

BitbyBit- An Advanced File sharing system using Flask

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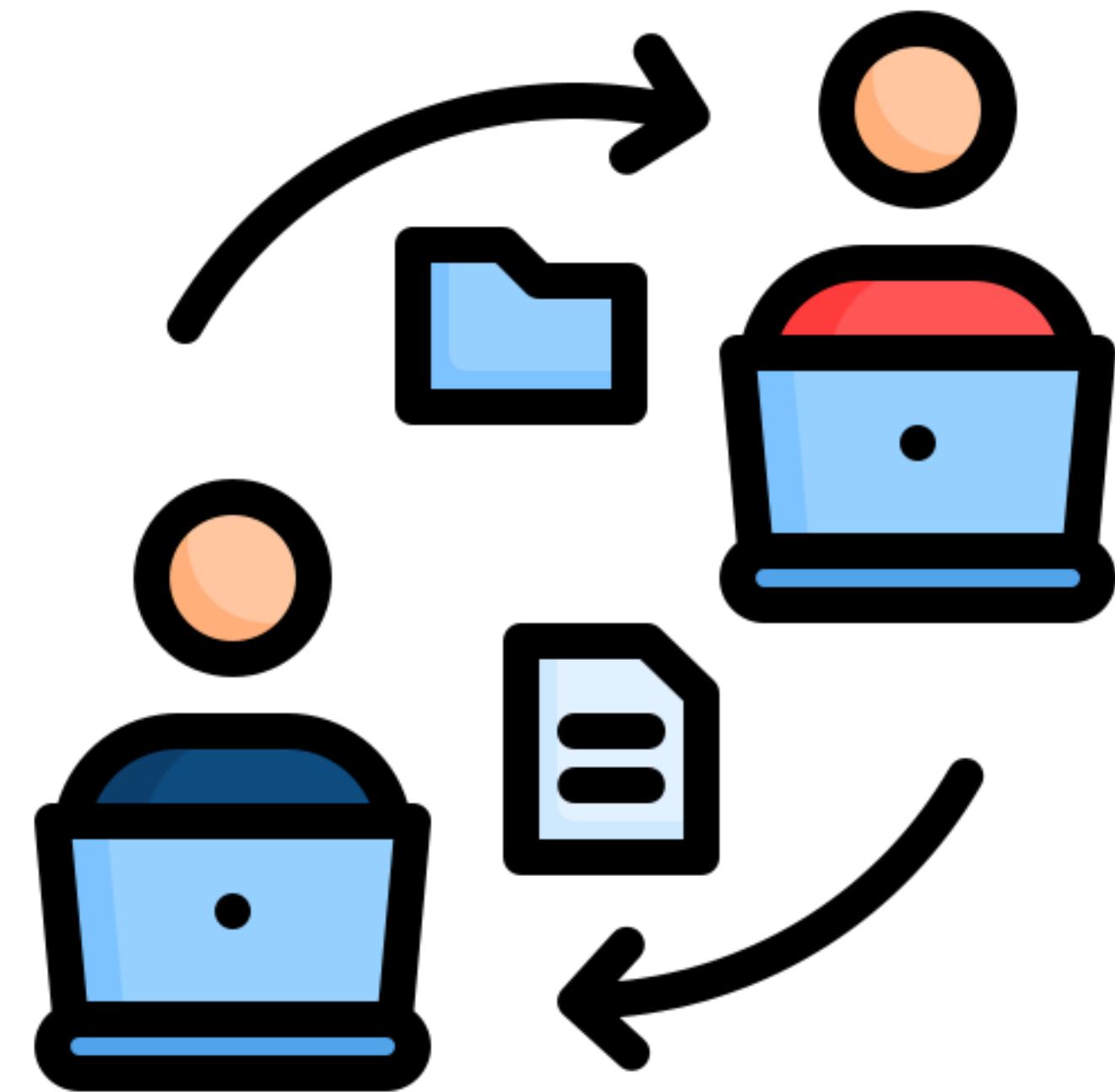
bitBybit

- Abstract and Agenda
- Introduction and Problem definition
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- Advantages and Testing
- Conclusion and future scope



