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**COSC2196**

**Introduction to Information Technology**

**Assessment 3: Our IT Project**

**Team 24**

**Group Website**

[**https://s3728065.github.io/A2-24/**](https://s3728065.github.io/A2-24/)

**Group Repository**

**https://github.com/s3728065/A2-24**

**Prepared by:**

**Motiana Tusa, Joanna Jane, Mason Brown, Simon Mckindley, Roshan Khadka and Amer Muhammad**

|  |  |
| --- | --- |
| **Team Profile** | **5%** |
| **Tools** | **5%** |
| **Project Plan/Description** | **50%** |
| **Skills and Jobs** | **15%** |
| **Feedback** | **7.5%** |
| **Group Reflection** | **7.5%** |
| **Presentation** | **10%** |

**Team 24 Profile**

* Create Git pages link for each member
* Each member has identified the tasks and roadmap to obtain their ideal job in their individual websites though not in the Team 24 presentation - this could have been used to have described how team members would have dealt with your potential similarities or complimenting styles of ideal job.

About us Our Team

Motiana Tusa

S3873180

https://github.com/MotianaTusa/my-profile

Motiana grew up in the pacific island of Western Samoa. Beautiful Polynesian country where family is the core of all values and traditions. Motiana migrated to New Zealand before eventually settling down in Australia. Motiana is bilingual and has undertaken various courses as part of her professional development in New Zealand and Australia. After having pursued a successful career in Disability services she is now aiming to go further by studying IT. Her interests in IT developed overtime as she saw the remarkable pace at which IT Technologies have grown and have had a positive impact on all facets of life. Through her work experience she also saw a need to have basic IT education which can compliment any chosen career. Her IT experiences so far have been from user’s perspective, but she is aiming to expand her skills as she progresses in her IT degree and apply those to further her career.

Joanna Jane

S3873742

<https://github.com/s3873742/My-I.T-Profile>

Jo was born in Australia to English parents who settled here in the 70s. Artistic in nature, Jo also loves performance vehicles and owns a WRX. Her interest in IT stems from a strong desire to understand how technology works. This began about 7 years ago when she started working on the helpdesk of a software company. Jo came to enjoy the troubleshooting aspect of it and would often test things in her downtime to fill gaps in her knowledge. She also really enjoyed writing technical guides and documentation on how to perform certain processes, and found it quite rewarding to not only solve problems for clients but teach them new or better ways of doing something using technology. Her experience is somewhat limited in that work was more-so related to the software itself rather than the computer or programs running on it, but by proxy she also learned a range of skills such as the process of troubleshooting by elimination (which largely comes down to knowing the right questions to ask), the software testing process, knowledge of client-server systems, and the basic concepts of database maintenance and repair.

Mason Brown

S3876704

<https://s3876704.github.io/Intro-to-IT-/>

Mason is from North Queensland and has fond memories of playing video games on pcs and PS4. This led to his fascination with IT technologies and their potential applications in tackling issues such as coping with deteriorating weather patterns and unpredictable storm surges due to global warming. Mason is passionate about building an application which integrates data available in public domain such Bureau Of Meteorology and uses Raspberry Pi to create physical indicators which alert users before they leave the premises, of possible stormy weather.

Roshan Khadka

S3876349

<https://rk121.github.io/>

Roshan was born in Nepal and came to Australia at a very young age and loves to showcase his cultural heritage by celebrating Nepalese festivals. He plays soccer and loves FC Barcelona. Roshan had a keen interest in IT and even though has pursued another career, his main interest remained with IT and he is doing a bachelor’s degree. His main interests are programming and web development. He would like to develop an application which integrates front-end and back-end development with practical application in hospitality industry. This idea is particularly useful in the context of social distancing and responsible practices promoted within hospitality industry in the wake of COVID pandemic.

Simon Mckindley

S9406133

<https://s9406133.github.io/IntroToITAssigment1/>

Simon grew up in Heywood, a small town in country Victoria, and moved to Melbourne after finishing high school. A family man with a successful career at Australia Post, he also likes to play guitar. Simon is hoping to develop an app for teaching beginner guitar playing, one which will incorporate many unique features currently missing from available apps. Simon’s interest in developed at an early age when he got his first PC to do his homework. He also pursued a degree in IT early on but decided on an alternative career. He possesses programming skills in C++ and is also a Microsoft Certified Systems Administrator.

Amer Muhammad

S3728065

<https://s3728065.github.io/My-Profile/>

Amer was born and brought up in a rural town in Pakistan. Passionate about cricket and football, avid reader of history and politics, and is passionate about cooking, specialises in Indian and Pakistani delicacies. After migrating to Australia, chose to study Business Management and has held various jobs ranging from Administration to middle management. Interest in IT only grew after starting an investment and trading proprietary. Would like to study cloud computing and cybersecurity further to enhance the outreach of current technologies available in the financial sector.

Group Processes

How well did your group work together in Assignment 2? Will you be introducing any changes in process for Assignment 3? *This is new for this assignment.*

Frequency of meetings

Group structure

Task allocations

Task reassignment/delegation

Career Plans

Compare and contrast the career plans, including ideal jobs, for each person in the group. This may have changed due to feedback from Assignments 1 and 2. What common elements are there, if any? What differentiates each position from the others, if anything? How similar or different are your career plans across the group? *This is new for this assignment.*

Ideal Jobs

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Ideal Job** | **Job titles**  **ratings** | **General skills** | **General skills in demand ratings** | **Core IT skills** | **IT skills in demand ratings** |
| Motiana | Scrum Master | 18 | * Communication skills * Team Building * Project management | 1  18  19 | * Project management * Business management * Scrum master | 5 7 23 |
| Joanna | Test Analyst | 10 | * Communication skills * Interpersonal skills * Quality Assurance and Control | 1  5  14 | * JavaScript, MSSQL), * C#/Python * HTML/CSS, JIRA, * Browser Stack, * CI/CD tools, Selenium, Agile development, Git, | 1  12  17 |
| Roshan | Senior Full Stack Developer | 17 | * Communication * Problem solving * Teamwork | 1  2  5 | * SQL, WCF, WPF * JavaScript, React, * C# * .NET, NET MVC, | 1  2  12 |
| Simon | Software Design Engineer | 11 | * Communication * Problem solving * Detail oriented | 1  2  8 | * Java * C# * Software engineering | 3  12  15 |
| Mason | Geek2U Field Technician | 18 | * Communication skills * Problem solving * Troubleshooting | 1  2  6 | * Microsoft Windows * Technical Support * Microsoft office | 4  11  18 |
| Amer | Cyber Security Consultant | 1 | * Communications skills * Time management * Multi-tasking | 1  12  20 | * Business analysis * Technical support * Microsoft Windows | 9  11  12 |

**Ratings Source: Labour Insight Jobs (Burning Glass Technologies)**

Ideal jobs for group members are as diverse as group itself. Mason has chosen a self-employment option where he works as IT vendor who comes to you for your basic IT needs, most customers in this line of work are going to be households with limited knowledge of products and services they use, providing technical support for Microsoft operating systems and Office products is ranked very highly among core IT skills most in demand at present.

