PROJECTHIVE

A WEB BASED CHAT APPLICATION FOR TEAM WORK

Submitted by

1. Md. Zahid Sarder

ID: 21190301203

2. Shuvo Shaha

ID: 21190301204

3. Samira Sultana

ID: 21190301192

4. Shaimum Islam

ID: 21160200477

A Project Report Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science & Engineering

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NOTHERN UNIVERSITY BANGLADESH

May 2023

APPROVAL

The Project Report on "**ProjectHive a web based chat application for team work**" submitted by **Md. Zahid Sarder (ID: ECSE21190301203)**, **Shuvo Shaha (ID: ECSE21190301204), Samira Sultana (ID: ECSE21190301192)** and **Shaimum Islam (ID: ECSE21160200477)** to the Department of Computer Science and Engineering, Northern University Bangladesh, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents.

Board of Examiners

1. Simon Bin Akter   **(Supervisor)**

3. Sumya Akter   **(Examiner)**

4. A. M. Tayeful Islam   **(Examiner)**

Md. Raihan-Ul-Masood

Associate Professor and Head

Department of Computer Science and Engineering

Northern University Bangladesh

DECLARATION

We, hereby, declare that the work presented in this Project report is the outcome of the investigation performed by us under the supervision of **Simon Bin Akter sir**, Lecturer, Northern University of Bangladesh. We also declare that no part of this Project has been or is being submitted elsewhere for the award of any degree or diploma.

Signature

…………………………
Name: Md. Zahid Sarder
(ID: 21190301203)

....
Name: Shuvo Shaha
(ID: 21190301204)

....
Name: Samira Sultana
(ID: 21190301192)

....
Name: Shaimum Islam
(ID: 21160200477)

Candidates

ACKNOWLEDGEMENT

We would like to express our heartfelt gratitude to several individuals and organizations who have played a significant role in the successful completion of our ProjectHive. Without their guidance, support, and encouragement, this project would not have been possible. First and foremost, we would like to extend our sincere thanks to our respected supervisor **Simon Bin Akter sir**, Lecturer, Dept. of Computer Science & Engineering, Northern University of Bangladesh. His valuable guidance, expertise, and unwavering support have been instrumental throughout the entire project. His insights, suggestions, and feedback have greatly contributed to shaping the direction and quality of our work. We would also like to express our deep appreciation to our honorable Vice Chancellor and our university for providing us with the opportunity to undertake this project. Their support, resources, and belief in our capabilities have been invaluable in realizing our vision for ProjectHive. We extend our gratitude to the faculty members of the Science Faculty, Northern University Bangladesh, for their valuable contributions and suggestions during the development of ProjectHive. Their expertise and insights have greatly enriched our understanding and implementation of the project. Additionally, we would like to acknowledge the contributions of our fellow friends and colleagues who have provided us with encouragement, support, and valuable suggestions throughout the project. Their involvement and collaboration have been instrumental in shaping the features and functionalities of ProjectHive. Finally, we would like to express our heartfelt appreciation to our families for their unwavering support, love, and understanding. Their encouragement and belief in our abilities have been a constant source of motivation throughout this project and beyond. In conclusion, we sincerely thank all the individuals, institutions, and resources that have contributed to the successful completion of ProjectHive. Their collective efforts have played an integral role in making this project a reality, and we are deeply grateful for their support.

ABSTRACT

This thesis book presents ProjectHive, a team communication and collaboration software designed to revolutionize the way teams work together. ProjectHive aims to provide a user-friendly and intuitive interface that facilitates seamless team communication and collaboration. With a focus on enhancing productivity and efficiency, ProjectHive offers a wide range of features and functionalities. Users can create private and open channels, allowing for secure and transparent communication within teams. The software enables real-time messaging, file sharing, and collaborative task management, empowering teams to work together effectively on projects of any scale. Unlike other platforms, ProjectHive stands out by being completely free of cost, making it accessible to individuals and organizations with limited resources. Moreover, ProjectHive offers flexibility in user authentication by supporting login using ID and password, providing an alternative to relying solely on Google login like many other platforms. This thesis book delves into the design, development, and technical aspects of ProjectHive, providing a comprehensive overview of its features and functionalities. It explores how ProjectHive can transform team dynamics, streamline workflows, and foster a culture of collaboration and innovation.