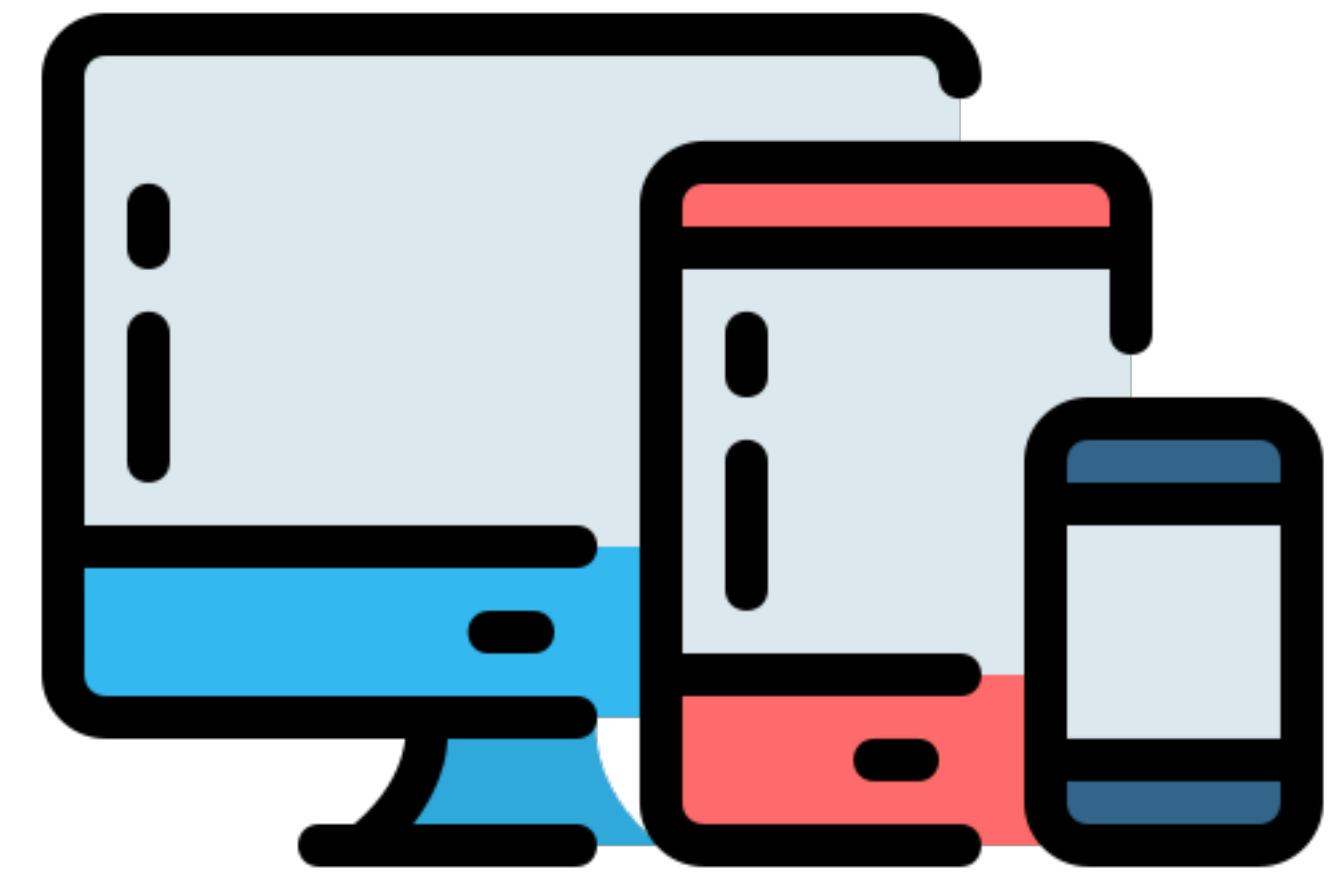
Abstract

- This research is about a self hosted file sharing platform.
- The project aims to enable local sharing and file management in a versatile and approachable way.
- Web applications are a powerful starting point, being versatile by association to a web browser's flexibility and accessibility.
- The project was developed using specialized libraries (Flask) and hosted via Gunicorn with WSGI.
- The project would follow the testing procedures for a web application.



