

Assessment 3: IT Project

OUA COSC2196 IIT
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By Group : Active Plus

Team Members

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1. Team Profile

1.1 Team Name

Active Plus is our project name as well as team name. Our project is to promote computer users to maintain their good posture to prevent neck and back pain.

1.2 The Team Member Personal Information

1.2.1 Minnie Gim

Student Email Address: s3846058@student.rmit.edu.au

Location: Adelaide, Australia

Background: I am doing an internship in a team of cyber-security team. I have knowledge in HTML, CSS, JS, C#, and python at the university and completed few cybersecurity certificates.

Hobbies: mother of 4 dogs, love to play the piano, listen to music, like arts, building up my vegetable gardens at the balcony

IT Interest: When I have more time, I would like to build more IoT stuff such as smart farm, robots, automatic doors etc. Ethical Hacking, Penetration Tester, Cybersecurity,

IT Experience: I have experience in cyber security Red and White Team. I run my own start-up business to develop websites and applications.

1.2.2 Niroshini Tharshan

Student Email Address: s3351297@student.rmit.edu.au

Location: Melbourne, Australia

Background: I am from Sri Lanka, currently living in Melbourne. I have fluency in 3 languages such as Tamil, Sinhala, and English. I have been a grocery manager in the retail industry for 5 years. I finished high school back in Sri Lanka.

Hobbies: In my spare time, I love reading non-fiction books, listening to podcasts about neuroscience and going for a long drive with my lovely family.

IT Interest: I am keen on building websites and creating application.

IT Experience: I have no background in IT. However, I have learnt the basics of the python programming language as part of the degree program.

1.2.3 Travis Powell

Student Email Address: s3977230@student.rmit.edu.au

Location: Alice Springs, Australia

Background: I have a background in Military and law enforcement. I am currently learning as much as I can about IT as I wish to progress into the field.

Hobbies: I enjoy going the gym, martial arts and looking after my cat.

IT Interest: I would like to learn more about ethical hacking, computer forensics and networking.

IT Experience: I have limited exposure outside of my job with computers, however I have worked with various pieces of technologies.

1.2.4 Yumna Rashid

Student Email Address:s3975399@student.rmit.edu.au

Location: Melbourne, Australia

Background: I am a qualified teacher aide and pastry chef and currently working in field of education as a teacher's aide in the past 4 years. I live in Melbourne with my husband and three 3 kids. I do not have much knowledge in IT, but I did BASIC programming language, C language and basic Microsoft office courses back in 2002.

Hobbies: Cake decorating, and baking is my main hobby along with some calligraphy too. I am a full-time employee with full time studies with RMIT online in Bachelor of IT.

IT Interest: I would like to construct web apps that are specifically designed for cybersecurity and cybercrime.

IT Experience: Friendly speaking, I do not have much experience aside from Microsoft office. In the field of hospitality, I used to do menu planning, personalised meal or diet planning, budgeting, and while working in education, I created some kahoots quizzes for students or simple coding games, but not much more. Aside from these, I am familiar with c programming and basic programming languages, and I am currently learning CSS, HTML, and python programming language in my IT subject and python programming language in my other subject.

1.3 Group Processes

Our group work A2 did not go that well. 2 team members are left. We would like to plan thoroughly with strong and clear communication.

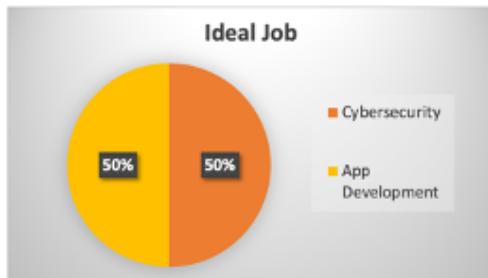
1.4 Career Plans

This is Active Plus members' ideal jobs.

Ideal Job		
NAME	Cybersecurity	App Development
Minnie Gim	✓	
Niroshini Tharshan		✓
Travis Powell	✓	
Yumna Rashid		✓

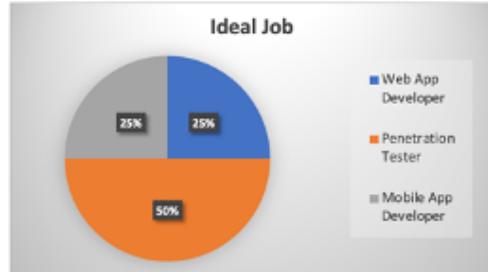
50% of Group 3 : interested in Cybersecurity

50% of Group 3 : interested in App Development



NAME	IDEAL JOB
Minnie Gim	Penetration Tester
Niroshini Tharshan	Web App Developer
Travis Powell	Penetration Tester
Yumna Rashid	Mobile App Developer

2 members are interested in Penetration Tester position.



As you see the below data, 2 members which is 50% of our group are interested in Cybersecurity – Penetration Tester and the other 50% are interested in Application Development.

The following table shows the details of skill requirements from the employers.

➤ Similarity

Both Application Development and Cybersecurity positions required excellent communication skills and work experiences.

In the penetration tester positions, it is required to have Certified Network Defence (CND) certificate, knowledge in OOP such as Python and Command Language Bash.

In the Application developer position in both Web application and Mobile Application, it required knowledge in HTML, CSS, JS, and collaborative project management such as Scrum and Jira.

➤ Differences

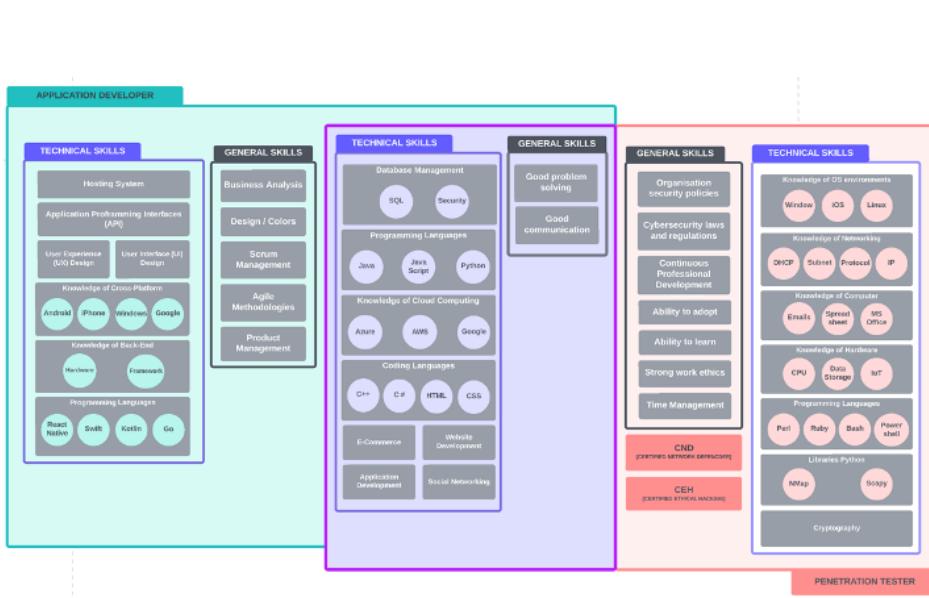
Application Developers required more skills in the UI, UX and visual effect than Penetration Tester. Penetration Tester required very broad knowledge around the computer system and network. They need knowledge in programming languages as well as Operational System such as Windows, iOS, especially Linux Kali.

Application Developers need to understand different cross-platform and front-end framework with how the devices change the users experience of applications. However, Penetration tester need to understand how hackers can attack the computer and network system.

Minnie Gim Penetration Tester	Travis Powell Penetration Tester	Niroshini Tharshan Web App Developer	Yumna Rashid Mobile App Developer
Good communication Skill Work Experience	Good communication Skill Work Experience	Good communication Skill Work Experience	Good communication Skill Work Experience
		Bachelor Degree	
Penetration skills CND / CAN	Penetration Skills CND		
Bash / PoweShell OOP (Python, Ruby, Java)	Bash Python		
Cyber attack Kali Linux		UX/UI Figma Github HTML / CSS / JS React / React Native / Node Js Serverless / AWS / SQL SDLC Tracking Tools (Jira)	HTML5 / CSS3 JS Framework Back-End Devlopment SEO WCAG

➤ Conclusion

Both jobs required some level of knowledge in application development, computer programming languages, network system and cybersecurity knowledge. However, the 2 jobs' audience are different. Application Developers are working to make system more convenience and efficiencies for the Users and different devices, while Penetration Tester are working to understand Hackers' behaviours and methods to prevent cyber-attack.



2. Tools

- Direct Link to Active Plus Website: https://foxy-lady.github.io/Active_Plus/
- Direct Link to Active Plus Git repository: https://github.com/Foxy-Lady/Active_Plus.git
- As a novice in this area, we studied GitHub via videos, blogs, and demonstration on Google.

3. Project Description

3.1 Overview

Topic

Active Plus desktop software application aims to reduce government spending on pain-related illnesses. Moreover, the app will decrease the 40 years of early retirement due to back pain by creating a pain-free and productive work environment for those working on the computer for a long time. The purpose of this webcam-based posture-correcting technology is to help workers stop hunching over their desks. The user would be alerted to correct their posture while working on the computer. Moreover, it can be a prevention tool for poor posture. Adopting poor posture may lead to fatigue, neck pain, back pain, chronic pain, injury, and other health problems. It is imperative to practice the correct posture during tasks regardless of how much money you spend to fix the pain.

