Brisbane IT Crowd

COSC2196

Introduction to Information Technology

Assessment 2: Team Project

Contents

Team Profile – Brisbane IT Crowd

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Name: Darren Bonelli > [Profile](#)

Student number: s3793513

Darren is an avid gardener and pet owner with an interest in sampling craft beer and whiskey, which entails nicely with Darren's favourite leisure interests in food and being engrossed by Netflix entertainment.

Darren's interest in IT stems from early childhood where anything electronic held an unending fascination, which only increased over time and led to an ongoing career in IT.

Starting with gaining access to computers and the internet in libraries, internet cafes and friends places, Darren transformed this into career opportunities in ICT.

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Name: Charlon Cachuela > [Profile](#)

Student number: s3793506

Charlon imigrated to Australia in the late 1980's from the Philippines, becoming an Australian citizen in the early 90s. Fluent in two languages; English and Tagalog and working on two others, Italian and Spanish. Charlon has a strong interest for mentoring and counselling and hopes to combine this with technology to improve patient care in medical institutions.

The introduction to IT in high school has transitioned into a long and fulfilling career in IT that continues to provide opportunity and challenges for Charlon.

Charlon has been working in ICT for over 20 years and this level of experience will invaluable to the team.

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Name: Andrew Gartner > [Profile](#)

Student number: s3526562

Andrew has lived in and around South East Queensland for the most part, currently residing just south of Brisbane. As a family, the focus is on horses and all things related to living with them. Andrew also swims to keep fit and plays badminton on occasion as well.

Andrew's interest in IT came from the introduction of computers into engineering drawing offices in the late 1980's. Since then, computers and technology have played a major part in Andrew's career since changing from the drafting industry to the technology industry.

Much like some of the others in the group, Andrew has been working in technology related roles for various organisations for many years.

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Name: Paul Harman > Profile

Student number: s3789959

Paul has been immersed in technology for many years, having started using computers during his school years. Even after taking a break from technology soon after leaving school, Paul has since been drawn back to the technology industry.

Paul, like Charlon, speaks another language, being Japanese and is making progress with Cantonese. Living with two dogs, Koko and Spot, in Central Queensland, takes up Paul's time when not woking on his own personal data centre located in his house.

Paul is an advocate for positive and constructive attitudes towards mental illness and other conditions affecting the brain, placing a focus of the importance of acceptance for those of us who are outside societies norms.

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Name: Lee May > Profile

Student number: s3770851

Lee is originally from New Zealand and has a passion for motorcycles, golf, and an artistic interest in sketching and airbrushing.

Lee's interest in IT originated from performing upgrades, repairs and assisting friends and family with their computing problems. This has expanded from an unplanned exposure to programming through a work colleague.

Since then, the ability to create software to provide solutions for business outcomes, as well as personal interest, has led to Lee seeking further knowledge in software development, turning this interest into career aspirations.

Team Member Profile Overview

Team Member	Myers-Briggs	Learning Style	Key Attributes
Darren Bonelli	The Mediator (INFP-A)	Visual Learner	introverted, intuitive, thinker, healer, craftsperson, architect, visual learner, openness, neuroticism, quiet person, hands on approach
Charlon Cachuela	The Mediator (INFP-A)	Visual Learner	extraverted, formal, serious, quiet and reserved, analytic mind frame
Andrew Gartner	Advocate (INFJ-A)	Visual Learner	advocate, idealistic, task oriented, visual learner, practical, openness, conscientious, agreeable
Paul Harman	The Mediator (INFP-A)	Visual Learner	mediator, analytic, diplomat, principled, visual leaner, structured, ordered, creative, clam under pressure
Lee May	The Inspector (ISTJ)	Visual Learner	introverted, sensing, thinking, judging, openness, introverted, agreeable, conscientious

Team Profile Summary and Analysis

The results from the three personality tests completed by each member of the team indicates that while there are a number of similarities, there are also comparative differences. The common personality traits that each person has, shows that there is a solid foundation of a task focused, analytical and collaborative work ethic that will prove very useful for this assignment as well as any future assignments that this same group works on together.

While there are a number of introverted personalities, the contrasting extraverted tendencies of others in the group will provide a good balance of leadership and group dynamic.

Everyone shows an openness and a level of agreeableness that will encourage a positive, supportive and level of inclusion for all team members. Overall, and based on the test results, the team should achieve a good working environment, during both face to face meetings, as well as remote, virtual meetings, that will focus on productive, task-oriented outcomes.

Maintaining this personality momentum will most likely be the only challenge as the course progresses and the workloads increase. However, after the initial face to face meeting held last Saturday, there are very positive indications that each team member will be able to contribute thoroughly while at the same time providing a supportive environment for any team member that requires assistance.

Ideal Jobs

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Team Member	Role	Key Skills
Darren Bonelli	Senior Technical Developer	programming, management, leadership, team leader, project management
Charlon Cachuela	Senior Technology Officer	management, project management, systems administration, systems architect
Andrew Gartner	Software Engineer	programming, problem solving
Paul Harman	Cyber Security Practice Lead	cryptography, systems administration, security management, problem solving
Lee May	Mobile Application Developer	programming, problem solving

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Ideal Jobs Summary and Analysis

There are two very distinct career plans evident in the chosen ideal jobs by members of the team.

The first career type is very clearly along the lines of technical team leadership with elements of project management. These job roles are positions where the incumbent is responsible for providing direction of operational activities in an ICT environment that requires many years of experience in systems management, and development.

The second career type is focused on software development of different types of systems. These roles require experience in a few programming languages such as C++, Python, Swift, Objective C, Java and C#.

They also deem highly desirable an understanding of software development methodologies and modern software development environments. In addition, the ability to use software to develop solutions to real world problems is also one of the requirements for these roles.

While these two career paths follow different specifics, they are both similar in some respects. They require several years of experience in similar roles, and the environments in which they operate are almost identical.

