

## **PassUSB**

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## Abstract

## **PassUSB**

With the prevalence of information technologies, there exists an ever-increasing need for individuals to secure one's own access to online accounts. The typical method of doing so requires the user to create a secret passphrase that they would then be responsible for memorizing in order to access a given system. However, several factors make such a task difficult and unsafe; first, the exponential rise in computational power has led to the feasibility of "brute force attacks", in turn forcing IT administrators to enforce increased password length and complexity. Another effect that the increase in password length has is making the memorization of multiple different passwords difficult, thereby incentivizing individuals to unsafely reuse their own passwords. With these shortcomings in mind, we propose a system that would solve all of these issues in a single package.

### **Purpose of system**

Solve the security issues facing PC end users in the realm of password authentication

### **Scope of the system**

In scope: Multi-platform mobile application, password management, multi-platform USB keyboard emulation, mitigations against man-in-the-middle, replay and spoofing attacks  
Out of scope: Application data security, side-channel attacks

### **Objectives and success criteria of the project**

- Provide a mobile app for users to create and store passwords
- Provide a USB hardware dongle that can be paired with the mobile app which can type in passwords in lieu of keyboard input

### **Definitions, acronyms, and abbreviations**

- PassUSB: the project's USB dongle solution that emulates a USB keyboard

- Password manager: a computer program that generates, stores and retrieves passwords for its users
- HID (Human Interface Device): a computer device that facilitates communications between a computer user and a computer
- App: a computer application
- Pairing: the process of recognition and acknowledgement between the mobile device and USB dongle

## **Overview of document**

The project will consist of two types of coding assignments, one for frontend development i.e. mobile app development, and the other for backend development i.e. microcontroller programming. The mobile app will prompt the user to create a new password database, in which he/she will then enter a master password that is to be used to secure the database. The user will be given an option to pair the PassUSB with the app. Should the user choose to or not choose to pair the PassUSB, the user is then able to utilize the app's password generation, management and storage features.