COSC2196

Introduction to Information Technology

Assessment 3: Our IT Project

Team 24

Group Website

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 24 Profile

About us

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 complement 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. Motiana's roadmap towards her career in IT includes Scrum Master certification and eventually a degree in IT.

Joanna Jane

S3873742

https://s3873742.github.io/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. Jo intends to obtain her ideal job by continuing further studies in IT as well as seeking professional certifications in aeras of web development and software testing.

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. Mason's ideal job is to work as a field technician and offer technical support. He intends to acquire the necessary technical skills by pursuing a degree in IT at RMIT.

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. Roshan is very passionate about web development and is very keen to pursue his ideal job as a full stack developer. His future plans are inspired by Traversy Media roadmap for Web Development which identifies all necessary skills required to become a full stack developer.

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. Simon's roadmap to a successful career in IT includes a degree in IT and either Electrical or Mechanical engineering,

he also intends to stay updated with latest trends in the industry by pursuing professional development courses.

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.

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

Github repository was set up for the group. All members were invited as collaborators using the access manager. Members were asked to fork the repository as well, follow ups were done with each member to ensure there are no accessibility issues and there is a minimum level of competency to perform basic pull and push functions. Members were also encouraged to set up Github desktop to allow for easy access to the documents and artifacts. Within the repository, different folders were set up to track and access documentation specific to various assessment components and the GitHub website.

Group Website: https://s3728065.github.io/A2-24/

Group Repository: https://github.com/s3728065/A2-24

The audit trail on the Git repository is an accurate reflection on our group's work. All members have been accessing it to push and pull documents. Edits are made and documents are constantly updated. In addition to GitHub repository, same documents are also uploaded on Canvas under files section. It offers a better document review and access from mobile devices.

Project Description

Overview

Topic

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

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

Our contactless ordering application is part of an ecosystem which has thrived since COVID pandemic. Contactless ordering is not a new concept and there are many products in the market which cater for this concept as illustrated below. Our product SmartOrder® has an edge over its competitors because it offers a complete contactless experience by incorporating and integrating bookings, tableside ordering, link to secure payments and a chatbot which offers information about dishes which may contain food allergens as well as caters for particular preferences such as Kosher and halal foods. The philosophy and motivation behind the development of SmartOrder® is to offer contactless ordering from social distancing perspective but also as a tool to reduce costs for hospitality industry. SmartOrder® does not have subscription fee, it has no ongoing fee for business owners, it charges a small transaction fee of 0.9% which is paid by the restaurant owner and not by customers.

