ASSESSMENT 2- TEAM PROJECT

Sharper Tech

Sharper Tech

Sharper Tech comprised of Andrew Suhr (S3933181), Evan Phelps (S3934101), Gavin Jamieson (S3925654), Rory Henderson (S3933584) and Kyle Ross (S3930665). Sharper Tech, our team's name, is an Anagram created by using the letters of our members names to create “Sharper”

The information in this report is also duplicated on our group website which can be viewed HERE [https://ejp1998.github.io/Assessment2/]

You can also view our Git Repository HERE [https://github.com/ejp1998/Assessment2]

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Personal Information

Gavin Jamieson
S3925654

My name is Gavin, I am an Australian who grew up in Brisbane and lives in Sydney. Currently I am studying Introduction to IT online via OUA and working on team Sharper Tech. I have a keen interest in the world around me and learning about why things are the way they are. My interest in IT stems from a hobby interest in electronics and programming which initially drove me to pursue a trade in Aircraft Electrical Systems (Avionics).
Throughout the years I have tinkered on and off with a number of different electronic and IT-related projects while finding a keen interest in projects that bridge the gap between the physical and the connected world, and automation projects. As someone who is not a huge fan, contributor or user of social media, one of my favourite builds was developing my own blog for my travelling based on Wordpress. I was able to develop a unique page on it that would receive position updates via my HF radio and post them on a map along with short tweets so that family and friends with the link could follow along.

Rory Henderson
S3933584

I'm Rory and I am the R in Sharper Tech (one of them...). I was born in Scotland, grew up in Brisbane and now live in Western Australia. In 2019 I was thrown into IT and now coordinate IT for 2 campuses with around 350 users. I have no formal training in IT and am pursuing a Bachelor of IT at RMIT as it offers a great base, giving an understanding of core IT concepts with the ability to specialise in specific areas later in the degree structure. The flexibility of online study and lighter load than a traditional semester structure is appealing whilst I continue to work.
Although I have no formal training, IT has been a part of my life for a long time. My father is a web developer and always encouraged us to explore IT. Computer games were a big part of this interest when I was younger, although I was also interested in Audio/Visual productions which allowed me experiences such as building PCs capable of 4k editing, running multi-terabyte shared network drives and managing multi-camera live streams.
I also work as a bar manager and create video graphics for theatre shows. My recent projects include The Boy from Oz and Priscilla, Queen of the Desert.

Evan Phelps
S3934101

G'day, my name's Evan, and I hail from all over the place. Born in the UK, but grew up several years at a time in various Australian towns and cities, especially Perth and Alice Springs. Alice was where I first picked up a guitar during early high school, and since then that hobby has grown into a passion, and from there it lead me into a full-fledged Music Performance degree in the UK. After that was done, I came back to Aus and settled down in Tasmania, ready to pursue new things.
I've always had a very definite interest in the field of IT and programming, what with computers and software being the place I've spent most of my time. Hoping now that this course can gradually take me down the path of concrete career skills, and secure a solid future, and to that end I've joined up with Sharper Tech, proud to be a contributing team member.

Kyle Ross
S3930665

Hi, I'm Kyle, I'm the other R in Sharper Tech, I was born and have lived on the Gold Coast my whole life. I am currently studying Information Technology through Open Universities as a way to test the waters of further IT study while I continue to work from home part-time. Nearly all my hobbies involve computers, with them being video games, music (where my taste is all over the place), movies, or just messing about on the internet. These hobbies spawned my interest in IT and kept it alive while my high school did its best attempt to crush the interest.
I'm most interested in the area of programming, where I'd love to learn to make my own applications or games. The ability to work for yourself if the opportunity presents it is a very tempting one and one of my favourite perks of the Information Technology industry. Outside of my usual computer-centric hobbies, I enjoy spending time with my mates doing whatever catches our attention, watching various Philadelphia based sports teams (go Sixers!), reading random literature that catches my eye, or at the gym where I train 5-6 nights each week.

Andrew Suhr
S3933181

My name is Andrew, I was born and raised in Hobart, Tasmania and moved to Melbourne, Victoria in 2006. After completing high school, I went on to complete an Advanced Diploma of Music Performance but have not studied for a decade since. I’m passionate about playing video games and music, playing guitar for both work and pleasure in bands for the last 10 years or so.
My interest in IT stems from the generational leap in gaming hardware and graphics over the last 20 years, the necessity/advancement in smartphone and app technology and the new possibilities of learning and recording music through software. I have minimal experience in the field of IT, and I'm currently studying Introduction to IT through RMIT online and working with my group Sharper Tech.

Team Profile

Personality Tests

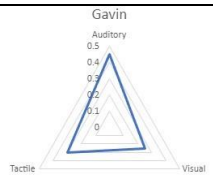
It was found during the Myers-Briggs personality tests that each team member shared a number of common traits, but in almost every case each team member also possessed a single trait that strongly differentiated them from the group. The most common trait revealed by the Myers-Briggs test was Introversion. This was interesting as one may not expect a team of introverts to function or step up to a leadership role in the group. During team meetings it has been found that this is almost a strength. At different times, each team member has had to take responsibility for setting goals and coordinating the work for the team. This has been successful, work has been shared equitably, and no conflict has arisen.

Gavin	Rory	Evan	Kyle	Andrew
INTJ	INTJ	ESTP	INFP	INTJ

Member learning styles

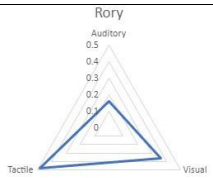
Much like the personality test, there were a number of commonalities. Three out of five group members were heavily weighted towards being auditory learners. Visual learning styles showed the smallest deviation across the sample set between group members. The group contains two musicians who both share similarly high ratings in the visual learning category.

Note: The results for the learning tests for Rory and Evan were sourced from the VARK Questionnaire version 8.01 (VARK Learning Style Questionnaire, 2021) while the rest of the group was sourced from the educationplanner.org learning style test. The results for Reading and Writing were wrapped up into the visual category to align all data.



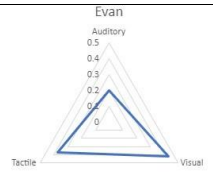
Gavin

Category	Value
Auditory	45%
Visual	25%
Tactile	30%



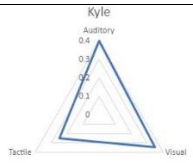
Rory

Category	Value
Auditory	16%
Visual	36%
Tactile	48%



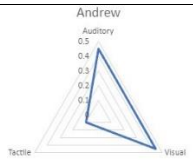
Evan

Category	Value
Auditory	20%
Visual	43%
Tactile	37%



Kyle

Category	Value
Auditory	40%
Visual	35%
Tactile	25%



Andrew

Category	Value
Auditory	45%
Visual	45%
Tactile	10%

Conclusion

Having a diverse range of styles in the group allows each member to play to their strengths. It is also interesting to note that there doesn't seem to be any correlation between personality type and learning style.

When considering this data against our ideal jobs, we have discovered that even though there is some commonality amongst the group between personality, learning styles, and ideal jobs, there is no common indictor in any test or job preference that can be used to link any of these items together.

Individual tests

Gavin - Human Benchmark Memory Sequence Test
The human Benchmark Memory Test repeats a pattern that gets increasingly longer, making it more difficult. The test continues until you incorrectly repeat the pattern which gives you a scroe that can be compared to other results. Gavins Score of 8 put him right at the tip of the bell curve. This indicates to the rest of the team that Gavin possesses a short term memory that is similar to the bulk of the population. This is a small indicator that Gavin should be able to retain short term information enough to keep up with the rest of the team.
Rory - Workplace Values Test
Rory took the Workplace Values test which mapped his results to 14 workplace vlaues identified in research with the goal of linking an individual's values to a workplace's values to increases efficiency and happiness. His results in the workplace values test placed him right in the middle of the band across most categories. This indicates that Rory should be able to integrate into most teams. Further, the structure and autonomy values drives him to meet not only his own expectations, but that of the whole team.
Evan - Creativity Test
Evan took a creativity test which provides an overall creativity score and maps to 8 different metrics; Abstraction, Connection, Perspective, Curiosity, Boldness, Paradox, Complexity and Persistence. His score of 56.55 on the creativity test showed scores that met with the average in most categories. One exception being the persistence category in which Evan exceeds the average result. This persistence trait shows with Evan pushing to improve upon already good results to deliver an even better outcome.
Kyle - Big Five Personality Test
Kyles results in the Big Five Personality Test showed that he is strongest in the areas of Insight and analytical thinking. IT is a field that benefits those with these characteristics perfectly, with solutions to technical problems requiring both creativity and an analytical approach.
Andrew - Creativity Test
Andrew took a creativity test through a different provider than Evan. His test only provided a total score but provided a deeper analysis of what this score means. Andrew's creativity test showed creativity in a range that is slightly above average. Andrew works creatively and collaboratively in a team environment with a strong drive to ensure the best results for the team. Working in a team environment exposes everyone to different ideas and perspectives allowing a stronger collective creativity.

