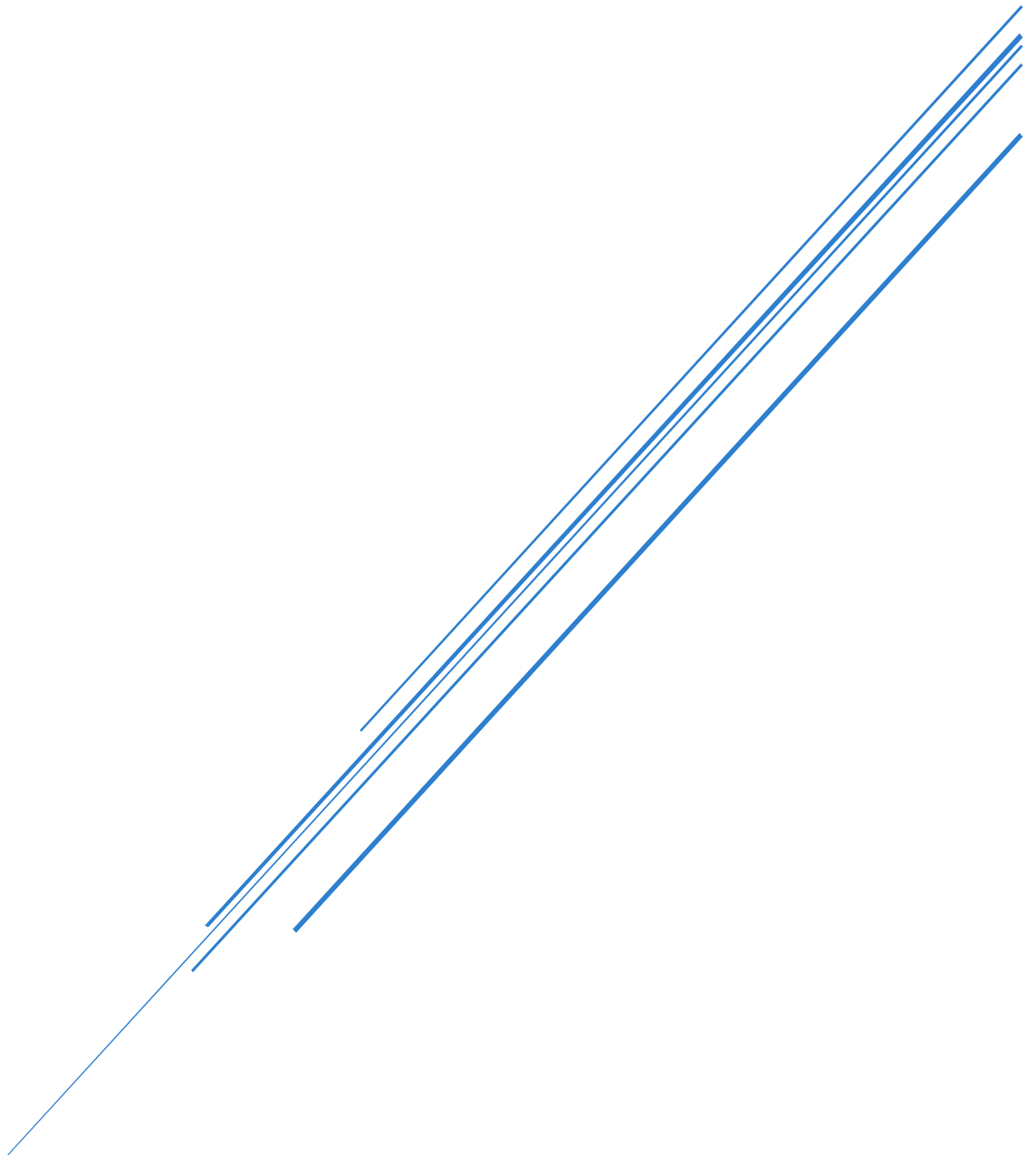


# EMERGING TRENDS (ACCB6019)

HACKATHON 2025 – INDIVIDUAL REFLECTIVE JOURNAL



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Cyber Security & Networks

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## Personal Experience of Working with the Team

Working on the SupportLink project was an extremely enjoyable experience but also eye-opening experience for me. At the start I had a few concerns about doing group work, from prior experience miscommunication or uneven contributions became a huge issue but the group we formed was much different and were quite engaged and committed to the project. Everyone ended up with clearly set roles and communication was effective throughout the entire project, which allowed us to stay on the right path and motivated.

We used a combination of both in-person meetings (in the uni library) and online chats through Discord. The regular meetings proved to be helpful not only for checking up on everyone's progress, but also for brainstorming ideas and solving problems, even pushing forward on certain parts like development. I also appreciated how everyone respected what each other were saying and took it on board.