1

---

[1] https://ritual.co/

2
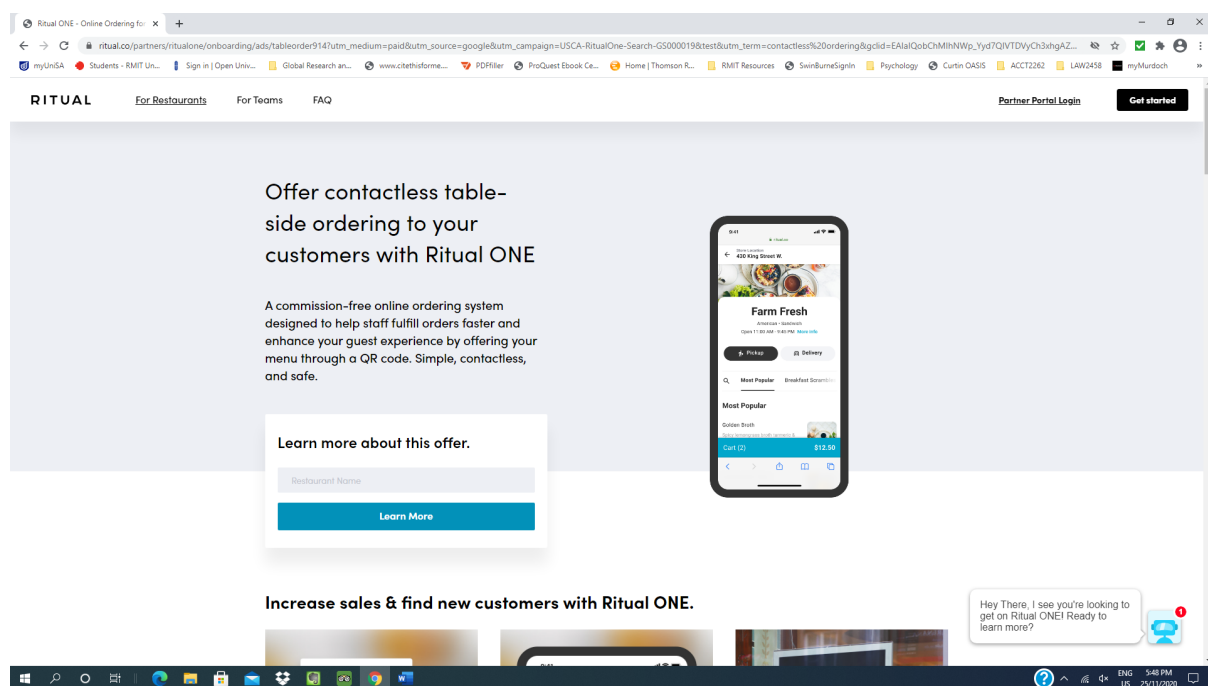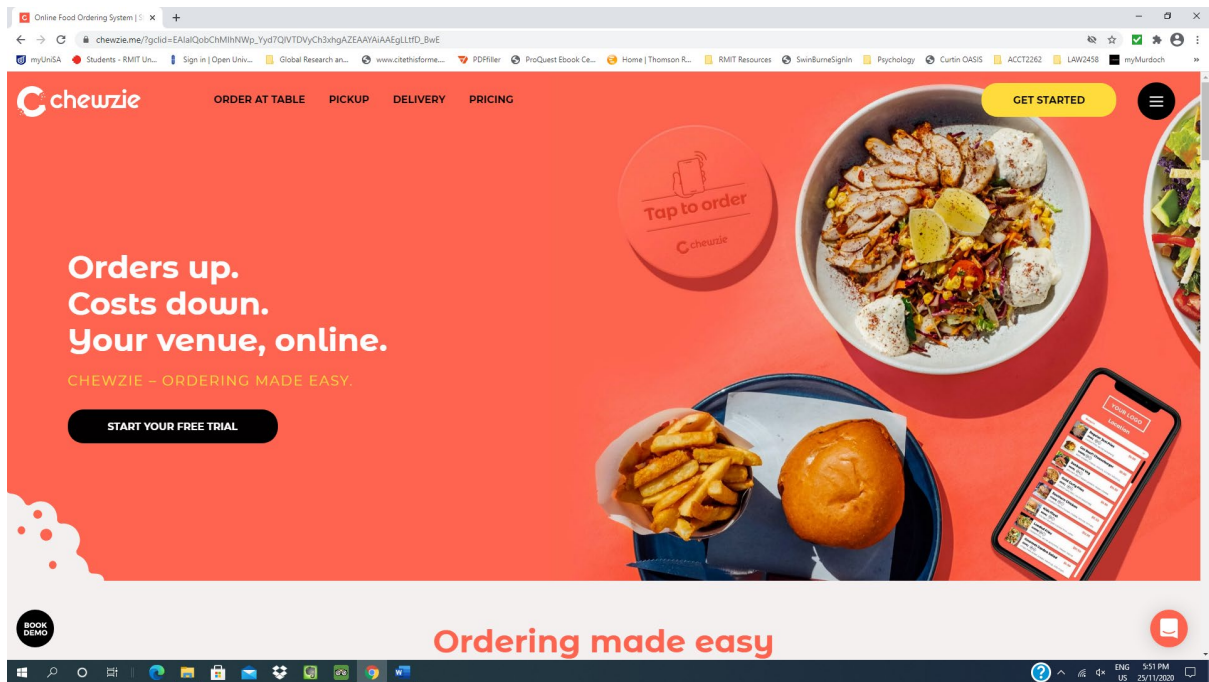
Detailed Description

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.

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

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, but 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

Team 24 identified the specific needs in terms of software and hardware required for the completion of this project within the required timeframe. After reviewing the skillset of each member, specific roles were created which included,

Roles

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 – What a chatbot can do is only limited by the imagination of the project team deploying it. At the beginning of our project, team 24 envisaged a chatbot with inbuilt capabilities to answer not only basic customer enquiries but also offer them advice on dishes containing food allergens and help customers with specific preferences such as halal, kosher and vegan meals. In the end, due to time constraints team decided to opt for a third party bot with minimal capability but one which will answer simple queries and direct customers to service desk if required.

Tools and Technologies

Hardware Requirements

User: smart phone

Client: iPad/POS System, requires internet connection on premises

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.