Solving the issue of poor posture could have a positive effect. Short daily sessions increase posture awareness and behaviour change. Furthermore, users will start to notice and be aware of their posture and naturally move to a better position. It is not necessary to leave the application running all day. Instead, using the 30/60 minutes feature a couple of times a day for seven days would see excellent results in increased posture awareness and decreased back and joint pain.

The outcome of this software will be measured by the feedback given by the user 30 days after signing up.

Motivation

The inspiration behind this project is that the cost to the government and employers, in disability payments, worker's compensation and productivity loss, is staggering. The AIHW has reported that Australia spends more money (over \$12.5 billion) on musculoskeletal pain-related conditions or injuries than any other disease, particularly back pain. (Carol Bennett.2021). In addition, about 4 million Australians have back problems, according to self-reported data from the Australian Bureau of Statistics. (Carol Bennett, 2021) During development, this webcam-based posture-correcting app will be a motivator to create healthy habits and will use machine learning and computer vision to predict whether a posture is appropriate or incorrect.

The project's outcome, the approach to dealing with all the challenges, and how my skills would help to lead that project successfully are things I can show to a future employer if I am a part of this project.

Landscape

Many posture correction applications and postural braces support products are available, such as Posture Net, Posture Corrector, Plicly and more. However, Active Plus is a desktop application specifically designed to improve the future of work. It supports only Windows. On top of that, the user's posture improvements can be tracked over time via the app.

3.2 Aims

Our desktop app business model focuses on selling to companies that offer Active Plus to employees as a benefit.

To achieve the targeted outcome, the following goals will be set.

Better UX: Our focus is on building an application with a better user experience. Two things must be considered when building the app: researching market needs and how the Active Plus desktop app will differ from existing ones.

Creating Team: First, Form the team with an experienced project manager and other individuals with relevant skills and over five years of experience.

Timeframe:

Keeping the deadline is the most significant part of the project. A well-defined project plan keeps a project on schedule. Allocate time for planning the project so the team can clearly and accurately

work on tasks, milestones, and results. This way, the team does not need to spend time figuring out when, how, and what to do.

Implementation:

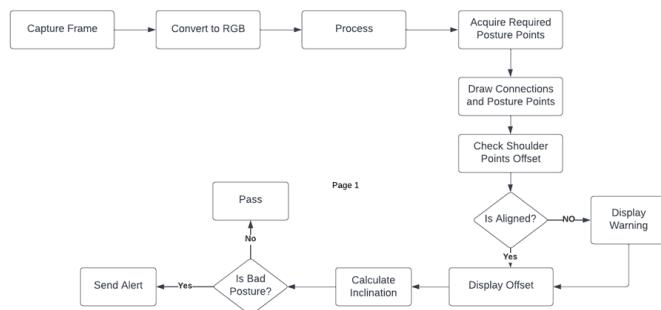
In terms of results, the project's implementation is also crucial. The project plan, as well as the use of the appropriate tool/framework and an effective communication system, are necessary for implementation. In addition, the schedules need to be checked by comparing the actual time against the planned time. If there are missed deadlines, the project manager should reach out to stakeholders and ask for flexibility.

To find consumers: The marketing team will create and implement a plan to launch our product on the market.

3.3 Plans and Progress

Active Plus is designed to assist workers in stopping hunching over their desks and sending alerts when detected. It utilizes the webcam to check the user's posture. There has to be comfort in watching through the lens as you work. Employers who signed up for the tool and how much time they spend in front of the computer are the two data points.

AI also processes data locally on the device, which means it does not require an internet connection. This software component runs offline, without the internet, without recording or storing visuals. Data, like photos or videos, cannot be transferred to the cloud without an internet connection, which is the only way employers could spy on employees. It's technically impossible for us and employers to record or store any visuals and ultimately spy on people. Since the software only receives information about how many employees sign up for the app and how many use it weekly, it does not receive personal information. These two data points can show whether employees are engaged with the application.



Posture Detection and Analysis Workflow

The posture correction feature, which accesses individuals' cameras, does not run in the cloud, meaning no one can access data, including visuals. There is a feature enabled for quick posture checks, rather than keeping it on all the time. It is also possible to combine the posture monitoring feature with other apps that require the webcam to be on, such as when making a video conference call. The software integrates with the user's general computer workflow running in the background and imaging the user's pose through a stick-man icon shown in the menu bar, which allows users to stay alert without being interrupted by awake messages. Blue and upright are favourable; bent and red are not.

Nevertheless, it never sends pop-up notifications. Users can choose a few options for how they want to be alerted. The user needs to demonstrate an upright posture when setting up.

This project idea came up to Niroshini when she suffered neck pain as she developed unhealthy habits like slouching while using the computer. She created the prototype When she studied at university, she had a chance to work on a group project. This opportunity was taken to discuss her idea with the team, and the tutors' feedback also helped move this project further. Here is how Active Plus works:

As an input, the desktop application takes a video stream from a webcam without recording or storing anything visual. It utilizes a locally stored computer vision model that analyses the video to find and output key posture points. When starting the app, these posture points are fed to a mathematical model that compares the current position to the original baseline position you set as your "healthy posture" position. In addition, the software applies geometrical formulas to vectors assembled from your current posture position and your original baseline upright posture position to determine if you are slouching.

We are just focusing on how it can be explicitly built-in in Python. However, we need to learn how to use MediaPipe and OpenCV to build this application. In addition, there are challenges in dealing with hair and lighting in the room that hide ears.



Active Plus team members have no previous experiences as an application development and enrolled 1st subject in the bachelor's degree in the computer science. However, we would like to adopt and learn the real-world professional practice as much as we can. At the beginning of the project, Active Plus has adopted Agile project management methodology with Kanban board and Scrum sprint to develop Active Plus - Posture Correct Desktop Application.

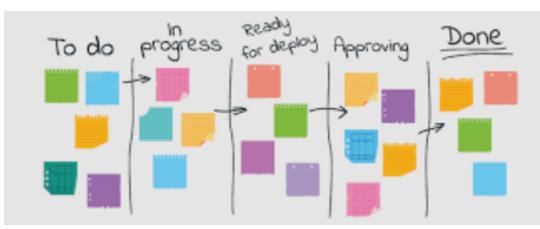
Because the agile is an iterative methodology that can prioritising a flexible approach and can break the big plan into short sprints.

Also, this project plan has iterative backlog management, sprints, reflection, iteration, and more sprints.



We did not implement all aspects of scrum rules, because this is a small project at this moment with a small team of 4. Our group does not have scrum master, we have assigned a team as a product owner. As being a small group, bi-weekly meeting set us up for success and had an opportunity to review

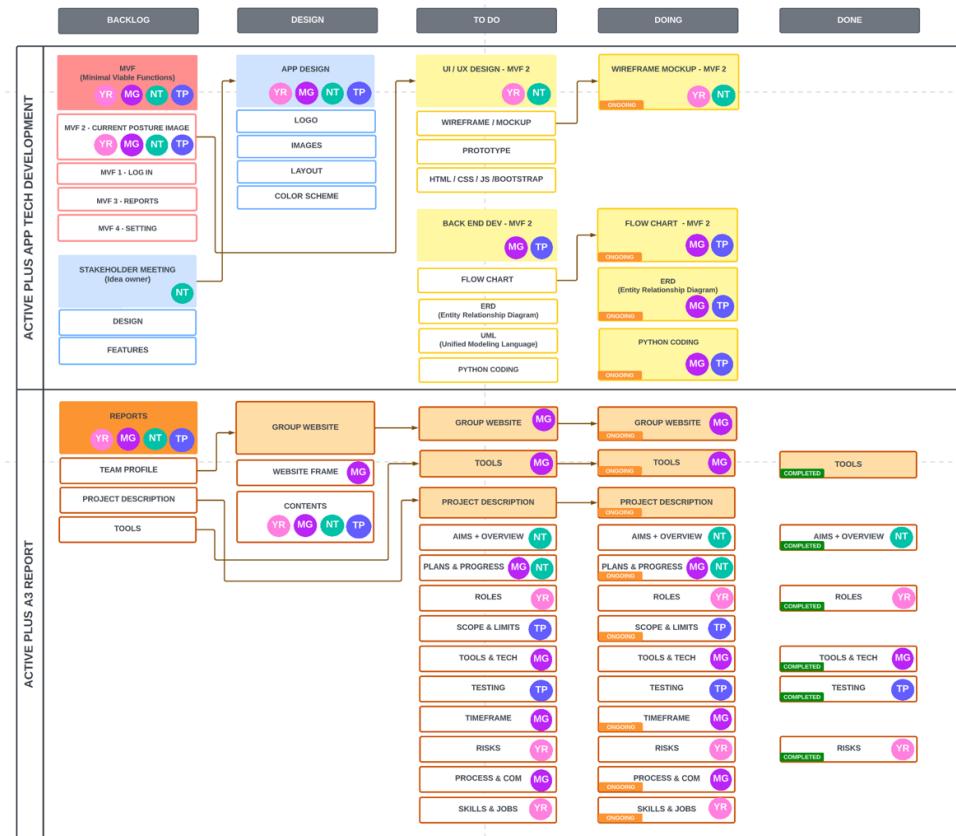
the project progress and discuss everyone's goals for the upcoming week to keep morale high and our team engaged.



team collaboration, we have implemented some of scrum.