IT Technologies

Autonomous Vehicles

Written by Kyle Ross, Rory Henderson, Evan Phelps

What does it do?

Autonomous Vehicles (AV) are vehicles that have the capability to drive themselves with minimal to no human input. For many years, this technology has been thought of as a technology of the future, however, technological advancements in other fields such as Artificial Intelligence, GPS, LIDAR (Light detection and ranging) and more have brought the reality of Autonomous Vehicles closer to our present with each day. Currently, self-driving functionality can be used by specific cars, with an example being Tesla's Auto-Pilot.

Autonomous Vehicles construct a map of their surrounding environments using a combination of Realtime sensors such as GPS for journey planning and location relevant information, radars that monitor the position of nearby objects, cameras that identify traffic lights, signs, and pedestrians and more (What is an Autonomous Car? – How Self-Driving Cars Work | Synopsys, n.d.). Autonomous Vehicles use this collected data and run it through Engineering Algorithms and AI to map their location, perceive what is around them, predict what each of these objects will do and then plan what it will do next to reach its destination (National Association of City Transportation Officials, 2019).

Where does this technology currently stand?

When discussing AV's and their level of automation the Society of Automotive Engineers use 6 levels (Path to Autonomy: Self-Driving Car Levels 0 to 5 Explained, 2017). There are:

0-No Automation. A human driver is fully responsible for all controls; steering, brakes, acceleration, etc.
1-Drive Assistance. The car controls speed or steering in some situations. This level of automation requires the driver to perform all other aspects of driving and leaves the driver the responsibility to take over if the automation fails.
2-Partial Automation. The car can steer, accelerate and brake in certain circumstances. The driver will need to perform "Tactical maneuvers" (Traffic signals, changing lanes) and will often need to keep their hand on the wheel as a safety feature.
3-Conditional Automation. The car can manage most aspects of driving (including environmental monitoring) but the driver must be available and ready to take over if the car has an issue.

4-High Automation. The car can drive without human input under specific road conditions or geographical region. There can still be controls (pedals, steering wheel) and the driver can have the ability to take over, but this isn't necessary.
5-Full automation. The car can drive on any surface (that a human could drive). Currently it doesn't exist but is the goal of many manufacturers.

Currently, Autonomous Vehicles (AV) have the ability to self-drive in certain cities and areas of North America, where development of this technology is heavily focused. Human intervention is still something that must occur when operating these self-driving vehicles, as the technology is not yet developed enough for drivers to rely on the automation. This puts the current leading vehicles in level 3-Conditional Automation with Tesla's Model 3 often topping the list of cars with self-driving capabilities (heycar editorial team, 2021).

Tesla's Model 3 in some situations can be classed as having Level 4 automation with the Enhanced Auto-Pilot feature allowing the car to park with no human input.

Crucially, it must be noted that the marketing and advertising surrounding "autonomous vehicles" could, in itself, be considered very misleading just from using that term. Despite the sales pitch, no self-driving car is yet truly autonomous. They still require very alert human failsafe's, especially on more dangerous roads and unpredictable conditions, yet many of those who would purchase such a car can find themselves mislead into believing otherwise - with quite disastrous results. "In one crash report, the National Transportation Safety Board (NTSB) referred to it as "automation complacency"." (Associated Press, theguardian.com)

What is the future of this technology?
AV's are developing rapidly and are seeing heavy investment from car manufacturers and tech giants (Anand, 2021). Looking at Tesla, the current leader in the consumer market for AV's, their technology has evolved from Level 0 Automation in 2014, pre their first Auto Pilot release (Evannex, 2018) to now supporting up to level 4 in consumer applications. We can expect to see other manufactures meet and surpass Tesla's current offering within the next few years.

ABI Research forecast that 8 million consumer vehicles will be equipped with Self driving features in Automation levels 3 and 4 in the consumer market by 2025. However the National Association of city Transportation officials predict that if every new vehicle purchased today were fully automated, it would take at least two decades for AVs to make up ninety percent of the vehicles on the road(National Association of City Transportation Offcials, 2019).

In the future, the expected goal is to be able to perform other higher levels of Automation will allow other activities such as working, reading, or sleeping while the car drives the passengers to the intended destination.

What is the likely impact?

The positive attributes Autonomous Vehicles and self-driving cars can bring forward are plentiful, but with that being said, the aspect of robotic error is something we must then consider, could these cars bring more problems and harm than they solve?

Autonomous Vehicles can offer significant safety gains when they reach higher levels of automation. The most common causes of car accidents in Australia are speeding, distracted driving, fatigued driving, and drink driving (Car accidents survey & statistics 2021, 2021) all of which exclusively apply to human drivers. However, there are fears that Autonomous Vehicles on Levels 2 and 3 can lull drivers into a false sense of security where they become complacent with their responsibilities and rely too heavily on the vehicle's automation.

Autonomous vehicles also raise questions around the ethics of discission making. Will cars prioritize the safety of it's passengers or passers-by in the event of an unavoidable crash. It brings up discussions similar to the classic Trolley problem.

In 2017 in it was estimated that US Drivers spent an average 97 hours sitting in Traffic with a cost to the economy being over $300 Billion (National Association of City Transportation Officials, 2019). Freeing up this time for drivers and allowing them to use this for work or leisure adds significant value to an economy and an individual. Combine this added time with a redesign of a car interior, removing unnecessary controls and adding worktops/lounge seating will also enhance this.

Modern vehicles are relying more heavily on computer managed systems, and this is enhanced with autonomous vehicles. Through collection of the data used by autonomous vehicles there is an ability to give transportation departments enormous data sets to better plan and develop our transit infrastructure (National Association of City Transportation Officials, 2019). The cars can accurately report live traffic flow through GPS location data, can be used for monitoring road conditions and necessary repairs through the onboard sensors and cameras and more. However, collection of data introduces concerns around data privacy and access to information.Through simple methods, such as combining pick-up and drop-off points with public records or reverse address look up data, the journey data can become Personally Identifiable Information and an individual could easily be tracked (National Association of City Transportation Officials, 2019). What data will be collected and who has access to it is an open question.

This heavy reliance on computers also creates a threat as they could become a target for cyberattacks and other malicious parties.

Which people will be most affected and how?

The development of Autonomous Vehicles will have the biggest impact upon the transportation industry. Once cars and trucks attain the ability to drive from one location to the next, jobs such as truck drivers and taxi drivers will become obsolete, instead replaced by these self-driving cars.

In Australia the Transportation Industry accounts for 625,000 workers with 56% of this being made up for road transportation and delivery transportation workers. These occupations

have been flagged as having between a 57% and 99% chance of automation (Centre for Future Work at the Australia Institute, 2020). This represents a major change in this industry; however it is estimated that this level of automation will take 15 years giving the economy time to adjust and support the affected workers.

Historically automation of industry has allowed stronger business investment, which leads to stronger job creation, but there are worries that this time due to the size of the industry being affected and the skill gap between old employment positions and new positions, Truck Driver to Automation Engineer, there will be significant effects to economies and unemployment numbers (Grey, 2014).

Away from road travel here may also be disruption to the air-travel industry, with people more likely to rely on their cars drive them long-distances while they sleep or do other activities, instead of flying. There are also automation opportunities in Shipping and Rail transportation industries.

Integration and Adoption of the technology

Whenever new technology is introduced, it is important to think of how people will be able to integrate it into their lives. Should this technology be slowly integrated onto our roads, or should it all be implemented all at once? The possibility of older model cars interfering with autonomous vehicles self-driving is also something that should be considered.

How will this affect us?

When Autonomous Vehicles become adopted widely in society we will start to drive less and rely more on AV's. There is research that suggests that Human drivers will be illegal by 2050 due to the risk they bring to public roads (Driving will be illegal by 2050, says new study, 2021), so eventually we will not drive at all.

Depending on the roll out approach (fleets/ride share/private ownership) there may also be a significant drop in Private Car ownership as Automated Taxi services will be able to match the cost per mile of private ownership (Grabar, 2016).

Many people could likely have a vested interest in travelling further distances to visit attractions and places more than they currently do. If that thought process is indeed widespread, a boost to domestic travel may be in store as the accessibility, ease, and affordability of travelling via self-driving car may encourage those looking to travel to consider places within driving distance rather than flying either interstate or overseas.

The potential time saved from not needing to pay attention while commuting could lead to less stress by allowing those workers with longer commutes a time to relax and unwind.

Alternatively, this time spent on a commute could be put into something productive such as the learning of new skills.

As an IT professional the move towards Automation both in vehicles and other industries opens many employment opportunities, both in creating autonomous systems and working with the data collected to improve other areas.

Final Thoughts

The idea of self-driving cars has been dreamed of for decades, for even in the twentieth century people would talk of the future involving self-driving cars, and now it seems this future is right at our doorstep, though how much longer until this becomes our reality remains unknown.