STACK CHOICE

MEAN Stack

MEAN Stack stands for:
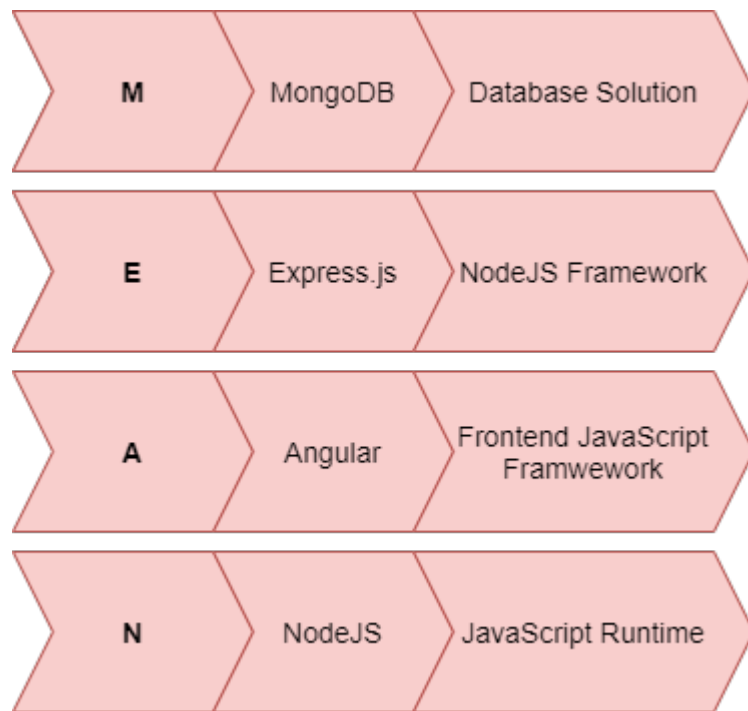
MEAN stack is collection of JavaScript technologies used to develop web applications. From client to server and server to database, everything is based on JavaScript. MEAN stack is used to build quick and robust web applications.

Why MEAN stack?

- 1 language handles everything from frontend to backend
- Flexible Backend API – Flexible and reusable API which can be used for web apps or application
- Powerful Frontend – mobile app like experience, updates instantly, great user experience
- Separation of Concerns – separate frontend and backend, makes it easier to work in a team.
- High performance Technologies – Easy to use to build web applications

MONGO

What is MongoDB?

MongoDB is a free and open source database. MongoDB is a NoSQL database; it has no fixed schema which means that you can create records without first defining the structure. Unlike MySQL. Data is stored in JSON or BSON format unlike MySQL where data is stored in a tabular format. Adding new data to MongoDB is simpler as it does not require updating the whole table. With MongoDB you can develop an entire application using only JavaScript.

NoSQL Database Model

NoSQL is non-relational database; they do not use tables or columns. A flexible database used for big data and real-time web applications. NoSQL handles unstructured data where data doesn't have to relate and you don't have to predefine data compared to relational data, it is cheaper to manage, and scales better, as the database gets bigger you can just add more nodes compared to upgrading a whole data infrastructure. NoSQL does not have steep learning curve.

Express

What is Express.js?

Express.js is a free and open source framework for NodeJS meaning most of the code is already written, you can implement what is available to the project. Used to build web applications quick and easily. Express.js only requires the knowledge of JavaScript, make it an easy to learn framework once you have learnt JavaScript. You can build applications and API or use available API. Expreess.js is:

- Model, View and Controller framework for NodeJS application
- Simple and lightweight

- Easy to configure and customise because it provides flexibility

- Great for creating API

  Express packages we can use:

- Express Rate Limit – Middleware used for basic rate limiting and security

- PassportJS – Authentication and Authorisation

- Strapi – Content management

Why Express.js?

- Easy to learn and it is a widely used language, makes find information on it a simple task.

- Build different kinds of web applications in a short period of time.

- Most codes are already written.

- Backend toolkit that only requires only knowledge of JavaScript.

Angular

Angular is a JavaScript framework used to build single page applications using HTML and JavaScript. Angular will be used to create the front-end of the website in conjunction with Bootstrap, Angular requires knowledge of JavaScript and TypeScript (helpful but not required). Angular is used for future scalability, and ease of use, it includes features such as:

- Organised front-end structure

- Very powerful and packed with features

- It is an All-in-one solution, it includes routing, HTTP, RxJS and more.

- You can build powerful single page application

  With Angular we can create elements that is constantly used into a component, which makes it so we don't have to keep coding the same thing over and over again, Angular can be used to create headers, footers, special banner etc.