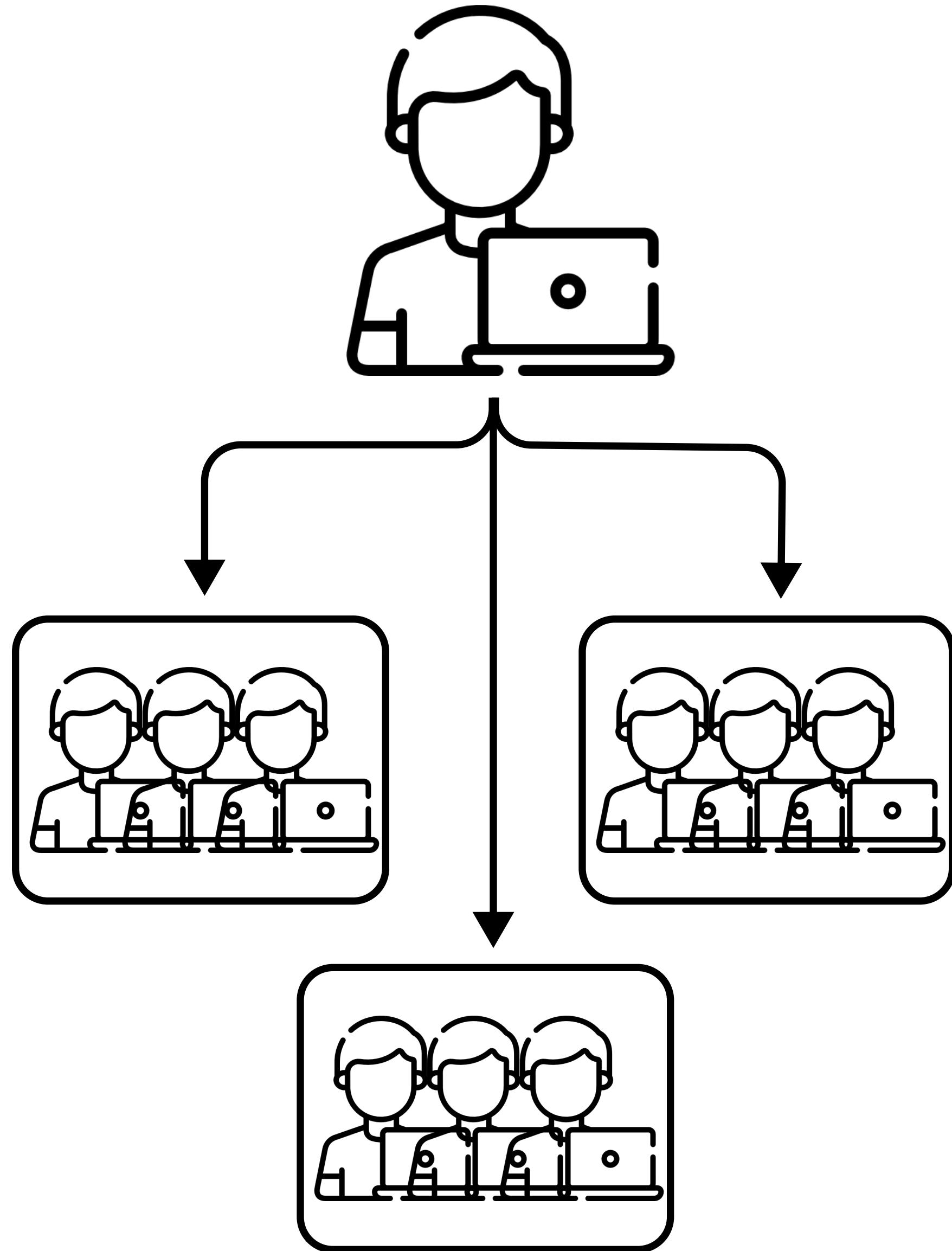
Background

- Following the digital revolution, smaller personal computers have become synonymous with as work tools.
- Services that can enhance these tools effectively, are valued much higher.
- In that regard, a good file sharing service that can foster and aid collaborative work can help boost the coordinated performance of multiple users.
- Indirectly helps facilitate the productive aspects of feedback loops in a distributed work environment (Heroux. et al., 2019).