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Raspberry Pi, Arduino, and Small Form Factor Computing

Written by Gavin Jamieson and Rory Henderson

What does it do?

While looking similar to a new observer, the Arduino Family and the Raspberry Pi are both very different devices. Arduino is a brand name that has become synonymous with microcontrollers much like Kleenex has become to tissue paper while the device that is most commonly thought of when discussing the Raspberry is in fact a fully featured computer. Both were developed as educational tools but have found uses with hobbyists and researchers and have even been deployed into production environments in a variety of operations.

We will explore the differences and similarities over the next few paragraphs and look at the differences in application for these and similar devices.

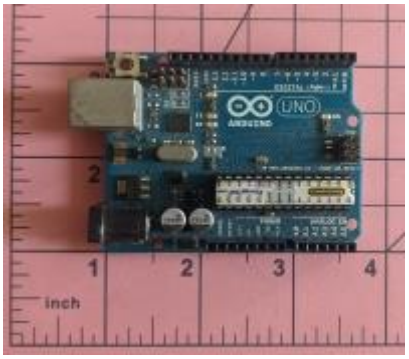
What is the Raspberry Pi?

The Raspberry Pi Family consists of a number of device types. The original Model B was released in 2012 and met with a huge demand. Personally I experienced a 2 month wait to receive mine. Initially the Pi was released with USB, HDMI out, 256MB of RAM, and an SD card slot for loading the OS. This Pi was slightly larger than a credit card in its major dimensions and at its tallest, the height of a PCB mounted RJ45 jack. Over the years this form factor has had a further three iterations with extra features added including Wifi and Blutooth and the family has expanded to include the Raspberry Pi Zero, both much smaller in size. What was revolutionary about the Pi was the incredible performance at the price and the access to the General Purpose Input Output pins. This was something that computer hobbyists in the past had never really had access to in the past without performing modifications to their existing PCs.

Raspberry Pi Model B

What is the Arduino?

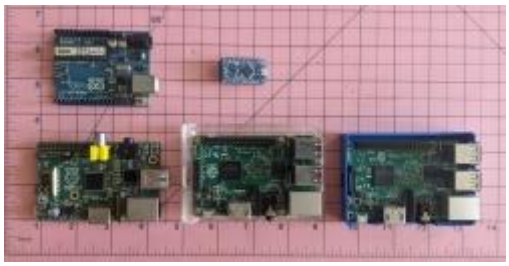
It is important to note that Arduino is not actually a specific device or chip, but rather a foundation with a goal to lower the barrier to entry into the world of electronics and microcontrollers. When Arduino is discussed, the most common item that is thought of is the Arduino Uno with the ATmega328 DIP IC. The Uno itself is a single breakout board with an on board ATMega328 Microntroller and the associated electronics required to make it a functional piece of equipment out of the box. Prior to Arduino, when someone wanted to explore the world of electronic engineering and microcontrollers, they had to create a lot of the circuitry themselves and purchase other equipment such as PIC programmers. When referring to an "Arduino", someone may be referring to any number of microcontroller development or breakout boards however they all tend to be programmed using some sort of UART interface using a C like language in the arduino IDE. Since the release of the Arduino Uno, a number of other devices (of note, the ESP32 and ESP12) have been released onto the market with extra features such as wifi and bluetooth.



Arduino Uno

What is the difference?

While the two devices are similar in appearance and can perform some similar applications to each other, the application can vary dramatically. The Raspberry Pi is really just a small computer and as such can support a number of higher level applications, while the arduino is a device that is generally used for an embedded application and rapid prototyping of electronic gadgets. Once you have developed a prototyped it is common to develop your own circuit board around the chip itself, omitting circuitry from the development board that is no longer required and miniaturising the whole assembly for production.



Different Arduino and Pi models

Additionally, generally Arduinos are cheaper, boot faster, are tougher, consume 1/10th of the power, and feature a stronger output current than Raspberry Pi's. (Library Guides: Arduino, Raspberry Pi, and Makey Makey kits: Comparing Devices, 2021).

The Raspberry Pi generally runs a Linux Operating System, while the arduino is generally coded in C and then compiled into Assembly.

Crossover

The Raspberry Pi Foundation released the Raspberry Pi Pico in January 2021. This is the foundations first release of a microcontroller and is very close to the functionality of an Arduino uno in that it is a microprocessor on a board, as well as a USB driver to program it, power supply to operate it over USB, a crystal on board to drive the clock signal, and all GPIO pins are broken out on the edge of the PCB to allow easy access.

What is the future of this technology?

As technology improves, further enhancements will be able to be made. In the case of the Arduino style of microcontroller development board, more and more new ICs will be miniaturised and delivered to the market. This will bring newer technologies into the reach of more creators, educators, and hobbyists, which in turn will drive innovation and further new technologies. The future is bright for those that can operate these tools.

The future of the Raspberry Pi

The Raspberry Pi will share a similar trajectory to that of the Arduino, but for a slightly different audience. While the Arduino family comes in a number of different form factors, since the raspberry Pi2, the pi has become locked into its current form factor by its desire to remain backwards compatible with the sheer amount of expansion boards that are available to it. The Raspberry Pi foundation has sought to work around this possible limitation by releasing the Zero and Pico Models, both of which boast similar specifications to their larger brother but with an even smaller form factor.

What is the likely impact?

With the Pi, an update is normally made every couple of years to improve the specifications of the product and add features as newer technology becomes cheaper and allows the Raspberry Pi Foundation to continue to deliver a low cost product in line with their goals. The future of the Arduino Uno will still remain, however newer chips with better performance and more features in a smaller package continue to be put onto development boards and marketed while the community develops compilers to program them.

The older Raspberry Pis will become obsolete for some use cases as system requirements advance although there will still be a place for them for their orignal purpose of education or even some hobbyist implementations.

The vision of both the Arduino and the Raspberry Pi foundations are very similar, and any improvements that can be made to the technology that allows them to deliver their original visions at a low cost will have a positive impact across the world. Of particular note are groups that may never had access to these sorts of educational materials in the past. As part of the Australian Governments Digital Technologies curriculum, students in year levels as low as 3 and 4 can be taught the basics of flow control and iteration (Australiancurriculum.edu.au. 2022.). The low cost of the Raspberry Pi allows this education to be delivered to areas that in the past could never have hoped to deliver this type of content. Secondly, the low cost allows the technology to be brought into more and more homes where access to anything IT related may have been out of reach in the past.

While developments to these items may not directly make any individual item redundant or relegate it to history, the knowledge, experience, and ideas gained from individuals experimenting and developing these sorts of platforms will continue to drive innovation an the IT and electronic engineering sectors.

How will this affect you?

How will it affect me personally?

I am always finding a use for this sort of technology in various hobbies and further improvements and miniaturisation is only every a good thing in my opinion. More access to this sort of technology will enable innovation from a wider cross section of the community. A person who may have only had a passing interest in electronics or engineering may be driven to explore the topic further and accomplish great things because the basic tools were accessible to them easily.

How will it affect the wider community?

Changes to how we use IT

While a computer may have been a ubiquitous item in the household recently, more and more the internet is being accessed by mobile devices instead of computers(Australian Bureau of Statistics. 2022). Think of your own friends and colleagues with children in Primary school that do not have a laptop or desktop computer in the house and instead accomplish the entirety of their online lives using mobile devices. Those same people may have no interest in setting aside their limited space for a desktop computer or an IT

workspace and the leading mobile devices do not have much of a facility for any sort of software or technology development.

Where does this leave the children?

Consider a child growing up in a household like the one detailed above. It would be such a shame to see the interest in technology or creativity stifled due to a large cost barrier to enter or the amount of space that a dektop computer or an electronics workspace could take up in a small envirnoment. This problem is overcome by the small nature of devices like the Raspberry Pi and Arduino family. Being able to cultivate interst in these fields from a young age at home and at their own pace may be enough to change the trajectory of their life and career forever.

Final Thoughts

While researching this, I came across the blog page https://www.raspberrypi.org/blog/ on the Raspberry Pi Foundation website. A number of the stories listed echo my own thoughts and the facts detailed above. I would encourage anyone reading this to have a quick browse and see how the foundation is indeed making a difference.

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Cloud Computing

Written by Andrew Suhr, Kyle Ross, Gavin Jamieson

What Does it do?

Early on in the history of the internet and smaller networks, the architecture was quite simple. A server is basically a single computer sitting in a rack and taking requests for a single application, whether that is a website, email, or a gaming server. This worked for small scale operations but as the application for internet services grew and grew it was found to be insufficient. Cloud computing treats servers as a service that one company can provide to another. You may not have your application served from the same physical hardware from day to day and you may not even run the same number of servers. The cloud could be considered to be renting servers on demand and providing a vast amount of flexibility to meet demand.

Consider the case of a company that sells a product available in its online store. In the traditional Client-Server arrangement you would own or rent a number of physical servers either on your own premises or in a data center. The amount of servers available would be enough to match your average demand with some flex room available for some peaks. Should demand spike, say in the event of an online sale, then the response time for the online store could increase which could potentially result in lost business. Using cloud computing, you can automatically scale the operation up and down depending on the demand for services.