Also Active Plus group has adopted some benefits of Kanban board as it is more visual project management that provide a quick snapshot in an image instead of words. This is easier to assign a task to individual with clear due dates. However, to enhance the

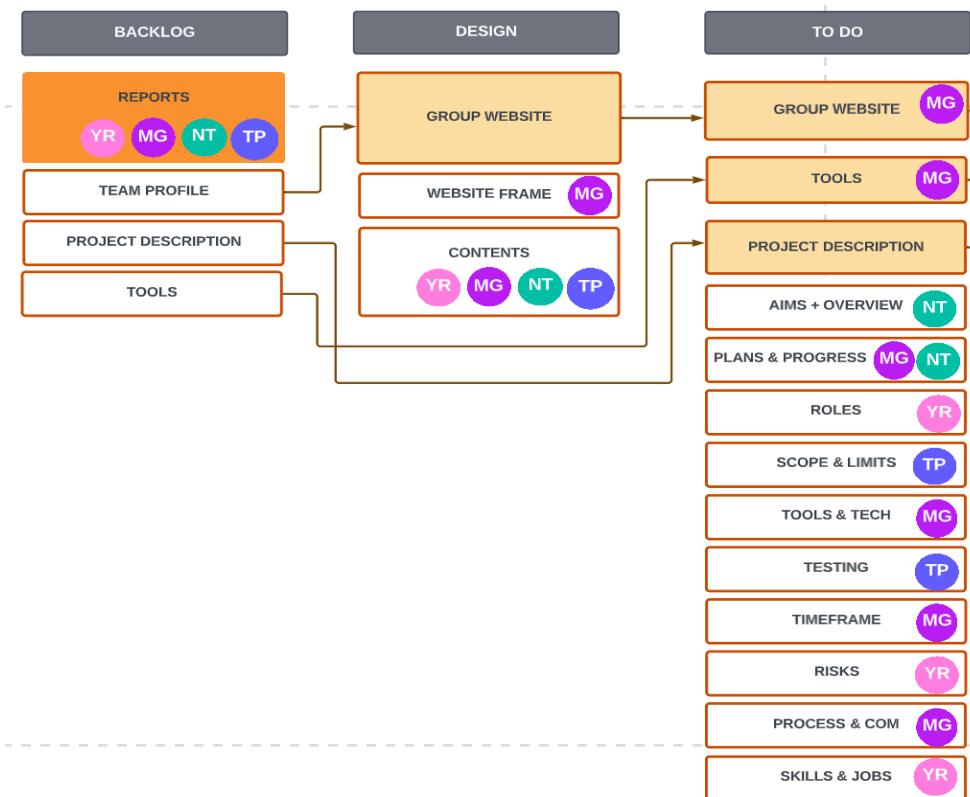
With the combined agile, Kanban and scrum project plan, this is Active Plus project planner. (See below screenshot)



On the first meeting, the members set up Backlog for the reports then had a brief idea of MVFs. Due to the lengths of report, we have focused and assigned tasks to the members as you see the above the plan.

Firstly, with setting up new team for A3, we need to start developing our group websites as well as the A3 report. Minnie had a group website frame (HTML and CSS) that could not use in the A2. Active Plus was happy to adopt the re-written HTML and CSS, then modified for A3. All team members added the contents.

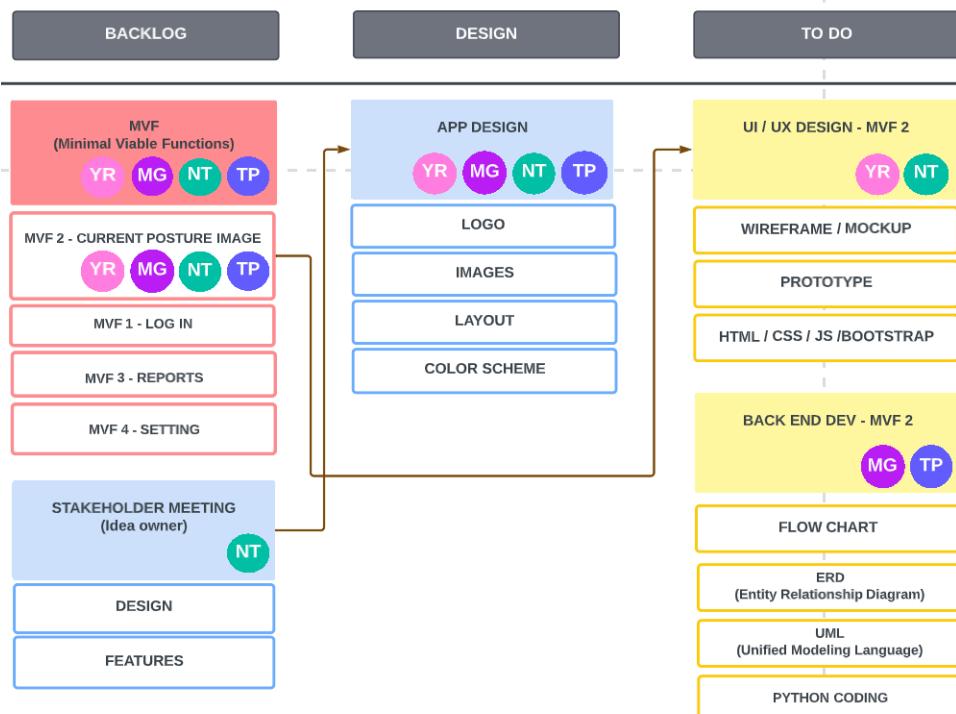
While Minnie was transferring the data from A2, other members were starting the research and write of the A3 report. For the task delegations, we carried on from the backlog to the 'to do' sprint. We discussed at the bi-weekly meetings and prioritized the tasks.



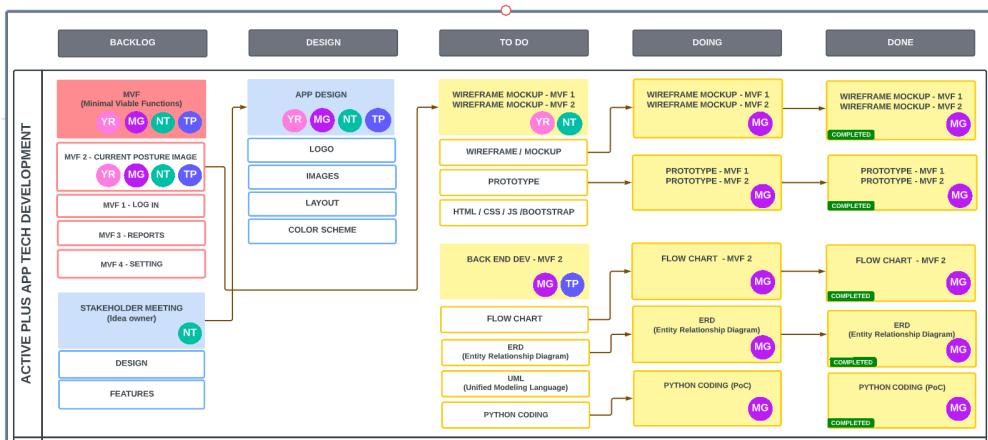
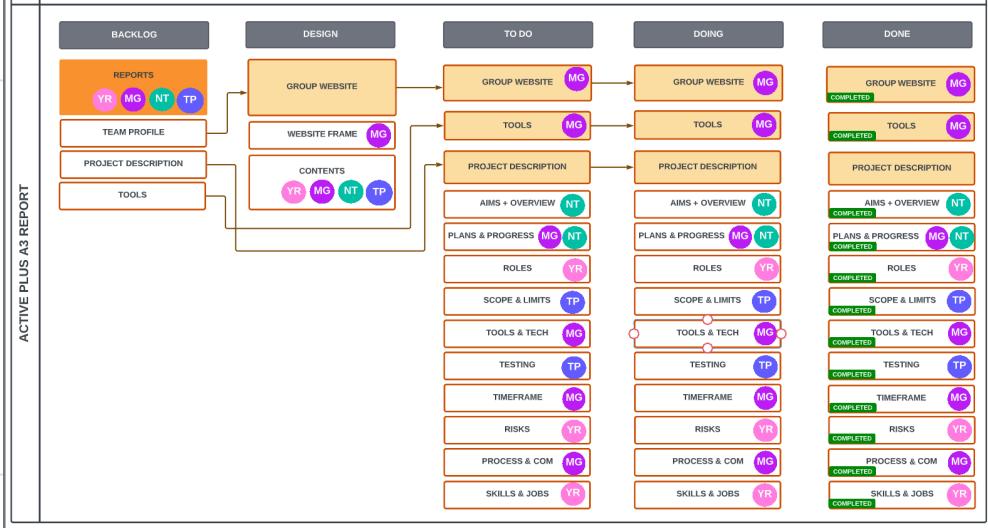
From the technical development perspective, we reviewed our backlog and timeframe. We agreed that we do not have enough time to complete a whole functional Active Plus Desktop nor not senior application developer or full stack developer in our team.

Therefore, we decided to focus on MVF 2 concept design, such as UI/UX design and Flow Chart on Lucid chart. Currently, Back End Development team is building a python program with MediaPipe and OpenCV for PoC on VS code.