Angular also features Terminal, where you can components easily, it auto generates all files required to create a new component. Angular Bootstrap to be used to create the front-end UI/UX elements.

Angular Bootstrap Module

Bootstrap will used to create the User Interface; bootstrap is a front-end framework that can be used to create responsive websites and web apps. It is free to use but packed with HTML and CSS templates and features to make creating user interface easy. It simplifies the project, saving time when creating user interface. Bootstrap contains documentation of all the features, making it easy to create the front-end of the website by simply following the documentation.

Bootstrap can be used without any experience in it as everything is readily available – although experience in HTML and CSS is highly recommended to make changes that is desired to fit the style on the company. We can use Bootstrap to create all the user interfaces in the web app this includes:

For Customers:

- Sign In/Sign up page

- Profile page of customers that are signed up

- Ordering page

- Shopping carts page

- Menu page

- Ratings page

For Restaurants:

- Sign in page for admins

- Admin portal – To manage menus - categories, items, payment system, update store hours

- Order History page

- Payment history page

- Ratings & review

This can all be created using Bootstrap, we can follow the documentations to create each of the following. As bootstrap is a library of features it will have prebuilt forms which can be used to create sign in/sign up page for both admins and customers. In the documentation, the navigation bar, image gallery, tables are all included to create all other pages.

NodeJS

What is NodeJS

NodeJS is a JavaScript runtime, instead of JavaScript running on browser environment, it runs on your machine as a service or a runtime, which allows use JavaScript as a server sided language like Php, python etc., essentially allows us to run JavaScript to code on the server. NodeJS requires knowledge of JavaScript Fundamentals.

Why use NodeJS?

- Fast, efficient, and highly scalable
- Event driven, non-blocking I/O makes it very fast and efficient
- Popular in the industry
- Same language on front-end and back-end uses JavaScript

Great for real time services such as chat, shopping carts etc.

Web Hosting:

The deployment and hosting of the web site for our application will be handled by Heroku. Heroku is a cloud-based application hosting service which allows developers to run their application across a pre-set number of virtual servers known as "Dynos". Dynos are Heroku's version of containerisation, which is a type of software virtualisation system that allows multiple applications to share the same physical hardware (Rouse, 2014).

Heroku offers an efficient and complete hosting service which is cost-effective and dynamic. Some of the features their service includes are, the management of releases by rolling out your application to different environments, ensuring your application automatically recovers from server failures, and handling load balancing across many application instances, allowing you to instantly scale your application (What is Heroku | Heroku, 2020).

Heroku supports all the most common application programming languages such as Ruby, Node.js, Python, Java, Go, PHP, and Scala. Deployment through GitHub is also available. This provides easy deployment of existing applications on Heroku with minimum modifications needed (What is Heroku | Heroku, 2020).

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

1. "Free/Hobby" A service for small scale applications, personal projects and testing.

2. "Production" For larger scale business-focused applications that require greater bandwidth and support.

3. "Advanced" For mission-critical business web applications that require high availability and can handle a high volume of traffic.

Within each of these packages we can choose different levels services such as RAM, storage and connections. Initial development and testing of our web application would be implemented with the "Hobby" package. This provides basic application hosting and includes 512MB of RAM 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 "Production" package which starts at US$25 per month. This package offers an increased access bandwidth and many other additional included features. The amount of RAM assigned to your app is variable but obviously has a greater cost when more RAM is used. This package would be sufficient for most of our usage. It would only be when we reached a high level of

customer requests that we would need to move to the next package. With this in mind, Heroku's service is scalable, which means that we can easily increase or decrease the level of service that we require. This will make it necessary for us to regularly monitor our applications level of usage and determine if changes to our package are required. The "Advanced" package is a lot more expensive, starting at US$250 a month, but it would always be necessary to upgrade to the higher service when demand increases because slow application response times will negatively impact the customers experience (Pricing | Heroku, 2020).

Back-end Database Handling:

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 (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 (Pricing, 2020).

Natural Language Processing & Chatbots

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.

Testing

Testing throughout the developmental stages of a new app or program is crucial to ensuring that the app not only runs as intended, but that it is meeting and preferably exceeding the needs and wants of its target market.

The testing strategy for the SmartOrder® app will involve a combination of formal and informal testing methods including unit testing, integration testing, system testing, exploratory testing and user feedback testing. Given the novelty of the app however, greater emphasis will be placed on exploratory and user feedback testing, as these are inherently the best methods for determining user friendliness and intuitiveness for users who have never used the app before. It is expected and hoped that improvements in features and functionality will be implemented as a result of feature requests and constructive criticism that arises throughout the testing process.