Dedicated to Our Parents

TABLE OF CONTENTS

Chapter III: Methodology   10

Chapter IV: System Design & Analysis   15

Chapter V: Tools & Technique

Chapter VI: Feature & Functionalities

Chapter VII: Conclusion

References

CHAPTER-I

Introduction

1.1 Introduction

In today's fast-paced and interconnected world, effective communication and collaboration are key to the success of any organization. The advent of technology has transformed the way teams work together, eliminating geographical barriers and enabling seamless communication across distances. Among the numerous communication platforms that have emerged, ProjectHive stands out as an innovative solution designed to efficient team interactions, increase productivity, and promote a cohesive work environment.

ProjectHive is a comprehensive team communication and collaboration platform, inspired by the success of platforms like Slack, which have revolutionized the way teams connect and collaborate. The aim of ProjectHive is to provide organizations with a centralized hub that integrates multiple communication channels, simplifying real-time communications, file sharing, and project management in an intuitive and user-friendly manner.[10]

This thesis book explores into the conceptualization, development, and implementation of ProjectHive as a powerful tool for enhancing team productivity and development a culture of effective communication within organizations. Through wide research, analysis, and hands-on experience, this thesis aims to present a complete overview of the features, benefits, and potential applications of ProjectHive.

1.2 Objective

The primary objective of this thesis is to analyze and evaluate the impact of ProjectHive as a team communication and collaboration platform. The specific objectives include:

1. Investigating the features and functionalities of ProjectHive and understanding how they contribute to improving team communication and collaboration.
2. Evaluating the benefits and challenges associated with implementing ProjectHive in different organizational settings.
3. Examining the impact of ProjectHive on team dynamics, employee satisfaction, and overall organizational performance.

4. Exploring the technical aspects of ProjectHive, such as its architecture, security measures, scalability, and integration capabilities.

5. Providing recommendations and best practices for organizations considering the adoption of ProjectHive or similar platforms.

1.3 Justification of Study

The study of ProjectHive and its implications is justified by several factors. Firstly, effective communication and collaboration are critical for the success of modern organizations. By exploring a platform like ProjectHive, which is specifically designed to enhance these aspects, this study contributes to the knowledge base surrounding team collaboration tools.[16]

Secondly, while platforms like Slack have gained widespread popularity, there is a need to examine newer alternatives such as ProjectHive. Understanding the unique features and benefits offered by ProjectHive can provide valuable insights for organizations seeking to optimize their communication and collaboration processes.[12]

Thirdly, as technology continues to evolve, it is crucial to evaluate the impact of platforms like ProjectHive on team dynamics, productivity, and organizational performance. This study aims to fill this gap by assessing the real-world implications of implementing ProjectHive in diverse organizational contexts.

1.4 Scope of Study

This study focuses specifically on ProjectHive as a team communication and collaboration platform. The scope includes the following aspects:

1. Understanding the features and functionalities of ProjectHive and their importance to team communication and collaboration.

2. Assessing the impact of ProjectHive on team dynamics, employee satisfaction, and organizational performance through case studies and surveys.

3. Exploring the technical aspects of ProjectHive, including its architecture, security measures, scalability, and integration capabilities.

4. Providing recommendations and best practices for organizations considering the adoption of ProjectHive or similar platforms.

It is important to note that this study does not compare ProjectHive with other specific platforms but focuses on understanding its unique contributions and implications in the term of team communication and collaboration.

1.5 Overview

This thesis book is structured into several chapters to provide a comprehensive understanding of ProjectHive. Chapter 1 provides an introduction to the project, objectives, justification of the study, and the scope of the project. Chapter 2 conducts a literature review, exploring existing research and literature in the field of team communication and collaboration. Chapter 3 discusses the methodology employed in the development of ProjectHive, including the project management approach, development methodologies, and data collection techniques. Chapter 4 delves into the System design and analysis of ProjectHive, covering the system design, architecture, and technologies utilized. Chapter 5 explores the tools and techniques employed in the development and implementation of ProjectHive. Chapter 6 provides an overview of the features and functionalities offered by ProjectHive, Chapter 7 concludes the thesis book, summarizing the findings, discussing limitations, and suggesting future directions.

By the end of this thesis book, readers will gain a comprehensive understanding of ProjectHive, its development process, and its potential to enhance team communication and collaboration in various domains and industries.