Motiana has chosen to work as scrum master where she will be managing small teams and actively engaged in project managements delivering tangible benefits for her employers. Her core IT skills required for this kind of work are listed among top five in desired IT skills in demand.

Roshan and Simon have opted for a high-end software development and engineering roles, respectively. This career path requires competencies in high end programming languages and web development applications, which are listed among top 3 most desirable IT skills in the industry.

Joanna has chosen to be a test analyst. Her work experience closely matches her chosen career path and competencies required to perform this role include knowledge of JavaScript, SQL, and Python. These core skills are among top 3 most desirable skills for IT professionals.

Amer has chosen to work as a cybersecurity consultant. Work will involve engaging clients in determining their business needs, analysing existing IT infrastructure, and delivering client-oriented cybersecurity solutions. This role will involve combining generic business management skills and technical knowledge of latest industry trends available in the market.

Notwithstanding obvious differences in chosen career pathways by group members, almost all job selections have general and core competencies listed in the top ten most desirable for IT professionals. These include, communication skills, problem solving, teamwork, SQL, Java, operating software and packaged software such as Microsoft Office.

Tools

As in Assignment 2, you need to have a group website and a GitHub (or similar) repository for your group. In your report you should include a brief description of what you have done, and include the following:

- The link to your group’s website - The link to your group’s Git repository (GitHub) - Your comments on how well the audit trail on the Git repository reflects your group’s work. You will presumably only be able to do this close to the time of submission.

Project Description

Naturally the choice of what to do is up to you, but you should take the following into account when making your decision.

- The passions, interests and skills of your group

- IT industry trends

- What would assist you in your career plan

- Feedback from Assignments 1 and 2

Overview

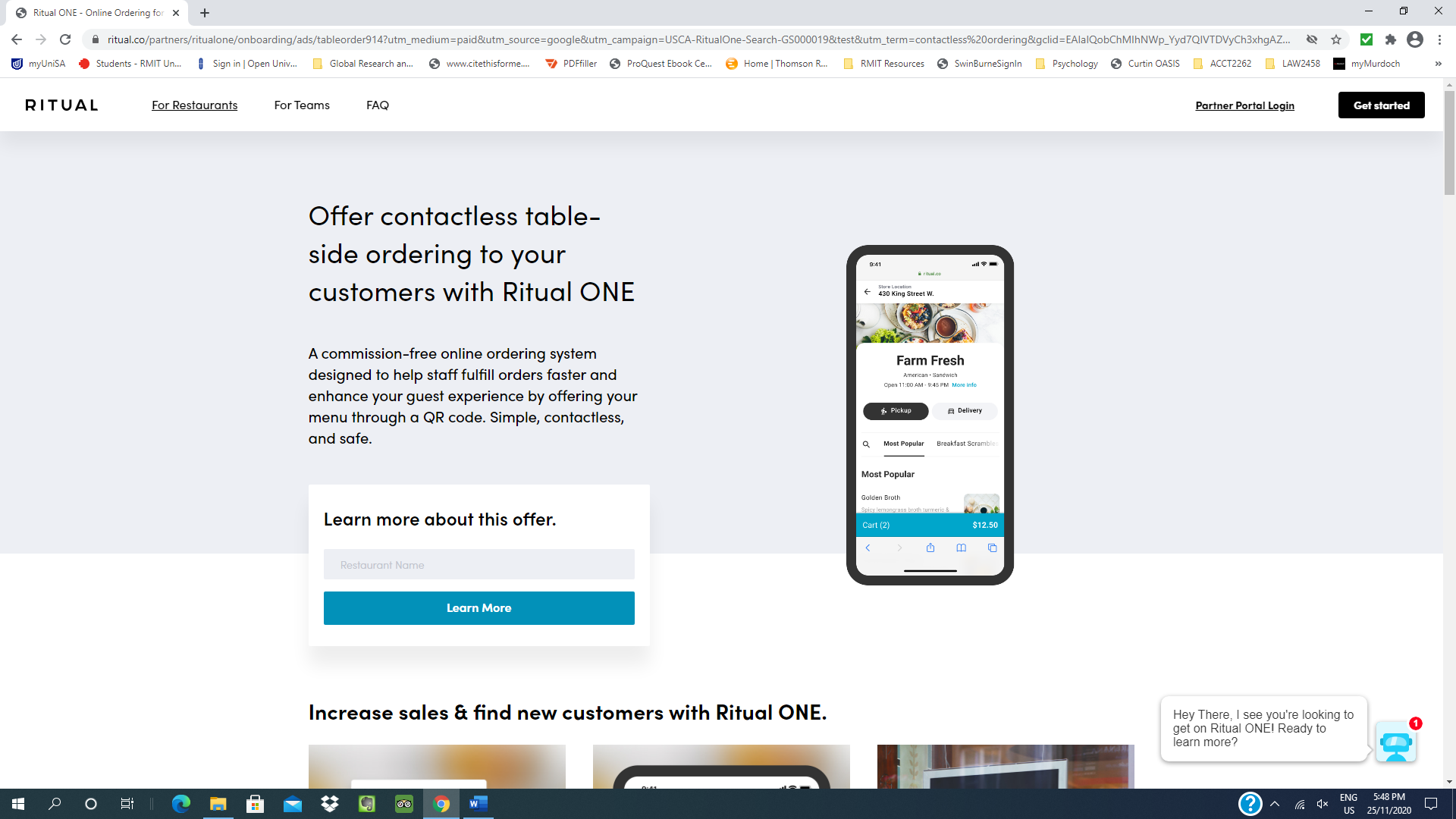
Topic An overview of what you propose to do in your project. Concentrate on the big picture and outcomes, rather than intricate details. At least two paragraphs is expected.