The environment is based around creating, managing and delivering solutions that requires knowledge of technology systems, the ability to develop software to interact with systems and the leadership to guide other individuals to achieving the outcomes required.

So far as the dynamic of the group is concerned, with relation to the ideal jobs, the overall career direction of all team members is very similar. Each person desires a role that creates software-based solutions. This desire fits in nicely with the content of this course as well as the other courses likely to be undertaken in the coming study periods.

Description and Links to Brisbane IT Crowd

The team GitHub repository has been a good introduction to working collaboratively on shared source code and data. The ability to work on separate parts of the team's website without affecting other parts that others were working on helped in reducing any rework or lost work.

The updates to the data files were clearly visible to each contributor in the form of commit comments and history.

This ensured that each team member was able to review any proposed changes in the form of pull requests before the changes were applied to the main data files.

The team elected to break each of the sub parts of the web site, being Personal Information, Team Profile and Ideal Jobs, into git branches and then work on each branch separately.

Updates were committed by team members, reviewed by others through commit comments and finally merged to the master branch through the pull requests mechanism.

The ability to track and review this audit trail of changes was beneficial to each person as it allowed reflection of what had been done and why.

One of the challenges the group faced at the start of the assignment was becoming familiar with Git and how it works.

Proving that the team works well together, this was quickly overcome through shared knowledge of some team members to other team members early on, so that as the assignment progressed, use of Git and GitHub would not prove to be a hindrance.

Repository:

https://github.com/BrisbaneITCrowd/CPT110-A2

Website:

https://brisbaneitcrowd.github.io/CPT110-A2/

Industry Data

What are the Job Titles for your group's ideal jobs?

- Senior Technical Developer

- Senior Technology Officer

- Software Engineer

- Cyber Security Practice Lead

- Mobile Application Developer

How does each of these rank in terms of demand from employers?

Job Title	Burning Glass Equivalent	Rank	Count
Senior Technology Officer	Service Desk Analyst	5	779
Mobile Application Developer	Front End Developer	6	738
Software Engineer	Software Engineer	11	539
Senior Technical Developer	Senior Net developer / Senior Java developer	12/13	481/478
Cyber Security Practice Lead	n/a	n/a	n/a

Source: Burning Glass - Top IT Job Titles March 2018.pdf

From your group's ideal jobs, you can identify a set of skills required for these jobs (we will refer to this as your group's required skill set). These can be divided into general skills (communication, problem solving, writing etc.) and IT-specific skills (JavaScript, SQL, etc.).

How do the IT-specific skills in your required skill set rank in terms of demand from employers?

IT Specific Skill	Burning Glass Rank	Burning Glass Count
SQL Server	1	3,570
JavaScript	2	2,946
Java	3	2,860
ASP .NET	16	1,370
ITIL / Service Desk Analyst	20	1,257
Python	22	1,150
C++	-	-
Objective C	-	-
Swift	-	-
UI / UX	-	-

Source: Burning Glass - Top IT Skills March 2018.pdf

How do the general skills in your required skill set rank in terms of demand from employers?

General Skill	Burning Glass Rank	Burning Glass Count
Oral and written communication skills	1	44,367
Problem solving	2	16,445
Collaboration	5	14,364

Source: Burning Glass - Top Generic Skills March 2018.pdf

What are the three highest ranked IT-specific skills which are not in your required skill set?

IT Specific Skill	Burning Glass Rank	Burning Glass Count
Microsoft Windows	4	2,699
SAP	6	2,189
Business Management	7	2,141

Source: Burning Glass - Top IT Skills March 2018.pdf

What are the three highest ranked general skills which are not in your required skill set?

General Skill	Burning Glass Rank	Burning Glass Count
Organisational skills	3	15,844
Troubleshooting	6	11,471
Planning	7	11,315

Source: Burning Glass - Top Generic Skills March 2018.pdf

Response to Burning Glass data; has this affected opinions?

Darren

My ideal role has not changed. From the beginning up until this point I understand that a lot of hard work and many years of ICT related study need to be accomplished before I can get there. I've already been working in IT for over 14 years so I have come to the realisation that time does fly and if I manage to successfully study outside of work, I can reach my goals and before I know it can find myself educated and experienced enough to land such a position.

Charlon

My ideal job would be to entertain the idea of working in a full time, permanent role in Information Technology. My previous role was ensuring that the computer systems in a major hospital in Brisbane was up to date. The role was exciting, perhaps a bit intimidating since I was communicating with medical professionals. Patient care was our priority and the challenges that were part of my role became quite exciting in a way that there was no room for any errors.

My ideal is to work towards being a Senior Technology Officer. The role is very technical, providing operational support to Queensland Health sites, configuring, installing and managing their ICT environments. My current skillset encompasses all that is required for the position, with over 20 years of ICT knowledge and experience. I have provided support to investigate and diagnose incidents and providing remedial action, providing excellent customer service by applying communication skills with an ability to negotiate, advise and work collaboratively with others.

Andrew

My ideal job of Software Engineer is still very appealing as it is the type of work and role that interests me more than whether the specific and general skills required are in demand more than others. Certainly, as far as employment opportunity is concerned, focusing on those skills that are most in demand seems a wise decision. However, a job role is more than a set of skills and there are other considerations that should be taken into account.

The work environment can be a very important element when choosing a position in an organisation. This can sometimes be difficult to determine especially for those organisations that are not too well known, or that reviews cannot be sourced.

As well as the work environment, the type of work can also play an important role. The skills required across many different jobs can be similar and are in most cases transferrable.

Paul

The Burning Glass information has not influenced my decision in anyway, despite some amusement that there is no equivalent in Burning Glass to compare against.

I am confident that the role is a growing one and one that will be not only needed but as the population becomes more cyber savvy will be more so. My personality is not one that leads itself to a leadership role, but I am in constant need of a challenge. The constant change of a security role with needing to keep on the bleeding edge of technology and human behavioural practices certainly ticks all the boxes in this criteria.

