

COSC2196 - INTRODUCTION TO INFORMATION TECHNOLOGY

ASSESSMENT 1: MY PROFILE

PERSONAL INFORMATION

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GitHub Public Repository: <https://github.com/chrisduncan92/chrisduncan92.github.io>

GitHub Pages: <https://chrisduncan92.github.io/1personalinformation.html>

Hello world! My name is Christopher James Duncan, and I am a 28-year-old RMIT student that works full time as a customer service representative and technician at a major IT retailer. My job focuses on providing a range of repair and technical services for most modern IT devices including desktop and notebook PCs, mobile phones, tablets, digital cameras and more. I take pride in and am dedicated to finding the right solution for our customers. My hobbies include PC gaming, reading, playing the drums, making music with friends, and chilling out at home with my partner and our kitten Yen.

INTEREST IN IT

I have always had a keen interest in learning and understanding how IT products work and function together; how the technology can benefit individuals, groups and cultures; and theorising the implications that new developments or technologies in the space have for our future. I am particularly fascinated by the rise of 'Deepfake' technology, which refers to an existing video or image that has been manipulated by an AI program to show events or an individual saying something that never actually occurred. I believe this technology has profound implications for the education and mass media sectors and provides a real threat to a world already struggling to separate reliable and unreliable media.

My interest in IT predominately comes from my love of gaming and being able to build or modify desktop PCs, the beginnings of which I happily attribute to my father. For as long as I can remember, Dad always had a desktop PC or two in the house: I can recall an old PC, running Windows 95 and with a giant CRT monitor, that Dad loaded multiple games on and would teach us how to play. Over the years this passion grew and expanded: I bought my first notebook PC while in high school to play 'Left 4 Dead 2', which I still play to this day, and several years after I built my first gaming desktop with a little help from Dad.

While I studied various IT subjects throughout high school and did work experience with the IT department of the Catholic Education Office Wollongong, most of my experience in IT is self-taught or comes from my current employment. My employment requires me to be knowledgeable and adept at determining and troubleshooting problems with IT

products or systems, as well as being able to configure or tailor these aspects to suit customer's needs. This can involve: physically disassembling products to address or resolve hardware faults; having in-depth knowledge of multiple PC and mobile device operating systems; being familiar with command line interfaces; liaising with customers, vendors, service agents and manufacturers; providing basic technical support over the phone or by email; and dealing with different departments and teams within the store to provide a solution.

I chose to study with RMIT, through Open Universities Australia, because they offered online study for a course I was interested in, allowing me to work around my full-time employment schedule. I have so far had an excellent experience with the RMIT teaching staff and the online study experience.

During my studies, I am expecting to build upon and expand my existing knowledge in the consumer & retail IT sector; I am looking forward to gaining valuable skills in programming and networking, which I do not have a lot of experience in, and to obtain a deeper understanding of how other IT systems function and operate. I would also like to increase my critical thinking abilities, discover new formats and methods to present information & data, and to broaden my capacity to work as an individual and within a group.

IDEAL JOB

I am currently interested in studying to become an IT or ICT Manager.

As an example, the Surf Live Saving Australia organisation is currently looking for an ICT manager, as advertised on the website Seek:

<https://www.seek.com.au/job/50545985?type=standard#searchRequestToken=36c06939-becb-46cc-8d7b-11a9b4f513e>.

If the job posting is no longer listed, please see the following image for reference:

<Git\chrisduncan92.github.io\idealjobcapture.png>.

I believe an IT or ICT manager is an individual who leads a team of dedicated IT staff in developing and maintaining various systems and technologies for a business or company. An ICT manager would be responsible for communicating and liaising with other departments within the organisation, and to discuss and present new ideas and changes that may benefit the organisation. They would also be responsible for maintaining the well-being of the IT team, ensuring they remain capable and productive in their work.