CHAPTER-II

Literature Review

2.1 Introduction

This chapter presents a comprehensive review of the relevant literature on team communication, collaboration platforms, and related concepts. The literature review aims to provide a theoretical foundation for understanding the significance and potential impact of ProjectHive as a team communication and collaboration platform. By examining existing research and studies in this domain, this chapter identifies key trends, challenges, and best practices that inform the development and implementation of ProjectHive.

2.2 Team Communication and Collaboration

2.2.1 Importance of Effective Team Communication

This section explores the critical role of effective team communication in achieving organizational goals. It discusses how clear and efficient communication fosters collaboration, improves decision-making, and enhances overall team performance. The literature review highlights the impact of poor communication on team dynamics and project outcomes, emphasizing the need for strong communication platforms like ProjectHive.[4]

2.2.2 Advantages of Collaborative Work Environments

This section examines the benefits of collaborative work environments and their impact on employee satisfaction, productivity, and innovation. It reviews studies that determine how effective collaboration leads to better problem-solving, knowledge sharing, and creativity within teams. The literature also explores the characteristics of successful collaborative teams and identifies factors that contribute to their effectiveness.[1]

2.2.3 Challenges in Team Communication and Collaboration

In this section, the literature review addresses the challenges commonly encountered in team communication and collaboration. It discusses issues such as information overload, miscommunication, lack of coordination, and difficulties in managing virtual or distributed

teams. Understanding these challenges provides insights into the specific areas where platforms like ProjectHive can offer solutions and improvements.[5]

2.3 Collaboration Platforms and Tools

2.3.1 Overview of Collaboration Platforms

This section provides an overview of existing collaboration platforms, including their features, functionalities, and applications. It explores popular platforms like Slack, Microsoft Teams, and Google Workspace, analyzing their strengths and limitations. By examining these platforms, the literature review establishes a baseline for evaluating the unique contributions of ProjectHive in the context of team communication and collaboration.[10][11]

2.3.2 Impact of Collaboration Platforms on Team Productivity

This section reviews practical studies that investigate the impact of collaboration platforms on team productivity and performance. It examines research on the adoption and use of collaboration tools, identifying factors that influence their effectiveness. The literature also explores the role of user experience, interface design, and ease of integration in shaping the outcomes of collaboration platforms.[4]

2.3.3 Integration of Communication and Collaboration Tools

This section discusses the combination of communication and collaboration tools within organizations. It explores the benefits and challenges associated with integrating multiple tools and platforms, highlighting the potential for improved efficiency, streamlined workflows, and enhanced user experience. The literature review identifies successful integration strategies and provides insights into how ProjectHive can offer seamless integration with existing communication and productivity tools.[9]

2.4 Comparison Between ProjectHive and Other Communication Platform

In the realm of team communication and collaboration platforms, ProjectHive and Slack are two prominent players offering a range of features to enhance teamwork and streamline workflows. While both platforms share the goal of facilitating effective collaboration, there are several key differences that set them apart.[10]

2.4.1 User Interface (UI):

One significant difference lies in the user interface. Slack, although widely adopted, has been criticized for its complex and cluttered interface, which can be overwhelming for new users. In contrast, ProjectHive prioritizes user-friendliness with an intuitive and easy-to-understand UI. ProjectHive's interface is designed to minimize complexity and provide a seamless user experience, enabling users to navigate the platform effortlessly and focus on productive collaboration.

2.4.2 Cost:

Another noteworthy difference is the cost structure. Slack operates on a freemium model, offering limited functionality for free and charging for advanced features and additional user licenses. In contrast, ProjectHive stands out by being completely free of cost, providing all its features and functionalities without any subscription fees. This makes ProjectHive an attractive option for organizations seeking a cost-effective solution without compromising on essential collaboration tools.

2.4.3 Authentication Options:

Authentication options also differ between the two platforms. Slack primarily supports login via Google accounts, limiting users to a single sign-on option. On the other hand, ProjectHive provides the flexibility to log in using traditional username and password credentials. This broader authentication support caters to users who prefer different login methods, accommodating a wider range of preferences and organizational requirements.

By offering a more user-friendly interface, cost-effective pricing, and versatile authentication options, ProjectHive provides an attractive alternative to Slack for organizations seeking an intuitive, cost-efficient, and customizable team communication and collaboration platform.