Lee

It hasn't changed my opinion whatsoever, if anything, it has inspired me to continue on with this choice of career path. The demand is high, and it is challenging and rewarding work. Another factor is that the skillset is transferable to other areas of development. By not being restricted to one line of development makes perfect sense to me. The ability to travel anywhere, and work in any part of the world is extremely appealing to me.

With the knowledge and skillsets developed, freelance work could also be an avenue of opportunity available to utilise as an additional source of income.

Although mobile application development doesn't feature highly on the top occupations ladder, the programming skillset would still avail me to other industry specific opportunities.

Interview an IT professional

Mr Arash Karimi is a senior technical officer from eHealth, Metro North Digital Partnership, Queensland Health. Mr Karimi's place of employment is located at the Citilink Building, Campbell Street, Bowen Hills QLD 4006

Mr Karimi has been employed by Queensland Health as a technology officer for three years as a permanent employee, initially to assist with the deployment of the Windows 7 operating system, within the hospital and health services throughout the Queensland sites.

Mr Karimi was originally from Tehran, which is the capital of Iran. Mr Karimi speaks fluent in Persian and English, which has assisted Mr Karimi to transition with ease when he immigrated to Australia.

With a bachelor's degree in Engineering, Mr Karimi has had plenty of success with attaining IT related work experience in Iran and in Australia.

What kind of work is done by the IT professional?

As senior technical officer, Mr Karimi's job description is to provide operational support, on site and remotely to Queensland Health sites. Mr Karimi's daily tasks are as follows:

•	Technical knowledge and experience in management, auditing, configuration, monitoring and implementation of ICT environments

•	Delivering high quality ICT support to clients with an emphasis on managing and prioritising tasks

•	Identifying and resolving ICT related problems within defined Service Level Agreements

•	Demonstrates interpersonal skills and personal qualities to develop good working relationships while enhancing the provision of quality client service in a team environment

•	Sound oral and written communication skills to assist with the creation and maintenance of system documentation and work instructions

•	Provides operational support, on site and remotely to Queensland Health sites

•	Configures, installs, monitors, supports and manages ICT environments by applying his technical expertise

What kind of people does the IT professional interact with?

On a normal work day, Mr Karimi interacts with medical staff and their patients within the hospital health service sites, internal stakeholders and senior management.

Mr Karimi must provide a timely support to all his clients, ensuring that Mr Karimi is also providing excellent customer service while investigating IT related issues.

Are they IT professionals? Clients? Investors? The general public?

The general public does play a part in Mr Karimi's daily interaction in his IT role; however, patient care is his number one priority.

During the time that I interviewed Mr Karimi, he was contacted by other IT professionals such as his project manager, Faraz Junaidi, who was querying on another project that Mr Karimi was involved in earlier that day, to attain some details regarding a replacement of a Queensland Health asset.

Mr Karimi's IT role is reactive, which means he is always on the go, collaborating with his team to resolve issues in a timely manner, offering quick fixes and at the same time, managing his own time to capture the information of issues that are outstanding.

Where does the IT professional spend most of their time?

While developing and maintaining IT solutions, Mr Karimi spends most of his time at Royal Brisbane Women's Hospital, where currently, he oversees replacing Qld Health smart devices such as laptops, Workstation on Wheels (WoW) and desktop computers.

To start his day, Mr Karimi will first arrive at his desk, log into his computer, check any outstanding issues via an ICT ticketing system called, Service Now, or in short, SNOW.

Service Now will determine how busy Mr Karimi will be every day as the issues that have been logged are from various end users from Metro North Hospital Health Service.

Mr Karimi will act on the issues straight away, issues that have not been resolved and plan his day around to resolving as many IT issues as he can.

Mr Karimi will manage his time, liaise with other IT teams and his team to collaborate who Mr Karimi can identify to assist him with the pending work load each day.

What aspect of their position is most challenging?

As English is Mr Karimi's second language, communicating with non-technical end users such as nurses, doctors and administration staff can be challenging.

To be able to express the IT related issues at hand, to explain them in the easiest way can be tedious.

Mr Karimi is also a very technical minded individual, sometimes forgetting that he must explain an issue three or four times to someone else who is not very technical can be a challenge. A nurse or a doctor can have no interest in any IT related issue, but otherwise they must be able to explain what the issues are to Mr Karimi.

With the years of IT background experience, Mr Karimi has been able to determine the cause of most IT related issues, fix them and report back to his team to educate them.

As my interview with Mr Karimi was nearing, Mr Karimi's mobile device had been silently vibrating. There were at least twenty notifications of IT related issues that needed attention, various missed phone calls and voicemail messages.

Mr Karimi is a busy man, but he enjoys the busy that will make the day go quick.

IT Technologies

Autonomous Vehicles

What does it do?

In 2020, the volume of autonomous vehicles on the road will be worth over US$87 billion. By 2040, it is estimated that four out of ten vehicles on our roads will be fully autonomous.

Autonomous vehicles have been used in mining for the last decade which has seen an increase in productivity along with lower business costs. What began as a trial of autonomous big haul trucks ten years ago at Rio Tinto mines in the Pilbara region has grown into one fifth of the company's big haul trucks fleet being fully autonomous vehicles.

Moving forward Rio Tinto is planning on increasing the number of driverless trucks from their current number of around 80 to over 140 by the end of 2019. In 2017 Rio, in partnership with truck manufacturing company Komatsu successfully deployed the world's first retrofitted autonomous haul truck meaning fleet replacement is not necessary and therefore costs will remain down while generating greater revenue into the future of the vehicle's life span.

The mining company is also planning soon to deploy a fleet of autonomous locomotives where they successfully ran the first autonomous train in the Pilbara region in October 2012. The technology still employs a person to oversee the vehicles operations, but they can do so from a central control room many kilometres away while managing multiple vehicles simultaneously. During one of our group discussions team member Paul Harman disclosed that he works in the mining sector in Mackay where they are also moving towards autonomous vehicles where one of the main lines of infrastructure required is establishing a reliable wireless network to cover thousands of kilometres in remote areas.