This role appeals to me because I am confident in my existing IT knowledge and pride myself on being able to effectively communicate with customers, staff members, vendors and manufacturers to provide solutions; I also believe I have gained and can demonstrate valuable skills in conflict resolution and team management, making this position a natural extension of my current responsibilities.

I believe an IT or ICT manager will need to have an extensive knowledge of IT systems and the way they interact; the ability to successfully lead and manage a team of IT staff; effectively communicate with individuals, teams or departments within an organisation;

and ensure that their IT team and relevant systems or technologies operate within the organisation's mission statement or objectives. They will need to be a strong communicator and be able to anticipate and meet needs for their team. Previous work experience as part of an IT team or team manager would be a huge benefit for a potential candidate, as well as experience with common application software.

I believe that many of the skills required to become an IT or ICT manager can be obtained by studying a Bachelor of Information Technology or similar degree, with electing to complete a Minor Stream in Management; completing an additional Graduate Diploma of Management would grant further skills and resources and be highly beneficial when applying for management positions. I believe obtaining successful employment as part of an IT team would demonstrate to a potential employer that you can successfully operate as an individual and as part of a team.

PERSONAL PROFILE

To further understand and develop my learning skills and ability to work in a team, I have undertaken an online Myers-Briggs personality test, a learning style test, and a leadership style test. The results of each of the tests, and my interpretations of how they apply, are as follows.

- 16Personalities test - <https://www.16personalities.com/>

This personality test indicates that I am an 'Advocate' personality: Advocates see great cause in helping others achieve goals and feel fulfilled if they are successful, working with determination and passion. The test suggests that Advocates approach tasks and challenges with creativity and imagination; while they can be strong-willed and act decisively, Advocates are sensitive to other's needs and are determined to create a sense of balance through their actions. Advocates strive for their work to be altruistic in purpose, knowing that they are helping others & by connecting with people.

I believe an Advocate personality is a huge benefit to a team or group in approaching challenges or ideas in a unique, creative way; their determination and passion will ensure they work effectively at individual tasks and contribute to projects. Advocates will be sensitive and respectful towards group members, helping facilitate a constructive and harmonious environment: through their empathy, Advocates will offer support and assistance to other group members who are struggling or facing individual problems. Because Advocates are decisive and strong-willed, this may cause disagreements between group members: Advocates will need to ensure they clearly communicate personal ideas and thoughts with the group, especially when their work may affect other members.

I believe this Advocate personality type does accurately describe my approach to tasks or challenges in a personal and professional setting, as well as my professional goal of always providing the right solution to a customer. I believe my work and the outcomes I achieve are amplified by my empathetic and sensitive approach to tasks, challenges, and communication; I am interested to discover new methods or techniques to solve

problems and am always ready to assist my work colleagues where possible. I am eager to further develop the way I approach and work through challenges and look forward to constructing a successful project with my group.

- EMTRAIN Learning styles quiz - <http://www.emtrain.eu/learning-styles/>

This learning style quiz suggests that I primarily learn in the 'Pragmatist' style, where learning is most effective using practical examples, case studies and discussions. Pragmatist learners need to be able to visualise how to apply learning to real world problems; they are comfortable with experimenting and trying out new ideas or techniques to see if they are successful. Pragmatist learners may feel more comfortable in active attempts to apply learning rather than lengthy discussions.

In a group or team environment, a Pragmatist learner will likely be ready to jump into tasks or challenges, especially if they have had previous experience with the work. They may struggle with long discussions about projects with other team members and may require tactile resources to help them better understand challenges or tasks. This can easily be addressed by visually breaking down ideas and challenges in a clear manner, such as by creating a timeline or list of tasks to complete, and by establishing effective communication to address any questions or concerns during project work.

Through the course of my professional career, I have found that I can learn more effectively through a hands-on approach to tasks or problems, which I believe fits within the Pragmatist learning style. I find the use of visual aids or instructions extremely beneficial in understanding issues or developing a new skill or technique.