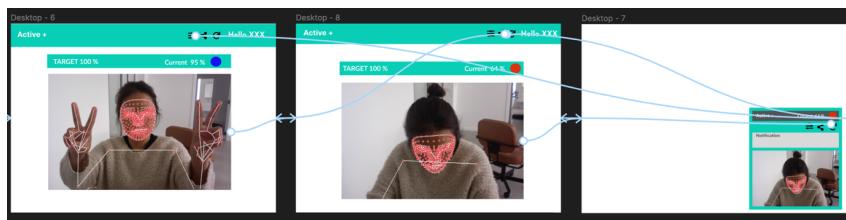
With well organize plan and being a proactive, Active Plus was able to complete the most of reports on time. We will spend the last week before the due to review and edit our writing and check the references.

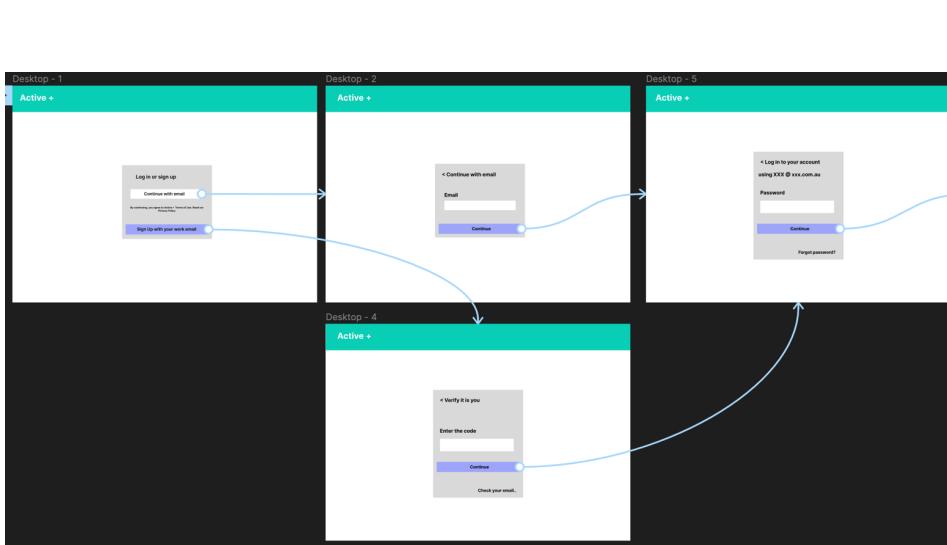


However, due to lack of experience and knowledge in Desktop application development, we have not made much progress in the technical development side yet. It has been very slow progress.



In week 12, the back-end development team will create Proof of Concept (PoC) in python with MediaPipe and OpenCV to show the posture image. The front-end development team will create the wireframe and mock-up.





The project manager will recruit experienced team members and implement collaborating software such as Trello. Also, we need to engage more with the idea owner to finalize the logo, images, and colour scheme for the application.

Lastly, we have not discussed how we will deploy Active Plus application. Most likely, we will choose the cloud computing. There are many options for the application deployments, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), or Software as a Service (SaaS) via AWS, Azure, or Google. Due to the lack of experience and limited knowledge in cloud computing, we will decide the further after recruiting more experienced employee later.

3.4 Roles

3.4.1 Front-End Programmer

We strongly urge any front-end developer (Scrum manager) with proficiency in Python to apply for our project Active+. additionally, to guarantee that users of the active+ website can easily interact with the page. They accomplish this by combining programming, design, and technology to code a website's appearance and take care of debugging.

Front-end programmer Skills:

- Confidence and can-do attitude
- Understanding the principles of SEO and MySQL
- Problem solving
- CSS/HTML
- Good knowledge of Python / Java
- DOM manipulation
- Good experienced with graphic design applications.

3.4.2 Project Manager

Project managers may be required to have a certain skill set depending on the job, project, industry, and experience level. However, there are general project management skills that are common to any project manager job description. These are the most essential.

Versatile Skills:

- Leadership skills
- Communication skills
- Interpersonal skills

Team mentality

- Organizational skills

Difficult Skills:

- Time management
- Team management
- Risk management
- Stakeholder management
- Industry-related technical skills
- Knowledge of project management software
- Project management certifications

Roles and Responsibilities of the Project Leader

Leadership is a topic that affects every division of a developing organisation. And to become a project leader, you must understand how being a project manager and a project leader are related. An expert who guides others and makes sure a project is successfully finished is a project leader. The project leader's responsibilities include motivating the team, attending to their needs, and preserving a pleasant and productive work environment.

In project management, a project leader's responsibilities span a wide range of activities, including thorough planning, oversight of project descriptions, task organisation, project supervision, team motivation, and making crucial decisions regarding how to set up a strategy for the proposed project. Both these crucial leadership skills include the following in addition to boosting group confidence and efficiency:

3.5 Scope and Limits

As a result of continuously using this product, user will develop much better posture. Having a more upright, distinguished posture can be very beneficial in everyday life. With better posture users can give off a more confident appearance and professional look.

As stated in the testing portion of our report, Gerr et al., 2002 shows that there is a direct correlation between prolonged sitting and musculoskeletal injuries. We hope that using this product will yield a significant reduction in long term injuries because of static activity or inactivity.
Continuously sitting in one position can result in muscle fatigue, as there are certain muscles that hold your body in that position. Using this application, we envision to create a more productive work environment.

Commented [TP1]: Just got the concept here, will add references and more info later

3.6 Tools and Technologies

3.6. 1 Resources & Tools

3.6.1.1 Lucid Chart

According to Google workspace (2022), Lucid chart is to provide collaborative online diagramming to make it easy to draw flowcharts, wireframes, Unified Modelling Language (UML) and Entity Relationship Diagram (ERD). This is free with some limits and features. However, it is enough for student projects. 1 member has experiences in using Lucid chart at work and study. However, rest of members do not have experience.

3.6.1.2 Visual Studio Code / Atom

Text editor and Integrated Development Environments (IDEs) are applications for writing code (Makai, 2022). These makes developers easy to edit, write and delete easily with prompts. In the Introduction of Information Technology, our members learned to use free open-source text editor, Atom which built by GitHub team and one member uses Visual Studio as a text editor and Anaconda as an IDE in python projects at work and study. There is a major difference between text editor and IDE, IDEs is easier to configure for code metrics, running the tests and debugging.

3.6.1.3 Python

Python is one of the popular programming languages that used for web development, software development, data analysis and Machine Learning (Python Software Foundation, 2019). Python can be used to create application as well as handle big data, perform complex mathematics, and rapid prototyping.

It works on different operating systems, such as Windows, iOS, Linux, and Raspberry Pi, and has simple syntax, which allows developers to write few lines than other programming languages. Our project is required Machine Learning with Artificial Intelligence, accessibility of webcam, stability, flexibility, and simplicity. There are many useful libraries in Python for Machine Learning (GeeksforGeeks, 2021).

3.6.1.4 MediaPipe

MediaPipe is a cross-platform library in Python that provide ready-to-sue Machine Learning for computer vision tasks (GeeksforGeeks, 2021). MediaPipe supports many projects ideas like hand detection, facila detetion, face mesh, hair segmentation, object detection, and post (MediaPipe). It has in-depth documentation on lots of different programming languages like swift, C++, Python and Java (GeeksforGeeks, 2021).

3.6.1.5 OpenCV

OpenCV is a library in Python that provides computer vision used for image analysis, image processing, detection, and recognition (OpenCV, 2022).

3.6.2 Collaborative Workspaces

3.6.2.1 Microsoft Teams

This is the main communication method within the teamwork. It provides benefits team progress as a platform to conduct meetings that create transcripts and records, task management 'To do,' tracking and allocating, and several apps such as 'poll 'and 'form.' It has integrated with university email accounts for notifications.

3.6.2.2 GitHub Repository

GitHub suits for software development and version controls. It is utilized as Active + files and data storage and collaboration tool.