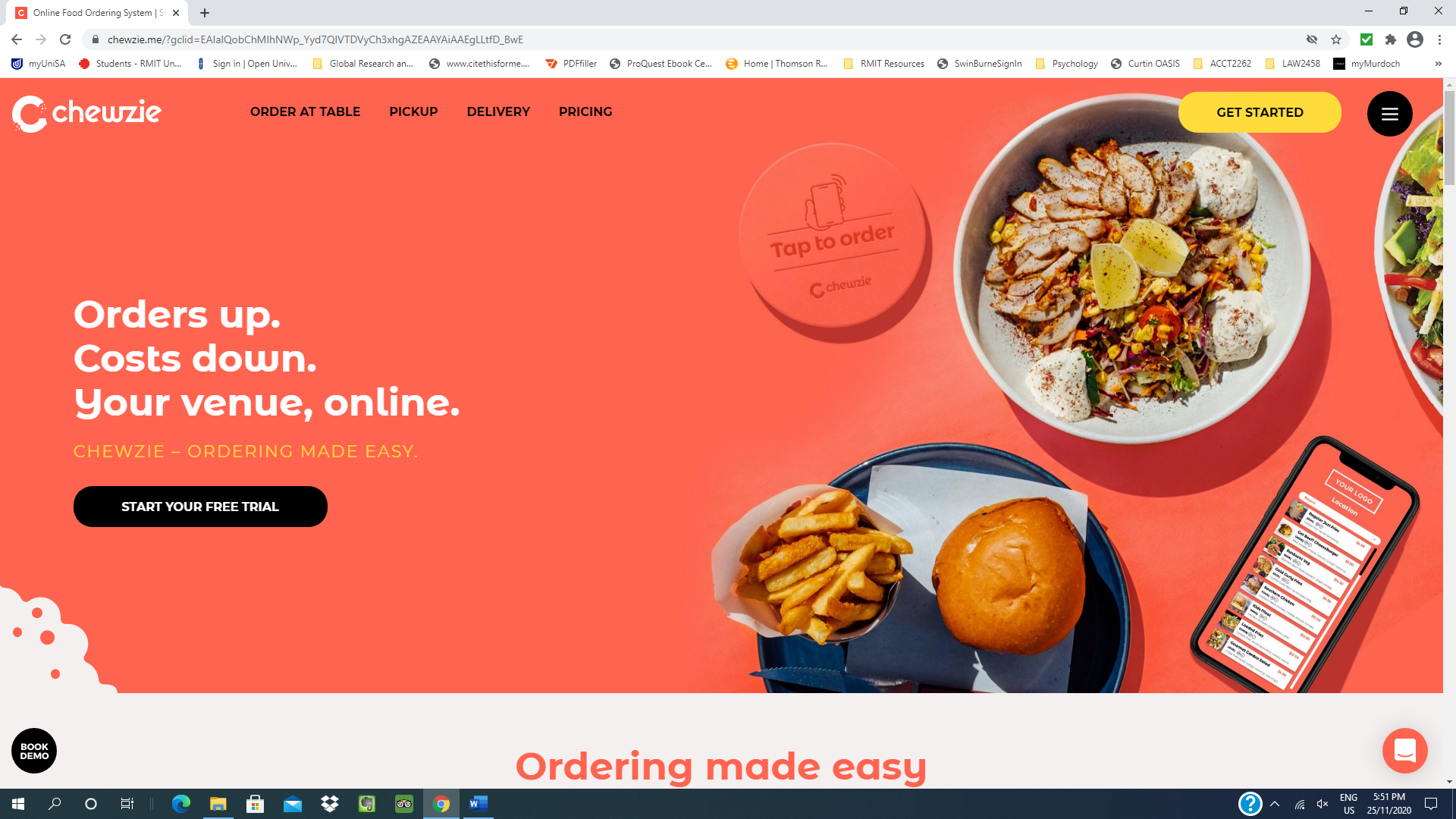
The project is a production grade web application that will power a backend and a front end involving both restaurateurs and patrons. The application will be linked to a restaurant website, where customers can sit at the table and place orders and pay via their phone without needing to order at the counter. Customers can scan QR codes or visit the main website to place an order, once the order has been placed the order is then sent to the restaurant’s dashboard which will be linked to the docket printer. This system’s backend will also integrate to the restaurants’ POS(Point of Sale) system. When orders are ready and passed out of the kitchen, the staff will have the ability to send a push/SMS notification to the customers allowing them to collect the food from the serving area. The customer will also be able to leave real time feedback about the quality of food and services received right on the platform allowing business to strengthen their weakness. Since this platform is a web application built with mobile first approach, the user experience will be very intuitive. This project aims to provide exceptional service to both customers and the business by reducing human errors that may otherwise occur in taking orders.

Motivation What are your motivations for your project. Why is this project important or interesting? How does it fit in with current IT trends? What would it show to a future employer if you were able to work on this project? At least one paragraph is expected.

The motivation behind the project is to help the family business in the technological side. I look for ideas to improve the shop and find ways to fix problems. Recently we have been struggling at busy times with some customers taking too long to order. As customers take longer the wait time increases for others and there are lines of customers while one staff is busy just taking orders and not able to help others.

There are apps out there, but all comes at a premium fee, and they lack certain features. There are also multiple online food delivery companies, but they all charge hefty fees which forces restaurants to increase food prices to be able to profit from their sales.

Landscape What similar systems or products are available? What competitors are there? What points of difference are there about your project compared to what exist now? At least one paragraph is expected. [[1]](#footnote-1)



[[2]](#footnote-2)

Detailed Description

The project will be a web app linked to the restaurant's main website. Customers can place an order for takeaway from anywhere through the web app but can only order dine-in if they are seated at a table. Ordering from the app helps restaurants a great deal as it will reduce the amount of staff needed to take orders instead, they can use that extra force in the kitchen, this will be especially helpful in busy times. The reduced customer interaction means the restaurant can focus more on the quality of food.

There is a seat reservation function where customers must sign in to book a table, and the booked table will be displayed as Reserved before a certain time from reserved time. When the table is Reserved customers will not be able to place an order from that table unless the person that booked orders from their account.

In the app each table's QR code will be linked to a table in the POS System. Once a customer enters the shop, they will take a seat at the table of their choosing. To view the menu customers will need to scan the QR code at the table or visit the restaurant website then go to order.

Ordering from the table, the customer has access to the full menu and what is being served, can place each item to cart and to place the order they must pay. Once payment is received, the order is then sent to the kitchen printer. Then after the order is ready the chef can send notification to customers that placed the order via Admin App to let them know that their food is ready and they should pick it up from the counter.

Review System - customers can give feedback and rating on their food once they are done, they can choose to leave review as anonymous, this review will go directly to the restaurant which will help them improve. This will help in keeping a good track record of satisfied customers which will work in favour of the restaurant. This will ensure that the restaurant's food and service is always excellent quality.

Loyalty System - customers can place orders as guests or register an account which will track how many visits they have had and will be given loyal customer offers(could be monthly specials or discounts after certain amount of orders etc.). Owners can set up loyalty offers via the admin panel, they can run monthly offers or run offers based on orders where after customers have placed orders a certain amount of times on different occasions they will receive a reward.

The admin/owner features will let them access the admin panel where they can make a variety of changes to the menu - they can add new items, remove items, take an item off for the day, add daily specials. They can also view all orders in detail, they can see the customers details which includes name, number, table number they are seated at, and their order.

## **Skills Required**

There are various skills necessary for the project including design, management, coding, testing and problem-solving skills, these are the soft skills needed.

Will need to learn how to use Github and Trello for collaboration with others working in the project. Github to share codes and merge all the codes and Trello to assign tasks and keep organised.