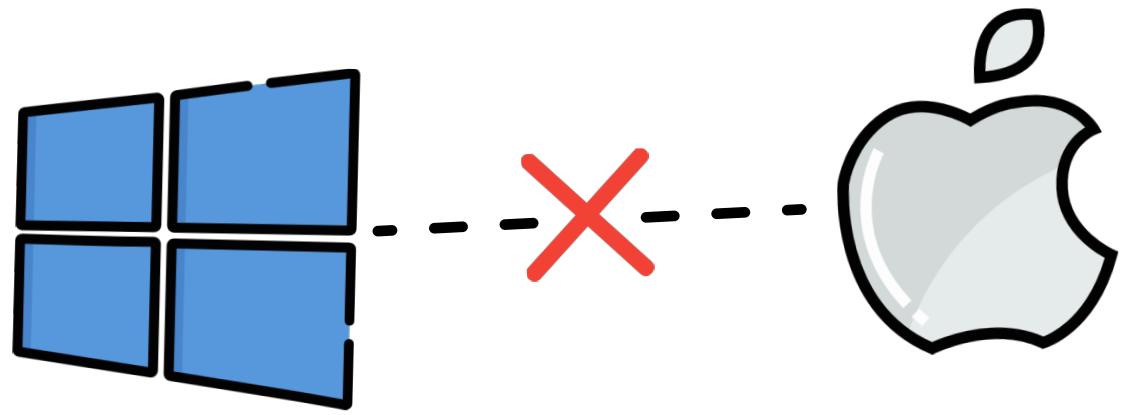
Introduction

- bitBybit is a file sharing platform, users can host the platform as the server.
- Designed as a web application, it can be supported on multiple types of devices.
- Relative topics are organised within “rooms” that can be accessed separately on individual threads.
- Data transfer security is ensured with self-signed certificates. Compression is provided as additional options.
- Version control is also provided with no enforced file sizes for creative workflows.



Problem Definition

- Increased work flexibility, in the wake of pandemic for individual teams.
- File sharing has become a underappreciated tool in today's more connected world.
- Current options present in the market are often limited by the approach employed, OS differences, file sizes or paywalls.
- Different device options and screen sizes are at an all time high, making any approach difficult to adapt for multiple devices.



Aims and Objectives

Aims

- Making a responsive website that possesses a limitless central file sharing capabilities.

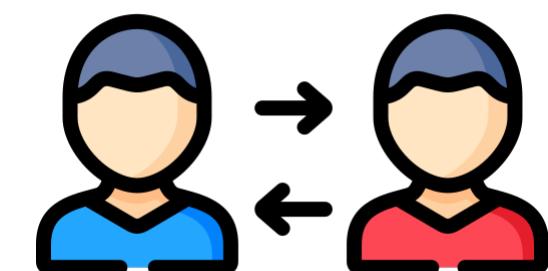
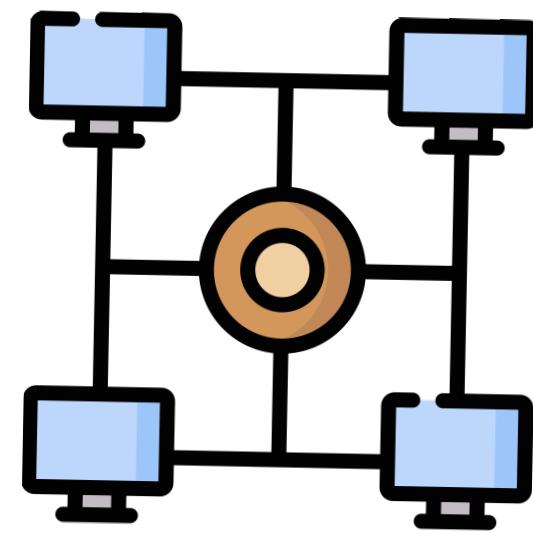
Objectives

1. Creating a simple Interface that can be shrunk down and adapted to different mobile devices.
2. Creating a self-signed certificate for secure TLS file sharing.
3. Adding options for compression and organisation.
4. Creating a file system to store the uploaded files on the server.



Literature Review

- Baria et al. (2021) analyses commercial file sharing options available on the market and their pitfalls.
- Heroux et al (2019) highlights the growing shift towards lightweight software practices that influence this research.
- Xiong et al (2018) provides a guide to enterprise level software tools.and requirements.
- Hwang, Rianto and Pakpahan (2018) for analysing a Peer to Peer approach.
- Liang, Ai, Dong and Li (2009) emphasising the importance of security in file sharing.



Methodology

- This is applied research as most of the conclusions drawn from it would influence the creative decisions taken before and during the development of this project.
- As this is a literature review, most sources collected and referenced here are secondary and strictly used for evaluation.
- The research method utilised is Qualitative Content Analysis to pick up on trends, opinions and use cases present within the sources.
- The sources which are the most recent will be chosen over other sources.



