

Bakery — Encrypted Mail Client

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Abstract

‘Bakery’ is a multi-platform desktop application mail client that has been designed and developed to demonstrate the capabilities of the authors, regarding their software development practices and further their understanding of JavaScript, encryption, and user interface & user experience (UI/UX) design practices. This document houses the referenced projects, project design documentation, and the tools and software that will be used for this project.

In short summary the mail client will follow the basic structure of a mail client by fetching user emails via a given email account, i.e. Google, Outlook, etc, alongside having the capacity to send emails from the account or accounts that the application is provided access to. Additional functionality comes in the form of end-to-end encryption (E2EE) between users sending emails through the client. This is to be achieved by public and private key infrastructure, the details of this process are to be confirmed at a later date.

Regarding the technologies used for this project the primary language to be used in the construction of the application is JavaScript, primarily through React-Native and Electron. This includes potentially ‘Storybook’ [1] for UI component development. Any later additional technologies implemented in the development of this project will be documented here.

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1 Introduction

Modern day systems have become rapidly more and more involved with the processes of digital communication, with email essentially becoming the de-facto replacement for physical mail systems with the notification of important documents or sensitive information. “According to the Breach Level Index, over 13 million records have leaked or been lost in published cybersecurity breaches since 2013. Of those 13 million records, a terrifying 96 percent weren’t encrypted.” [2]. Naturally, the most common method for an attacker to be able to crack security systems and proceed to use phishing attacks to impersonate trusted actors within the ecosystem is through the access to the contents of emails. While the most common email service providers, namely Google Gmail or Microsoft Outlook provide a decent level of protection as a service regarding the security of a user’s emails. There is little to no guarantee beyond the security systems in place that someone else is not reading or somehow gaining access to one’s email account.

2 Project Specifications

2.1 Similar Projects in Development

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2.2 Electron: Open Source Framework

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2.3 Public & Private Key Infrastructure

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3 Project Planning

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3.1 Work Breakdown Structure (WBS)

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3.2 Sequence Diagram

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3.3 Component Diagram

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3.4 Class Diagram

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3.5 Deployment Diagram

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