

A QR scan utilizes a design pattern called "Data Encoding Pattern" where information is stored in a grid of black squares on a white background, with specific patterns like "finder patterns" and "alignment patterns" allowing a scanner to easily identify and decode the data within the QR code; essentially, it's a visual representation of binary data that can be read by a camera and interpreted by software.

Key points about QR code design patterns:

- **2D Matrix Barcode:**

QR codes are considered a type of 2D barcode, meaning information is encoded both horizontally and vertically within the grid of squares.

- **Finder Patterns:**

Large square patterns located in the corners of the QR code that help the scanner identify the code's orientation and position.

- **Alignment Patterns:**

Smaller patterns used to correct for distortion in the QR code when scanned at an angle.

- **Timing Pattern:**

A vertical line of alternating black and white modules that helps the scanner determine the grid size and accurately read the data.

- **Error Correction:**

QR codes incorporate error correction mechanisms to ensure data can be read even if parts of the code are damaged or obscured.

The patterns within QR codes represent binary codes that can be interpreted to reveal the code's data. A QR reader can identify a standard QR code based on the three large squares outside the QR code. Once it has identified these three shapes, it knows that everything contained inside the square is a QR code.

- QR code - Wikipedia

A QR code, quick-response code, is a type of two-dimensional matrix barcode invented in 1994 by Masahiro Hara of Japanese company.

- Quick Response (QR) Code: Definition and How QR Codes Work

Basically, the Reed Solomon method is an algorithm that all QR code readers have built-in as standard. It allows QR codes to be sc