For technical skills, The project will require general knowledge on Front-end technologies and how to code HTML, CSS, JavaScript, jQuery, Ajax, Bootstrap. This is required to make the front-end of the web app and make it visually appealing.

As the project technology is heavily reliant on JavaScript, it will need extensive knowledge of JavaScript in order to use NodeJS, jQuery etc.

Knowledge of server sided scripts such as Php, python, Ruby on Rails and NodeJS to connect the app with the shop and send data from customers device to restaurant. Will also require knowledge of MongoDB for database management and inputting all the restaurant data in.

Aims

**Outcome**

Mobile phones have become an integral part of our daily life. With seamless internet connectivity, these devices have become a utility with immense possibility. Among several applications users engage in their daily life, with this web application, we aim to provide a very comfortable, secure, and reliable way for people to experience dining in at a restaurant. Not only that, this application will also allow restaurants to manage their menu online, collect orders and feedback from customers in real time. This project aims to provide exceptional service to both customers and the business by reducing human errors that may otherwise occur in taking orders.

Plans and Progress

Roles (MASON)

Project Manager - Amer

1. Lead Developer – Roshan
2. Backend Developer – Simon
3. Software Tester – Joanna
4. Technical Support/Help Desk – Mason
5. Document/Artefact review and management - Motiana

Scopes and Limits

The ultimate aim of our project team is to deliver a product which caters for the needs of all stakeholders within the hospitality sector. From consumer perspective, it is to provide a contactless experience which promotes safe practices and improves consumer sentiment. From hospitality staff perspective, provide a safe work environment where they are not exposed to additional health risks. From business owner’s perspective, provide a sustainable environment which meets the stringent regulatory requirements but also delivers cost saving measures in the wake of declining demand. But due to time and financial constraints, we had to define the scope and limitations of our product. The rollout is going to be in stages and there will be eventual upgrades, first version of our application will have defined limitations in key areas such as;

Cybersecurity – Our application uses third party service providers such as web hosting and cloud-based data storage. Third parties are responsible for the integrity of information stored on their servers, but it can certainly be enhanced by deploying additional cybersecurity measures. SmartOrder® also provides a link to restaurant payment system, this has potential for infiltration, but team has decided that at this stage no additional cybersecurity is warranted. Product integrity will be monitored, and any breaches will be scrutinised, additional cybersecurity measures will be integrated into our systems should there be a need for it in future.

Chatbot

Tools and Technologies

Since the project is a large-scale application, in order to divide the workload of the application amongst all the team members evenly, we decided to break down the whole application stack into multiple manageable modules. Each team member will be given a module to work on and research with regards to jobs they are interested in. The modules will be broken down into the following:

* UI and UX design and development module
* Customer sign in and sign out module - Designing and developing sign in and sign out system
* Restaurant menu holding module - Database of restaurant menu
* Ordering module - Design and developing of an ordering system which will have cart function, payment gateway, and send orders to the restaurant
* Admin panel - Basic admin panel to override all the modules if needed, and will have management features for staff, so that staff at the shop can change easily, will have features such as putting items off the menu for the day, adding specials, changing prices, editing menu, add photos etc.
* Application testing, review, and feedback module - testing for bugs and overall use, and extensive feedback as an end user on the application’s pro’s and con’s for further improvement.
* Branding module - promoting and marketing the app to the end users, so shops can receive orders online, this module will also include deployment of the application.

We will look at each members ideal job and will assign tasks accordingly, we all have different interests which will link up well with the modules, Amer will handle the project management, Roshan and Simon will handle the development of Software, Joanna will handle the testing and Mason will assist Joanna on application testing and also handle support after the deployment of project.

Github will be used for group collaboration, as it is a great platform and packed with features, it has seamless collaboration and version control. Trello is a great way to assign tasks and set a due date for tasks to each member of the group, it can also be used for progress tracking through comments.

To use the service, the customers will need a smartphone that can access the internet. The shop will need a Wi-Fi printer, POS System, and a device that can access the web application admin panel for order management.

For technical skills, knowledge and ideas on different programming languages is required. Knowledge of visual language such as HTML, CSS, JavaScript is needed for front end development and to learn other helpful languages like NodeJS. To make the app work and connect to the server it will require knowledge of server sided languages such as Php, Ruby, Python etc. For databases, we will be using MongoDB because of its flexibility and ease of use, MongoDB will not require extensive knowledge like MySQL. We are planning to use NodeJS as a back-end for the application as this provides flexibility of using JavaScript on both front and back end. Angular and React for front-end. We are looking at researching these functionalities for ease of use.

For Application hosting, we will research on Netlify as they provide a free tier for hosting, easy deployment of the project, as you can just Git push to deploy worldwide, this can link up well with GitHub. As Application hosting is a downside of our group because we do not have knowledge on this, so this will provide simplified hosting.

**Back-end Database Handling (SIMON)**

The back-end database for our application will be handled by MongoDB. MongoDB is an open-source database developed by MongoDB, Inc. It is a non-SQL database language that stores data in JSON and BSON type documents that can vary in structure. Related information is stored together for fast query access through the MongoDB query language. MongoDB uses dynamic schemas, meaning that you can create records without first defining the structure. The structure of documents can be changed simply by adding new fields or deleting existing ones and documents in a collection do not need to have an identical set of fields. This data model provides the ability to represent hierarchical relationships and complex structures easily. MongoDB is also designed with high availability and scalability, which allows for a flexible database system and future increases in usage. (Ref 1. mongodb.com, *The most popular database for modern apps*, 2020)

The most efficient and cost-effective way to implement database management for our application will be as a cloud service. This will reduce our need to manage and service our own infrastructure (servers, network connections, etc.). To access MongoDB’s cloud service, which is known as MongoDB Atlas, the company charge a monthly fee depending on the level of service we require. There are three different packages available:

1.“Shared” for testing and small-scale implementation.

2. “Dedicated” for medium and large-scale implementations.

3. “Dedicated Multi-Region” for large scale implementations across multiple world regions (countries).

For development, testing and initial implementation of our application the minimum service we would need is the “Shared” package which includes shared CPU and RAM processing. With 5GB of storage the monthly fee is US$25. However, once the application is fully operational and is in use across multiple sites database management would need to be scaled up to cope with increased usage. To access additional services we would need to have the “Dedicated” package which includes dedicated CPU and RAM processing and a minimum of 10GB of storage for US$57 a month. However, fees increase depending on the speed of processing and amount of storage required. Ongoing monitoring and consultation with MondoDB staff will be necessary to ensure the correct level of service is maintained. (Ref 2. mongodb.com/pricing, *Pricing*, 2020)

**Web Hosting: (SIMON)**

The development, deployment and hosting of the web site for our application will be handled by Netlify. Netlify is an all-encompassing web content management service, which helps developers to build, test, and deploy websites.

