WORK INTEGRATED LEARNING

XBCAD7311

CODEVERSE SOLUTIONS

GROUP 2

NON-FUNCTIONAL REQUIREMENTS

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TABLE OF CONTENTS

INTRODUCTION **2**
1. SECURITY **3**
1.1 DATA PROTECTION 3
1.2 VULNERABILITY MANAGEMENT 4
2. USABILITY **4**
2.1 USER INTERFACE DESIGN 5
2.2 USER ACCESSIBILITY 5
3. MAINTAINABILITY **5**
3.1 MODULAR ARCHITECTURE 5
3.2 CODE DOCUMENTATION 6
3.3 VERSION CONTROL 6
3.4 AUTOMATED TESTING 6
4. RELIABILITY **6**
4.2 MONITORING AND ALERTING 7
4.3 DISASTER RECOVERY 7
5. SCALABILITY **7**
5.1 ELASTIC INFRASTRUCTURE 7
5.2 CACHING AND OPTIMISATION 8
5.3 PERFORMANCE TESTING 8
6. INTEROPERABILITY **8**
6.1 API INTEGRATION 8
6.2 STANDARDS COMPLIANCE 9
6.3 CROSS PLATFORM COMPATIBILITY 9
7. LOCALISATION **9**
8.1 SUPPORT FOR MULTIPLE LANGUAGE CHOICE: 9
REFERENCES **10**

INTRODUCTION

This document outlines the non-functional requirements for the SA Outreach website and mobile app project. These specifications specify the qualities, limitations of the system, and rules of operation that the project needs to follow to guarantee a stable, safe, and easy-to-use platform. By meeting these needs, we hope to offer a dependable and effective solution that improves the organization's capacity to oversee volunteers, accept contributions, and interact with stakeholders in a productive manner. In order to guarantee that the finished product fulfils the expectations of all users—donors, volunteers, administrators, and the larger community—this document is essential for directing the development process.

1. SECURITY

The SA Outreach website and mobile app must be completely secure, especially considering the sensitive nature of user data and financial transactions. The main security guidelines that must be followed in order to safeguard user data and guarantee data integrity and confidentiality are described in this section.

1.1 DATA PROTECTION

Encryption:
All sensitive data such as user passwords, payment information, and individual data will be encrypted using modern encryption methods. The encryption guarantees that even if the data is intercepted, it is still unreadable to the unauthorized parties.

Authentication and Authorisation:
For that we ensure strong passwords, multi factor authentication setup and other processes with purpose to protect the user's data. In addition to ability based access restriction, the following will be ensured, such that users only have access to the features and information that are related to their assigned roles, eventually preserving the sensitive data.

- Multi-factor authentication: MFA to add an extra degree of protection. To get access, users will have to submit two or more verification elements, including a password and a code texted to their mobile device.
- Policies for Passwords: Make sure that passwords are strong and contain a combination of special characters, numbers, and letters. Put safeguards in place to stop common attacks like credential stuffing and brute force.

1.2 VULNERABILITY MANAGEMENT

Regular Updates:

- Software Updates: To reduce vulnerabilities, update the operating system, application servers, and libraries on a regular basis to the most recent versions.
- Patch Management: To guarantee that security patches and upgrades are applied on time, put in place a patch management procedure.

Incident Response:

- Create and record an incident response plan that details the steps to take in order to identify, address, and resolve security incidents.
- Instruction and Exercises: To guarantee readiness, regularly train employees on the emergency response plan and hold drills.

2. USABILITY

Usability is one of the most important factors when it comes to user interface (UI) design as it makes the users comfortable to use the website or mobile app to reach their goals. The usability considerations will include:

2.1 USER INTERFACE DESIGN

Intuitive design: Minimise the learning curve for new users by designing the user interface to be straightforward and simple to use.
Responsive design: Make sure the platform is completely responsive to provide the best possible user experience on a variety of platforms (desktops, tablets, and smartphones). This is known as responsive design.

2.2 USER ACCESSIBILITY

WCAG Compliance: To guarantee that the platform is usable by people with impairments, comply with the Web Content Accessibility Guidelines (WCAG) 2.1.
Alternative Text: To assist screen readers, we could provide alternative text for all images and multimedia content.
The website will have well-arranged and user-friendly navigation menus and pathways that will guide users to the information and features they want in a timely and uncomplicated manner. We will be doing this by organizing content logically, providing descriptive labels and tooltips, and minimising the number of clicks required to complete tasks.

3. MAINTAINABILITY

Maintaining the website and mobile application requires effort so that it remains relevant with new features and bug fixes. The maintainability measures will include:

3.1 MODULAR ARCHITECTURE

The system will be implemented with modular architecture through which concerns are separated into different components as well as modules. Following this, service becomes easier and single parts can be upgraded without affecting the whole app.