2.5 Best Practices and Recommendations

2.4.1 Best Practices for Team Communication and Collaboration

This section presents a compilation of best practices derived from the literature for effective team communication and collaboration. It explores strategies for establishing clear communication channels, fostering a collaborative culture, and promoting active participation within teams. These best practices serve as guidelines for the development and implementation of ProjectHive to ensure optimal outcomes.[7]

2.4.2 Recommendations for Designing Collaboration Platforms

Drawing from the literature, this section offers recommendations for designing collaboration platforms that promote user engagement, satisfaction, and adoption. It discusses the importance of intuitive interfaces, customizable features, and effective information management. The literature review identifies key design principles and usability guidelines that can inform the design and development of ProjectHive.[8]

2.6 Summary

This chapter concludes with a summary of the key findings from the literature review. It highlights the importance of effective team communication and collaboration, the existing challenges in this domain, the role of collaboration platforms, and best practices for their implementation. The literature review serves as a foundation for the subsequent chapters, informing the analysis and evaluation of ProjectHive as a team communication and collaboration platform.

CHAPTER-III

Methodology

3.1 Introduction

This chapter represents the methodology that adopted for the study of ProjectHive as a team communication and collaboration platform. The methodology outlines the research approach, data collection methods, sample selection, and data analysis techniques conducted to achieve the objectives of this study. By following a hard methodology, this chapter ensures the reliability and validity of the research findings.

3.2 Research Approach

The research approach for this study is mainly qualitative and exploratory in nature. It involves an in-depth investigation of ProjectHive, its features, functionalities, and impact on team communication and collaboration. The research approach includes a combination of literature review, case studies, and surveys to gather comprehensive insights and perspectives.[17]

3.3 Data Collection Methods

To gather relevant data and insights, multiple data collection methods are conducted in this study:[3]

3.3.1 Literature Review

A detailed literature review is conducted to explore existing research, studies, and publications which is related to team communication, collaboration platforms, and similar topics. This helps to establish a theoretical framework and identify key concepts, trends, and challenges in the field. The literature review helps as a foundation for understanding the context and significance of ProjectHive.

3.3.2 Case Studies

Multiple case studies are conducted to examine the implementation and impact of ProjectHive in different organizational settings. The case studies involve in-depth

interviews with project managers, team members, and other stakeholders who have utilized ProjectHive in their work. These interviews explore their experiences, challenges, and discovered benefits of using ProjectHive. The case studies provide real-world insights into the practical implications of ProjectHive and its effectiveness in enhancing team communication and collaboration.

3.3.3 Surveys and Interviews

Surveys and interviews are conducted to gather quantitative and qualitative data from a larger sample of ProjectHive users. The surveys are designed to collect information on user satisfaction, perceived benefits, challenges faced, and overall impact of ProjectHive on team communication and collaboration. Interviews provide an opportunity for in-depth discussions with selected users to gain further insights into their experiences and perspectives.

3.4 Sample Selection

For the case studies, a purposive sampling technique is employed to select organizations that have implemented ProjectHive. The sample includes a diverse range of industries, team sizes, and geographical locations to capture a comprehensive understanding of ProjectHive's impact in different situation. Similarly, the survey participants are selected from a wide range of organizations that have accepted ProjectHive, ensuring a diverse representation of users.

3.5 Data Analysis

The collected data is analyzed using a mixed-methods approach:[3]

3.5.1 Qualitative Data Analysis

Qualitative data that obtained from interviews and open-ended survey questions are analyzed using thematic analysis. The data is coded and categorized into themes and

patterns to identify the key findings and insights related to ProjectHive's impact on team communication and collaboration. These findings help to contextualize and support the qualitative aspects of the study.
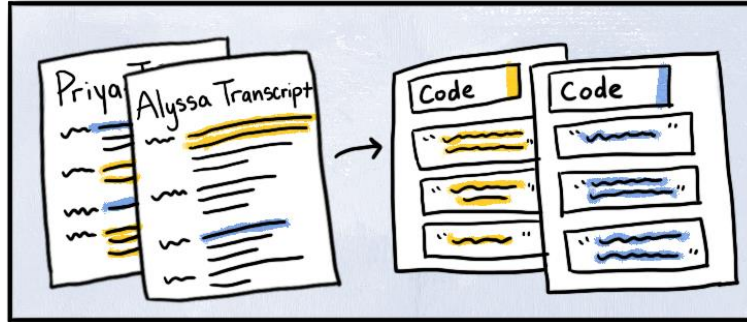

Fig-3.1: How to do thematic analysis

3.5.2 Quantitative Data Analysis

Quantitative data that obtained from surveys are analyzed using statistical techniques. The survey responses are collected, and appropriate statistical measures such as frequencies, percentages, and connections are calculated. This analysis provides quantitative insights into user satisfaction, perceived benefits, and other measurable aspects of ProjectHive's impact.