As our developers begin to create the product, testing of the absolute fundamentals will be performed in a process called unit testing. In programming, a 'unit' is the smallest testable part of a piece of software, and so unit testing is the act of running a block of code e.g a function, to ensure it works correctly (Unit Testing – Software Testing Fundamentals, 2020). Unit testing requires programming knowledge and is done usually at the time of writing the code, so the team's developers Roshan and Simon will be responsible for performing this. Defects or bugs in the code will be corrected as they are found, negating any requirement for these to be formally documented or tracked.

Once the units of code have been compiled, integration testing can be performed by the team's test analyst Joanna and support analyst Mason. Integration testing involves combining the individual components (units) of the software and testing them as a group. This helps identify any faults which may only become apparent when the components are made to interact with one another (Integration Testing – Software Testing Fundamentals, 2020).

In the context of our app, integration testing will consist of testing combined components which have direct relationships; for example, submitting an order and processing the credit card payment.

Once enough components of the app have been created that sequences of actions can be performed on a mocked up interface, some in-house system testing can occur. A checklist of items (Fig 1.) shall be used to ensure each component does get tested, and the same features will be tested at various intervals throughout the project's lifetime to account for any inadvertent bugs that may appear due to changes elsewhere in the code. It's at this point we can also draw upon the expertise of our industry based testers (Roshan's family), to test the components and begin to provide feedback to the team in a collaborative fashion. Having this occur early on in the project is invaluable as industry experts will have insight on a multitude of variables specific to the restaurant environment and likely think of unique scenarios developers and testers simply could not. It is also far easier to make changes to the app earlier on and avoid the possibility of having to sacrifice many hours of work later on down the track when it's discovered something needed to work differently.

When SmartOrder® has enough functionality for it to become a prototype, a broader range of testers will be sought to test the app in an explorative way. Explorative testing allows testers to have free reign of the app, and in no set order, explore and try whichever buttons and functions of the app they choose (Parmar, 2020). One of the key aims for the team is to create an app which any customer can easily understand and be able to use without assistance or prompts, and explorative testing is ideal in that it replicates this style of self learning behaviour.

Other factors relating to external variables will also need to be tested, including OS of the device that is being used, and performance of the system during heavy use periods (20+ concurrent users).

Fig 1. Testing Checklist

Task	Successful? Y or N	If not successful, why? Other comments/feedback
Patron's app		
Book a table		
Scan QR code		
Add items to order		
Remove items from order		
Make changes to items in order (e.g 2 serves instead of 1)		
Place order and pay		
Cancel order/flag waitstaff		
Apply reward (applicable after 10th order)		
Receive push notification from kitchen to collect food		
Write a review		
Restaurant staff/Owner's portal		
Order correctly prints on kitchen docket printer. Includes any custom notes/additions, allergies.		
View reservations		

View customer's orders		
Make amendments to orders – change size, add an allergy note, etc.		
Admin are able to: Add items to menu Remove items from menu Temporarily make items unavailable Make item available again Add a special Remove a special		

Our test users will preferably need to be a diverse group of people who represent the typical patronage in a restaurant setting, as well as those who are experienced in various roles at restaurants, including wait staff, kitchen staff, floor managers and business owners. Roshan's inspiration for the app drew from a desire to help his family's own restaurant, and so staff from the restaurant will be called upon in the early stages of testing. One to two waitstaff, a cook, and the business owner shall be sufficient to begin with. As testing increases in the later stages of the app's development, a pool of roughly 15-20 testers of various ages and levels of technological savviness would be ideal, particularly to help replicate scenarios of heavy load/traffic on the system. The app could be offered as a free trial in the restaurant one evening, and/or beta testers could be sought via a company such as Ubertesters.

While it can never be known if a program is entirely bug free, some valid markers to indicate successful test phase completion would be an app which has had all known bugs corrected, and a consensus among the majority of users that the app would greatly benefit their business and workflow.