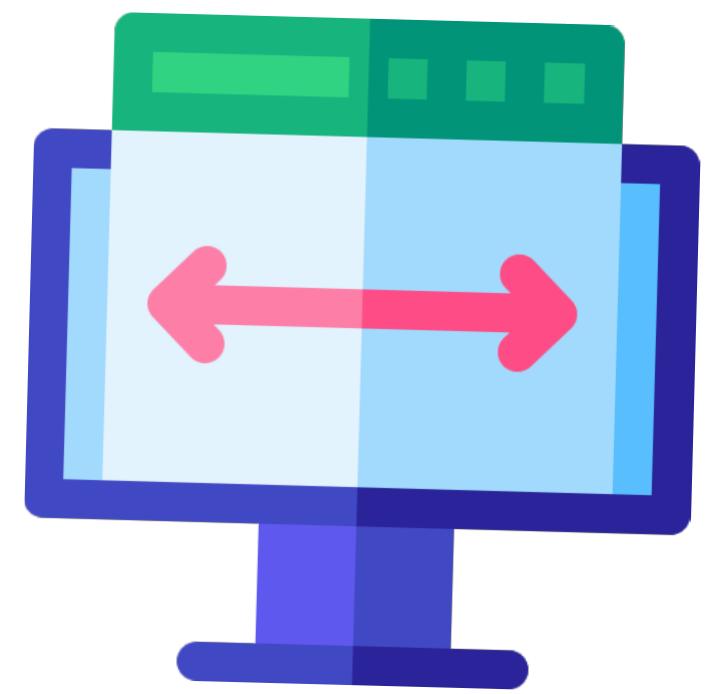
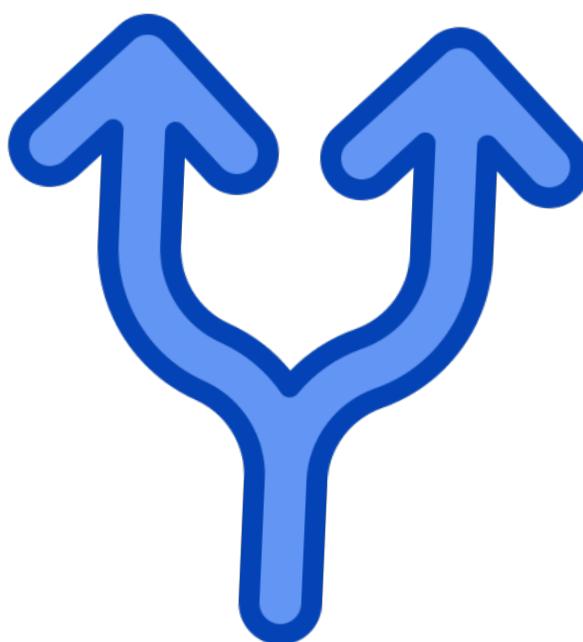
Summary of findings

- General purpose Internet Communication protocols like HTTPS, are far more useful in browsers compared to specialised protocols like FTP or SFTP (Paudel and Schindler, 2020).
- A one-to-many approach using a cloud like central server would be more efficient than a P2P approach (Baria et al, 2021).
- Designing access permissions can be bypassed by organising and filtering the files based on context (rooms).