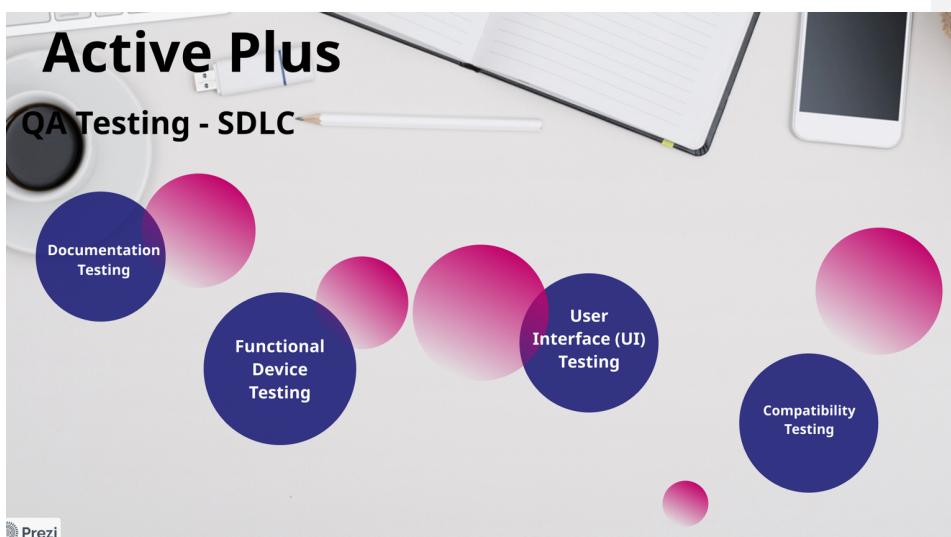
3.7 Testing

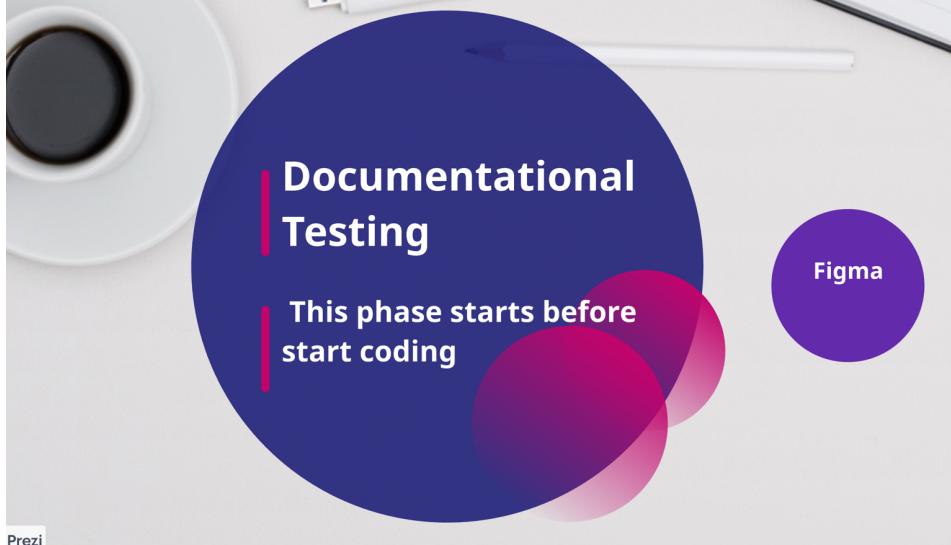
As Daneshmandi et al., 2017 states, in occupations that involve being in a seated position, 47% of women and 42% of men are spending about 6.3 hours out of an average 8-hour day in a chair. A study by Gerr et al., 2002 showed the correlation between musculoskeletal problems in the neck, shoulders, arms and hands and bouts of prolonged sitting. It is for these reasons that office workers or anyone sat behind a desk for extended periods will be the subjects of our tests.

As it takes roughly around 2 months to develop new habits, as stated by Clear, 2014, the test will go on for 3 months, to determine if the posture correction application will improve posture and reduce the number of alarms throughout each day. We will use around 100 people from different occupations that involve work in a chair, behind a computer. Testing can be done on old and low-range laptops to the latest Windows laptops.

Testing in Software Development Life Cycle (SDLC) is simply “is it working as expected?”

In this process, we compared our desktop application with Mockup and Prototype while we are writing the codes on the jupyter notebook – python.





At this moment, we are testing the project on the Anacoda – jupyter notebook environment on mac and windows. The first step in the progress is to import Mediapipe and OpenCV on the python which successfully finished.

3.8 Timeframe

	TECHNICAL SIDE	REPORT SIDE
WEEK 9	Brainstorming Backlog – developing MVFs Meeting with stakeholder (idea owner) <ul style="list-style-type: none"> - Design details - Features 	Create Group Website Set up Tools Study A3 Reports Guideline <ul style="list-style-type: none"> - Assigned tasks to team members
WEEK 10	Create MVF <ul style="list-style-type: none"> - MVF 1: Log in - MVF 2: Currently Image - MVF 3: Reports - MVF 4: Setting 	Research and write <ul style="list-style-type: none"> - Overview & Aims - Roles - Testing - Tools & Technologies - Risks
WEEK 11	Front End Development <ul style="list-style-type: none"> - Wireframe - Mock up Back End Development <ul style="list-style-type: none"> - Flow Chart - Coding 	Complete the report <ul style="list-style-type: none"> - Plans and Progress - Scope and Limits - Timeframe - Process and Communications - Skills and Jobs - References list
WEEK 12	Build PoC (Proof of Concept) MVF 2 <ul style="list-style-type: none"> - Python with MediaPipe and OpenCV: able to demonstrate posture 	Read and edit the reports Check plagiarism and references list
WEEK 13	Animated Prototype Upload on the group website	Design the presentation on Prezi Write the scription

	WEEK 9	WEEK 10	WEEK 11	WEEK 12
Create Group Set up Tools	M			Review a whole document Focus on Tech development and presentation
Team Profile. (Catching up A2)	M / N / T / Y			
Tools	M			
Project – Overview	N			
Project – Aims	N			
Project - Plans and Progress	M	M / N / T / Y	M / N	
Project - Roles		Y		
Project - Scope and Limits			T	
Project - Tools & Technologies	M			
Project - Testing		T		
Project - Timeframe	M	M	M	
Project - Risks	Y			
Project - Group Process & Com	M	M	M	
Skills & Jobs			Y	
Feedback			Y	

3.9 Risks

3.9.1 Operational Impacts

Active+ Posture assistance is only intended to be used temporarily and should not be used for extended periods of time if users do not use it properly, including some muscle soreness and stiffness. This method of use weakens the musculature and may even result in further injury (Dr.Sullivan 2018), so if you are not feeling well, we recommend that you discontinue use and consult with your physician or doctor. Though, essentially adhere to the instructions.

3.9.2 Data Security

Although there are risks associated with benefits, and our valued customers may face some risks and complications. In our project Active+ users could perhaps face security threats from SQL Injections (SQLi), XSS (Cross-Site Scripting), and Cross-Site Request Forgery because Python is run through an interpreter rather than a compiler, errors and bugs cannot be detected during compilation.

3.9.3 Communication Barriers and Breakdowns

Communication is at the forefront of teamwork, regardless of the structure, the progress, or the project itself, communication is the way we receive, send, and interpret information for others. Due to this, communication skills are challenging for teams due to the differences that may pre-exist or begin to form that function as barriers and breakdowns.

In the context of this project, a pre-existing barrier of communication is the limitations to online communication only. There can be signals we naturally pick up from a in person discussion that simply are not present in an online only medium.

Examples of this include the limitation to only communicating by messaging or voice/video calling which impedes the ability to gauge facial reactions, body language, and tones. This barrier can escalate to a breakdown from the misunderstanding of a message, and incorrect interpretation of a statement in a call.

There is potential for misunderstandings and miscommunications to occur that can lead towards a breakdown on communication that can take more time to repair then an effective mitigation strategy.

3.10 Group Processes and Communications

3.10.1 Group Communications

3.10.1.1 Communication Expectations

The communication expectations have been created and defined as a team to ensure that there is a sense of responsibility towards all, contribution, and agreement of trust within the context of a team. Please see the below the communication procedure.

The first act once the group was formed was to outline our expectations around communication, which can be detailed as:

- Team members should act to respond to communication within 12 to 24 hours from posting or notification.
- Team Active Plus will hold meetings on a bi-weekly basis.
 - Meetings are held on Sundays at 9 PM AEST and Tuesdays at 5 PM AEST.
- Meetings are conducted in Microsoft Teams and are reordered with a transcription generated by the platform.
- Agendas are to be used for all meetings, which members can contribute to the Meetings channel within the Active Plus (Microsoft Teams).

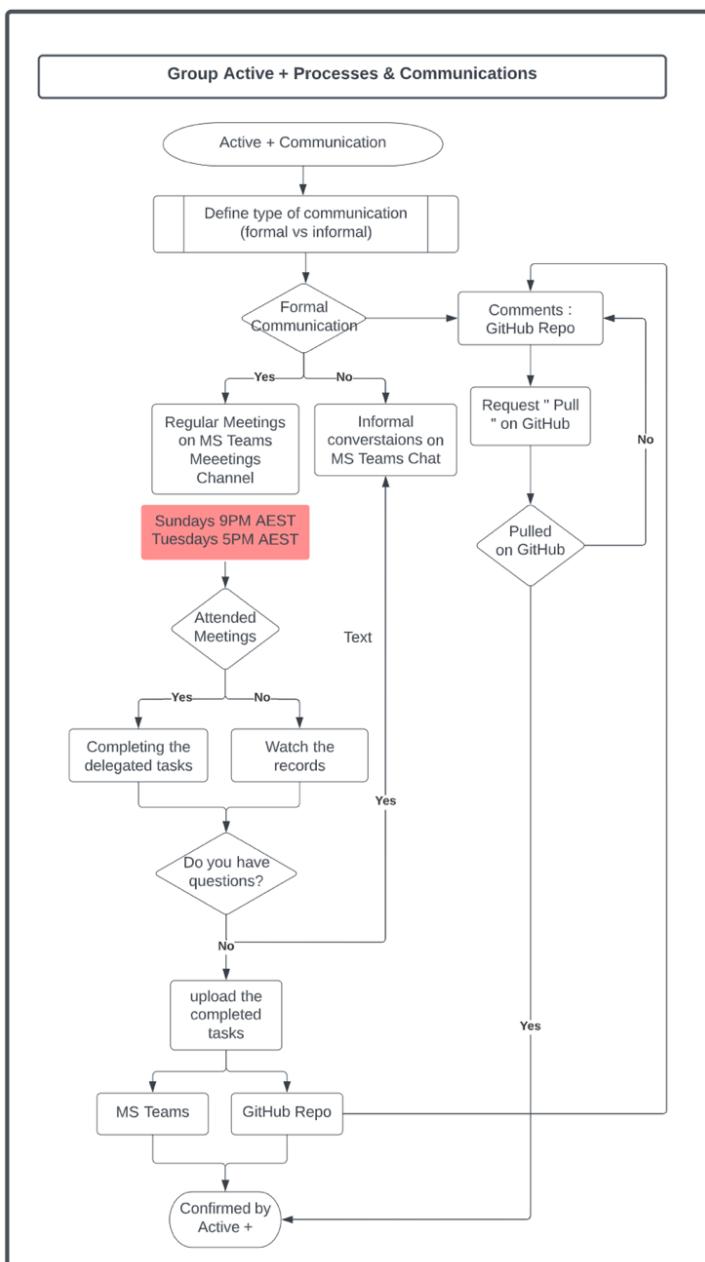
3.10.1.2 Communication Tools

Team Active Plus outlined the two distinct tools that will be used for communication throughout the project:

- **Microsoft Teams**
 - Acts as the main communication method for all members within the team.
 - Tasks (To Do) items are tracked and listed within the Teams General channel as transparent tracking of members' progress.
 - MS Teams chat used as a method of information communication.
- **GitHub Repository**
 - Issues: Team Active Plus used GitHub issues to delegate technical tasks in coding's.
 - GitHub Desktop: Team members used GitHub Desktop to see the upload and changes in the coding.

3.10.2 Decision Making Process

To ensure that progress with the project continues to progress as intended, team Active Plus have outlined and agreed to the following decision-making process.



The purpose of this process is to ensure that there is a clear and shared understanding of the objective we are reaching in a fair and informed manner.

1. **Group Brainstorming** is the first step in the decision-making process, by welcoming all team members to contribute towards idea and/or knowledge sharing, with the main objective to generate ideas, suggestions, processes, or any other project attributes that are collated for review and referencing.
2. **Opening Group Discussions** is the following step in the process and acts as a further expansion on group brainstorming as it gives team members the ability to express the preferences towards certain ideas and any reasoning behind this.
 - This process allows the members to share insight, thoughts, knowledges, and/or feelings towards concepts that can assist in the creative process as well as raise gives an opportunity to ensure members are remaining within the similar scope of the overall objective.
3. **Conducting a vote** on the ideas or concepts is the last step in the process, once the initially brainstorming and discussions have resulted in defined ideas, the team is able to vote via Microsoft Teams Poll to agree to a decision and therefore a direction that the team will proceed with.

4 Skills and Jobs

4.1 Scrum Project Owner

Job description: The position will involve transferring data from systems and ensuring that migration and facilitation are carried out properly.

What is required to achieve success

- Experience managing technical projects for two years +
- Experience with data migration and integration
- Facilitating abilities

4.2 Senior Software Developer / Full Stack Developer

Job description: This position will involve the candidate participating in the design and development of high-performance software applications, user interfaces, and technology integrations while working in a multidisciplinary, international project team.

What is required to achieve success

- Building experience with cloud-native PaaS offerings and container platforms.
- A strong background using Python for coding, algorithms, and data structures to create server-side applications
- Fluency in both speaking and writing English
- A solid knowledge and background in relational and document database design and implementation to develop and deliver high-quality, scalable, and secure solutions, strong knowledge of continuous delivery and continuous integration
- A piece of solid working knowledge and practical experience in quality engineering techniques such as test-driven development (TDD), behaviour-driven development (BDD), integration testing, and performance testing
- A solid understanding of Infrastructure as Code deployment and Cloud Infrastructure patterns

4.3 Marketing Manager

Job description: The position will involve the candidate to increase Active+'s productivity, collaboration, and mobility of Active+, you will kickstart the innovative power of our products. In collaboration with Customer Engineers, Active+ Partners, and other stakeholders, the lead account strategy will generate and develop business growth opportunities.

What is required to achieve success

- Awareness of selling or managing media for digital advertising
- Outstanding facilitation, presentation, and business skills
- Manage Active+ relationships, structures, and communications, and act as a liaison between Google and our teams' ecosystem for all brand activations.
- In order to create and deliver training programmes, evaluate the brand product capabilities of active+ collaborators.
- knowledge of selling cloud solutions, databases, analytical tools, software, and infrastructure software.
- a record of accomplishment of success working with the contracting, legal, and business teams on significant, complex commercial and legal agreements.
- knowledge of collaborating and leading partners in challenging implementation projects, such as international system integrators and packaged software vendors.

4.4 Cloud Computing Engineer

The team at Active + is currently seeking an experienced and capable candidate who can deliver their finest performances in order to advance Active+ to a transitional stage due to its recent rapid growth and funding from the nation's top venture capitalist ABC company.

The following fields are what we are looking for:

Job description: This position will involve the candidate who join our team as a Senior Systems/ Cloud Engineer with previous experience working for an IT Managed Service Provider is an exciting one. The role provides a varied workload serving a variety of professional service clients and utilising a wide range of technologies. proficiency with Microsoft's desktop and server products

What is required to achieve success

- Good understanding of technical ICT service delivery
- Experience delivering projects across all aspects of a solutions stack for at least two years (Servers, O365, Cloud, Networking, Firewalls, Storage & Security)
- Comprehensive senior systems engineering work experience in a challenging environment
- Knowledge of Microsoft Desktop & Server Products at a prominent level
- Excellent time management abilities
- Possibility of taking initiative and being very proactive
- Reliable and trustable

What do we anticipate from you generally?

Strong programming skills are a must-have for any candidate who wants to join the Active+ team and has experience with full-stack or backend development. The four job roles that our team Active+ has previously mentioned are all generally consistent. In addition to the cloud, we also use HTML, CSS, and Python as programming languages. Skills that are practical and experienced include HTML, CSS, and Python coding. With experience in cloud computing and excellent English writing and communication skills, you can upgrade, debug, and troubleshoot existing software. possessing the ability to create and use innovative mobile applications. in web design, placing performance first. utilising appropriate and efficient digital marketing while being able to mentor team members and serve as a team leader and of course exceptional time management abilities.

Mandatory Field:

- English language
- Appropriate bachelor's/ master's degree
- Australian working rights (work authorisation)

Benefits

- Work from home
- Christmas bonus
- Paid sick leave(s)
- Paid carer's leave(s)

Job details

- Full time (8-hour shift)
- Part time
- Monday to Fridays

Experience:

- Software development: 2 years +
- Scrum project manager 2 years +
- Marketing manager 2 years +
- Cloud computing engineer 2 years +

Things you need to do right away

If you are interested in the above position(s), call us right away or click "apply now" to send us an updated copy of your resume.

5 Group Reflection

Niroshini

Indeed, it was a positive experience working on this team. Initially, I was worried about how we would manage 4 team members. In spite of this, all team members completed the tasks beforehand, which made me optimistic about our team. In order to avoid procrastination, I have taken a few initiatives to discuss our process of task completion. Furthermore, I have never failed to ask for clarification and make suggestions. This group work was an excellent opportunity to learn about the tools Minnie introduced and work on the website with my peers. I attended all the meetings and actively communicated with the team members outside of meetings.

It would be helpful if all team members could have attended every meeting. Regardless, our team spirit and focus helped us to create an outcome. My contribution to this group project was also satisfactory. Furthermore, I have developed a bond with my peers that I am very proud of.

Travis

I was concerned with how this team would work, considering the fall out of our previous team, but was pleasantly surprised. I found this assignment particularly difficult, however received help from members on the team who have more experience than me. Due to my work, I could not participate in all the meetings and had to review everything the following day or night, however tried to keep up with the team as much as possible. Working with this team, has opened my eyes to new ideas and paths I will take once this course has finished. I enjoyed listening to everyone's ideas and input during our meetings and provided some of my own.

I was offline for a few days whilst in Sydney as I had forgotten to take my laptop charger but managed to squeeze in a team's meeting before my computer ran out of juice. I believe even though this team has little experience in developing functioning applications, that we have produced a feasible concept.

Minnie

Working in a group can be very challenging and not my cup of tea. People with different views and priorities may not always agree. However, it was not bad. Frankly, it was pleasant. Each member was very keen to participate and shared the same goals. We regularly communicated through MS Teams chat.

In this journey, my tasks were setting up meetings and tools to collaborate, communicate, and update the project planner. So, we can easily track down our work.

Our group worked together in sharing ideas and made decisions. The group process was very efficient and productive. We were able to complete the project on schedule. Setting the meeting's day and time was very helpful instead of changing the schedule each time. The project planner was handy to track who is doing what and due when. None of us have experience in application development and Software Development Life Cycle (SDLC). We had to learn from each other and google. We could not have a lot of progress from the technical perspective. However, we learned and motivated each other.

Yumna

I was initially a little concerned after reducing our group from 6 to 4 members, especially in light of the assessment 2 incident. I was a little cautious that the quality of the work might suffer because I am a beginner and am participating in these IT tasks for the first time. However, my group members were very helpful in advising me on where to start and how to get the work done properly. Regrettably, I did my best to search through various websites and conduct research into the topic I was writing about, and now that I am at the stage where I am familiar with most things thoroughly, and to accomplish that Minnie really helped me. I have noticed that occasionally our group becomes less engaged. In my opinion, we need to make some improvements in this area. However, the good news is that whenever a member asks a question, we all respond right away. Moreover, during this assessment 3, I have also noticed that we chat and carry on a conversation more than before, and it feels wonderful after each conversation because, at this point, we are developing good friendships and bonds with one another. I tried my best to manage and did submit my work ahead of schedule, but I did miss one meeting during this time due to the world cup game I watched at the "G." In particular, the experience is overwhelming, and everyone is working extremely hard to produce their best work, which is phenomenal as a team and to be completely honest, I loved working with this team.

