

Software Vulnerabilities and Security – Project Proposal

Waltrus

○ Project Summary

▪ The Problem Statement

Passwords are difficult to remember, and users have multiple accounts that require passwords. This causes users to choose memorable but weak passwords and most of them reuse passwords, which makes them susceptible and vulnerable to security attacks. In Waltrus users only need to remember one password. This in combination with 2FA and other security features enables authorized users to securely access their vaults.

▪ The Significance of the Problem

For many of us, working or studying remotely has become routine—this means securing our online accounts is more crucial than ever. But trying to memorize dozens of passwords for work and personal needs is a challenge. People usually find themselves consistently getting locked out and resetting passwords of one online account or the other. That's where Vaultry comes in, helping people seamlessly oversee and handle all their login credentials.

▪ Tools/Technologies

Vaultry is an Android application, developed in Java. Development tools – Android studio, AVD. “Passay”, hashing and cryptography libraries. Android – keychain and biometric APIs. 3rd party services & APIs for Email and OTP service. SQLCipher database. Google Pixel 2XL – Physical device used for testing and deployment.

▪ Expected Outcome/ Deliverables

A secure and robust password manager android application. Easy to use and customizable. Features like 2FA using biometric/face ID/Email OTP, encrypted vault and passwords, privacy screen, session timeouts and ability to generate strong random passwords.

○ Literature Review

▪ General Overview

- No 2-factor authentication in most password managers to access vault
- No session timeouts while running in background - no time limit
- Prone to snooping attacks / eavesdropping while multitasking apps

▪ LastPass, 1Password, Dashlane and NordPass

- <https://www.zdnet.com/article/critical-vulnerabilities-uncovered-in-popular-password-managers/>