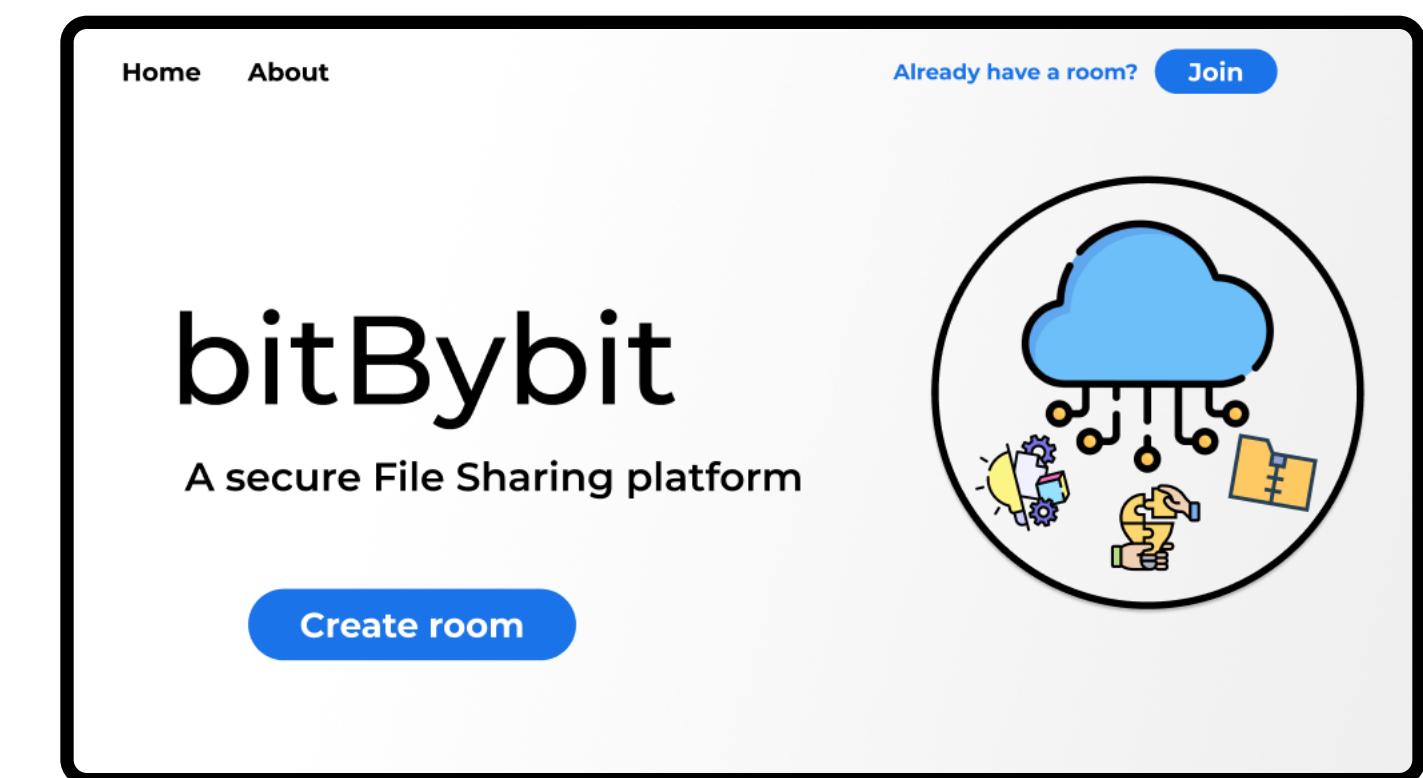
Advantages

- Simpler to develop and Script when compared to multiplatform development with media queries.
- Automated web sockets and threading infrastructure provided.
- Open source nature allows for the project to be ported and customised to fit other use cases.



Testing

- Functional testing: Testing the functionality of the element as designed.
- Input validation: Client side validation of form input values.
- Test cases: Organising test cases to account for edge cases in decision trees.
- Usability testing: Readability, accessibility and ease of use for such a product.



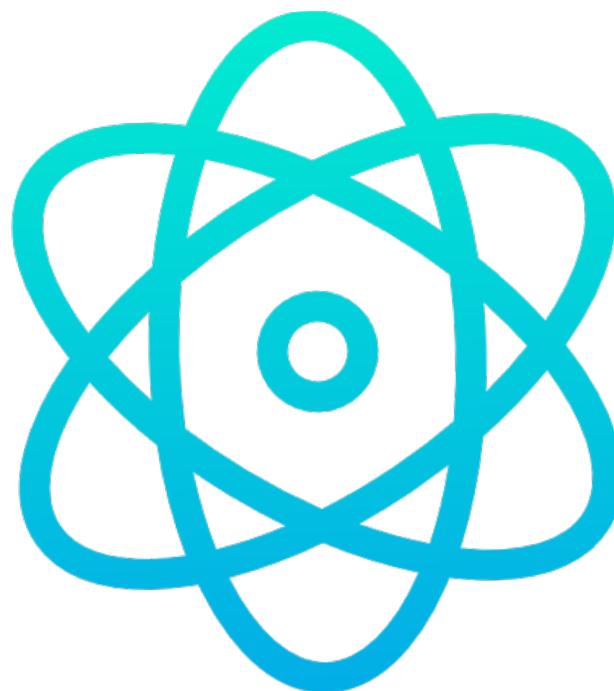
Conclusion

- This research was conducted to document and aid in the development of bitBybit.
- The research provides a guide into the existing market, helping with consistency on standards for the technologies being utilised (Testcases for web applications).
- The result of teh research helps highlight the strength of web applications being able to effectively cross platforms because of the Internet.



Future Scope

- Using REACT with NextJS for server side rendering which would allow for the inclusion of more complicated features.
- Using Bootstrap or Sass to systematise the styling of elements and make it consistent between platforms.
- Using external WSGI servers along with PyInstaller to convert bitBybit to a executable program without relying heavily on Flask.



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