Group Reflection

Every team does have some flaws, and Team Active+ is not an exception. In assessment 3, we managed to have 4 members from the previous group of 6 and this was our second experience working together as a team, to be honest, everyone was a bit conscious and extremely vigilant in the beginning to attend meetings and respond to every query on time but after our first meeting, we surged wide and kick-started our assessment 3 we planned everything through charts followed by a lucid chart that facilitates each member to keep track of their progress and create a weekly to-do list So that was a great surprising tool that, unfortunately, we didn't use much in our previous experience to keep track of. We have been working together more than we had anticipated during these weeks, and occasionally we keep in touch with one another after meetings have ended. Surprisingly, this has helped us establish strong bonds among ourselves

as a team, and the conversations also enable each team member to ask simple questions without feeling self-conscious. Since our previous experience, we have improved significantly in most areas, and each member of our team gains a lot of knowledge. Today, everyone can smoothly use the Microsoft Team platform and is comfortable dealing with how to record meetings, take minutes at meetings, upload files in HTML/CSS and most importantly, become familiar and comfortable towards using GitHub without assistance. Our group occasionally becomes very quiet. The good news is that we all quickly answer any questions or requests for assistance from other members. To improve, we should definitely demonstrate better performance in this area by being more active. Even though we can consider ourselves active by scheduling frequent meetings (around 2-3 per week) and being attentive and efficient in chats. Considering the fact that each member of our group is from a different Australian city and holds in a different time zone, we were fortunate to be able to collaborate on time and without any disagreements and concerns at each meeting. Most importantly, it was a huge relief for everyone that we managed to finish most of our tasks ahead of schedule. All of our members are incredibly humble, have a can-do attitude, and are willing to try new experiences, which contribute significantly to the accomplishment of project Active+. The tasks were distributed to everyone based on their abilities, convenience, and after receiving their consent whether they are comfortable doing it or not.

Despite the fact that each member has proven their ability to be sincere, ambitious, and helpful, our entire experience as a team has been without a doubt cool, comforting, and productive.

6 References

Anon (2015) *OpenCV (C++ vs Python) vs MATLAB for Computer Vision | Learn OpenCV*, OpenCV, accessed 26 October 2022. <https://learnopencv.com/opencv-c-vs-python-vs-matlab-for-computer-vision/>

Asana (n.d.) *Waterfall, Agile, Kanban, and Scrum: What's the Difference?* Asana website accessed 2 November 2022. <https://asana.com/resources/waterfall-agile-kanban-scrum>

Berkeley Boot Camps. (n.d.) *What Does A Front End Web Developer Do?* Berkeley Coding Bootcamps, accessed 31 October 2022. <https://bootcamp.berkeley.edu/resources/coding/learn-web-development/what-does-a-front-end-web-developer-do/>

Clear J (2014) *How Long Does It Take to Form a Habit? Backed by Science* [online] James Clear website, accessed 18 October 2022. <https://jamesclear.com/new-habit#:~:text=On%20average%2C%20it%20takes%20more>

Daneshmandi, H., Choobineh, A., Ghaem, H. and Karimi, M. (2017). Adverse Effects of Prolonged Sitting Behavior on the General Health of Office Workers. *Journal of Lifestyle Medicine*, [online] 7(2), pp.69–75. doi:10.15280/jlm.2017.7.2.69

Digite (2019) *What Is Scrum Methodology? & Scrum Project Management*, Digite website, accessed 13 November 2022. <https://www.digite.com/agile/scrum-methodology/>

GeeksforGeeks (2021) *Face and Hand Landmarks Detection using Python - Mediapipe*, OpenCV, accessed 17 October 2022. <https://www.geeksforgeeks.org/face-and-hand-landmarks-detection-using-python-mediapipe-opencv/>

GeeksforGeeks (2021) *Machine Learning with Python*, GeeksforGeeks, accessed 17 October 2022. <https://www.geeksforgeeks.org/machine-learning-with-python/>

Guru99.com (2019) *What is Backend Developer? Skills to become a Web Developer*, Guru99 website, accessed 5 November 2022. <https://www.guru99.com/what-is-backend-developer.html>

Nvisia.com (n.d.) *Agile Methodology 101*, nvisia website, accessed 13 November 2022. <https://www.nvisia.com/insights/agile-methodology>

Opencv.org (n.d) *OpenCV: Introduction to OpenCV-Python Tutorials*, OpenCV, accessed 17 October 2022. https://docs.opencv.org/4.6.0/d0/de3/tutorial_py_intro.html#

Painaustralia.org.au. (n.d.) *Why Australia can't afford to ignore pain*, Pain Australia website, accessed 13 October 2022. <https://www.painaustralia.org.au/media-document/blog-1/blog-2021/blog-september-2021/why-australia-can-t-afford-to-ignore-pain>

ProjectManager.com (2017) *Project Manager Job Description*, Project Manager website, accessed 31 October 2022. <https://www.projectmanager.com/blog/project-manager-job-description#:~:text=An%20IT%20Project%20Manager%20is>

Python Central (2021) *Why Cyber Security Important when Programming with Python?* Python Central website, accessed 1 November 2022. <https://www.pythongcentral.io/is-cyber-security-important-when-programming-with-python/>

Python Software Foundation (2019) *What is Python? Executive Summary*, Python website, accessed 17 October 2022. <https://www.python.org/doc/essays/blurb/>

Shutterstock (n.d.) *8 Kanb Images, Stock Photos & Vectors*, Shutterstock website, accessed 13 November 2022. <https://www.shutterstock.com/search/kanb>

Staragile.com (n.d.) *Project Leader Roles and Responsibilities in Project Management*, Staragile website, accessed 13 November 2022. <https://staragile.com/blog/project-leader-roles-and-responsibilities#:~:text=The%20role%20of%20a%20project%20leader%20in%20project%20management%20includes>

TM (n.d.) *MediaPipe: MediaPipe is the simplest way for researchers and developers to build world-class ML solutions and applications for mobile, edge, cloud, and the web.*, MediaPipe in Python, accessed 26 October 2022. https://google.github.io/mediapipe/getting_started/python.html

Todd S (2014) *The Pros and Cons of Posture Aids*, Chiropractor in Burke, VA - NOVA Chiropractic & Wellness Center, accessed 31 October 2022. <https://novachiowellness.com/pros-cons-posture-aids/>

Visual Workforce (n.d.) *IT Career Skills Series: Web Application Security Officer*, Visual Workforce website, accessed 13 November 2022. <https://www.visualworkforce.com/blog/it-career-skills-series-web-application-security-officer>

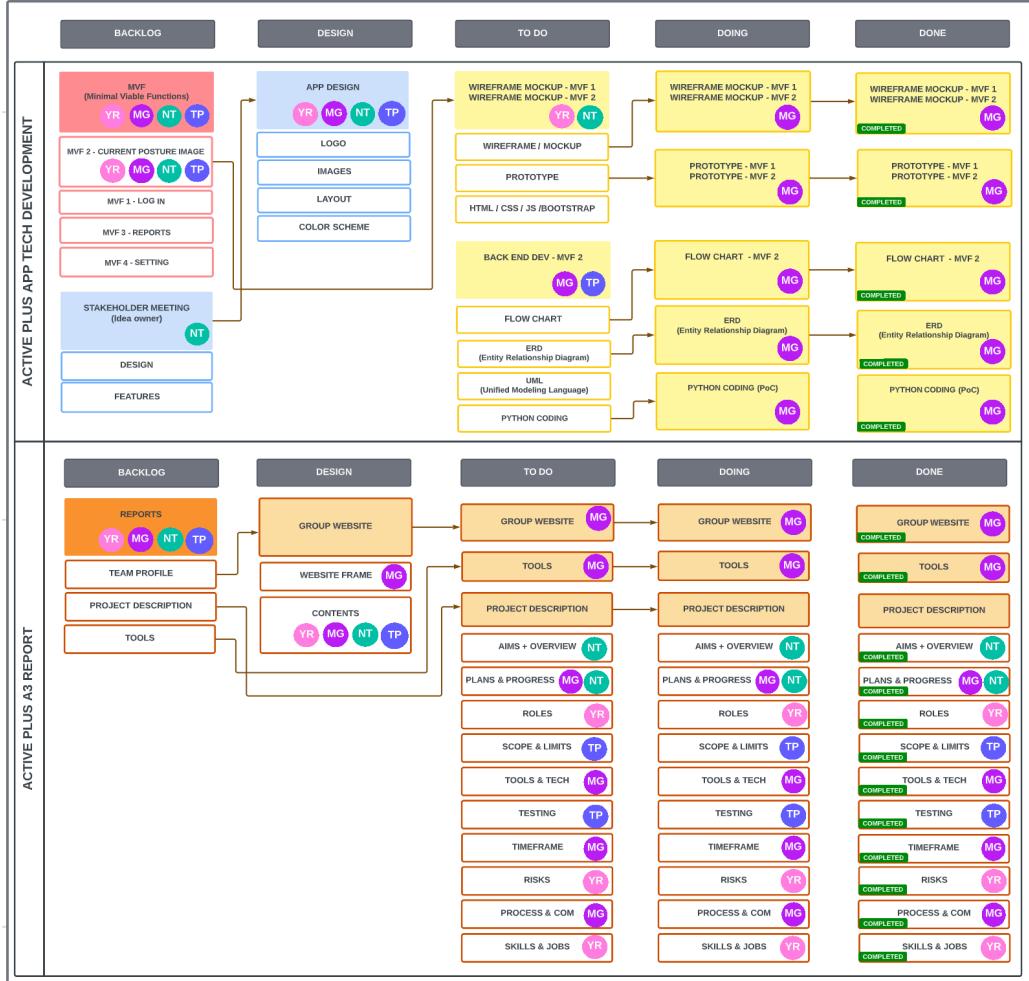
Wales M (2020) *Front-End vs Back-End vs Full Stack Web Developers*, Udacity, accessed 1 November 2022. <https://www.udacity.com/blog/2020/12/front-end-vs-back-end-vs-full-stack-web-developers.html>

Workspace.google.com (n.d.) *Lucidchart - Google Workspace Marketplace*, Workspace Google website, accessed 30 October 2022.