Timeframe (Table)

Member	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Motiana	Assessment review	Task allocation GitHub CLI Collaboration for developers	Software development workflow using Github	Task reassignment Document/ artifact management and review	Review Team Profile, Tools, Group Reflection	Review Skills and Jobs and Project Plan and Description	Review final draft and overall report, presentation
Joanna	Assessment review	Task allocation Software testing	Consultation with the development team, finalise the software requirements	Defining testing parameters for user interface, software element and quality aspects from user perspective	Assisting the development team in conducting unit testing	Integration testing of combined units	Comprehensive testing of all the tasks web application is designed to do. i.e. QR scanning, access to customer/client login portals,

							receive push notifications etc
Simon	Assessment review	Needs analysis of specific back-end development requirements	Detailed report on Database handling with MongoDB, selecting the appropriate package according to project requirements		Detailed consultations with lead developer, evaluating the integration issues, recommend changes is necessary	Detailed report on integrating a Chatbot but mainly from theoretical and functionality purposes, aim is to conceptualise the eventual end product	Review of the working prototype, testing the integration of various components from development perspective.
Roshan	Assessment review	Task allocation Project Plan, description, Front-end development	Detailed project plan, hardware, and software requirements. Front end development, Angular	Webhosting using Netlify, predominantly for static content management	Preparing a working prototype highlighting basic functionality	Webhosting using Heroku. Working prototype and other content require a more dynamic	Testing prototype, preparing group website.

			Bootstrap for user interface, customer/client login/dashboard	and website development		environment. Netlify no longer viable.	
Mason	Assessment review	Task allocation Skills and Jobs	Consultation with project manager to create specific roles	Report on the role of project manager, and the development team	Report on the role of software tester	Report on the role of technical support	Review the final submission and assess whether the described roles in Skills and Jobs match the tasks performed by the project team
Amer	Assessment review	Task allocation Project manager	Create specific roles within the team, delegate tasks. Define project parameters,	Check progress, re-assignment of tasks in case of extenuating circumstances. Check workloads	Start preparing final report, review feedback from A2 and make changes to components to be carried	Update project documents and artifacts to the final report, review progress, review deadlines.	Prepare final report, seek feedback from team members, make changes. Final check on the completed

			describe internal deadlines		over to A3. Check with team if anyone wishes to make changes to their profiles or ideal jobs	Prepare final MS Teams meeting report.	items, final review of deadline, seek extension if required. Submit final report and MS Teams pdf.

Additional Notes: Motiana's role was changed from GitHub CLI collaboration for the development team to overseeing the documents and project artifacts. This change was made to cater for the change in her personal circumstances as well project team identifying the need for one person to review and suggest edits given the scale of this project.

Development team decided to change webhosting from Netlify to Heroku in the later phase of the project. This change was deemed necessary because as project evolved, Netlify could no longer support more dynamic features of our application. Plans were changed and tasks were reassigned within our development team.

Risks

Team 24 has identified number of risk factors which could impact our IT project (Robertson, 2020). These include.

1. Inaccurate Estimation – Cost overruns and missed deadlines are the two most common risks in project monument. This usually occurs due to inexperienced project manager or in smaller team structures, unforeseen extenuating circumstances leads to missed deadlines.

2. Scope Variation – Scope variation could arise from changing market conditions, what looked like a viable marketable product in the beginning may no longer be competitive due to the launch of other products.

3. End-user Engagement – Extensive engagement with the stakeholders is required, most successful projects are carried out from consumer perspective, failure to do so can be costly.

4. Stakeholder Expectations – A significant change in stakeholder expectations can derail a project. This can happen because either stakeholders see alternative applications which seem more attractive or that they have unrealistic expectations which cannot be met within the defined project parameters, scope and limitations.

5. Poor Quality Code – Coding errors can lead to poor functionality of the application and it can cause significant damage to the consumer confidence in the product.

6. Inadequate Risk Management – All risk factors need to be evaluated in the planning phase of the project, ideally risk matrix should be included in project management and a risk mitigation strategy should be implemented. Failure to do this can have catastrophic impact on a project.

7. Inadequate Human Resources – Inadequate human resources affect small teams carrying out big projects. Underperformance due to extenuating circumstances or lack of motivation can add significant workload to other team members. Additional human resources cannot be deployed and consequently projects do suffer in both qualitative and quantitative measures.

8. Lack of Ownership – Project manager should take ownership of the project and the performance of the project team. It is ultimately the responsibility of the project manager to deliver the project on time and lack of ownership can have significant impact on the successful delivery of the project.

Group processes and communication

Team 24 performed really well in A2 in terms of cohesiveness, productivity, overcoming adversity, and constantly evolving to cater for any challenges that could have hindered us in achieving our collective goals. This was reflected in our final mark and we decided to keep the existing framework for the next phase of our project. However, as our project moved into development phase, it was decided that a more formal structure is required which would facilitate the technical and management requirements.