It has been well documented for years that Google are investing in the development of autonomous vehicles with trials on public roads in the US and UK in recent years. These trials still had safety measures of a driver to take over in an emergency and a technician on board to resolve any issues. Much of the technology is already found in modern vehicles such as automatic braking and automatic parallel parking.

These new semi-autonomous technologies out there already rely on the use of proximity sensors which are increasingly being added to new cars available on the market. Combining proximity sensors, automated steering aids already in use with park assist features, along with old technology such as cruise control, the autonomous vehicle on public roads is nearer to the norm than most people might consider.

Google adds to these existing technologies with a roof top LiDAR camera that uses an array of up to 64 lasers to build a 3D map of the car's surroundings with a range of 200 metres. Again, combining this new technology with existing technology, the car is constantly being relayed information via GPS location similarly to what we see today with traffic conditions when coordinating routes with Google maps. Googles autonomous car relies on many technologies working in conjunction.

Recently Domino's Pizza in conjunction with the Ford Motor Company began offering customers in the US cities of Michigan and Miami the option to have their food delivered by an autonomous Ford Fusion vehicle. The test program ran in October 2018 as a first step towards Ford's 2021 target date of producing fully autonomous vehicles. To date Ford has invested over one billion dollars in artificial intelligence company Argo A.I which has taken them to producing a test vehicle autonomously running on public American roads and by partnering with Domino's during this test phase valuable

real world scenario data is being collected and incorporated into what will end up being the final product by the goal date of 2021.

Fords objective is like that of the mining companies in that they envision to have a central control operation terminal where a commercial fleet of autonomous vehicles are monitored and stationed when not in use so thorough maintenance to the critical sensor components can be carried out.

Ford CEO and president, Sherif Marakby, has said before the future of thousands of self-driving vehicles can be on the road, we need to be prepared to manage a large high-tech fleet efficiently and this is a significant stride in that process.

What is the likely impact?

The potential impacts of autonomous vehicles will be the shift in jobs and required skills. For example, in the mining industry drivers of machinery and trains will be made redundant while an increase in the need of technicians to service the new technology will be the new demand.

The impact in this new technology may result in many people losing jobs because their skills are now redundant and while new roles are created less people will be required moving forward. People who have been operating large machinery or working as taxi or courier drivers for decades will potentially be out of work if they do not have other skills to fall back on.

On the other hand, jobs that simply did not exist 20 years ago to service the new technologies and operate the central control rooms will become more in demand which will require people who have developed specific skills required for these new changes. A positive impact of the development of this technology is the reduction of potential road accidents as over 80% of car crashes in the USA are caused by driver error.

Drink and drug affected drivers would become a thing of the past and the time spent travelling to work or required destinations could be better spent on more productive and enjoyable activities. One of the largest impacts of the autonomous vehicle is the ethical choice we leave to a computer to make in the situation where the car avoids running down a pedestrian but in doing so critically injures the occupants of the vehicle or vice versa.

Security will be a large impact moving forward as the autonomous vehicle could be hacked or suffer software or hardware malfunctions while in use. From a military perspective as of now terrorists do not have unmanned vehicles but this could have the potential to change how terrorists strike.

How will this affect you?

As someone who grew up in an era where cars and vehicles were always manually operated but at the same time having a keen interest in technological changes, I have conflicting feelings about how autonomous vehicles will affect me in the future.

I enjoy driving cars and have had the most fun in cars built from the 1970s era where there were no computers on-board at all. It will be a big change for myself if in the future I'm a passenger in an autonomous vehicle when I spent a large portion of my adult life manually operating a fully analogue carburettor air breathing machine.

I can see myself becoming a clichéd old man pining for the days of old but perhaps if it makes the roads and our cities safer, I will embrace it. I would enjoy having more free time to myself on commutes and hypothetically travel speeds should be reduced if efficiency of all vehicles on the road is increased as has been seen in the commercial sector.

In 20 years' time if as predicted one in four cars on the road is an autonomous vehicle I would see my family and friends leaning towards this technology as myself and my friends will be in our 50's and are of a generation that were born at the great technology boom.

I would see autonomous vehicles as a safe option for elderly family members as it would give me peace of mind that in their old age due to any medical conditions due to age that might impair their driving abilities as one less thing to be of concern. Furthermore, autonomous vehicles could open up further possibilities for friends or family members who can't manually operate a vehicle.

As of right now, I nor my friends or family work in heavy machinery so I don't know anyone having their jobs phased out. I see the emerging technology as a positive for people in my social groups as I can see future job opportunities for them.

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Cybersecurity
What does it do?

Cybersecurity is the protection of software, hardware and data. It is the assembly of developments that ensure systems, projects and information is free from harm. The defence of the digital information against any internal and or external malicious threats. The detection, prevention and the response times are three of the most important factors that inhibit cybersecurity (Rouse, 2017).

One issue of cybersecurity is the developing landscape of security risks. Today's generation rely on smart devices, however, not everyone is aware of how easy it is to steal the personal data from their smart devices.

The traditional method has been to emphasise on vital system components and protect against known coercions, which meant leaving components undefended and not protecting systems against less dangerous risks. The current state of our generation heavily depends on social media on their smart devices. This social habit leaves us defenceless from cyberattacks, stealing our data and personal information. Social Media Security protect the hardware and software from potential

threats. Physical Security is the protection of personnel, hardware, software, networks and data from physical actions, intrusions and other events such as natural disasters, fire, theft and terrorism

An example of a cybersecurity threat is ransomware. Ransomware is locking the target's smart device by encryption. A monetary fund is usually commanded from the target before the smart device is decrypted. The motivation for ransomware attacks is usually monetary funds. Ransomware can be spread through malicious email, infected software applications, external storage devices and conceded internet sites. A growing number of attacks usually do not rely on any form of interaction.

Malware, otherwise known as malicious software, is a plug-in or file that is destructive to a smart device. These malwares can include computer viruses; malicious programs can accomplish a variety of different functions such as stealing or encrypting without the target's permission.