- USC Price Leadership Style Assessment - <https://eml.usc.edu/leadership-style-quiz>

This assessment determined that I most suit the 'Postmodern' leadership style, which is an altruistic style in the way that leaders can bring joy to others by their role. Postmodern leaders can find pleasure and fulfillment in being able to influence society in a positive way; they can help realise the human potential of their team members or those they affect through their work. Through their role and work as a leader, they can help people realise how empowering creating a positive future can be.

A Postmodern leader would be instrumental in creating an open, constructive and upbeat team environment, encouraging team members to apply their ideas, skills and knowledge to create positive change in the world. With a heavy focus on the wellbeing of their team members, Postmodern leaders will strive to create a safe working environment and will be extremely respectful and considerate in their approach to all aspects of a project. They will help develop a welcoming and safe work culture, where team members feel comfortable in discussing issues or problems and having them resolved successfully. A positive work ethic and environment will help produce high standards of work and personal relationships.

I believe the Postmodern leadership style does match aspects of my personality and also coincides with the personality test I have undertaken: Postmodern leaders require a high degree of empathy and sensitivity in order to establish and develop personal connections

and effectively recognise and address issues and concerns. I personally find great joy and fulfillment in helping others, both inside of outside of work, or knowing that knowledge or a skill I passed on to someone has helped them achieve a goal or complete a task of their own.

PROJECT IDEA

- Overview and motivation

In today's digital age it has never been more important to practice good password hygiene, which refers to safely using individual, complex passwords for online accounts.

But how realistic is this practice when, for example, Australian internet users have an average of 6.7 social media accounts alone? (Kemp 2020, slide 42.)

A key tool for developing and maintaining good password hygiene is by using a password manager application, which allows users to save and manage passwords or login information for their online accounts. Many password managers, however, can appear daunting to a new or inexperienced user and prove difficult to use, often turning users away from the tool entirely.

My project idea will be to develop a password manager that is heavily focused on ease of use and designed in a simple, clear layout that allows friendly and intuitive navigation. This project will be targeted at consumers who have no experience with a password manager or have had a negative experience with the tool previously. The password manager will help users familiarise themselves with safe password hygiene by providing tips or information during use, such as not reusing passwords and creating unique, secure passwords for their accounts, which will in turn reinforce the benefits of using a password manager.

In addition to the ever-increasing number of online accounts the average internet user has, an Online Security Survey published by Google (2019) discovered that a staggering 65% of adults in the U.S. between the ages of 16-50+ reused the same password for multiple OR all accounts. Two years prior, Verizon's annual Data Breach Investigations Report (2017, p. 5) determined that a massive 81% of hacking-related breaches investigated 'leveraged either stolen and/or weak passwords.'

From my personal experience in the retail IT sector, the majority of consumers over the age of 50 I interact with are unable to remember their account passwords, requiring these passwords to be reset; if they are able remember a password or have it written down, I further discover that they are reusing the same, often simple or unsafe, password for multiple accounts. These consumers complain about the difficulty they experience in having to remember so many different account passwords, as well as regularly having to reset forgotten passwords, but typically have never used or are unfamiliar with a password manager tool.

I believe that developing a password manager that is user friendly and easily navigable will help consumers learn and practice good password hygiene, and to develop a better understanding of safety & security in the digital world.

- Description

The password manager will be a downloadable application or program that could be designed to run on major software platforms such as Windows, macOS, Android and iOS. The application will allow users to securely save and access any number of login credentials, from email passwords to online banking logins, by using a single master access code. Saved credentials or items will be displayed in a visually appealing and familiar journal-style format, including shortcuts to perform key functions or quickly search for a specific credential, to ensure users do not get lost or confused when using the application. The ability to customise the colour theme of the application, such as changing the main background colour from white to black or text colour from black to blue, will also provide a further degree of familiarity or comfort to the user.