3.2 CODE DOCUMENTATION

Comprehensive documentation will be provided for the codebase including comments, README files, and API documentation. This helps grasp an overall picture about the system's structure, functions and the internal data structures. This helps in maintenance and extending the system in the future.

3.3 VERSION CONTROL

The source code will be managed using version control systems, such as git to track any changes, work with different team members and roll back to previous versions if needed. Hence, changes are taken carefully on a step by step basis, with the possibility to revert to the initial state if necessary, which greatly reduces the amount of bugs and regressions.

3.4 AUTOMATED TESTING

Automation tests will be employed to test the websites and app in terms of both functionalities and performance. Such kind of tests include unit tests, integration tests, and end to end tests to be run automatically once the codebase is modified, which will help catch bugs at the early stage and as a result it will ensure code quality.

4. RELIABILITY

The reliability of the website and mobile app is key factor for stable and continuous functioning excluding the occurrence of the unanticipated downtime or errors. The reliability measures will include:

4.1 FAULT TOLERANCE

The system will be built to smoothly handle failures and errors to allow users to be as less affected as possible by these technical problems. This is employed by the use of retry options, fall back mechanisms, as in error recovery tools which are important components in dangers mitigation.

4.2 MONITORING AND ALERTING

Installing a comprehensive system of real-time monitoring and alerting involves the checking of health and performance of the web page and mobile app. Monitoring of metrics of servers, application logs, and user feedback should be carried out to promptly find existing problems before they have been significantly escalated.

4.3 DISASTER RECOVERY

The implementation of disaster recovery plans that may limit the outcomes of adverse events of any nature. We handle this by carrying out periodic data backups, transporting data off site, and the implementation of procedures that swiftly restore operations when a major outage occurs.

5. SCALABILITY

Scalability is essential for accommodating growth in user demand and ensuring that the website and mobile app can handle increased traffic and workload. The scalability measures will include:

5.1 ELASTIC INFRASTRUCTURE

The system will be deployed on cloud infrastructure that supports automatic scaling based on demand. This allows resources to be dynamically allocated and de-allocated in response to changes in traffic volume, ensuring optimal performance and cost-efficiency.

5.2 CACHING AND OPTIMISATION

Caching mechanisms will be implemented to cache frequently accessed data and resources, reducing the load on backend servers and improving response times. This includes caching static assets, database queries, and API responses at various layers of the application stack.

5.3 PERFORMANCE TESTING

Performance testing will be conducted to identify scalability bottlenecks and determine the system's capacity limits. This involves simulating high volumes of concurrent user interactions and monitoring key performance metrics to ensure that the system can scale effectively under peak loads.

6. INTEROPERABILITY

Interoperability is essential for ensuring that the website and mobile app can seamlessly integrate with external systems, services, and platforms. The interoperability measures will include:

6.1 API INTEGRATION

Well-defined APIs (Application Programming Interfaces) will be provided to enable integration with external systems, such as CRM (Customer Relationship Management) software, payment gateways, and third-party services. This allows data to be exchanged and synchronized between different systems seamlessly.

6.2 STANDARDS COMPLIANCE

The system will adhere to industry standards and protocols to ensure compatibility and interoperability with other software and hardware components. This includes using standardized data formats, communication protocols, and authentication mechanisms to facilitate seamless integration with third-party systems.

6.3 CROSS PLATFORM COMPATIBILITY

The website and mobile app will be designed to be compatible with a wide range of devices, operating systems, and web browsers to maximize reach and accessibility. This includes implementing responsive design techniques, progressive web app features, and native app wrappers to ensure a consistent user experience across different platforms.

7. LOCALISATION

Localisation provides suitable linguistic and cultural settings so that the SA Outreach platform can serve consumers in various countries efficiently. This improves accessibility and user experience, enabling the organisation to reach a larger audience and more effectively carry out its objective.

8.1 SUPPORT FOR MULTIPLE LANGUAGE CHOICE:

User Interface: Make sure that the language selection option is available both in the user settings and on the homepage. This makes it simple for users to select their preferred language and guarantees that non-native English speakers may utilise the platform.
Default Language: Set a default language based on the user's browser settings or geographic region, with an ability to alter it.

Accurate Translations: Make advantage of expert translation services to guarantee that all content—including notifications, help documents, and UI elements—is appropriately translated into the languages that are supported. Relying exclusively on automatic translation technologies is not a good way to guarantee accuracy and precision.
Constant Updates: Establish a procedure for updating translations on a regular basis to ensure correctness and consistency while keeping up with new features and content.

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