Team structure - Project manager role is created to oversee the development of individual components and keep track of the documentation process. Front end and back end development roles are assigned to members with technical experience in these areas. Software tester is assigned to define the testing parameters as well involvement in the development cycle from the very beginning. Given the scale of the documentation and number of artifacts required, one member is assigned as document manager whose responsibility it is to review all individual submissions and suggest any changes.

Communication – Members are required to meet twice a week in a formal MS Teams environment, but for this phase of our project, members are also encouraged to engage informally to discuss all issues in an honest and transparent manner. Members are encouraged to speak out if they are dissatisfied with any aspect of our project. Workloads are openly discussed, and changes are made to cater for any unforeseen eventualities and extenuating circumstances.

Skills and jobs

Roles

Team 24 identified the need to create specific roles within the team to carry out specific tasks. Roles were created in accordance with the individual skillset and overall education and work experience.

- Lead Developer – Roshan
- Backend Developer – Simon
- Software Tester – Joanna
- 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 (Sasdy, 2020). The lead Developer also help by research 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 (Hickey, 2019). 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 (Bridger, 2014). 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 (Half, 2017).

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 (Back-end Developer job description template, 2020). 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 (Backend Developer Skills You need to Know, 2020). 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 (Back end Developer Job Description, 2020).

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 (Withers, 2020). 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 (Software Tester job description template, 2020). 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 (Software Tester Job Description, 2020).

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 (Technical Support Job Description, 2020). 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 (Doyle, 2020). 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. As a technical support help desk you are required to have degree in either computer science, computing or engineering (Half, 2020).

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 plans were formalised less than 5 weeks to the date of submission. Notwithstanding the extenuating circumstances and uncertainty due to COVID pandemic, our collaboration could have been better. 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. Missed deadlines did result in trepidations among members and some members had to work extremely hard than others to complete the project.

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.

References

Betterteam. 2020. *Back End Developer Job Description*. [online] Available at: <https://www.betterteam.com/back-end-developers-job-description> [Accessed 28 November 2020].

Betterteam. 2020. *Software Tester Job Description*. [online] Available at: <https://www.betterteam.com/software-tester-job-description> [Accessed 28 November 2020].

Betterteam. 2020. *Technical Support Job Description*. [online] Available at: <https://www.betterteam.com/technical-support-job-description#:~:text=Technical%20Support%20Responsibilities%3A&text=Diagnosing%20and%20repairing%20faults.,the%20root%20of%20their%20problem> [Accessed 28 November 2020].

Bridger, P., 2014. *What Is The Role Of The Lead Developer In An Agile Team?*. [online] Software Engineering Stack Exchange. Available at: <https://softwareengineering.stackexchange.com/questions/236726/what-is-the-role-of-the-lead-developer-in-an-agile-team/236729> [Accessed 28 November 2020].

Chi, C., 2020. *7 Of The Best AI Chatbots For 2020*. [online] Blog.hubspot.com. Available at: <https://blog.hubspot.com/marketing/best-ai-chatbot> [Accessed 28 November 2020].

Doyle, A., 2020. *Important Skills For Tech Support Jobs*. [online] The Balance Careers. Available at: <https://www.thebalancecareers.com/tech-support-skills-list-2063774> [Accessed 28 November 2020].

En.wikipedia.org. 2020. *Artificial Neural Network*. [online] Available at: <https://en.wikipedia.org/wiki/Artificial_neural_network> [Accessed 28 November 2020].

En.wikipedia.org. 2020. *Natural Language Processing*. [online] Available at: <https://en.wikipedia.org/wiki/Natural_language_processing> [Accessed 28 November 2020].

En.wikipedia.org. 2020. *Outline Of Natural Language Processing*. [online] Available at: <https://en.wikipedia.org/wiki/Outline_of_natural_language_processing> [Accessed 28 November 2020].

En.wikipedia.org. 2020. *Turing Test*. [online] Available at: <https://en.wikipedia.org/wiki/Turing_test> [Accessed 28 November 2020].

Half, R., 2017. *Top Skills For A Lead Applications Developer*. [online] Roberthalf.com. Available at: <https://www.roberthalf.com/blog/salaries-and-skills/top-skills-for-a-lead-applications-developer#:~:text=As%20a%20lead%20applications%20developer,and%20other%20IT%20functional%20areas.> [Accessed 28 November 2020].

Half, R., 2020. *IT Support Job Description And Duties | Robert Half*. [online] Roberthalf.com.au. Available at: <https://www.roberthalf.com.au/employers/it-technology/help-desk-jobs#:~:text=Installing%20and%20configuring%20computer%20hardware,person%20or%20over%20the%20phone)> [Accessed 28 November 2020].