Netlify works by connecting to your GitHub repository to pull your website’s source code. After that it will run a build process to pre-render your website’s pages into static HTML. The resulting pages will then be distributed and deployed across a wider range of content delivery networks. Whenever a user requests access to your website, it will choose the nearest data centre automatically to serve users in the fastest and most efficient way. Because of this process you can test new versions of your website simply by pushing the code to your GitHub repository, Netlify do the rest. (Ref 1. blog.back4app.com *What is Netlify? | Back4App Blog*, 2020)

Netlify offer a number of different service packages, the first three would be of interest to our application. They are:

1. “Starter” A free service for small scale websites and testing.

2. “Pro” For larger scale websites that require greater bandwidth and support.

3. “Business” For full scale business web applications with full support and dedicated Netlify support.

Initial development and testing of our web application would be implemented with the “Starter” package. This provides basic web hosting and rendering which would be sufficient to allow us to test and develop the application before full deployment. Once our web app is fully deployed, we would need to initially upgrade to the “Pro” packaged which costs US$19 per team member, per month. This package offers an increased access bandwidth and many other additional included features such as logon passwords and authentication, and access to technical support. When our web application is up and running, we would have to closely monitor its usage because Netlify have high fees for exceeding the package inclusions. It is much cheaper to move to the “Business” package for US$99 per member, per month than consistently pay for the excess usage charges. As well as an increased user access bandwidth the “Business” package also has unlimited access to many of the services Netlify offers. (Ref 3. netlify.com/pricing/ *Netlify Pricing and Plans*, 2020)

Natural Language Processing & Chatbots (SIMON)

**What are they?**

Chatbots are software programs designed to interact with humans in lieu of interactions with other humans. They are mostly used by companies to supplement online customer service capabilities and direct people to dedicated customer service agents, and as assistance apps on mobile phones and computers (e.g. Siri, Cortana, Google Assistant). Natural Language Processing (NLP) is the name used for software processes which are designed to interpret human communication. Different chatbots will use different types of NLP depending on the environment they are implemented in and the level of technology available to the organisation which created the chatbot. (En.wikipedia.org. *Natural Language Processing*. 2020.)

Because chatbots rely on NLP to communicate with humans, the development of both has gone hand in hand. The first chatbot developed was call ELIZA and was developed primarily to evaluate the Turing Test. This test devised by Alan Turing was to assess a machines intelligence from a person’s ability to determine if they are communicating with another person or a machine. The NLP used in these early model chatbots was basically a database of phrases that were manually matched up to the input from the human. (En.wikipedia.org. *Turing Test*. 2020.)

Since then there have been two major shifts in NLP implementation. The first of these began early in the 1990’s when the increase in computational power made it possible for algorithms to be written which allowed software to “learn” by studying written text. The algorithms then used statistical models to infer further information about the language that they were processing and to formulate responses base on probabilities. This is called Statistical NLP. (En.wikipedia.org. *Natural Language Processing*. 2020.)

Skipping forward to current technology, NLP has progressed to understanding human speech, which is much harder for a computer to do than understanding written text. Peoples speech is very variable, for instance not only are there many different languages spoken, people speak different dialects and with different accents. Speech is also not as structured as text as people can mumble, slur, use slang and can use terms from other languages. (Sas.com. *What Is Natural Language Processing?*. 2020.)

This progress has been made possible by the second shift in NLP implementation, which has also been made possible because of the further increase in computation power. This latest implementation is termed as Neural NLP and is a subset of Artificial Intelligence research. Neural NLP uses Artificial Neural Networks (ANN) to “learn” in a more efficient way. ANN’s are, simply put, a collection of computational segments designed to mimic the structure of animal brains. There are “neurons” interconnected with “synapses” and the individual synapses are strengthened the more they are used (En.wikipedia.org. *Artificial Neural Network*. 2020.). The main processes the ANN’s use to learn are known as Deep Learning and Data Mining. Deep Learning is a process where the ANN’s repeatedly perform set tasks on different sets of data and alter their responses and methods according to the results they receive. This technique has been made possible by the massive amount of data available with the current ubiquitous use of the internet (Marr, B., *What Is Deep Learning AI? A Simple Guide With 8 Practical Examples*. 2020.). Data Mining is the method of analysing large amounts of data using statistical algorithms to extract predictions about other events and processes. This is like what was used with Statistical NLP, but with much larger amounts of data available and more efficient ANN’s to process it. (Sas.com. *What Is Data Mining?*. 2020)

Current chatbot technology is widely used in customer service situations. While they are very efficient at simple tasks, they are generally programmed to transfer the customer to a human agent when more complex situations arise. It is also generally made obvious to the customer by the companies that use the chatbots that they are communicating with a bot (Chi, C., *7 Of The Best AI Chatbots For 2020*. 2020). Although, at the moment there is a rapid increase in the level of Artificial Intelligence being implemented in public fields and Natural Language Processing is a part of this. It is quite feasible that in the near future all our phone and text interactions with companies will exclusively be with chatbots and we may not be able to tell the difference between them and a real person. Also, as technology becomes more complicated tech companies will need to find better user interfaces for their products and chatbots are the best option for this. If you can interact with your device the same way you would another person, it would be the easiest option for the user.

**What are the likely impacts?**

The biggest impact that chatbots will have in society is the improvement in the general public’s access to services and technology. The use of technology such as accessing the internet and mobile phone use has become an essential part of life, and people who are not IT literate are in danger of being left behind. Chatbots can give people easier access to technology by allowing them to simply talk to an interface that can assist them to use a device or navigate websites. They can communicate with the chatbot just like they were talking to another person, so they would not need to learn anything new. People can also get greater access to essential services such as legal help, medical advice, education, news, and community information (Zilkha, G., *What Chatbots Are Doing For Social Good.* 2020). Many of these services are under resourced or expensive so people can wait long periods of time for access or not be able to get access at all. Chatbots are a very cost-effective solution to this problem, because for instance if a person is employed as a customer service assistant to answer phone calls, they can only answer one call at a time. Whereas the chatbot can answer as many calls as there are phone connections. When implemented online the chatbot can also communicate and assist an almost unlimited number of people simultaneously.

Like any technology there are also possible negative impacts of chatbots and NLP as well. For example, chatbots could be used to conduct phishing scams on a large scale. Chatbots could be programmed to communicate with people online through social media platforms, pretending that they are real people. They could then use this interaction to elicit personal details (bank account details, date of birth etc.) from their targets. There is also the impact to employment. Currently most chatbots can only help with basic enquiries, so there has not been a great impact on customer service jobs. However, as NLP improves chatbots will be able to engage in more and more complex interactions with people, so online and phone customer service roles will begin to be supplanted by this technology.

