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Eliminating Credential Risk: A Lightweight Data Access System For Public Devices

Sneha Pandey and Nikhil Chauhan
Department of Computer Science & Engineering
Dronacharya College of Engineering Gurugram, Haryana

Abstract: *Nowadays, using typical email-based logins to access confidential documents can result in significant security and privacy breaches in settings where users depend on public or untrusted systems, such as internships, campus placements, and external collaborations. This paper suggests a login-free web-based solution which is secure, and lightweight for temporary data exchange between trusted sender and untrusted receiver devices. In order to guarantee that only the intended receivers can read the data, and only within a restricted window, the system uses an OTP-based secure session-pairing technique that instantly connects a trustworthy sender device and an untrusted receiver device without the need for link sharing or permanent credentials. By limiting default access and personally validating each request, the architecture adheres to the principles of Zero Trust Security. In future, for enhanced data confidentiality, use of protocols such as AES and RSA is proposed to secure real-time communication between the devices. The application, which was created with Express.js and React.js, provides a way to safely share test links, training materials, and onboarding paperwork, particularly in corporate and educational settings. Extensions like Redis-powered session control, blockchain logging for traceability, and QR code-based access are planned*

Keywords: Secure Data Transfer, Zero Trust Security, OTP-based session-pairing technique, AES/RSA Encryption, Data Confidentiality, Public Computer Security, Corporate / Educational Data Sharing

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