What makes this possible?

The largest advancement in technology that grew cloud computing was the concept of the Virtual Machine. This allowed for a single phyiscal server to run a number of virtual servers transparently to the end user. Another big advancement was the creation of technology like Docker. Docker allowed for the creation of not just virtual machines, but virtual networks connecting those machines. These virtual machines can be scripted to start and stop automatically based on almost any criteria, from a failure on one machine, to a spike in demand across the network, to a network failure in an entire area.

Is there still a place for on-premisis servers?

This is like asking "how long is a piece of string?". What works for one organisation may not be appropriate for another. Some organisations may be particularly security conscious and prefer to have complete control over the hardware, data, and networks. Others may be running some older legacy services that does not lend itself to more complex network.

There is still a cost vs benefit split in on-prem vs cloud computing. The scale of the operation may not warrant big dollars spent on cloud services and may be able to support the servers in house.(Burkhalter, 2021)

The future of cloud computing

New Markets

Cloud providers and data centres are expected to expand around the world continuously over the next few years. A market in Africa is beginning to emerge as mobile networks increase in speed and penetration across the continent and the internet becomes more accessible. As this market expands, large and small cloud providers will start to build more datacentres to adaquetly service the growing number of online businesses and consumers. We could potentially see a revolution in the way the entire African continent conducts commerce.

A larger move to cloud?

BYOD is expanding as companies aim to limit expenditure. There are a couple of problems that face most BYOD companies, one is "How do I secure my data"(Zammit et al., 2019), another is "How do I control costs when trying to support a non standard environment". An answer to this could be a product like Azure Virtual Desktop(azure.microsoft.com, n.d.). This allows the same controlled desktop environment to be accessed on any device by a user. This allows data to be kept more secure than on the users personal device and shifts the responsibility for the maintenance of the computer on to the user.

What is the likely impact?

There are many positive impacts in the advancement and usage of cloud computing. With it giving the ability to connect to a network from across the globe, employeers are able to work from wherever in the world they may be instead of being constricted to a certain country or state. Cloud storage is the most popular form of cloud services (and that which most think of when discussing cloud technology), with it you are able to safely store and backup any data you wish to safekeep at will via uploading to a companies cloud, from there you can continuously update documents via uploading of your local files, and then redownload these files when need be. Loss of important documents, media, and memories has plagued those with important documents since computing became a part of every day life, and with computing services, complete loss of data is a harder feat to achieve.

Potential Problems

With the progression and introduction of new technology, there are often risks. A potential risk that is taken with cloud computing is the fact your data becomes more a target due to being store en masse. Though wrong-doers may not be intentionally targeting your data, breaches within the network your data is stored on leaves your data vulnerable. Though data breaches are few and far between, storing data and using cloud computing is still a safer option than to that of storing your data all in one area locally.

Impact on business

Businesses using cloud computing and storage benefit from the flexibility and scalability of the service. Not only are they spending less on hardware, maintenance and upgrade costs are dramatically reduced. Using cloud services allows for easy expansion and the ease of upgradeability to future technologies.

How will this affect me?

So much of our day-to-day life is already reliant on cloud computing creating a huge social impact on society. Most people don't recognise they're using cloud services constantly from streaming videos on Netflix, music on Spotify, gaming online, using google services, email, or perhaps most prominent these days using social media like Facebook, Instagram, and twitter. Cloud computing services is also the number one place for information and news headlines.

Personal storage

Cloud computing is making the use of portable hard drives a thing of the past as anyone with an email can easily access online cloud storage services like drobox, google drive, One drive free of charge.

Online shopping

Businesses are storing online shopping customers data on the cloud to better cater to their needs, make future purchase recommendations according data analysis of previous purchases and improve overall customer service.

Education

The education sector has largely adopted cloud computing (even more so during the pandemic) as it gives students, teachers, and other staff the ability to access shared data and interact with each other outside of the classroom like never before. Cloud services allow schools to store data securely without the need of installing expensive infrastructure, it has made education more accessible worldwide.

Health

Healthcare is another area where cloud computing is becoming increasingly important. As you'd imagine keeping a paper record of patients would not only take up a lot of space but many man hours of managing and maintaining records, using cloud services reduces operational costs, is far more convenient and makes it so patients have easier access to their own records.

Navigation

The cloud has made travel easier than ever before. Most phones and devices now have map applications that can function anywhere in the world as long an internet connect is established or destinations are pre-downloaded, some services even offer live updates on routes and traffic.

Final thoughts

Cloud computing is quicky becoming an essential part of everyday life. We've relied on cloud services for many years already and that will only continue to grow in future as it reduces costs, has positive effects on the environment and improves communication and resources.

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Cyber Security

Written by Andrew Suhr and Evan Phelps

What does it do?

Cybersecurity (also known as Information security) refers to the practice of defending internet-connected computers, devices, electronic systems, data, hardware and servers against malicious cyber-attacks and unauthorised access. A cyber criminal's objective usually includes accessing, tampering with or destroying sensitive information, stealing or extorting funds, interrupting business and community services that can result in disruptions and major financial lose.

In today's world cybersecurity is essential because governments, military, businesses, health providers and financial institutes collect, share and store large quantities of data on cloud services, computers, and other hardware. A lot of this data can be sensitive information such as financial records, personal information, health records, classified documentation, information relating to national security, Intellectual property, or other forms of data where any modification or unauthorized access could have a very negative result, possibly jeopardising finances or the health and safety of one or many people. Cybersecurity helps protect these types of data from attack as they're transmitted via the internet from one party to another as well safeguarding systems used to store and process this data.

Cybersecurity has an ever-evolving set of tools, technologies and risk management strategies designed to protect networks, devices and data from cyber-attacks and data breaches. The different elements of cybersecurity used currently include:

- Network Security - Monitors incoming and outgoing data traffic on the network to avoid an attack and it's spread.
- Data Loss Prevention - Protects data by focusing on its location and monitoring when the data is active and inactive.
- Cloud Security - Security focused specifically on cloud services and apps.
- Intrusion Detection Systems - These systems focus is to flag possible hostile cyber-attack threats.
- Identity and Access Management - Limits access to employees and tracks internal systems for harmful software.
- Encryption - Encoding data rendering it inaccessible to avoid theft when transmitting over the internet.
- Application security - Developing and testing security features within applications to prevent security breaches against unauthorized access and modification.
- Information or data security - Systems preventing unauthorized access, disruption, modification or destruction of information or data.
- Disaster recovery/business continuity planning - Restoring data and IT infrastructure after a disaster, Business continuity is keeping the operations ongoing during a disaster.

- Operational security (OPSEC) - Risk management system that prevents sensitive data leaks.
- Critical infrastructure security - The protection of operating networks and assets deemed essential to ensure the security of a nation, its economy and its public safety.
- Physical security - A security force protecting physical forms of data, software, hardware, networks.
- End-user education - Factors in human error, aims to avoid accidental security breaches and viruses.
- Antivirus/anti-malware – Scans a computers system for potential viruses and threats.

Changes to authentication, logins and passwords is something we're likely to see in cybersecurity over the next few years. Similar to the transition of facial recognition on our personal devices, additional biometric precautions like retinal scanning, fingerprints, voice sampling could be further implemented to safeguard sensitive data and prevent unauthorised access. We're likely to see a further dependence on AI regarding cybersecurity in the coming years.

The increase reliance on cloud computing and its expansion ensures the same of cybersecurity and its development. Developing new ways to store and transfer data creates new obstacles and challenges for the cybersecurity field to overcome, as there are more ways to gain access to data there too must be ways to prevent it. Also, as more and more internet devices are implemented into our professional and personal lives it creates more vulnerability for data breaches so this too will see more of an emphasis on cybersecurity into the future as everyone's personal data could be at risk.

What is the likely impact?

According to research from the UK's Department for Digital, Culture, Media & Sport, 65% of medium-sized businesses reported that they'd faced a security breach or cyber attack in 2021, and consistently this number has been around the 66% mark for several years. Around 50% have reported that they needed new prevention methods, and additional staff, to deal with these breaches. However, COVID appears to be affecting businesses' ability to administer proper security in a severe way; with less overall security monitoring and user monitoring, the increasing move to the digital world for many people is putting much greater strain on companies, professional bodies, government agencies, and more. While the field of cybersecurity aims to protect and secure the important data of people and companies, in many places it is simply being outpaced by the rapid shifts of potential attackers.

Right now, this continual threat has influenced Australian industries to start considering it standard practice to implement external, independent, annual cyber-security health checks across all businesses. Many see this annual review as a good opportunity to ensure that the escalating risks have been properly taken into consideration, and that their organisation has not faltered in any material capacity when it comes to keeping up with their security - with the rate of change from the attackers' sides, any organisation with little or no material changes has almost certainly been exponentially outpaced and faces much, much greater risks.