An example of malware is a virus; a malicious code that reproduces by lifting itself to another plug-in and deviates how a computer works. The virus involves somebody to perceptively or mistakenly spread the infection without the information or consent of a user. Most viruses are spread by opening an email, visiting websites that are infected with advertisements. A virus can also spread by an external hardware such as a USB device. When a virus infects the smart device, it will spread and infect other hardware and incapacitate it, replicating the data that is stored in the smart device.

Another example of cyberattack is phishing. Phishing is a form of scam and the attackers can extract your username and passwords online. The common ways people fall from phishing is through social media such as Twitter, Facebook and Instagram. As most social media users have their profiles on public display, anybody can gather detailed information of the user's work history, date of birth and other personal information which can be used to initiate and steal someone's identity.

To protect against cyberattacks, it is highly desirable to back up smart devices on a regular basis. End users should beware of clicking on links in emails from strangers or opening email attachments. A few ways to protect from cyberattacks is to ensure that there is a frequent detection of cookies, regular scanning of viruses and installation of updates of the operating systems. Victims should do all they can to avoid paying ransoms and report the incident to the authorities. Cybersecurity is a tricky technology. There must be a three-factor authentication that must be implemented to counteract cyberattack, setting a high goal to achieve resilience.

What is the likely impact?

What is the potential impact of this development? What is likely to change? Which people will be most affected and how? Will this create, replace or make redundant any current jobs or technologies?

Cybersecurity has a potential to save the technology world from being infested from cyberattacks. For instance, the resilience of ensuring that a defence structure for software, hardware and a security of information is always at its highest level. As we move into a world of technological advances, firewalls, anti-virus and spyware should be at its highest and greatest of defending network servers, smart devices and data from malicious attacks. The impact of this technology will inhibit viruses in attaining access to our private information and keep cyberattack from happening in the future.

The biggest threat and the most affected from cybersecurity and cyberattack are people. Everybody can inadvertently introduce a virus, however, to minimise this issue everyone will need to follow a virtuous security implementation such as ensuring that they keep their information private and educating people to remove suspicious email, being wary of unknown USB drives and having a two-step authentication process when logging online (Anon., 2017).

As we are in a world filled with technological advances, cybersecurity will not only create employment within the information security component of Information Technology, it will create more functionality and branch out in creating an even deeper brand-new malware detection. The change in this will secure the future of our lives and keep us safer and determined to keep our information safe.

How will this affect you?

Cybersecurity has been in my life since 1990 when I was first introduced to information technology. As the years progressed and information technology began to be advanced, cybersecurity changed with

it. When cyberattack with emails were happening around the world in the early 2000, I began to realise that we are responsible for our own actions.

Understanding what was going on with information technology, why cybersecurity was happening and for how long, also made me initiate the understanding that it's a fact that cyberattack is the same as online terrorism. Cybersecurity will blanket the entire world, has blanketed my way of working with computer systems. My way of thinking regarding cybersecurity has also flowed into the minds of my family and friends, whom are also aware of the changes in information technology. My friends and family are wary of viruses, phishing and all other threats that we continually face each day, as we work with technology. These issues are resolved with the understanding of cybersecurity and how to overcome any threats, if it happens.

Data security is a priority, as well as ensuring that any potential virus is monitored even before it is introduced. For example, email security was not taken seriously in the early 1990 as nobody has really experienced it until it happened. USB drives were shared amongst people, introduced from external sources into the workplace. The process changed, rules were amended, and cybersecurity was revamped everywhere around the world. It begins with educating people on how to keep their private information safe and managing how to keep secret information locked in a safe place.

Raspberry Pi
What is the state of the art of this new technology?

A Raspberry Pi is one of the world's smallest desktop (or portable) computers. It is about the size of a credit-card and consists of a processor, RAM (random access memory) and standard hardware ports you would associate with most computers.

With almost everything like a regular computer, this means you're able to do most things a desktop computer can do.

You can edit documents, you can watch HD video, you can play games, you can surf the internet, you can use it as an Onion router or you can simply use it for coding.

Generally speaking, you will install Raspbian OS (a Debian based operating system, which is a flavour of Linux).

This OS is different to Windows in many ways; however, it isn't too difficult to navigate around and there is plenty of help out there in the Raspberry Pi community to find what you're looking for.

The current model is a Raspberry Pi 3 model B+ which has the following specs:

· 1.4GHz 64-bit quad-core processor

· Dual-Band Wireless LAN

· Bluetooth 4.2/BLE

· Faster Ethernet

· 1GB LPDDR2 SDRAM

· Gigabit Ethernet over USB 2.0 (maximum throughput 300 Mbps)

· Extended 40-pin GPIO header

· Full-size HDMI

· 4 USB 2.0 ports

· CSI camera port for connecting a Raspberry Pi camera

· DSI display port for connecting a Raspberry Pi touchscreen display

· 4-pole stereo output and composite video port

· Micro SD port for loading your operating system and storing data

· 5V/2.5A DC power input

The initial goal of Raspberry Pi developers was to increase the number of people applying to study computer science at Cambridge University. By putting cheap programmable computers in the hands of the right young people, a revival of the interest in computing as witnessed in the 80's through models such as the Sinclair Spectrum and the Commodore 64 was hoped to be achieved.

The creators had no idea that adults would also be interested in the product and subsequently sold over 10 million units within a four-year period.

There are many Raspberry projects available through quick internet searches for you to follow.

Some such projects are:

· Setting up your Pi as a VPN

· Using your Pi as a portable gaming console (mainly for retro games)

· Setting up a digital clock by using led lighting.

· You can set up Xbox controllers and PlayStation controllers on the Pi

· You can set up RaspbiCast, which is a form of Chromecast.

These things plus many more are things that the Pi can do now with the technology we have available. The list is growing everyday as people invent new ideas of what they can use their Pi for.

As new developments emerge, the possibilities of new project use for the Pi increase.

