**Topic:Browser extension to block transfer  
  
Introduction**

With growing concerns about online privacy and mass data collection, two privacy tools were developed: a browser extension to block tracking scripts and a chat application with end-to-end encryption. These tools empower users to take control of their online footprint and protect sensitive communications.

**Abstract**

The project produced:

* A cross-browser extension (Manifest v3) to block requests to known tracker domains, display real-time blocking activity, and offer customizable user controls.
* A secure chat application using Flask-SocketIO and strong cryptography, providing real-time encrypted messaging.

**Tools Used**

* **Extension:** JavaScript, Manifest v3, HTML/CSS
* **Chat App:** Python (Flask, Flask-SocketIO), RSA/AES (cryptography library)

**Steps in Building the Project**

**Browser Extension to Block Trackers**

1. **Tracker List:** Integrated a tracker domain list, allowing updates and custom edits.
2. **Request Interception:** Used browser APIs to intercept and check outgoing requests.
3. **Blocking Logic:** Blocked or redirected requests matching tracker domains.
4. **Badge Counter & Analytics:** Showed badge counts for blocked scripts and analytics dashboard for user review.
5. **User Controls:** Enabled whitelisting and blacklisting for site-level privacy management.

**Sample UI: Blocker Analytics Panel**

**Secure Chat App with End-to-End Encryption**

1. **Key Management:** Auto-generated RSA key pairs at signup; public keys shared for encrypted AES key exchanges.
2. **Message Encryption:** Messages encrypted with AES; AES keys encrypted for each recipient with RSA.
3. **Real-Time Delivery:** Used Flask-SocketIO to deliver messages immediately.
4. **Client-Side Decryption:** Only intended recipients could decrypt messages, preserving confidentiality throughout.
5. **Encrypted Logging:** Stored encrypted chat histories, decryptable only by the client.

**Sample UI: Secure Chat App Web Interface**

**Conclusion**

Both solutions deliver significant privacy benefits. The extension gives clear control and visibility over tracking while empowering users. The chat application ensures every message is only accessible to its intended recipient, end-to-end. Together, they demonstrate practical, user-friendly approaches to digital privacy for everyday users.