When it comes to more individual security measures however, one must seriously begin to consider the implications of many proposed, and active, security protocols. As society moves more and more of itself fully online, and as companies continue to discover more and more ways to monetise the very data itself of users, we may very likely find that technology becomes ever-more intrusive into our privacy. Every potential piece of data, scanned and recorded into some myriad of obfuscated databases, giving big tech corporations even more ways to track you and those close to you. Invasive security laws already permit Australian law enforcement agencies to use and collect any data they want without adhering to standard privacy guidlines, so long as said agency can "satisfy itself on reasonable grounds that non-compliance with one or more of the listed privacy principles is necessary in order to achieve or carry out the enforcement function in question." (QLD OIC guidelines, 2017)

How will this affect you?

Following on from the prior section, cybersecurity is a blanket field that has an enormous potential effect on individuals - particularly their data, their rights, and their online freedom. Sure, one may not be a business or run a company, or even have to think about organisational security in any real capacity, but governments around the world will certainly be thinking about it. The biggest individual effects would come from a government, like that of Australia's, implementing far-reaching data laws that allow even greater access and control over things like your internet history, your text messages, or your constant location data (bearing in mind, even "anonymised" location data isn't truly anonymous, as noted by PhilosophyTube - this video is an excellent illustrative breakdown of many of the ideas here.

On a much less federal level, one's individual data privacy is still an important concern even without the complex security systems afforded to larger corporations. However, many data breaches and "cyber attacks" don't take place in shady rooms with hooded figures mashing away at keyboards, despite the image CSI would like to present. "Phishing" is a term used to describe a much more grounded form of digital scam, where instead of attempting to covertly break into someone's account, a scammer simply pretends and presents themselves as some kind of IT professional, or website staff, or similar, and merely asks a user for their account information. If the user is duped by the scam, the "hacker" gains access to all their personal info and anything else the account gives them free reign over, without so much as a single technical hack. While it is possible to get attacked as an individual through more convoluted process, it is far more likely that you will be subjected to phishing or other social engineering scams instead. For this reason, the effect of cybersecurity to the layman should be to simply be aware while doing anything online of what might be a scam, and reduce their own risk through good password habits (like not sharing them between multiple sites).

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Industry Data & Ideal Jobs

Comparing our Ideal Jobs revealed some similarities and overlap between Job Titles and descriptions.

Andrew and Kyle both had their ideal Job as a Games developer. Their desire to work in Game Development would require a thorough knowledge of a coding language such as C# or C++, the knowledge and understanding of a game engine (Unity, Unreal Engine etc.) and have experience in general software development as their work is heavily code related. Software developers are by far the most sought after with the highest listings of jobs according to the burning glass data (29,456 out of 121,997 listings). The next most relevant job title to Games development would be Computer programmer with far less listings (4,436) but still ranks in the top 10 occupations.

Evan and Gavin both had roles that fit under a Backend developer description. Their desire to work in Back end development would require skills across a number of disciplines in the IT world including programming in a variety of languages, database development, cloud management, and networking. Computer programmer would be the top relevant job to Backend developer in the Burning Glass data. Database is a skill required in the Backend development job listings; Database administrator has 3,622 listings falling just out of the top 10 occupations at number 11.

Rory's ideal job was as an Azure incident manager. His desire to work as an Azure Incident Manager would requireextensive Cloud Computing knowledge with a focus on the Azure product line, the ability to communicate and work under pressure and the ability to debug and remediate issues. No Job titles line up perfectly to fit this role, but there are multiple occupations in the Burning Glass data that are loosely related including:

- Software Engineer #1 (29,456 listings), which Andrew and Kyle also matched with
- Computer Systems Engineer/ Architect #2 (13,111 listings)
- Network/ Systems Administrator #4 (9,830 listings)
- IT manager #10 (3,749 listings)

Overall it was good to see that our Ideal Jobs have a decent demand and are all ranked within the top 50% of the Burning Glass Data.

Skills

Using the burning glass data to identify the top in demand General and IT skills that were shared by at least two members we found that across those different jobs the top skill requirements for each role were varied, although each required some sort of scripting or programming skills. As such, any programming language (i.e. Java, python, Javascript) was rolled up into the general term "Programming". The top general skills from the burning glass data showed that the in-demand skills were common across all jobs.

	IT SKILL					GENERAL SKILL			
	Programming	Cloud	SQL and Databases	IT Degree	Debugging tools	Data Analysis	Problem Solving	Collaboration	Team Work
DREW	x			x	x		x	x	x
KYLE	x			x	x		x	x	x
RORY	x	x		x	x	x	x	x	x
EVAN	x		x	x			x	x	x
GAVIN	x	x	x	x		x	x	x	x

There are many overlaps when it comes to skill requirements for each group member's ideal job, with some group members even having chosen the same field.

Some IT related requirements of each ideal job:

- Programming in various languages relevant to each industry (e.g., C++, C#, Python, JavaScript, HTML, CSS).
- A relevant degree in Computer Science / Information Technology and/or multiple years of relevant experience in the job's requirements.
- Knowledge and proficiency in cloud services.

Some fundamental skills unspecific to the IT industry are required for all group members' jobs, such as:

- Communication and collaboration with fellow staff.
- Ability to work as part of a team.
- Problem solving through adaptive decision making.

We break this down further and map it to the Breaking Glass Data below.

IT specific skills by demand from employers?

- SQL – #1 (3,570 out of 27,435 postings)
- JavaScript – #2 (2,946 out of 27,435 postings)
- JAVA - #3 (2,860 out of 27,435 postings)
- Microsoft Windows – #4 (2,860 out of 27,435 postings)
- Microsoft C# - #12 (1,643 out of 27,435 postings)
- Software Engineering #15 (1,372 out of 27,435 postings)
- .NET Programming #16 (1,370 out of 27,435 postings)
- Microsoft office – #18 (1,341 out of 27,435 postings)
- Git – #21 (1,230 out of 27,435 postings)
- Python – #22 (1,150 out of 27,435 postings)

Out of the 10 IT specific skills we identified as a group we match the top 4 desired by employers, which is good to see. However, the other skills that we identified are all out of the top 10, with some falling towards the bottom of the employees desired list.

General skills by demand from employers?

- Communication skills - #1 (44,367 out of 121,997 postings)
- Problem solving - #2 (16,445 out of 121,997 postings)
- Organisational skills - #3 (15,844 out of 121,997 postings)
- Writing - #4 (15,549 out of 121,997 postings)
- Teamwork/ collaboration - #5 (14,364 out of 121,997 postings)
- Troubleshooting - #6 (11,471 out of 121,997 postings)
- Planning - #7 (11,315 out of 121,997 postings)
- Detail orientated - #8 (8,298 out of 121,997 postings)
- Time management - #12 (5,059 out of 121,997 postings)
- Quality assurance and control #14 (4,444 out of 121,997 postings)

Out of the 10 General Skills we identified as a group we match the top 8 desired by employees, which is very encouraging. Our two skills that fall out of the top 10 are still in high demand.

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

Although we identified the top 4 skills being relevant to ideal jobs, we did not select any of the skills in the rest of the top ten. The three highest ranked IT skills not in our IT Specific skill set are:

- Project management - #5 (2,252 out of 27,435 postings)
- SAP - #6 (2,189 out of 27,435 postings)
- Business management - #7 (2,141 out of 27,435 postings)

This reflects our overall combination with some skills, such as Project management being relevant to Rory in his ideal role and SAP which would affect all roles in a user capacity not being included in out top 10 selected skills.

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

We identified the top 8 General Skills as relevant to our ideal jobs. The three highest ranked General skills not in our IT Specific skill set are:

- Creativity #9 (7,475 out of 121,997 postings)
- Research #10 (7,227 out of 121,997 postings)
- Leadership #11 (5,144 out of 121,997 postings)

Modern Data

Whilst researching the current IT job market we were unable to find a comparable modern data set, however, we did find multiple articles that highlighted a growing demand for IT skills by employers, with digital skills making up 70% of all fast-growing skills (Strack et al., 2019).

New technology skills in fields such as AI, the IoT, Cloud Solutions and Machine learning have all seen a growth of upwards of 49% in mentions from 2015-2018 (Strack et al., 2019).

Comparing our Ideal Jobs to the Six most in-demand tech sectors and jobs as identified by HAYS is also reassuring as Cloud Solutions which links to Rory's ideal Job and our collective requirement of Cloud Services is second and Software Development which links directly to Drew and Kyles ideal job being 5th (Six of the most in-demand tech sectors and jobs, 2020).

Having looked at the Burning Glass data, has your opinion of your ideal job changed? Why or why not?

Andrew (Game developer): The Burning Glass data has shown me that perhaps I should have a broader scope of IT fields when looking for a job in IT so that starting a new career is more attainable. Instead of just focusing on Game development I should also consider other programming and software development roles.