The future of Raspberry Pi could be that it is used in small to medium businesses as a thin client and connect to the cloud. The potential savings of replacement traditional desktop computers would be enormous as the Pi is generally around the $50 price tag.

Some companies are already re-developing the Pi and creating actual thin clients for the market. With the current trend in virtualization this is being taken into consideration and the Pi will be used as virtual desktops and applications.

What is the likely impact?

The likely impact of this new development which will see the Raspberry Pi being used in virtualization would see many more new start-ups coming in to play.

With the current price and the ability to virtualize and utilize cloud services the cost of initial hardware setup has dramatically reduced.

As more and more businesses look to save money, the way forward for them could be by utilizing the Pi for everyday use.

All the Pi would be doing is basically connecting to their existing cloud service and dependent on the application; the processing power of the Pi would be enough to get them through.

They could also use one single Pi as a virtual host and potentially save even further by have two or more users accessing virtual machines from the host Pi.

I think this will create more jobs for businesses as the continual shift toward cloud-based services and the lessening of traditional server rooms based onsite means the IT budget will shrink substantially.

This will allow more room in the budget for more staff to join and help grow the business. Whether that be in sales or customer service, who knows? But it would be a potential and significant shift in the way IT is used in future business. The downside to this might be in the sales arena of the bigger manufacturing companies that produce desktop computers for business use.

I would expect to see either a pushback from these companies to retain their clients or they would adopt the technology and submit their own products into the marketplace.

Businesses would no longer need to supply laptops for staff to work from home as the Pi is extremely portable and can be taken anywhere, plugged in anywhere and used from wherever the user wants.

How will this affect you?

As a business manager, I can see the potential for switching over to these current trends and technologies and the benefits that would result.

What would be different for me is that I wouldn't have to supply every staff member with either laptops or expensive smartphones as they could take the Raspberry pi home or even out on jobs.

As the Pi could connect wirelessly and a touch screen can be connected, the Pi can be used as a mini tablet or phone.

Any friend or family member that doesn't have the budget to be able to upgrade or even access the internet would be able to do so now.

The potential to connect with all friends and family through this cheap PC alternative is very real and very exciting.

Third world countries would benefit greatly and allow start-ups to blossom without having to find capital for equipment investment.

This would help to boost their national economy and create employment and eventually help to bring their people to a decent standard of living.

With access to modern technologies and I would think an abundance of untapped new ideas, all sorts of new developments could emerge.

As always, there is a downside to everything, with the availability of such cheap computing power, scammers would now have access to a tool that has not previously been an option.

This could potentially lead to an influx in a problem that we already have.

I think that it would see newer security techniques being developed to help prevent this type of activity been used and, in the process, create more jobs in the IT security sector.

In summary, all in all I believe that this little device has a lot more to bring to the table than it currently does.

If the explosion of smart phones due to their portability and processing power is anything to go by, then keep a close eye out for this little fella in the future.

I may not be personally affected by future developments with the Pi but I'm certain that there will be millions of people who will be advantaged by it's capabilities and power.

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Clouds, Services, Servers

What does it do?

As what computers do get more complicated, the tasks they perform grow more diverse and the results are needed to be accessed from more and more locations. The needs of the average user have gotten beyond the said user's ability to afford or maintain. To combat this in the new millennium the "cloud" has moved from a vague buzzword in corporate boardrooms to something that is pretty much the foundation of Information services today

I think to properly discuss, I need to define the three terms individually:

Cloud, There is a joke amongst IT people, "There is no cloud, it is just someone else's computer" and to be honest this is true, The cloud is someone else's computer sitting in someone else's network connected to the Internet, however most people including System administrators, do not need to know what sort of hardware, network or operating system the infrastructure is running on, all you need to worry about is the service you require is up accessible and stable. To simplify network diagrams technicians and engineers would use a cloud as the symbol of what is on the other side of the edge of what they can control and do not need to document, or support and this interpretation were carried over into the acquisition of services. The service is the part we need to be concerned about, what the hardware it sits on or even where it sits inconsequential. Hence, we refer to the cloud, rather than use a detailed description of what we do not need to know about.

Services simply put, a service is the job that the computer has been set to do, or simply put again, the service the computer provides to the end user's computer. Services vary from network storage to Email, from Databases to Web servers, Terminal emulators to gaming and thousands of other jobs computers can do. Services can have their own dedicated server or share a server with other services depending on the requirements of the service, emails, printing and file shares can be a

single server for a small company where a large corporation is likely to have emails shared across numerous servers in numerous locations

Servers, Servers are the "other person's computer" that provide services and physically make up the cloud. This is quite a simplification and very vague explanation, A laptop under someone's bed with a file share application such as bit torrent running is technically a server in the cloud as is a Dell EMC or HP Blade system cluster providing multiple servers via HyperV or VMM and taking up an entire building floor. Any computer providing one or more services, is technically a server. The range and scope of what makes up a server are why we refer to a cloud rather than once again use a detailed description of what we do not need to be concerned about. If the laptop under the bed or the old PC on the shelf is providing the service in a stable and secure way, why purchase hundreds of thousands of dollars of hardware you really do not need.

Client, whilst not one of the three terms I think the client is a term that needs to be included, the client is the PC, smartphone, tablet or anything else in the Internet of Things (IoT). The reason I think the client is an important term, is that the client is the part of the cloud that the user sees and physically interacts with. Even the most powerful server is just a very expensive box of useless electronics without at least one client.

So, what we have is a varied collection of computers we refer to as Servers, doing a multiple of different jobs we refer to as Services connected in a cacophony of Switches, Routers, Firewalls and other networking components all bundled together and referred to as a The Cloud. Clear? Great can you explain it to me? Sometimes I think the more you try to explain cloud the more confusing it can get, which makes sense as Cloud is the definition we use to simplify complex systems, once you attempt to explain simple, she packs her bags and leaves whilst complex spreads to take over the whole couch. The cloud is also quite the area of debate in the IT industry some people love it and some hate it. Having an ethereal entity on the web is great the physical maintenance, real estate etc are still not your problem, your concentration can be on more critical areas of IT, all good right? Are you sure, is it secure? if you do not know where it is or even what it is, how can you be sure? What are the persons hosting your section clouds level of competence, could they accidently wipe your data, what is their WAN connection like, how many other people are sharing it? The list of issues and concerns that the system administrator hands off to the cloud provider are varied, A really good Cloud provider or host will advertise as having a rating of 5,9s meaning 99.999% uptime which is great but as a Sysadmin, who is the boss going to be screaming at when the service he needs is not working?