**How will they affect me?**

Currently when I come across a chatbot online I tend to avoid them, because my past interactions have been that the chatbot was not much more useful than a search bar. Simply directing you to another webpage or regurgitating information that is from the website. As chatbots become more sophisticated I am sure they will become the main way that we interact with customer service departments and even our devices, so I will have no choice but to interact with them more and more. Especially if digital assistants become the main way we interact with our devices, everybody will quickly get used to talking and giving instructions verbally to their phone, fridge, oven, media player, TV, etc.

The main negative impacts to my family would be diminished job prospects. Chatbots are most likely to replace entry-level remote customer service roles. These roles are often a way young people can enter the job market and gain experience as they are beginning their career. Without jobs like this available it makes it even harder for young people to enter the job market, and gain experience to move on to other roles.

Testing (Joanna)

## **Software Tester duties and responsibilities[[3]](#footnote-3)**

* analyzing users stories and/use cases/requirements for validity and feasibility
* collaborate closely with other team members and departments
* execute all levels of testing (System, Integration, and Regression)
* Design and develop automation scripts when needed
* Detect and track software defects and inconsistencies
* Provide timely solutions
* Apply quality engineering principals throughout the Agile product lifecycle
* Provide support and documentation
* **ISTQB Certified Tester**: The American Software Testing Qualifications Board (ASTQB) offers the vendor-neutral [ISTQB Certified Tester](http://www.astqb.org/) credential at the Foundation and Expert levels. ASTQB also offers Agile Tester, Advanced Test Analyst, Advanced Security Tester, and Advanced Technical Test Analyst certifications, among others, aimed at mobile app testing, test automation engineers, test managers, and business analysts.
* **Certified Software Tester (CSTE)**: The International Software Certification Board (ISCB) supports eight certifications for software testing, quality assurance and business analysis. In addition to passing a certification exam, the [CSTE certification](https://www.softwarecertifications.org/cste/) requires (1) a bachelor's degree and two years of experience in information services, (2) a two-year degree and four years of experience, or (3) six years of experience. Plus, you must prove you've worked in software testing within the last 18 months. If you don't meet CSTE work experience requirements, consider the Certified Associate in Software Testing ([CAST](http://www.softwarecertifications.org/cast/)) as a starting point.

# Software Testing Roles and Responsibilities

In case of software testing every company defines its own level of hierarchy, roles and responsibilities but on a broader level, if you take a look you will always find the following two levels in a software testing team:  
  
**Test lead/manager: A test lead is responsible for:**

* Defining the testing activities for subordinates – testers or test engineers.
* All responsibilities of test planning.
* To check if the team has all the necessary resources to execute the testing activities.
* To check if testing is going hand in hand with the software development in all phases.
* Prepare the status report of testing activities.
* Required Interactions with customers.
* Updating project manager regularly about the progress of testing activities.

**Test engineers/QA testers/QC testers are responsible for:[[4]](#footnote-4)**

* To read all the documents and understand what needs to be tested.
* Based on the information procured in the above step decide how it is to be tested.
* Inform the test lead about what all resources will be required for software testing.
* Develop test cases and prioritize testing activities.
* Execute all the test case and report defects, define severity and priority for each defect.
* Carry out regression testing every time when changes are made to the code to fix defects.

**Software Tester Role**

A Software tester (software test engineer) should be capable of designing test suites and should have the ability to understand usability issues. Such a tester is expected to have sound knowledge of software test design and test execution methodologies. It is very important for a software tester to have great communication skills so that he can interact with the development team efficiently. The roles and responsibilities for a usability software tester are as follows:

1. A Software Tester is responsible for designing testing scenarios for usability testing.
2. He is responsible for conducting the testing, thereafter analyze the results and then submit his observations to the development team.
3. He may have to interact with the clients to better understand the product requirements or in case the design requires any kind of modifications.
4. Software Testers are often responsible for creating test-product documentation and also has to participate in testing related walk through.

Timeframe (Table)

Risks[[5]](#footnote-5)

1. Inaccurate Estimation – Cost, timeframe
2. Scope Variation
3. End-user Engagement
4. Stakeholder Expectations
5. Poor Quality Code
6. Poor Productivity
7. Inadequate Risk Management
8. Low Stakeholder Engagement
9. Inadequate Human Resources
10. Lack of Ownership

Group processes and communication

Skills and jobs (15% - MASON)

**Roles**

It is sometimes useful to define roles for particular participants, such as Lead Developer, or Technical Designer, or User Interface Designer. It is also possible that roles are changed from week to week, depending on what needs to be done next. Have you defined any specific roles for your project? If so, describe and justify these. If not, describe your process and justify why there are no specific roles.

**Skills and Jobs**

Let us suppose that a group of venture capitalists hears about your project, and is so impressed that they wish to fund you to develop it further for say six months. You will be the manager of a team of 4 people to deliver the project outcomes. What position description would be appropriate? Write 4 position descriptions for people that you would employ to take your project to the next phase. You will need to consider what skills are appropriate, which may include specific technical expertise, team work experience, leadership and management techniques, and innovative thinking.

1. Lead Developer – Roshan
2. Backend Developer – Simon
3. Software Tester – Jo
4. Technical Support/Help Desk – Mason

Lead Developer

A lead developer can provide general design guidance and can also help aid the planning of the product development and can provide feedback to the marketing or sales teams. The lead developer can discuss the CEO managers to make sure that the development team and technologies are selected and are aligned with the business goals of the company. The lead Developer also help by researches new technologies for the team, can help give technical direction for the team. As a lead developer you will need to have great communication skills, outstanding understanding of the product, understanding the business problem of the software. (Reff 1). As a lead developer another one of your main goals is to boost the skills of your team members, this starts right from recruitment and continues to progress with new developers, set some best practices for development for coding, comments or documentation, reduce time needed for production launched by improving process. (Reff 1.2, Reff 1.3). What does it take to be a lead developer you are required to have at least three years of experience in technologies as visual basic, NET, PHP, C#/C++, Microsoft and NET framework development, you will also need to have a firm background in applications programming, you’ll need to have a bachelor’s degree in computer science and a couple of years of proven success as a team leader (Reff 1.4).

Backend Developer

A backend Developer usually responsible for being involved and participate in overall application lifecycle, the main focus of a backend developer is to focus on coding and debugging. The backend developer can define and communicate technical and design requirements. Backend developer can help with provide training and support other team members. While backend developer can learn new technologies and help troubleshoot and debug applications, also keep up to date with current practices. Backend developer can build high quality reusable code that can be used in the future, can also manage technologies to enhance application and follow the new emerging technologies. (Reff 2). The role of a backend developer that they can work front end developers and provide algorithms for user web application element. Backend developers can create functional web applications and increasing their response time and efficiency. (Reff 2.2). To succeed as a backend developer, you should focus on building a high quality and a more efficient program and creating flawless product for the end user experience. Back end developer requirements are that you have a bachelor’s degree in computer programming and computer science, understanding specific languages like Java, PHP and or Python. as a backend developer you will need to have a solid understanding of web development and programming techniques and tools, the ability to work either independent or in a group and to be willing to be seated for over extended periods of hours. (Reff 2.3).