Evan (Backend Developer): After reading through the Burning Glass data, while I am generally quite satisfied with my pick for an ideal role, I am also more keenly aware of positions within the industry that aren't quite as focused necessarily on hard coding - things like being on the more business-ended or managerial operations sides of an organisation. Something like that could test different skills in a way that I find very personally fulfilling.

Gavin (Backend Developer): The Burning Glass data aligned with my expectations of what is required for this role. As such, I havent had any major change of heart. While a passion of mine still remains with electronics and embedded devices, I am happy for that to remain a hobby.

Rory (Azure Incident Manager): The Burning Glass data has given me confidence in the demand of my ideal job moving into the future. Further research has highlighted a significant growth in demand by employers for Cloud Computing skill sets, which is also reassuring. My analysis of skills that I would need to obtain for assessment 1 remain unchanged, but I am now more open to working for other Cloud Computing platforms, such as Amazon and Google.

Kyle (Game Developer): After having researched and read the Burning Glass data, I've found my ideal job and my opinion of it to be unchanged. I was already aware of the collaborative aspect required to succeed in the position, however I have learnt of new areas and technologies I can continue to work on to properly prepare myself for a situation in which I attain my ideal job.

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Project Ideas

Pursuit of Hoppiness is a community sourced bar rating and review app that can be used to filter by specific categories to allow beer enthusiasts to broaden their beer horizons, beer bargain hunters to find a deal, and all beer lovers to come together in one place. It is the "Pursuit of Hoppiness".
The app focus on reviews of venues and encourages exploration of a user's local area or can serve as a guide when you arrive somewhere new providing 5 different beer focused categories to filter by instead of a single unrelated 5-star review. These 5 categories are Tap Uniqueness, Total Taps, Pint Price, and Atmosphere all based on fellow beer enthusiast's input. The app also allows reviews and social networking with friends.
To read more about the initial concept for the Pursuit of Hoppiness please Click Here [https://roryjhenderson.github.io/Task-1-My-Profile/Project_Idea.html].
Following consultation with fellow beer fans from the Sharper Tech Group, input form Tim Lo and other interested parties here are our considerations for additional features and future development strategies.

Owner comments and administration

Similar to google business' layout the app will give bar owners the option to certify ownership of the bars name, provide a brief description comment and comment on app user reviews.

A basic process of authentication will be necessary for the bar owner to prove their ownership that will grant them access to modify their bars page, sufficient documentation to prove their ownership such as an ABN registry letter or letter from their accountant. Once this is processed the owner is granted administration access to their business' page giving them the ability to provide a brief 50-word description of the bars overall theme and vibe, style of music and entertainment, general audience description, any entry fee, trading hours, happy hour and any other special offers. Bar owners will receive notifications through the app (and possibly email) on interaction statistics e.g., positive/negative reviews, increase or decrease in their 5-star rating, how many app users are visiting their business, they can also choose to reply to user reviews of their bar and craft beer service.

While Pursuit of Hoppiness appears to be mostly consumer facing on the surface, the business facing side of the application can not be understated. The technologies used in Pursuit of Hoppiness allow considerable analytics to be provided to businesses that sign up to access the data. Analytics services could be provided or even access to integrate into their own systems using the REST API. For example, popular analytics platforms like Jaspersoft or PowerBI can accept a RESTful data source.

Some examples of the data that can be collected by the application that may not be immediately obvious:

- Time of use
- Location of use
- Search criteria when looking for a venue

This data can be used by the business to build a detailed profile of the customers that they are attracting which can be used to make better business decisions.

Linking external services

We would design the UI to intergrate links to external apps for navigation, bookings, and purchases to improve accessibility and provide a more user-friendly experience.
Linking the app to google map services so that users can search for unfamiliar bars in their local area, find the best route to their bar of interest or plan an afternoon/evening of bar hoping around craft beer bars in the same area.
Each bar that required bookings would have an external link on the bars page to OpenTable so the user could book a table.
If any of the bars on the app were to brew their own craft beers or sell merchandise (t-shirts, stubbie holders, coasters etc.) then a link to their website could be provided through the bars profile.

Tools and Technology

Infrastructure

Initially a proof of concept application would be self hosted. Self hosting in the early phases offers a significant cost saving over using a cloud service(Website Planet, 2019). While a rented VPS may actually be in someone elses cloud, it will still behave as if it was a discrete computer rather than a cloud platform. After the proof of concept and initial local area public releases, a migration to a cloud hosted environment will offer better reliability and provide for the service to be distributed with lower latency to various population centres. With a planned migration to the cloud following succesful trials, development from the beginning must be cloud focused to reduce complexity during the cutover.

Back end

Database

A PostgreSQL database is the most likely selection for the database side of a backend. PostgreSQL is free and open source, with a wide community backing. These two points alone make it a very good choice. An alternative would be a MySQL database. MySQL offers a lower barrier to entry in regards to skills an knowledge required for setup but as the application needs to scale up or even change direction MySQL may not be able to provide the same in demand features of a PostgreSQL system.

REST API

A rest API will be the primary interface for the database with the rest of the world. Using a Rest API will allow for backend to be completely separated from front end and allow the product to be platform agnostic. This means that development for different platforms can take place concurrently and more rapidly as the human interfaces will not have to be developed individually to get the data requred. Alternative technologies such as SOAP increase the complexity of the API for no appreciable benefit.

Front End

As this is a mostly consumer facing product, the interface with humans is a very important part. Pursuit of Hoppiness is intended to be used on the go which makes mobile development a key area for development. iOS holds a slightly higher market share amongst the Australian market(StatCounter Global Stats, 2019). To reduce initial cost for development and to reach the largest segment of the market possible with a trial, iOS is the chosen platform for the initial mobile development. Further research would have to be conducted to understand if the overall statistics for mobile OS market share translates to the products target demographic.

Reasoning for iOS Development

The reasoning to why we plan to develop and release the application for iOS based devices has been decided per the knowledge of Apple holding the market majority of phones in Australia, with reports being that 56.7% of phones are that of Apple's (StatCounter Global Stats, 2019). Developing for this market before then expanding into Android development allows for lower developmental time and costs, while still allowing us to reach the largest audience available.

Payment via the application

Through this iOS application we plan to integrate payment applications such as Apple pay as well as Google pay through a tap or scan of a QR code. At a later date, we'd also like to explore the option of allowing users to store their cards payment details directly into the application. We believe that by allowing users to pay for their drinks through the application, it will promote the product to the owners of bars that which aren't signed up to then sign up. By keeping the payments inside the ecosystem of our own application, we would like to develop it so that there is no need to leave the application when ordering drinks at these bars.

Profiles

Users can choose to list their favourite bars and places to drink as well as what their go-to drinks would be. Also listed on these profiles would be the users favourite spirits, beers or wines.

Required Skills

Over the lifespan of Pursuit of Hoppiness the required skills is anticipated to shift. In the early phases of development the main technical skills can be grouped into two areas, front end and back end.

The front end area must possess the following technical skills

- iOS development
- Rest API usage
- Web development

The back end area must possess the following technical skills

- Database development
- Rest API development
- Cloud configuration

In addition to the technical skills it is important that all team members are able to work effectively in a team and can take responsibility for their own deliverables.
As the development progresses into the trial phase, the product will have to be marketed. This is something that can be outsourced to a third party or alternatively conducted in house depending on budgets. As no team members possess any skills in this area, outsourcing the work to a dedicated entity makes a lot of sense.

Ethical Considerations

The Pursuit of Hoppiness is constructed as a social and fun community review app, however the apps focus around the consumption of alcohol introduces two Ethical considerations when discussing the user base.

Age Limit

In researching similar existing services and websites that featured alcohol multiple sites contained an age gate such as Gage Roads Brewing [https://gageroads.com.au/] which requires users to verify with a Yes or No and Jim Beam [https://www.jimbeam.com/en-au/] which requires users to enter their Date of Birth. Researching further I learned that this is not a legal requirement in America (Thomson, 2017) for websites featuring Alcohol. I was unable to find any sources that discussed whether it was or was not a legal requirement in Australia, so I assume it isn't, however potential new laws will require Social Media sites, which The Pursuit of Hoppiness may fall under to take "All reasonable steps to verify" that users are over the age of 16 (Buckley, 2021).

"All reasonable steps to verify" is vague however in in 2019 there was an Inquiry into age verification for online wagering and online pornography by the Australian Parliament which discussed multiple methods for online age verification. There where multiple suggestions for using existing government identification methods for this purpose including, existing government issued ID documents or the Trusted Digital Identity Framework, however these forms of identification also verify a user's identity which in our context is far more information than we need. There were also suggestions to use publicly available consumer information and databases, such as the Electoral Roll (which is something that Equifax said they do), which would only include individuals aged 18 and above, however again this introduces the issue of verifying a user's identity. Another solution presented was using a service such as Yoti Age Scan [https://yoti.world/age-scan/] which can identify a person's age by looking at their face in around 1 to 1 ½ seconds with an error rate of 0.31% when the threshold is set to 25 (Standing Committee on Social Policy and Legal Affairs, 2019). As there is currently no legal requirement to verify a user's age, these methods are currently not required.