3.6 Ethical Considerations

Through the research process, ethical considerations are maintained. Informed consent is obtained from all participants, ensuring their voluntary participation and confidentiality of their responses. The data collected is used only for research purposes and reported in a collected and anonymized manner to maintain participant privacy.

3.7 Limitations

It is important to acknowledge certain limitations of this methodology. The case studies and surveys may have inherent biases due to self-selection and the potential for social desirability bias in participants' responses. Additionally, the findings may be influenced by contextual factors specific to the organizations and individuals involved. These limitations are carefully considered during the understanding of the results.

3.8 Summary

This chapter has provided an overview of the methodology that conducted in this study. The combination of qualitative and quantitative data collection methods, including literature review, case studies, surveys, and interviews, ensures a comprehensive examination of ProjectHive's impact on team communication and collaboration. The subsequent chapters will analyze and present the findings derived from this methodology.

CHAPTER-IV

System Design & Analysis

4.1 Introduction

This chapter focuses on the technical aspects of ProjectHive, providing a detailed examination of the underlying technologies, architecture, and development considerations. Understanding the technical foundations of ProjectHive is crucial for understanding its functionalities, performance, and scalability. This chapter aims to provide insights into the technical aspects that contribute to the effectiveness and reliability of the platform.

4.2 Discussion

In this step to develop our system, we have met with our supervisor sir to discuss about the system, how the system should be, how does it will work, what will be the features etc. Then we made research on it and gather some data to make a project insight and understanding the needing of a team communication and collaboration platform so that we can make a platform like ProjectHive.

4.3 System Architecture and Flowchart

The system architecture of ProjectHive plays a vital role in its performance, scalability, and resilience. This section delves into the architectural design principles and components that make up ProjectHive. It examines the different layers of the architecture, including the presentation layer, application layer, and data layer. The section also discusses the communication protocols and data flow within the system. The data that we gathered for our project we analyzed that data and tried to make an architecture for ProjectHive. In this situation we talked with our supervisor and he suggested us to make a flow chart so that we can make our project into some small part of functionalities which helped us to design the backend and frontend system easily. And then we made a flowchart (Fig 4.1) for our team communication and collaboration platform named ProjectHive.

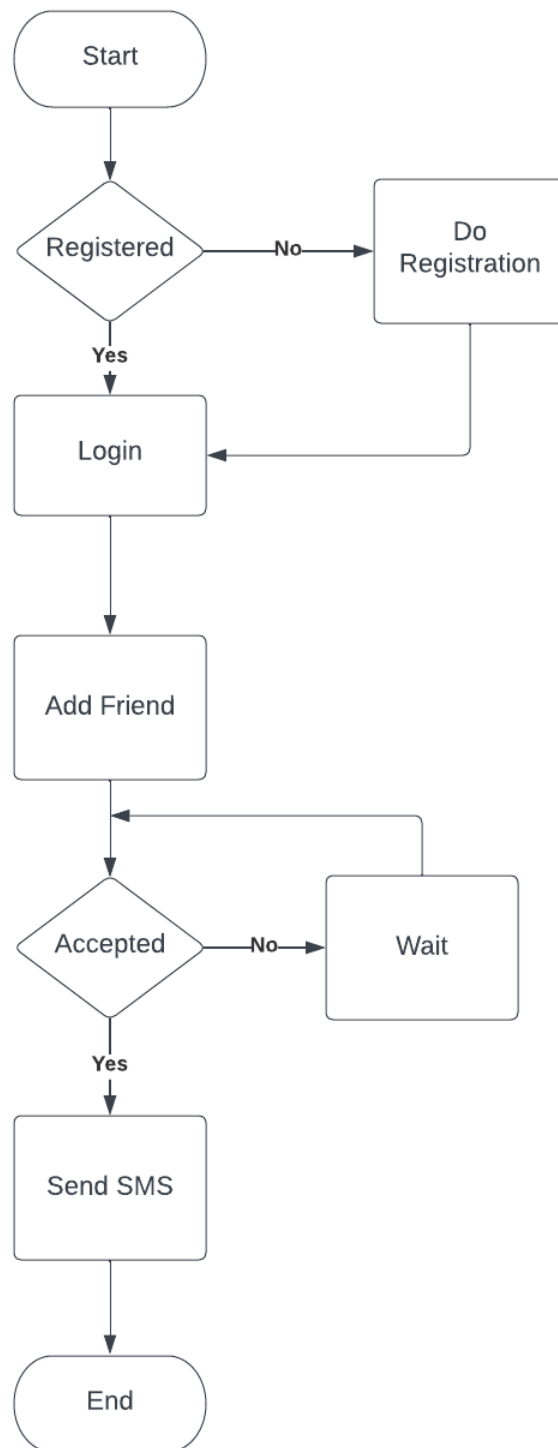Here is the flowchart in below:

Fig-4.1: Flowchart of ProjectHive

4.4 Front-end Development

The front-end development of ProjectHive focuses on the user interface (UI) and user experience (UX). This section explores the technologies and frameworks used to create the responsive and intuitive UI of ProjectHive. It discusses the design considerations, such as accessibility, and responsiveness. Additionally, it highlights the interactive elements and real-time updates that enhance the user experience. We don't keep any unnecessary tools or option and it made our ProjectHive's UI user friendly. Everyone can use it smoothly even without any IT expertise. Our supervisor suggested us to keep it simple and clean we did this. The flowchart was followed during the design on frontend. It made it simple to design it and understandable to all because we aimed that our team communication and collaboration platform can be used in every environment like School, College, Universities, Bank, office etc.[2]

4.5 Back-end Development

The back-end development of ProjectHive is responsible for the core functionalities and business logic of the platform. This section examines the programming languages, frameworks, and libraries used in the development of the back-end. It discusses the handling of user authentication, authorization, and security measures. The section also explores the implementation of real-time messaging, file storage, and integration with external services. Data management is a critical aspect of ProjectHive, ensuring the storage, retrieval, and efficient management of user data, messages, and files. This section discusses the database management system employed by ProjectHive and the considerations for data modeling and schema design. It explores the strategies for data backup, disaster recovery, and data encryption to ensure the security and integrity of user data. We designed ER diagram (Fig: 4.2) for ProjectHive to show how entity are connected with each other. Since we used Django as backend so we didn't have to create the ID attribute for every entity. [3]

