

# CHAPTER 1

## INTRODUCTION

In the modern digital era, secure and efficient file transfer has become an essential requirement. Existing methods such as Bluetooth, AirDrop, and internet-based applications are widely used but face limitations. Bluetooth suffers from slow transfer speed and limited range, while AirDrop is restricted to Apple devices. Internet-based platforms often rely on third-party servers, raising concerns about privacy, data leakage, and dependency on connectivity.

To overcome these challenges, **QR code–based secure file transfer** offers a promising solution. QR codes are lightweight, cross-platform, and easy to generate and scan. They can embed secure access tokens or file links, enabling users to exchange data across devices in a **local offline network** without relying on external internet servers. This makes the system faster, safer, and universally accessible.

The primary motivation is to design a file-sharing system that is:

- **Offline and platform-independent**, eliminating internet dependency.
- **Secure**, preventing unauthorized access and data leakage.
- **User-friendly**, allowing instant sharing by scanning a QR code.

### 1.1 Problem Statement

Current file transfer methods either compromise speed, accessibility, or data security. There is a lack of an offline, universal, and secure solution that can be used across different devices. This project addresses this gap by creating a **secure QR code–based file transfer system** that allows users to upload a file, generate a QR code, and share it seamlessly across devices within a local network.

### 1.2 Objectives

- To develop a web-based platform for uploading and hosting files locally.

- To generate QR codes containing secure access links for file download.
- To ensure file transfer without dependency on internet or third-party servers.
- To implement lightweight encryption for enhanced data security.
- To test the system's speed, security, and compatibility across devices.

### 1.3 Scope

The scope of this project is limited to local-network–based file transfers using QR codes. The solution will focus on small to medium-sized files and provide secure sharing without requiring cloud services. The study emphasizes **security, usability, and offline access** rather than large-scale enterprise file distribution.

### 1.4 Advantages of QR Code Based File Transfer

1. **Offline Access** – Does not require internet or external servers.
2. **Cross-Platform Compatibility** – Works on any device with a camera and browser.
3. **Security** – Access is limited through unique QR codes and local hosting.
4. **Speed** – Faster than Bluetooth and independent of network providers.
5. **Ease of Use** – Simple QR code scanning for instant file access.
6. **Cost-Effective** – Eliminates reliance on third-party cloud storage solutions.
7. **Scalable** – Can be extended for enterprise-level secure transfers.

### 1.5 Applications of QR Code Based File Transfer

1. **Educational Institutions** – Quick sharing of notes, assignments, and resources.
2. **Corporate Offices** – Secure exchange of confidential documents without internet.
3. **Public Services** – Distribution of forms, tickets, and information offline.
4. **Healthcare** – Sharing medical reports securely between systems.
5. **Event Management** – Instant sharing of passes, brochures, and guides.

6. **Personal Use** – Transferring media and files between personal devices safely.