Software Tester

A software tester is to analysis software and systems to reduce the risk and prevent any issues. Software testers are involved in quality assurance stage of a software development and deployment and need to do a manual test to unsure the software that is created by the developers to fit the purpose of any bugs or issues that are removed within the product before it gets deployed to everyday customer. Your role is to complete the creation of the software systems, technical products including defence and healthcare, you will need to familiar or to become familiar using programming and using coding languages. As a software tester your skills you will need to have are, strong verbal and writing communication skills and the ability to cooperate with variety of stakeholders, problem solving skills, working under pressure, focus on detail, expectance technical skills. (Reff 3) To be able to work in either a team or individually, organisational skill and to be able to work towards tight deadlines and need to have a passion for working with technology. (Reff 3.2). Software tester responsibilities are to review software requirements and prepare for testing structure, being able to carry through test on software usability, examine test results of database impacts, errors or bugs and usability. Software tester requirements, you are required to have a bachelor’s degree in computer science, in date knowledge of software test design and testing methodologies, up and running knowledge of test techniques and effective with various software programs, marvellous communication and critical thinking skills and a strong organizational skill and an oriented mindset. (Reff 3.4).

Technical Support / Help Desk

A technical support help desk can help to identify hardware and software solutions, they can also install and configure hardware and software, troubleshooting technical issues, diagnosing and fixing faults and resolving network issues. As technical support help desk you will be required to have degree in computer science or an information technology certification in Microsoft or Linux, you will need experience with remote desktop application and help desk software and to have excellent interpersonal skills. (Reff 4). As a Technical support / help desk you are to have the required skill to be able to, have the ability to learn new software and hardware, be able to listen, analysis technical issues, application support, case notes, data migration and data setting, detail oriented, diagnosing software and hardware, error log, explaining clearly about technical information, identify process improvement, mobile device, networks, patience, web application and web support and troubleshooting. (Reff 4.1). A technical support / help desk responsibility is to provide assistance and support for any issues for computers software and hardware. The help desk can write up training manuals for the users to help them if they get stuck, the technical support help desk help maintain computer systems daily. (Reff 4.2). As a technical support help desk you are required to have degree in either computer science, computing or engineering. (Reff 4.3)

Feedback (SparkPlus)

Group (Reflection)

## 

**Group Reflection**

**Joanna Jane S3873742**

**What went well**

 I believe most aspects of the group assignment went quite smoothly. I liked that the communication style between each member was open, respectful, and relatively prompt, both via chat and via team meetings. At times it actually felt like I was chatting with colleagues, rather than fellow students, which was a great glimpse in to what it might be like to work on a real life I.T project. I was also impressed that Amer stepped up to lead the meetings and help ensure everyone was on the same page. Group members were on a similar level in terms of motivation and willingness to get the assignment done as quickly as possible, and it was great to see team members volunteering to help others out where needed.

**What could be improved**

It was a little disconcerting in the early stages in that there seemed to be a lack of timely communication, though any feelings of unease were put to rest after we held our first team meeting and we were able to put faces to names, so to speak. Earlier agreement on the methods of communication would have helped avoid this situation, particularly as I found myself having to use 2-3 different methods to contact people. Some group members also had technical difficulties using Github which delayed profiles from assignment 1 being uploaded, though I imagine this will be less of an issue now that we have all had some experience in using the system.

**At least one thing that was surprising**

Even though we were essentially six strangers, there was a surprisingly good level of compatibility in the group, and an interesting blend of personality types e.g. some extraverted and others introverted. I did not expect that the meetings would flow so smoothly, and despite being greatly separated by distance and time differences, it felt like there was no real disadvantage to doing the assignment together remotely as opposed to in person. I am pleased to say it has given me greater confidence in the idea of doing an entire bachelor’s degree online.

**At least one thing that you have learned about groups**

 This experience has taught me that communication is key and agreeing to one or two preferred methods of contact early on in the project helps ensure time is used wisely and that important information does not get missed. I have also learnt it is always safest to never assume, and that it never hurts to ask something twice than to not ask at all. I understand that our schedules are all entirely different, and some compromise on my part will always be needed to ensure everything gets done in the required time frame, but that this will help ensure a successfully completed project, as well as utmost respect for my fellow team members.

**How log of activity on GitHub reflects on group work**

We used a range of tools for communicating and contributing our work and ideas, including Teams chat, Canvas, Discord, and email. Therefore, I feel the log of activity on GitHub alone really reflects just a mere portion of the amount of work we had all put in to getting the project completed. My feeling is that GitHub would certainly be useful in work environments such as Software Development where each person would work individually and contribute their changes to a live work in progress. Our work style however was really collaborative and given the differences in levels of experience and knowledge it was far more appropriate for us to also use other tools such as Chat and Discord. Combined, the history and trails of information in each of these tools overall capture our group work very well.

**Motiana Tusa S3873180**

**What went well?**

Once our group was established, we arranged our first meeting where we had the opportunity meeting each other face to face and discussed the contents of our Assignment. We collaborated well, setting our goals with timeframes, and it was really great to work with people that were open, honest, and willing to contribute. Help was always at hand if anyone has any issues with the completion of their part of our assessment.

**What could be improve?**

The uncertainty of establishing a group from the start was hard but once sorted, it all went smooth and well.

**At least one thing that was surprising?**

The mutual understanding, motivation, dedication, the responses, and collective consciousness from each member was far exceeded expectation and it felt like we knew each other long before. We got along so well with high respect for each other. I think that what makes it easier for everyone to take ownership without hesitation.

**At least one thing that you have learned about groups.**

1. That everyone is unique, and we are together for the same purposes. Valuing each other regardless of age, background, knowledge, skills, experience etc.
2. Sorting out my GitHub website issue with a group member help.

**How well you think your GitHub log of activity reflects your group's work on assignment.**

We knew from the start the importance of having records of all our group interactions such as discussions, meetings and meeting minutes recorded, written, and be made available on our Microsoft Team discussions logs and GitHub as well. This is very useful for a quick reference and/or group reflection later. Also grouping the contents of our assignment together makes the lay out in GitHub clear, neater, and easy to access.

**Simon McKindley S9406133**

**What went well?**

Once the group was established, we worked together well. We assigned tasks, set targets, and scheduled meetings collaboratively. If someone needed help, help was given. Every group member has contributed and offered to do work. Considering we did not know each other at all before forming this group, the whole process has run smoothly. I have enjoyed working with everyone in this group and all their work is greatly appreciated by me.

**What could be improved?**

Initially we took a bit of time to get going and find our feet. This was overcome quite quickly though, once a rapport was established within the group.

