

System Requirements Specification Document

**Dhiribhai Ambani Institute of
Information and Communication
Technology**

Online QR code Generator
SC 402: Elements of Cryptography

Group Project

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1. Introduction

1.1. Purpose:

The online QRcode generator quickly provides access to information without humans needing complex calculations. QR codes can store various data, including URLs, contact information, product information and event details. Human needs only a QR code scanner to decode it.

1.2. Intended Audience:

The intended audience of the Online QR code generator is companies that want to encode specific data as QR codes for better product guidance. The encoded data depends on the company's requirements.

1.3. Use:

The online QR code generator allows users to create their own QR code based on the data he/she want to encode, system needs two types of information first one is personal details for verification and second the message the user want to encrypt.

1.4. Product Scope:

The product scope for this online QR code generator includes the web development aspects of the project, such as the design and implementation of the user interface, as

well as the cryptography components, which consist of reed Solomon code, masking the QR code to hide the patterns. The QR code generator is intended to support a range of different types of message file encryption to QR codes. This project can be extended by including more complexity in the QR code, adding colours to it and encoding varieties of data such as images and videos.

2. Overall Description:

2.1. System Interfaces:

The online QR code-generating system will be available through a website-based interface, which users can access via standard web browsers. The system will include mainly two interfaces the first one is an instruction to users about the QR code generator form and the second is the form that users need to fill out to get generated QR code using provided data.

2.2. User Needs:

Users of the online QR code generating system will expect a secure and correctly generated QR code of the entered data. The user can verify it through a QR code scanner once it is generated on the website interface. It provides a secure QR code generating surety through its implementation in javascript. The user expects the faster generation of QR

codes that is satisfied via the cryptographic library of javascript.

2.3. Assumptions and Dependencies:

Assumptions-

- Users will have access to a stable internet connection and a standard web browser to access the online QR code-generating system.
- While the user is filling out the form for generating the QR code, the user should not fill in the wrong personal information about email or names.
- The system will not cause privacy issues because it is not storing the private messaging of the users. It is only converting messages through an encryption method.
- The encryption method is safe and based on standard QR code-generating techniques.

Dependencies-

- The system will depend on the availability and functionality of external libraries and frameworks for web development and cryptography, such as HTML, CSS, JavaScript, and cryptographic libraries from javascript.
- The system will depend on the availability of server infrastructure to host the web application and internet connection of the user.
- The system will depend on the availability of qualified developers and security experts to design, implement, and test the system effectively.

- The system will depend on the availability of sufficient resources, including time and budget, to complete the project within the desired timeframe and scope.

2.4. Constraints:

- **Security:** The system must be highly secure and able to protect user data from unauthorized access or theft, and comply with relevant laws and regulations related to elections and data privacy.
- **Performance:** The system must be reliable and scalable to handle high volumes of traffic without compromising performance and provide real-time updates on the progress of the voting process.
- **Availability:** The system must be highly available, with minimal downtime or disruption to the voting process, and designed to minimize the risk of system failure or downtime.
- **Usability:** The system must be user-friendly and accessible, with a clear and intuitive interface that accommodates users with different levels of technical expertise, and provides adequate training and support resources for users and administrators.
- **Design:** The system must be designed to meet the requirements of the project within the available resources, including time and budget, and must be tested thoroughly to ensure its reliability and effectiveness.

3. Specifications

3.1 Functional Requirements:

The following functional specifications should be met by the online QR code generation system:

- Offer a form where users can input their personal information and a message to be encoded into a QR code.
- Use Reed-Solomon coding and mask the QR code to ensure data security and error correction.
- Create a safe QR code that can be read by any scanner that reads QR codes.
- Generate a QR code based on the user's inputted information and chosen security level.

3.2 Non-Functional Requirements:

The following non-functional needs should be present in the online QR code-generating system:

- **Security:** Users can select from various security settings (low, medium, quartile, and high). To ensure the secrecy and accuracy of user data, the system should use secure cryptographic libraries.
- **Speed:** The system should be able to quickly generate QR codes and efficiently handle heavy traffic volumes.
- **Usability:** The programme must have an easy-to-navigate interface.
- Devices in the system should be compatible with common web browsers.

3.3 Use Cases:

The following use cases are expected in the online QR code generator system:

- The user enters their data and the message they want to encrypt.
- The user can choose any one of the security levels provided.
- The technology uses Reed Solomon code to encrypt the user's communication and masks the QR code to conceal patterns.
- Any QR code scanner can read the secure QR code that the system generates.

4. User Categories:

Users of all kinds are encouraged to utilize the online QR code generator, including:

- People who need a QR code for their personal use.
- Create a QR code for your goods or services if you own a small business.
- For their marketing initiatives, big companies need a QR code.
- Event planners must provide a QR code for the information about their event.
- With the help of the online QR code generator system, these user types may produce QR codes that satisfy their unique requirements.

5. Business Constraints:

The online QR code generator system may face the following business constraints:

- **Budget constraints:** The project needs to be finished within a certain budget, taking cost estimates for development, testing, and maintenance into account.
- **Resource constraints:** the project must be done with the help of the available infrastructure, technology, and employees.
- **Time constraints:** there must be a timetable for the project's completion with important checkpoints and deadlines for development, testing, and deployment.
- **Security constraints:** the system needs to be built with security in mind so that user information and QR may be protected against manipulation.
- **Legal constraints:** it must adhere to all applicable laws, rules, and guidelines regulating voting and election procedures, including data protection and privacy legislation.