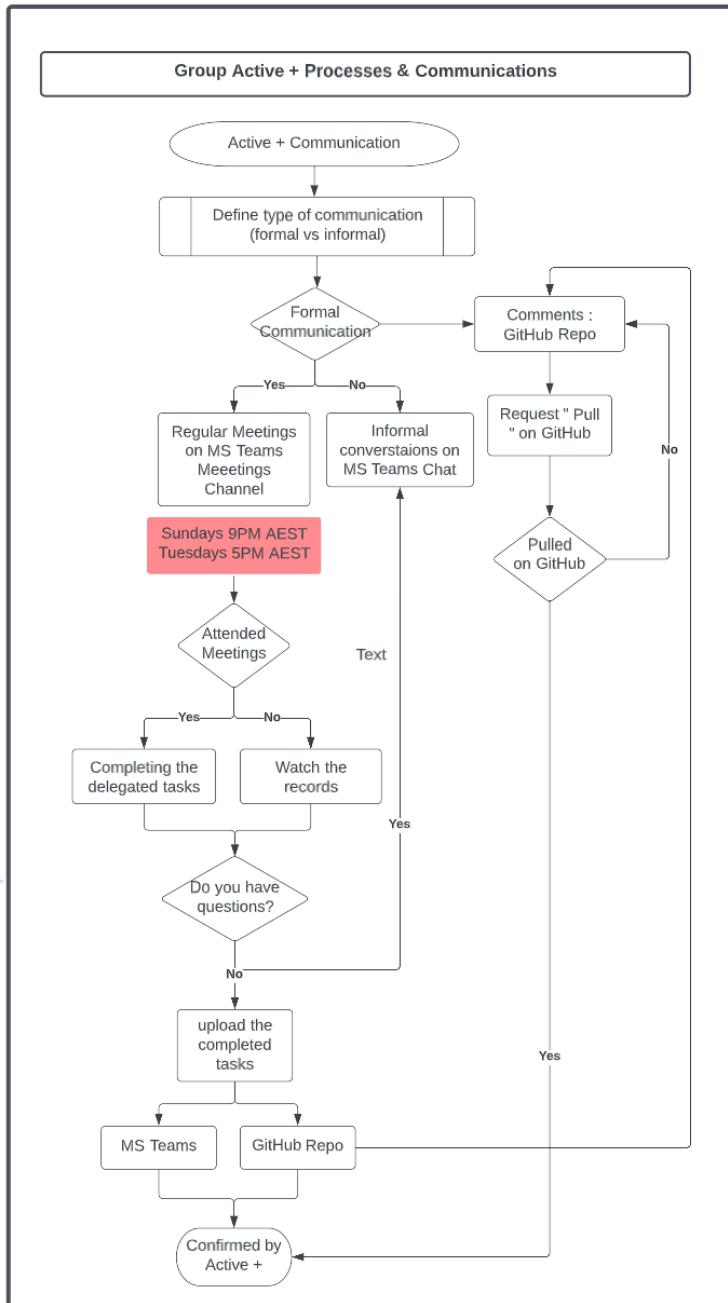
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7 Appendices

Appendix 1

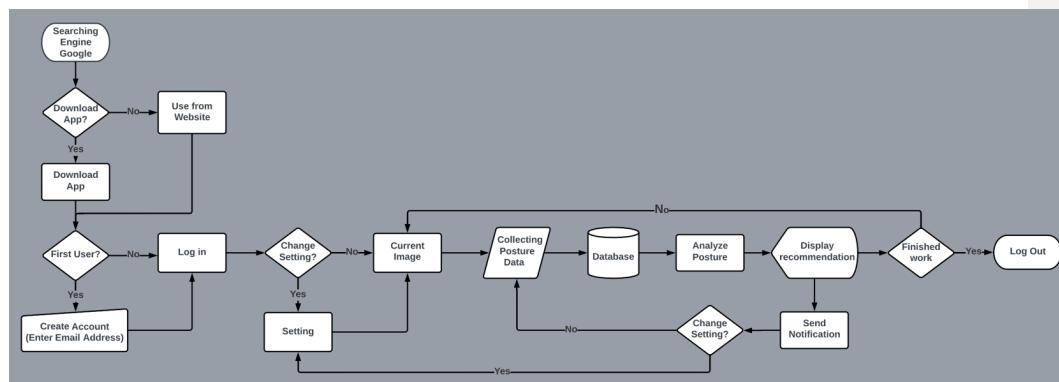
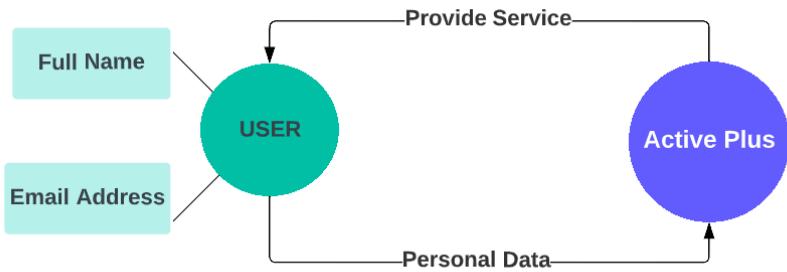


Appendix 2



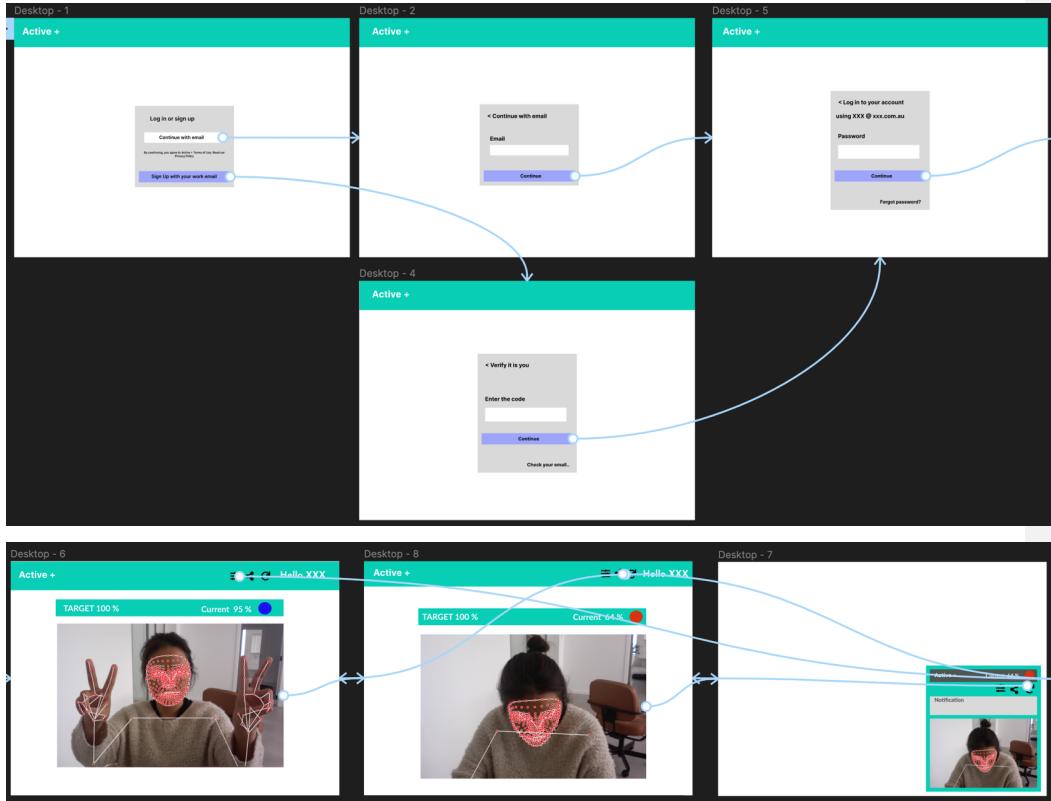
Appendix 3

Flow Chart and ERD (Entity Relationship Diagram) of Active Plus App functions



Appendix 4

Prototype Active Plus App



Appendix 5

Proof of Concept