Asking for a user's Date of Birth also presents an issue as it classifies as Personally Identifiable Information and there have been cases of Apps being blocked from the Apple App Store for asking for this information (Age Restrictions on Apps | Apple Developer Forums, 2016).

Despite there currently not being any legal requirement to do so having users verify their age seems to be best practice. With this information in mind, when creating a profile in our app users will be required to select yes or no to the prompt are you over 18. If the user

selects no they will be directed to the DrinkWise Landing Page [https://drinkwise.org.au/under-18s/age-gate-restrictions/?fbclid=IwAR0DhxvJdUrtWdyPKh8Rjy7-tZ4ltIA-6RPk7VU791UjBMofgD37dUGuSr4#] which can direct underage users to more resources.

Alcohol Consumption

Pursuit of Hoppiness focuses on the Craft market and social aspects of drinking, however it would be irresponsible to ignore the potential health risks to creating an app that encourages and promotes the consumption of alcohol.

Short term health risks of alcohol consumption include Injuries, drowning, motor vehicle crashes, violence, alcohol poisoning and risky sexual behavior and long-term risks include increased risk of cancer, high blood pressure, weakening of the immune system and social issues (Drinking too much alcohol can harm your health. Learn the facts | CDC, 2021). To mitigate these risks the Australian Government recommends no more than 4 Standard Drinks in one day and no more than 10 standard drinks in a week (Managing your alcohol intake, 2020).

Addition of common safe drinking slogans, such as “Drink Responsibly” and “Know you limit” can be scattered around the app to help provide subtle reminders to users. Additionally, linking to resources such as DrinkWise in the main menu can provide awareness and support.

To further support safe drinking behaviors the app could feature low and non-alcoholic beverages which is a quickly growing industry. In 2020 the share of no and low alcohol beer, wine and spirits incandesced to 3% of the total beverage market with an expected 31% growth of the nonalcoholic industry by 2024 (IWSR Drinks Market Analysis, 2021). The sales of Non-Alcoholic Drinks at BWS and Dan Murphys’ almost doubling over the last 12 months (Brescia, 2021). Promoting these beers encourages their consumption and helps reconstruct current social norms which result in 35% of 18-44 year old's saying they would hide low or lower strength alcohol products while drinking socially (Zero, low and mid-strength alcohol – Australian consumers’ prevalence, practices and attitudes, 2021).

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Interview an IT Professional

Recording:
IT interview with Alan [https://youtu.be/UBETZOBqx5o]

Transcript:
Transcript [https://rmiteduau.sharepoint.com/:b:/s/IntrotoIT-TeamProject/EYHckPGmdGlDrw_WkDec0voBsXSbxUrhhnFmvKIR-s6AUA?e=ewdI0Z]

Summary:

Introduction

Alan works as a software developer for one of the big 5 banks in Canada. He has been a developer in this role for 2 years. The software he develops is for internal use and does not do any front facing work. His work focus's around API development, which he described as a program running on a server which is designed to have requests for content sent to it and then a response sent out.

Alan looks at the problems presented by his team, forms a methodology for how to resolve this and then interprets that into code. Once written Alan does his own testing before sharing it with users and supporting its deployment. He occasionally contributes design suggestions based on his own experience working with the software.

The whole banking industry in Canada work in Java. This supports the homogenous environment required for work. The industry is built on existing systems and mainframes that were in place far before Alan started his career. He flagged this as a potential issue mentioning Y2K.

Structure

Business System Analyst (BSA) identifies the software development needs within the company, which they pass onto solution designers.

Solutions Designers are the lead developers of a development team. They organizes the developers within their team, distribute work and answer questions about the integrations being developed. They are usually the main interfaces with the BSA/stakeholders, but other in the development team can sometimes talk directly to these other parties.

Developers develop the solution. These solutions are developed individually with testing being completed before being passed on to the Testers.

Testers test the solutions created by the developers. They reach back to highlight any issues found/ask questions about the development. Testers test the code in wider situations than the developer to ensure that it is compatible and will work in all situations.

In addition to this Structure Alan will also interacts with other development teams to ask questions about their API's if it is relevant to his development.

Alan encourages light social interaction between team members, as it supports a stronger team.

Time Spent
In his role Alan spends most of his time analyzing requirements. He does not approach beginning the implementation until he has a complete and total understanding of the requirements and a plan for how to approach the problem.

He mentioned that some developers work differently approaching the issue without a clear plan in mind and instead learning and working towards a solution during the development process.

Challenges
Alan flagged that the biggest issue he faces is interacting with QA and dealing with their mistakes. QA will often not consider what the issue is before bringing it to Alan to resolve. All API requests are in Json format and usually, the issue is with the Json request that was being sent to the API. These issues are often as simple as miss spelling or a missed bracket and only take ten seconds to resolve but take time away from his other work.

Alans solution to this issue is to maintain open lines of communication between the team to make sure that there is no misunderstanding between himself and others in the team. Another issue flagged by Alan was when working with other systems. Often he has to deal with limited documentation or logging and results to debugging responses to understand what the systems is doing when a request is sent to it.

He mentioned the concept of a “Black Box”, where no one understands what happens in it, all we know is what goes in and what comes out.

Captures the essence
Alan is not strictly speaking in the information technology industry, he just works in Information Technology. However, for him knowing the purpose of what you are working on and what it means for and the people that it is for is important. Connecting individuals with problems with those with solutions he feels is the entirety of his job.

Terms
“Scrum”
Short meeting where people in 2 sentences sum up the work from yesterday and the plan for today and highlight any potential issues with the aim of the group giving support.
“Sprints”
Typically, you build systems from the ground up in the order that makes the most sense. Sprints are 2 week “sprints” to develop small parts. More about showing the consumer that progress is being made. This is part of his companies agile mythology, which Alan does not think helps development overall and slows down the development cycle.
Bug VS Defect
Often in the team they will use the language Defect over bug when a development does not do what they expect it to.

Reflection

Personal Reflection

Gavin Jamieson

In the last three weeks the group has really pulled together to deliver the assessment. The work in the group was divided up in such a manner that not a single person was responsible for deliver a single segment. During our meetings we generally each took actions that saw us crossing over into an area that we hadnt looked at previously. The open discussions also allowed us to highlight assignment requirements that may have been overlooked by other group members.
We decided early to go against the advice in the assignment and have only a single weekly meeting. I feel that two smaller meetings would be an improvement.
It was surprising to me that most of the group were managing the workload with full time jobs. It was also surprising how satisfying it was to see all the commits rolling into over the last couple of weeks as members really honed their individual bits of work.
I learned that a group with common values and a common goal can all pull in the same direction with a minimum of oversight. Having the correct tools to enable the collaboration such as Teams and Github were really helpful.

Rory Henderson

Group Task. Those two words send shivers down the spines of all Students. However, the experience has allowed me to learn from my peers, share knowledge, network and collaboratively produce a complex assessment task, all online.
The group's collaborative effort has been good to see, with each member taking responsibility for different sections of the task and then allowing other members to come in, edit, add and improve, to create a greater overall result. This same attitude has also allowed group members to share knowledge and learn from each other.
As we move into tasks 3 and 5 it will be good to introduce a more structured approach to our weekly meetings, which was difficult to achieve over the holiday season. Similarly, as we will be working on two tasks simultaneously a more structured timeline with goals will be beneficial.
One pleasant surprise was that meetings have been productive, with room for humor and tangents, which reflects positively on the compatibility of our group members.
After initially being resistant to GitHub, I found the process of Pulling, Editing, Committing a Changing becoming second nature. Tracking the changes and being able to quickly identify what each member had been working on and changing invaluable.

Evan Phelps

Personally I've felt like this group was a very perfect one to end up a part of. Despite some initial issues getting used to Microsoft Teams leading to some admittedly sparse meeting attendance, especially over the Christmas break period, everyone very quickly found a rhythm and have all been seriously accommodating to various members' needs. When Andrew ran into some familial troubles and couldn't make the meeting, or when I was feeling a bit lost with the scope of the project, there was always a well-organised list of actions and notes after meetings for everyone to keep a good track of where things were at. Looking forward to future projects if the group is this cohesive!
I think if I had to make any harder criticisms or feedback, it would pretty much be directed towards myself; I got very caught up with the two uni courses running side-by-side, and that sort of thing really runs the risk of making me fall behind. Happily however, the group has been very nice about it so hopefully there won't be any major troubles in the vein for the future.