What is the likely impact?

The impact of cloud services is that it allows more nuanced and specialised hosting services come into the reach of more and more end users it allows end users to concentrate of content rather than technical issues like hardware platforms, bandwidth allocations and to some extent security. This in turn allows more businesses such as retail outlets to have an online presence, geographically diverse groups can collaborate real time with services such as Asana or Microsoft Teams. Small businesses can employ professional communication systems such as Citrix's Grasshopper as well as Document management systems, accounting/payroll platforms, Customer Resource management, in house educational systems such as Docebo, helpdesk solutions. The "cloud" is far more than just document storage and webhosting.

To put succinctly the cloud allows the small or medium business SMB to compete and have the corporate presence, at least online of the larger corporate entities. No matter what service the cloud is providing, Infrastructure IaaS, Software SaaS, Everything EaaS or any other "flavour" of cloud, online presence is becoming a more and more accessible commodity for more and more people.

Another Impact of Cloud services is many software developers and application providers are modifying their goods to work predominately online and example of this is would be Microsoft's office suite and the changes brought about with 365.

Probably the biggest impact of cloud services as well as the largest and most prominent service at this point however would be storage, it is almost at a stage where you cannot create an email or buy a mobile device, network device or PC these days without the being offered some sort of cloud storage be it Microsoft's OneDrive, Apples iCloud, Google drive or something similar.

The impacts of the Cloud, Services and Servers are as diverse and numerous as the Servers and Services that make up the Cloud.

How will this affect me?

To be honest in numerous ways.

As an end user: The options available to me are staggering, today's end user is spoilt for choice and opportunity, I can, for example, have my webstore on a 5 9s platform without having to build my own datacentre with redundant WAN connections and power, I can have information pictures and any data I choose on my phone and at hand at all times and know that even I lose said phone, my data is safely retrievable online.

As an IT professional: The scope and variety of work available to me expands, I could specialise in hardware solutions and concentrate on Infrastructure as a service systems or Platform as a service, I could concentrate in modifying existing software to work in multi-user or concurrent user environments. I could specialise in the communication between systems. I could choose to not worry about the workings of data centres and trust in my provider, I could do or not do a thousand different things depending on the needs of the role and my interests dictate. The opportunities opened by the cloud are staggeringly vast.

The dark side: Whilst the cloud is a mostly positive entity and I personally am a proponent, there is a flipside to the way the cloud affects us. Not all cloud services are secure, not all way of getting information onto the cloud are safe and a lot of people do not expend anywhere near as much thought as they should on what they share in platforms like Facebook and Instagram. This has meant that alongside the cloud there has been a growth in social engineering, identity theft and other nasties of the cyber world, I can say from my own forays into penetration testing, that the information available on most people borders on terrifying.

Project Idea

After quickly learning that all of our team had the idea of application development as individual projects, it was a fairly simple decision to make our team project an application.

After some discussion, the team decided to go with an application that will assist the user to accurately calculate the amount of ingredients required to prepare a meal for any number of people.

This is important, as it will assist in the reduction of annual food waste (not only in Australia, but around the world.)

The below is a list of problems identified through research, which assisted the team to choose this application for its project idea.

Annual food waste in Australia

- 345kg per household or in a financial term $8 billion.

- Up to 40% of the average household bin is food waste which is costing them $1036 per year.

- Up to 20% of food purchased is discarded in Australia.

- 4,000,000 tonnes of food each year is thrown out

Statistics of food waste in Australia

Fresh Food – 33%

Leftovers – 27%

Packaged and Long-life products – 15%

Drinks – 9%

Frozen Food – 9%

Takeaway Food – 7% (Isn't it interesting that this is the least discarded food item?)

It is estimated that somewhere between 20 and 40% of fruit and vegetables are rejected before reaching the shop floor, mostly because they don't match the consumers high cosmetic standards.

Environmental Impact

When food waste decomposes with other organics in landfill it produces the greenhouse gas commonly known as Methane.

Methane is 25% more potent than the carbon that comes from a car exhaust.

Fresh water, fuel and other resources are wasted producing food that is ultimately discarded.

Target Audience

The biggest wasters of food in Australia are:

- Young consumers (18-24)

- Households with more than $100,000 income per annum

- Families with children

Because of the above statistics, the group believes that by helping and educating people on food waste, this project idea will have enormous benefits such as listed below:

- Society

- The Environment

- Health and Weight control

- Financial

These statistics are purely based on Australian food waste per annum, when you look at countries like America, it very quickly becomes apparent that this problem is truly alarming and requires a solution sooner rather than later.

America wastes 25% of its fresh water supply, producing food that gets discarded before consumption.

Starvation around the world is not a supply problem, it is a distribution problem.

Summary of Project Idea

Our project idea will not only benefit society and the environment but will also educate people on correct portion control. After using the application for a while, people will start to get a feel for and see how much food is actually required to feed people without the need for guessing or over-purchasing at the supermarket.

The application will take some user inputs such as height and weight of each guest or consumer and calculate requirements to meet BMI standards.

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Reflections

Individual Reflections

Darren's Reflection

Working in the group assignment proved to be a positive experience. From the first meeting with the initial four people it was clear that we all had similar interests and understanding in Information Technology.

I felt myself the least skilled and knowledgeable of the group which was fine as the support and patience from my peers was exceptionally reassuring and appreciated. Those who took leadership roles had done so organically based on high levels of knowledge and experience while remaining respectful and supportive to those who fell into followers positions.