**Surprising things**

What was surprising was that people from diverse backgrounds, life stages, experience and work schedules can come together and work harmoniously on a project. This doesn’t always happen in a workplace environment.

**What did I learn about groups?**

Even if people are coming from different situations in life, if we have a common goal and motivation to achieve that goal, it can be quite easy for everybody to work together and help each other.

**How well you think your GitHub log of activity reflects your group's work on assignment.**

Group repository on Github does reflect active group collaboration because all of us have pushed and pulled documentation using the repository. We also have used Canvas files, emailed and MS Teams to upload and exchange documentation.

**Mason Brown S3876704**

**What went well?**

I think what went well as our group that we all contributed to the group assignment, we were able to get everything done before the due date. There were no arguments in the group which was a plus for our group. Everyone was assigned into doing something which was a really good idea. Everyone did what they were meant to do.

**What could be improved?**

What I think that should improve next time is that we need to be more communicated with each other, so we know what everyone in the group knows what everyone is doing, and should be reminded what to do every few days or so and what other people are doing too.

**At least one thing that was surprising.**

One thing that was surprising that no one in the group was the leadership in the group assignment, well I was not sure who took the leadership.

**At least one thing that you have learned about groups.**

The one thing I have learned about working in a team or a group is that you should work on the project the sooner that better instead of leaving it on a time crunch.

**How well you think your GitHub log of activity reflects your group's work on assignment.**

Github repository log reflects the group work because there are active contributions from all of us. Everyone has contributed by uploading and downloading files from our group repository.

**Amer Muhammad S3728065**

**What went well**

Group formation was relatively easy, members were very attentive and cooperative in nature. Team tasks were picked by members voluntary and individual tasks were easy to delegate. Almost all required work was completed on time.

**What could be improved**

Group came together in late September and by the time tasks were allocated, members were left to do most of the work within 7-10 days. Group formation could have taken place early and that would have allowed more time for the completion of tasks as well as better review and edits before submission.

**At least one thing that was surprising**

It is almost inevitable that a group comes together for the completion of a project and there is bound to be a conflict or a difficult personality or two, not with our group. Throughout our time together I have not heard a single word with any negative connotations nor has there been any conflict.

**At least one thing that you have learned about groups**

Our group has wonderful attributes such as cultural diversity, varying levels of age and educational backgrounds. Creating a collaborative environment which was conducive to creativity, the ease with which difficult messages were communicated, adaptations to different personalities where potential barriers became opportunities to know each member at a personal level, these are some of the key takeaways from my interactions with this amazing group of people.

**How log of activity on GitHub reflects on group work**

Log of activity on GitHub alone may not be an accurate reflection on the contribution of all members. I created GitHub group repository but my lack of knowledge about accessibility issues restricted some members in their attempts to pull/push documents in the early stages of our collaboration. More accurate reflection will be to consider our activities across all platforms we have utilised such as Canvas, MS Teams including meeting minutes and GitHub.

**Roshan Khadka S3876349**

**What went well?**

Once we got started, every member performed their assigned task very well. We were all able to communicate very well and was able to assign task, meet up to keep everyone updated on what we have done and what we were up to. The communication was great once we got the team started and organized our first meeting.

**What could be improved?**

The only problem I found was at the start where the only communications that was done was by email, the response time was slow, and was hard to get the team together but this was all fixed once we organized a Discord server for our first communication, then started meeting on Teams.

**At least one thing that was surprising.**

It was surprising how well the group functioned and excellent effort everyone put in. We are all at different locations, throughout Australia from different backgrounds and experience but we were able communicate well with someone we have never spoken too or worked with, felt as if we have done it before.

**At least one thing that you have learned about groups.**

I have learnt the importance of communication in projects, good communication will lead to project being completed in time as well as the project being up to standard and organization is key to completing a task in time, setting up date and time for online meeting beforehand and organizing what to talk about in meetings before hand will keep the project in flow, as well as keep everyone updated on the project stage.

**How log of activity on GitHub reflects on group work**

GitHub log does not really reflect the group work, as some members had trouble when it came to collaborating on GitHub. As we are all new to GitHub, it's pretty much learn as we do things right now and we are helping each other in the process.

**Group Reflection**

**What went well**

Group formation was relatively straight forward, and group dynamics were established very early on when members shared their experiences and backgrounds openly. We became aware that there was wealth of knowledge and expertise within our group which could be harnessed to successfully complete our team project. Selecting team leader was a very smooth process and there were no conflicting personalities or clashing egos. Once assessment requirements were discussed, individual and team tasks were identified, members picked task voluntarily. A very collaborative, cohesive environment which proved to be conducive towards achieving our shared objectives through effective teamwork.

**What could be improved**

Group formation took place with less than 3 weeks to the date of submission. Notwithstanding the difficult circumstances and uncertainty due to COVID pandemic, our first few days together were not very productive. Tentative communication, uncertainty in terms of how to approach the project and constant overflow of information through announcements and discussion board activities made it a very challenging start to our collaboration. Earlier group formation would have allowed members additional time to be more thorough with their work and allowed others to review and suggest improvements. Time constraints also led to some oversight in task delegations such as Group Reflections and Industry Data questions not being answered in a timely manner.

**At least one thing that was surprising**

Despite a late start and challenges early on, our group has managed to perform well and adhered to internal and external deadlines. This was made possible due to similar personality traits of the members. Cooperation, collaboration, consideration, and willingness to compromise for the sake of others were the key attributes of our group. Extremely pleasant working environment which has been very conducive to producing results in a timely and efficient manner.

**At least one thing that you have learned about groups**

Our group is very diverse in terms of cultural and social diversity. Diverse environment can be very vibrant and productive because people from different backgrounds bring their own problem-solving skills to the fore. Diversity can also pose a challenge in terms of communicating within a group where members have varying levels of education, vastly different work experiences and future plans vary a great deal as well. One of the key takeaways for us collectively as a group has been the ability to overcome potential communications barriers. Throughout group formation, task delegation, meetings and completion checks, our group’s ability to effectively communicate with each other and work towards collective objectives has been very successful. This bodes well for us individually and as a group because communication is the most sought-after skill in IT professionals worldwide.

**How log of activity on GitHub reflects on group work**

To ascertain our collective success on group/teamwork, our collaboration across all platforms needs to be taken into consideration. GitHub presented some challenges for us in the beginning in terms of pull/push requests, members having difficulty in running GitHub desktop application, having right access levels and collaboration invitations across the group. We overcame all those issues but for the sake of better time management and our successful collaboration, Our group has used Canvas Discussion forums, MS Teams, Meetings, RMIT emails and Github for sharing and exchanging ideas as well as uploading and updating documents. There is a trail of all these documents gradually and ultimately uploaded to our group repository. All these documents were updated to a final draft version which forms the core of our project report.

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