Heroku.com. 2020. *Pricing | Heroku*. [online] Available at: <https://www.heroku.com/pricing> [Accessed 28 November 2020].

Heroku.com. 2020. *What Is Heroku | Heroku*. [online] Available at: <https://www.heroku.com/what> [Accessed 28 November 2020].

Hickey, J., 2019. *What's The Difference Between A Senior And Lead Developer?*. [online] DEV Community. Available at: <https://dev.to/jamesmh/whats-the-difference-between-a-senior-and-lead-developer-1pl2#:~:text=The%20lead%20developer%20can%20act,stages%20of%20a%20product's%20development.&text=Lead%20developers%20often%3A,to%20marketing%20or%20sales%20teams> [Accessed 28 November 2020].

Insights, S., 2020. *What Is Data Mining?*. [online] Sas.com. Available at: <https://www.sas.com/en_au/insights/analytics/data-mining.html> [Accessed 28 November 2020].

Marr, B., 2020. *What Is Deep Learning AI? A Simple Guide With 8 Practical Examples*. [online] Forbes. Available at: <https://www.forbes.com/sites/bernardmarr/2018/10/01/what-is-deep-learning-ai-a-simple-guide-with-8-practical-examples/?sh=4fcfb4428d4b> [Accessed 28 November 2020].

MongoDB. 2020. *Pricing*. [online] Available at: <https://www.mongodb.com/pricing> [Accessed 28 November 2020].

MongoDB. 2020. *The Most Popular Database For Modern Apps*. [online] Available at: <https://www.mongodb.com/> [Accessed 28 November 2020].

Parmar, D., 2020. *Exploratory Testing | Atlassian*. [online] Atlassian. Available at: <https://www.atlassian.com/continuous-delivery/software-testing/exploratory-testing> [Accessed 28 November 2020].

Recruiting and Hiring Resources. 2020. *Back-End Developer Job Description Template*. [online] Available at: <https://www.talentlyft.com/en/resources/back-end-developer-job-description#:~:text=Back%2Dend%20developers%20are%20usually,of%20the%20front%2Dend%20part.> [Accessed 28 November 2020].

Recruiting and Hiring Resources. 2020. *Software Tester Job Description Template*. [online] Available at: <https://www.talentlyft.com/en/resources/software-tester-job-description> [Accessed 28 November 2020].

Robertson, M., 2020. *What Are The 10 Biggest Risks In Software Development?*. [online] Codebots. Available at: <https://codebots.com/library/way-of-working/what-are-the-10-biggest-risks-in-software-development> [Accessed 28 November 2020].

Rouse, M., 2014. *What Are Containers (Container-Based Virtualization Or Containerization)?*. [online] SearchITOperations. Available at: <https://searchitoperations.techtarget.com/definition/container-containerization-or-container-based-virtualization> [Accessed 28 November 2020].

Sas.com. 2020. *What Is Natural Language Processing?*. [online] Available at: <https://www.sas.com/en_au/insights/analytics/what-is-natural-language-processing-nlp.html#:~:text=Natural%20language%20processing%20helps%20computers,determine%20which%20parts%20are%20important.> [Accessed 28 November 2020].

Sasdy, G., 2020. *How To Excel As A Lead Developer*. [online] Welcometothejungle.com. Available at: <https://www.welcometothejungle.com/en/articles/excel-lead-developer> [Accessed 28 November 2020].

SOFTWARE TESTING Fundamentals. 2020. *Integration Testing - SOFTWARE TESTING Fundamentals*. [online] Available at: <https://softwaretestingfundamentals.com/integration-testing/> [Accessed 28 November 2020].

SOFTWARE TESTING Fundamentals. 2020. *Unit Testing - SOFTWARE TESTING Fundamentals*. [online] Available at: <https://softwaretestingfundamentals.com/unit-testing> [Accessed 28 November 2020].

Squareboat. 2020. *Backend Developer Skills You Need To Know*. [online] Available at: <https://squareboat.com/blog/backend-developer-skills> [Accessed 28 November 2020].

Withers, L., 2020. *Software Tester Job Profile | Prospects.Ac.Uk*. [online] Prospects.ac.uk. Available at: <https://www.prospects.ac.uk/job-profiles/software-tester#:~:text=Software%20testers%20are%20involved%20in,gets%20deployed%20to%20everyday%20users.> [Accessed 28 November 2020].