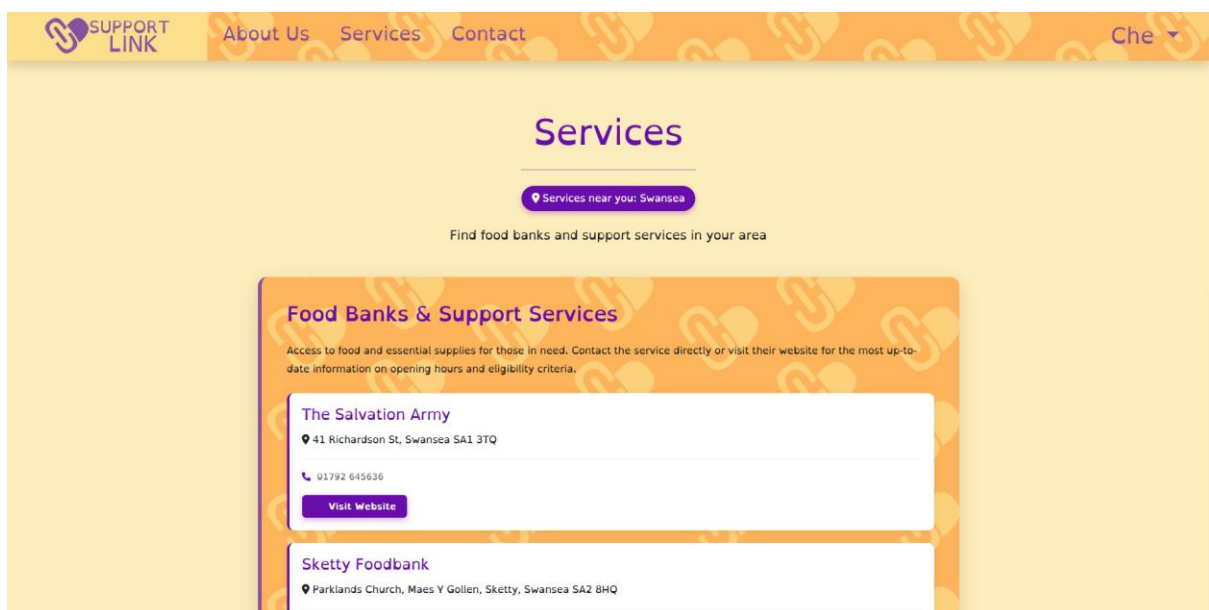
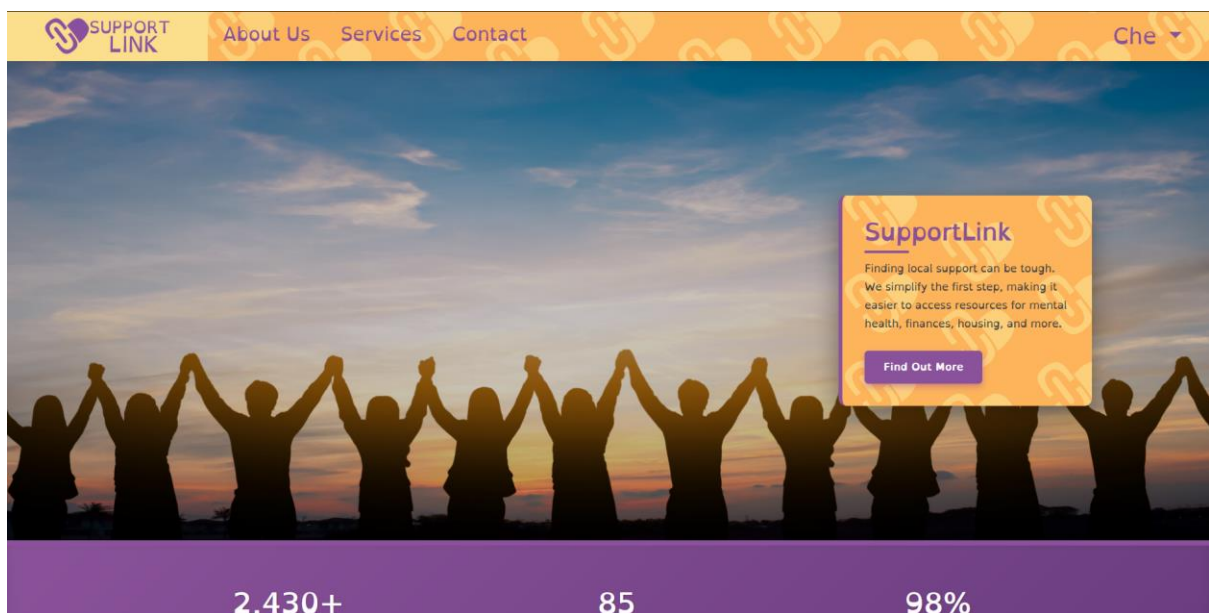
My role focused primarily on leading the development of the website, but the design and what would go on it were designed collaboratively. An example of this being when Ellis and Daniel would design pages and the layout and myself and Kai would then implement it. We were able to communicate well with any adjustments that were needed and there were no hard feelings.