Kyle Ross

My experience of working with the group was more than pleasant. I found that everyone pulled their weight and contributed equal amounts while also discussing and taking part in the weekly meetings we arranged. With everyone seemingly working jobs while also studying, it was nice that we were able to actively meet and have all members present more often than not.
I was pleasantly surprised to find that with every part a team member may have struggled in, another member was experienced with, and was more than happy and able to assist them and bring them up to speed, I feel it created a welcoming and understanding atmosphere without any ill feelings or animosity attached.
If there was an aspect to be improved upon, I believe there could have been an agreed choice on whether the group pushed updates to the GitHub in small parts or larger parts. This coincides with me feeling as though the GitHub activity logs to not show the true amount of work done by each person, as half were the type to update with every change, and the other half instead uploaded less but had more a style of uploading in batches of work.
In conclusion, I was more than happy with how the group performed as a unit and look forward to continuing the further coursework with them in future assignments.

Andrew Suhr

From the get-go the group has worked efficiently together, everyone is friendly and happy to have input. Meetings have run smoothly given everyone is on a different schedule or even a different time zone, so we've managed to make it work thankfully. The workload has been delegated evenly and everyone has stepped up and done their share.

I'm not sure much could be improved, luckily it's a good group to work with. I guess it was just a bit unfortunate the assignment started over the busiest part of the holiday period making everyone's availability a bit all over the place that first week, so it took a little while to get the ball rolling.

One thing that was pleasantly surprising, in the middle of the project I was a bit overwhelmed with the amount of work, the functionality of GitHub and using CSS to format the webpage, thankfully Gavin was able to take the extra time out of his day to troubleshoot and help me through these problems, this really helped me push through and get to the finish line.

This assignment has helped me develop my skills working as a group online whereas my previous team experiences have only ever been in the same room.

Group reflection

What went well?
Overall, the group has worked incredibly well together and completing the assignment was a relatively easy task thanks to a good amount of communication, support, and teamwork.

From the initial meetings to the end of week 7 all members were friendly, professional, and respectful making meetings a safe space for input without judgement or ego. Meeting agendas have been clear and evenly spaced out each week ensuring a smooth process when completing each section of the assignment. Scheduling meetings for the most part was a pretty easy process as members made the time regardless of other commitments or time zones and were punctual about it. Communication is key when working as part of a group and thankfully we've had great communication between our group.

Additionally all members came in with different skill levels, experience and knowledge, which they have been happy to share. We look forward to continuing to share and grow our collective knowledge over the next 2 group tasks.

We all have the same goal at the end of the day, but the combination of similar and contrasting personalities has led to some good comradery between the group and were happy to be working together in the upcoming assignments.

What could be improved?
The first thing that comes to mind when thinking about what we could have improved upon would be better organisation of meetings. The beginning of the project, fell right on the busiest part of the holiday season and everyone's scheduling was a bit all over the place due to work and Christmas engagements.

Some members were more well versed in the use of GitHub and webpage creation, so some aspects of the project were delegated to them by default. We hope to sharpen our skills going into the next assignment and continue to share our personal knowledge so that everyone has a better understanding of the app's functionality. Half the group was already familiar with Microsoft teams using it for work or other projects while a couple of us had not used it before, this led to a little bit of hand holding getting those who were unfamiliar with its functionality up to speed, so again, just sharpen our knowledge of Microsoft teams to make the follow up project an easier process.

At least one thing that was surprising?
It was pleasantly surprising to see all group members time management and commitment regarding the assignment. Everyone has a very different lifestyles and there have been a few obstacles in the last few weeks but everyone has stepped up and done their part. Rory has been juggling large event productions but has fully communicated when that will be taking place and when he aims to catch up on the work, Gavin & Kyle have been busy working full-time but have managed to set aside enough time for full commit to the task. Evan is currently studying a separate course which he has stated is keeping him very busy but he hasn't dropped the ball with this course work and Andrew has been busy seeking employment and was exposed to Covid-19 which delayed his progress but he managed to make up the time.

Additionally, it was surprising how well we communicated, worked together, and got along. There is always a fear with group assessments that you need to pull dead weight, and this is enhanced with all communication being online, however, we managed to avoid this cliché and all members contributed to the project.

At least one thing you've learned about groups?
Working on this assignment has taught some of us that working and collaborating online is a very different experience to working together in person, I guess in some instances it makes you less liable as people can't call you out there and then like in person but as we mentioned before everyone has been reliable and trustworthy.

It's been great to see members who have prior IT knowledge really step up and take a leadership role and also take the time to assist others, this is very important when working as part of a group as they say, "a rising tide lifts all boats".

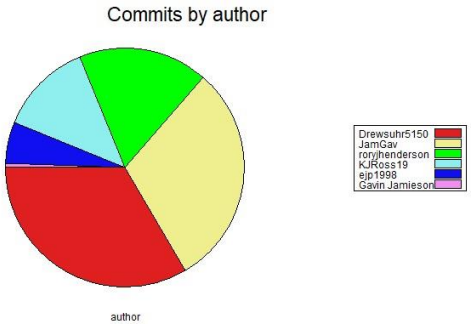
Different members have displayed different specialties (coding, research, grammar, scheduling, app functionality) so delegating the appropriate section of the assignment to that member has made the assignment far less time consuming.

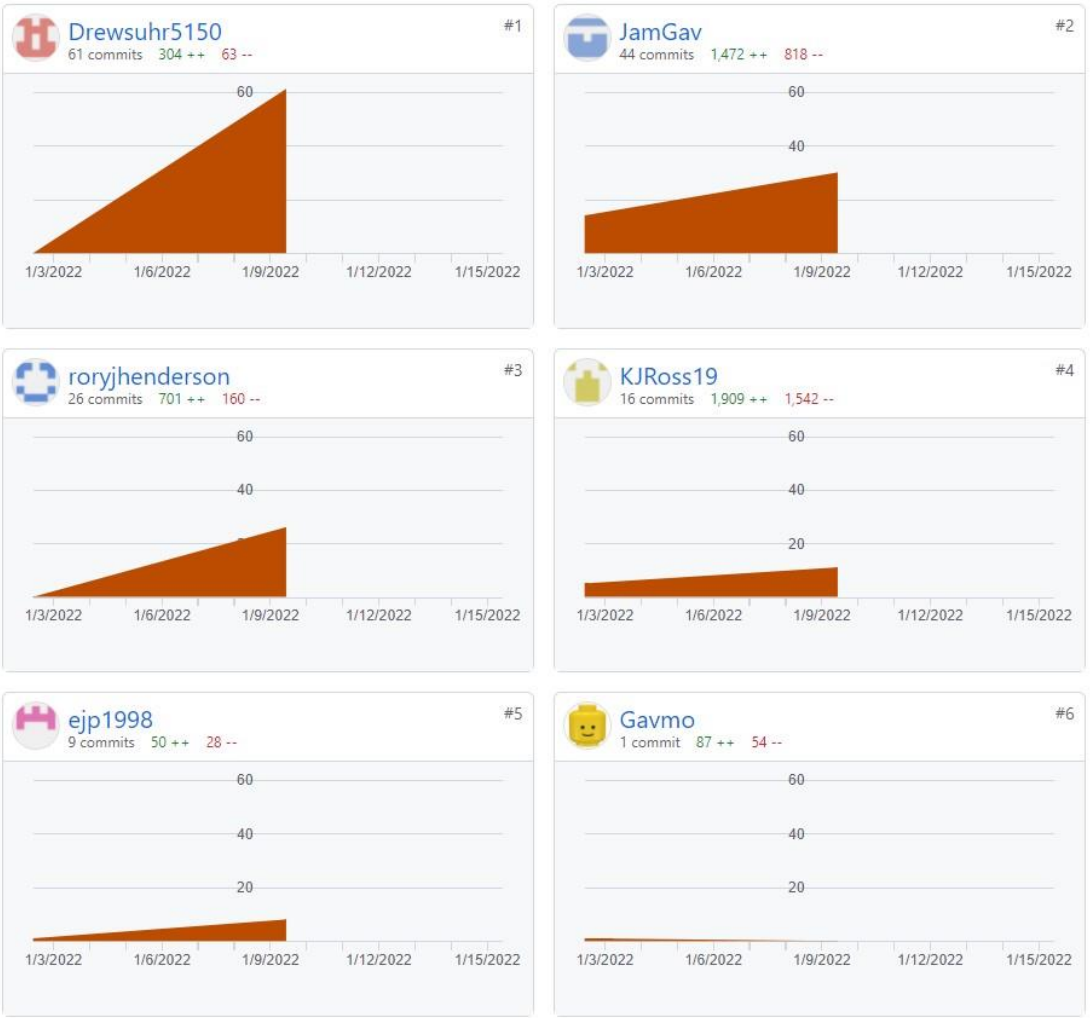
This group seems to work really well together as we all have the same goal and through some clear discussions everyone has been on the same page about how to reach it.

Github Insights

Using the GitHub Insights panel we can see the number of commits made to the repository by different members and the number of total contributions they have made over a period of up to one month.

Andrew	Gavin	Rory	Kyle	Evan
43	26	23	10	7





The number of commits and contributions does not reflect the amount of work contributed to the project, with some user's workflows making multiple changes across many aspects of the repository before committing and others committing regularly. Similarly, not all work on this project was completed on GitHub, with Interviews, Teams meetings, research, and more happening off GitHub.