When opened, the application will prompt the user to create a master access code in the form of a password, passphrase or PIN code; this access code could also be supplemented by a biometric login method, such as fingerprint or facial recognition functions found in modern smartphones, for simpler and more secure access. As the master access code will be used to access their collection of credentials, referred to as a 'vault', it is the most crucial component of the application: the user will be prompted to create a unique, memorable and secure code and be reminded not to record this code anywhere.

After accessing their vault, users can simply tap a create or add button in the bottom-right corner to add their first credential: in the following create screen, they will be asked to record a name for the credential (e.g. Facebook, Google) and to create and confirm a password. When creating a password, helpful suggestions or hints on creating secure passwords will be provided (e.g. passwords greater than 8 characters in length; mix of letters, numbers and symbols) as well as an option to have a password randomly created via a built-in secure password generator. Users would then also have the option to add notes to this login, such as applicable recovery information for the credential or answers to security questions.

Users will view their vault as a list of items in a simple notebook or journal-style design: their credentials will be listed alphabetically by name, allowing the user to scroll up & down to view items. Adding small tabs along the right-edge of the page, with shortcuts to jump to a range of credentials (e.g. accounts named with characters between 1-9, A-M and N-Z) will allow users to quickly navigate between saved credentials. Adding a search button along the top edge of the window to allow users to search for a specific credential will further increase the ease of use and access.

Simply tapping a credential will display the account, password and any notes saved; while the passwords initially appear as asterisks or dots for privacy, the user can tap a

show/hide button to view the password or a copy button to temporarily save the password to the device's clipboard memory.

Upon exit or close, the password manager will lock the vault for security and require the master access code to be input when opened again.

The credentials in the user's vault will be securely encrypted by the device, and can only be decrypted and accessed by entering the master access code; if this master access code is forgotten, there is no way to access the encrypted vault data and the application will securely erase the vault and data contained within. This is primarily done for security reasons, as the ability to reset a master password could expose a potential vulnerability or weakness in the application.

- Tools and Technologies

As the password manager application will be installed and run on the user's preferred device and operating system, no dedicated hardware or other equipment will be required to use the application.

The password manager would first be developed as an application for the Android mobile-based operating system, which can be done freely through the Android Studio tool: <https://developer.android.com/studio/>. Android Studio will allow the application to integrate various hardware components of the user's device, such as the fingerprint reader for an alternate access method.

The application will need to include various security software components to ensure the user's data is safely stored. A modern cryptography standard such as AES-CBC would be used to encrypt the user's vault data, requiring the correct master access code for decryption. Existing open source cryptographic code libraries, such as 'Web Crypto' - <https://w3c.github.io/webcrypto/> - or 'Forge' - <https://github.com/digitalbazaar/forge> - would be used as a basis to develop the data encryption method. It would also be beneficial to examine existing open source password managers, such as the free application Bitwarden - <https://bitwarden.com/>, source code available at <https://github.com/bitwarden> - to gain a better understanding of developing a secure password manager.

- Skills Required

To begin developing this application for the Android operating system, it will be necessary to obtain an in-depth knowledge of and experience with Java and Kotlin programming languages; a fundamental understanding of other languages (e.g. JavaScript, C#, HTML) would also be beneficial when researching code libraries. A basic understanding of these programming languages can be learnt online but completing a programming skills course or qualification - such as a Bachelor of Computer Science through RMIT University - would provide an in-depth knowledge of and ability to successfully apply these languages.

- Outcome

If this project is successful, I believe this password manager will greatly increase the user's online safety and help to reduce the chance of experiencing an online hack; the application will also eliminate the stress of managing passwords and help cultivate a better online experience for the user. By using this password manager, the user will learn the importance of good password hygiene and account management which will only become more relevant in the future as the digital world continues to expand. By reducing the number of weak or reused passwords, especially if applied to users within a business, this password manager may also help reduce large-scale data breaches and some of the financial loss that can be contributed to online hacks or breaches.

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