It wasn't completely stress-free though, there were certain points where some of us were out of the loop and others were ahead, but we learned to push through these problems quickly. Overall, this experience has improved my ability to work in a team and develop better group communication.

## My Contribution

My primary responsibility within the project was to lead development, which I ended up doing the majority of. David and Faiz provided a website they had made previously for something else, which I didn't use much of and rebuilt completely to ensure that it would be more function and better long term.

The website was developed using PHP and JavaScript, connected to a MariaDB database. To make development easier, and prevent against SQL injection & syntax errors, I used the Medoo framework, which allowed for cleaner, quicker and more secure interaction with the database. I also implemented a custom page router to simplify URL handling and make it easier to maintain.



One of the most important additions was user sessions. I introduced user accounts with login sessions that expire after 3 days, also handled in the backend as backup using UNIX timestamps. I also decided to use PHPMailer for email verification, ensuring that only verified users could access important parts of the site. This also served to prevent bot signups and spam, which the original base lacked.

| id | username | password                                             | dc |
|----|----------|------------------------------------------------------|----|
| 1  | Che      | \$2y\$10\$QTdyiO6yRIO8GJ2JtnFdGOP4jIWqQB8GEI85INJ... |    |

Passwords are now stored using BCrypt encryption instead of plain text, a huge upgrade compared to the skeleton website, meeting modern security standards. I also configured the .htaccess file to block directory access, preventing unintended source code leaking, parts in there are also for the page router.

```
RewriteEngine On
RewriteBase /      root, last month * che

Options -Indexes

RewriteRule ^\.git(/|$) - [F,L]

RewriteCond %{THE_REQUEST} ^[A-Z]{3,}\s/(.*(inc|pages|_parts)/.+)\s [NC]
RewriteCond %{REQUEST_URI} !^/base\.php [NC]
RewriteCond %{REQUEST_URI} !^/index\.php [NC]
RewriteRule ^ - [F,L]

RewriteCond %{REQUEST_FILENAME} !-f
RewriteCond %{REQUEST_FILENAME} !-d
RewriteRule ^(.*)$ base.php?page=$1 [L,QSA]
```

To deploy the website, I hosted the site on my personal server and setup automatic deployment with GitHub, allowing for both me and Kai to push updates seamlessly to go live as soon as a change was detected. This experience has not only improved my knowledge of PHP and how backend works, but has also helped me expand my knowledge on web security.

## Team Performance Ratings

Overall, I found that the team was very well balanced and worked well together, with each member contributing well to the project. My ratings for each member (out of 5) are below:

- Kai Probert (**5/5**) – Played a huge role in doing the final website demo and helped with the frontend on the website despite being unfamiliar but was willing to learn something new.
- Ellis Christie (**5/5**) – Led the branding and the initial design work with a great vision, the colour schemes and logo designs were followed throughout.
- David Rapado (**4/5**) – Took lead on the business and financial planning and organised the meetings. Was done well but it felt like the reaching out to charities and businesses was a bit of a let down and could have been pushed more.
- Faiz Khan (**5/5**) – Great work with the survey and social media aspect, his efforts had we gone long term would have had great outreach.
- Daniel Thomas (**4/5**) – Provided designs for the website pages and some of the layout, felt like he would not take some of me and Kai's ideas into account though sometimes.

As a group though, I'd rate our overall performance **5/5**, great collaborative work, productive and adaptable when deadlines came.

## Limitations

Whilst our website achieved its core goals, a few limitations became apparent. Looking at what we originally planned, the website lacks accessibility features like screen reader compatibility and adjustable text sizes, colours and fonts, which could be important for certain users. Email verification also added an extra layer of security but also created a barrier of entry for users without easy access to email.

On the other side of things, hosting the site on my server was cost-effective but isn't scalable. If the project had significant expansion, we'd need to migrate to and start paying for a platform with uptime guarantees that could handle more users. As well, moderation features like spam detection or abuse reporting aren't a thing, which would be needed if user interaction increased. Most of this was down to time constraints.

## Risks Encountered

The biggest risk early on in development was the base website, which stored passwords in plain text and did not have sessions so pages with permissions could be directly visited. This was mitigated by implementing password encryption, sessions and email verification. Another risk was with the GitHub setup, merge conflicts can be an extreme pain to deal with, especially with all 5 of us on the branch at one point. This was mitigated by setting branch rules and communicating before deciding who would work on which files.