The team meetings were well structured with an agenda while at the same time proving to be friendly encounters. The team was flexible with who could volunteer to take on specific tasks and we were always open to hearing change suggestions.

Team communication outside of meetings was a strong factor that made this group work as we shared contacts via email and setup a collaboration group in Microsoft Teams.

One of the more challenging aspects of this group assignment was working with one of our team members not based in Brisbane. We overcame the distance issue with video calls and electronic communications.

I found the team to be a great bunch of individuals and if in the professional world we would form a great ICT team.

Charlon's Reflection

Group assignments can be quite a challenge, especially when we are grouped with complete strangers.

The greatest empowerment in starting a brand-new team is ensuring that the team itself can overcome the behavior, attitude and personality traits of each team member.

The team must focus on the goal, raise and resolve issues, work towards an outcome that will play with the team's weaknesses and strengths, ensuring that the team will complete the tasks that they have been given.

Our group, Brisbane IT Crowd, stayed within the grounds of being a professional entity. We were able to gather as a brand-new team to work cohesively, encasing ourselves to collaborate on a weekly basis, meeting up as a team and focusing on even deeper to complete our assignment.

We are a strong team; playing on our strengths after losing a team member and surprisingly didn't affect the mechanics of our team.

As a team, we have managed to overcome issues which we had resolved quickly and as a team, we empowered each other to complete the tasks at hand.

It is a rare occasion when an activity in a group can be a success, but most of the time when it does succeed, it is since each member of the team truly appreciates that we value each other's goals and accomplishments.

Andrew's Reflection

There is always some trepidation when first starting a group assignment, and this assignment was no exception. However, this apprehension was soon allayed during the first meeting between four out of the six team members. It became clear almost immediately that the four students were committed, conscientious people. This may have been partly due to all of us being older and that we had all been working for some time in various organisations.

The collaboration and positive outlook of each person was the primary reason that the group has worked so well together. Everyone has been completing their assigned tasks, and where required, provided assistance to other members of the group when asked.

The most surprising part of the group was the ease with which everyone got along. It was very refreshing to encounter similar personalities that gelled well together without any conflicts. Everyone was open and accepting of different points of view, resulting in group decisions being made quickly and efficiently.

While one or two members were not communicative, and proved difficult to engage with, this did not hinder the progress made on the assignment, with any slack taken up eagerly by other members of the group.

Paul's Reflection

My reflection is one of admittance and admission, due to work commitments such as the ASA for a remote site turning up 24 hours late. I have been pretty much incommunicado for most of the project and feel bad for, as Andrew puts it the "slack" that needed to be taken up by my colleagues. I regret that I was not able to be more collaborative and share with the group my industry experiences and learn theirs. I am also hoping that the group allows me to make up it in the last sprint.

What went well?

Everybody seemed to get on great, there was no conflict of egos or any other issues

What could have been improved?

To be honest my availability to the rest of the group

One thing that was surprising was...

I cannot think of any surprises really, we just seemed to get in and gel as a team, actually that is quite surprising

One thing the group learned was...

That the world of IT can be a fickle mistress, but we can get around that with minimum effort.

Lee's Reflection

What was surprising?

Is that I am glad much of the group all live in the same city. This has made collaboration a surprisingly simple process and enabled us to meet weekly in person to discuss, review and complete stages of our assignment.

What could be improved?

While this has been only achievable for those of us meeting in person, with collaboration environments such as Microsoft teams we have had moderate success to fully include and collaborate with the remaining team member.

One of our other team members pulled out of the team early in the piece and we didn't get the opportunity to work with him.

What went well?

We all got along extremely well, we worked together well, and most importantly, we achieved everything required in a timely manner.

Our focus was succinctly on the team goal, and as such, the whole team chipped in tirelessly and remained fully committed to ensure the success of the team.

I feel comfortable in the knowing, that we have the ability to be able work together openly and transparently to discuss any issues that we encountered with the subject content.

One thing I have learned about the group was the knowledge of differing IT fields from each team member was vast, luckily we has a member with GitHub experience and through him I managed to learn more than i ever would have on my own.

I think that our team has remained committed and focused and I look forward to collaborating and working with the guys on future assignments.

Group Reflections

What went well?

Immediately there was a connection between all members of our team. This had a tremendous positive influence on the outcome of our assignment.

The steps that the team took to achieve what was required were very well planned. We initially set up our first meeting to discuss and set out a weekly agenda and how we could tackle each component of the assessment. We then worked out how many weeks were required to submit our assignment on time and set out to achieve a certain number of goals within each weekly meeting, ensuring that we reached our targets.

What could have been improved?

The only thing that the team thought of and agreed upon, was that we felt we could have improved our communication at times. Although we were regularly meeting in person and communicating through Microsoft teams, there were times when additional assistance could have been offered to team members.

We set out our weekly tasks during our face to face collaborations but didn't really have a quick online progress collaboration throughout the week. Through these sessions, we could have identified if anyone in the team was struggling or if anybody in the team had scope to do extra work.

One thing that was surprising, was that within the first week, we lost a team member, and then also realized that we had a remote team member (we all thought everybody was from Brisbane). However, the team wasn't discouraged and went about with progression on the assignment by

splitting up the workload that was initially to be done by six team members. We knew that we had options such as Microsoft Teams and Canvas / Discord to include and collaborate with our remote member and quickly set out to the task at hand without hesitation.

One thing we learnt about groups was, that it doesn't matter how distanced people are nowadays, coming together as a team and collaborating on a project is a relatively a simple task to achieve with the correct tools available and properly utilized.

The team had a lot of quality discussions which assisted us to staying on track and getting through the workload within the timeframes set. Knowledge sharing played an important role in our success and we all felt that we learnt a little bit more about various aspects of IT.

One of the team members is a regular user of Git and assisted the team in using GitHub, all the while showing and explaining how GitHub worked and how to make it effective. This proved to be invaluable for the team and the learnings we took from it were beneficial for us all.