Professional Issues: Computer science

**Introduction:**

It is easy to be complacent when it comes to ethics and issues in computer science. The repercussions of one’s actions are, for the most part, unknown to the average software developer. However, there are some cases where the repercussions are emphasised a lot: for example, when programming systems on an aircraft, where the safety of the masses are at risk, therefore are considered highly when programming. However, for the average software developer: security, user’s safety and wellbeing (physically and emotionally) are often forfeited over usability and design.

**Privacy and Ethics**

As my project is relative to android devices, and the majority of people use their phones to hold very sensitive data including name, address, phone number etc. My android app allows me to send and receive data across the device to different apps including data such as names, addresses etc. Therefore, this project has many privacy factors that one must be ethical with. A few examples that will be mentioned are: testing using the testing ethics, Access ethics and human ethics.

Testing:

Firstly, invasiveness of my tests is a risk that may arise. Using other’s devices to test on has a level of human ethics that needs to be abide by. As my project is specifically about sending, receiving and detecting sensitive data exploitation, I may use other’s devices to test on in order to check that my programs work across different platforms. However, the devices I use will only be from close friends who always have the option of ‘opting out’ of the testing process, where they will receive their device back.

One of the main examples that is displayed, is testing with sensitive data. The concept of exploiting covert channels is to send sensitive data from one app to another in order to use that data in an app that may not have permissions. In terms of the user, or owner of the testing device, the data may indeed be the user’s address, phone logs or contact numbers. The app I make specifically will send a phone number in the form of screen brightness channel, to an app that doesn’t have permissions. Professional issues occur when a software engineer is manipulating real user’s data irresponsibly. To avoid this risk of abuse or misuse of sensitive data, I will use artificial data instead of the user’s private data, e.g. phone numbers, contact information or call logs.

Access and Trust:

Abuse of access is another major component of professional issues for my project; although the user of artificial data is often applied, a software engineer still has access to many of the files and sensitive components in the android system. In the case of a storage channel, the editing of shared resources could greatly affect the phone while allowing the misuse of sensitive data. In this project, there will be tests that temporarily change shared resources, i.e. encoding artificial data among the mechanics and data that is situated in the shared resources. Similarly to the previous point, when testing on other’s android devices, the user must have a certain level of trust in me to potentially change the shared resources on their phone. As mentioned before, the testing devices will be either my close friends or blank phones. If the former is to be true, then the user’s may ‘opt out’ any time; if it’s the latter, it would avoid adding the risk of badly manipulating shared resources as well as being better for human ethics.

This project is backwards compatible to android 5.0, therefore, I would require different version devices to test on. The point's I've made previously before apply, however as I need to check every version of android, it would be better if I avoided this risk using an emulator instead.

Plagiarism

A common issue in computer science is plagiarism. In the industry of software engineering, coder’s do use code snippets from other’s work and but must use the correct citation due to possible licencing disputes. There are no exceptions for my project as I must obey the licencing laws and correctly cite. When researching possible covert channels to implement and the ways to implement them, there are a few projects that possess functions that will be useful and are seemingly efficient. Professional issues would occur if I don’t cite my code correctly, therefore, if/when I use snippets from these repositories, I will correctly cite their code and whether it is licenced or not (including acknowledging the creator, the date made etc).

The majority of programmers use online repositories for their work and from that a large number of them use GitHub with their repositories open and public, making it is easy to steal and plagiarise someone else’s code. Even though I am using a private repository (Subversion) rather that a public GitHub account, I must consider is licencing my own code using GPL. This GNU (general public licence) would obey copyright laws, so should others ever attempt to use my work commercially, they must cite me. This is a huge issue for many creators and indeed the Computer Science industry.