Rules:** Rules to ensure that data entered into the system is accurate and complete.
- **Audit Trail:** A record of all actions taken within the system for security and troubleshooting purposes.
- **Iterative Refinement:** The process of continuously improving the system through multiple feedback loops.