Final Year Project Plan

**Full Unit – Project Plan**

Develop a security suite for Android based smartphones.

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**1 Abstract**

Since the first release of the Android mobile Operating System in 2008, Android Smartphones have developed to become an integral part of day-to-day life and as smartphones improved and added features, the amount of personal/private data they handled also increased. Android Smartphones now have the capability to act as anything from a way to digitally sign contracts to complete bank branches in our pocket. They can replace anything from our Debit Cards to our personal laptops and as we become more and more reliant on the palm-sized slabs of glass in our pockets, the need for security becomes more and more crucial. Especially now more than ever as new malware is being developed and exploited quicker than exploits can be patched and as our devices become more and more connected to the outside world and an up-to-date fully featured android security suite will help with keeping our phones secure.

To combat this, various Android smartphones manufacturers have been guaranteeing Android Security Updates on a monthly, bi-monthly, or quarterly basis for a limited number of years depending on the age of the device. This is beneficial in practice until the variation in number of years being supported from manufacturer to manufacturer is realised. For example, Google, which has 0.5% market share (appbrain.com, 2022), can promise at least 3 years of Security updates across all their with their latest smartphones offering at least 5 years (Google Support, 2022) whereas Oppo, with 10.1% market share (appbrain.com, 2022), uses a “more you spend, the more you get policy”(Android Authority, 2022) with mid-range and budget models receiving less and less Security updates as you go down in price with their ultra-budget phones seeing no upgrades. Maintaining the security and increasing the longevity of these phones is one of my motivations for this project.

For most people, Android already comes with all the essential safety and security features such as Encryption and App Security and basic malware and anti-virus protection. However, the level of security is dependent on whether the device is running the latest version of the OS. Unfortunately, the Android Version market Share is very fragmented with only 23.5% of devices running the latest Android 12.0 with more than 27% using a version of Android that is over 3 years (Android Version Market Share Worldwide | Statcounter Global Stats, 2022). Naturally, owners of older android devices look to the Google Play store for a 3rd party Security solution such as those provided by McAfee or Malwarebytes and then soon realise that in order to maintain every aspect of security on their device, they would need to download multiple apps because there is no full-featured Security suite that can act as an all-in-one solution for your security needs on your android device. This inconvenience may deter less tech-savvy users from maintaining the security of their older device. Having an all-in-one Security Suite on Android will benefit and allow those users to protect their data more conveniently.

With this project, my goal is to unite and package multiple existing android security modules into a do it all mobile security centre that lives on the user’s android device of choice and conveniently shows the user an overview of the level of security that their device currently possesses in a user-friendly understandable way. I aim to achieve this by using open-source implementations of various security features as the foundation that will allow me to develop my own fit for purpose implementation that can be incorporated into my security suite without requiring a standalone app or modifications to the OS. I aim to present the data being shown by my security suite in an understandable way that doesn’t panic the user if not necessary yet will also allow the user to perform multiple of the modules listed below with the press of a button. A secondary goal is to then have this security suite run automatically in the background ensuring that all security definitions are up to date for the malware detection algorithm as well as provide day-to-day security without user input.

I have taken an interest in this particular project title as I am hoping to pursue a career in the Cybersecurity Industry with a particular interest in Mobile Security. I am an avid Android User who has resisted the rise of IOS for many years and have taken an interest in Secure Messaging and Encryption and programmed a secure messaging app (reminiscent of something like WhatsApp or Messenger) using Java and Google Firebase and although I’m fairly new to on-device android security, it has always been a subject that I have wanted to pursue in the future.

This project will analyse the possibility of having an all-in-one security suite on android that:

* Requires no prior modification to the OS
* User-Friendly
* Up to date using the latest security definitions
* Is Compatible with older versions of Android
* Handles multiple modules of Security on an Android Device from this list:
  + Anti-Virus/Malware Detection
  + Firewall
  + Overview/Management of app permissions
  + Overview/Management of active sensor usage (including camera, microphone, etc.)
  + File Encryption
  + Password Manager
  + VPN / Tor
  + Secure Messaging

2 Timeline

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| **Week 1** |  |
| **Week 2** |  |
| **Week 3** |  |
| **Week 4** |  |
| **Week 5** |  |
| **Week 6** |  |
| **Week 7** |  |
| **Week 8** |  |
| **Week 9** |  |