4.6 ER Diagram

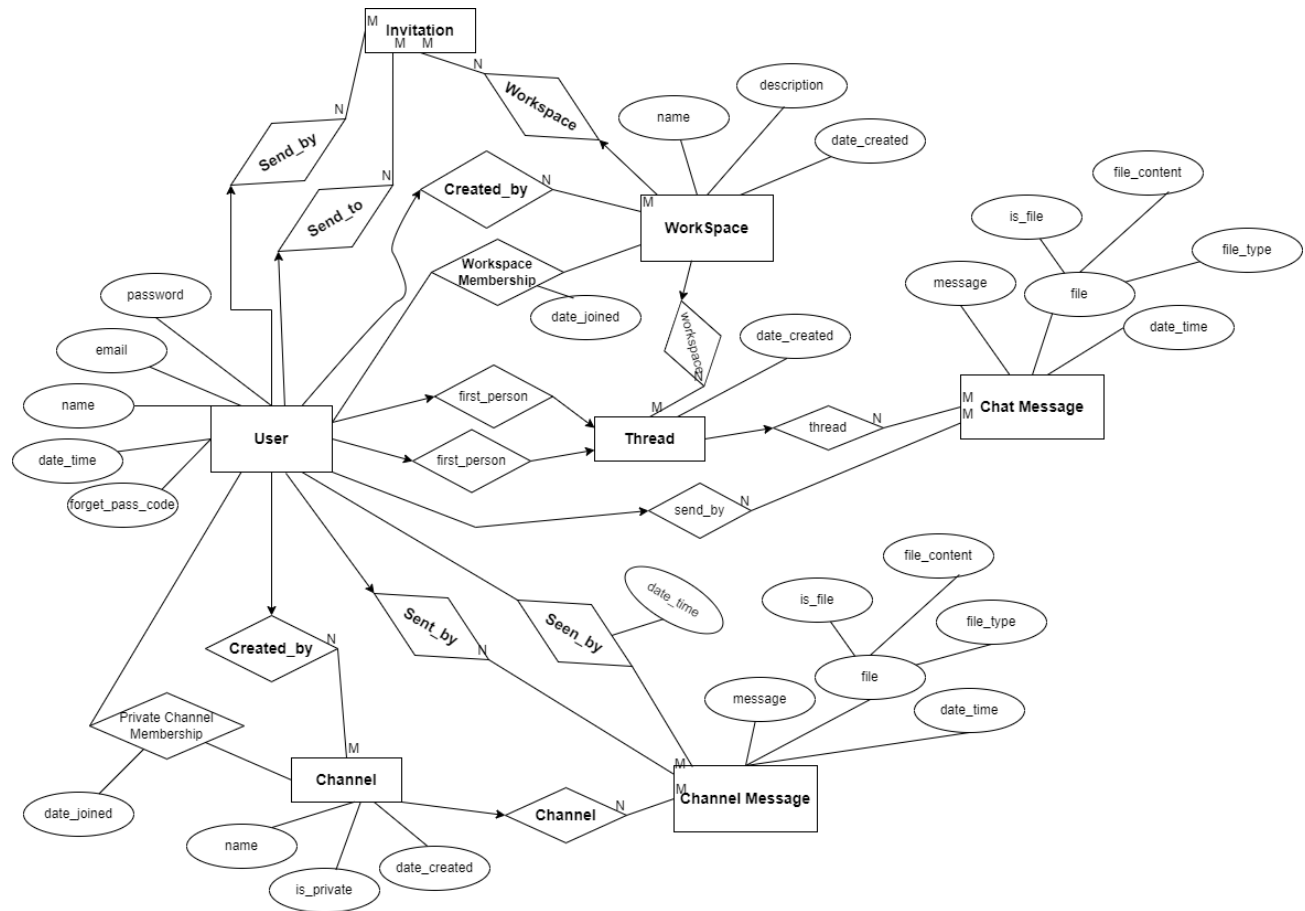Here is the ER diagram in below:

Fig-4.2: ER Diagram of ProjectHive

4.7 Database Relation

Database relations, also known as table relationships, are fundamental to the design and functionality of a relational database. They establish connections and dependencies between tables, enabling efficient data storage, organization, and retrieval. The database relations play some vital for every project.

4.7.1 Data Integrity:

Relations enforce data integrity by defining constraints and rules that maintain the accuracy, consistency, and validity of the data. For example, referential integrity constraints ensure that data in one table relates to data in another table correctly, preventing orphaned or inconsistent data.

4.7.2 Data Consistency:

Relations allow for consistent data representation across multiple tables. By linking related data through relationships, you avoid duplication and ensure that updates or modifications to data are applied uniformly throughout the database. This promotes data consistency and avoids data differences or inconsistencies.

4.7.3 Data Organization:

Relations facilitate the logical organization of data within a database. By breaking down complex data into smaller, interconnected tables, you can efficiently categorize and store information based on its characteristics and relationships. This improves data management, simplifies queries, and enables easier data retrieval.

4.7.4 Query Performance:

Well-designed relations can significantly enhance query performance. By establishing appropriate relationships and using indexing techniques, you can optimize data access and retrieval operations. Relations enable the use of joins to combine data from multiple tables, reducing the need for redundant data storage and improving query efficiency.

4.7.5 Scalability and Flexibility:

Database relations provide a foundation for scalability and flexibility. As new data requirements arise, you can extend existing relations or create new ones to accommodate the changes. Relations allow for modular design, making it easier to modify and expand the database structure without impacting the entire system.

4.7.6 Data Analysis and Reporting:

Relations enable the extraction of meaningful insights from data through data analysis and reporting. By leveraging relationships between tables, you can perform complex queries, aggregations, and analytics to generate reports, make informed decisions, and gain a deeper understanding of the data.

In ProjectHive we have 10 entities in our database named User, Thread, Workspace, Workspace Membership, Channel, Channel Membership, Channel Message, Thread Message, Invitation and Seen By (Fig: 4.3). There are several database relationships between entities like one to one, one to many, many to many. Here is the Database Relation bellow:
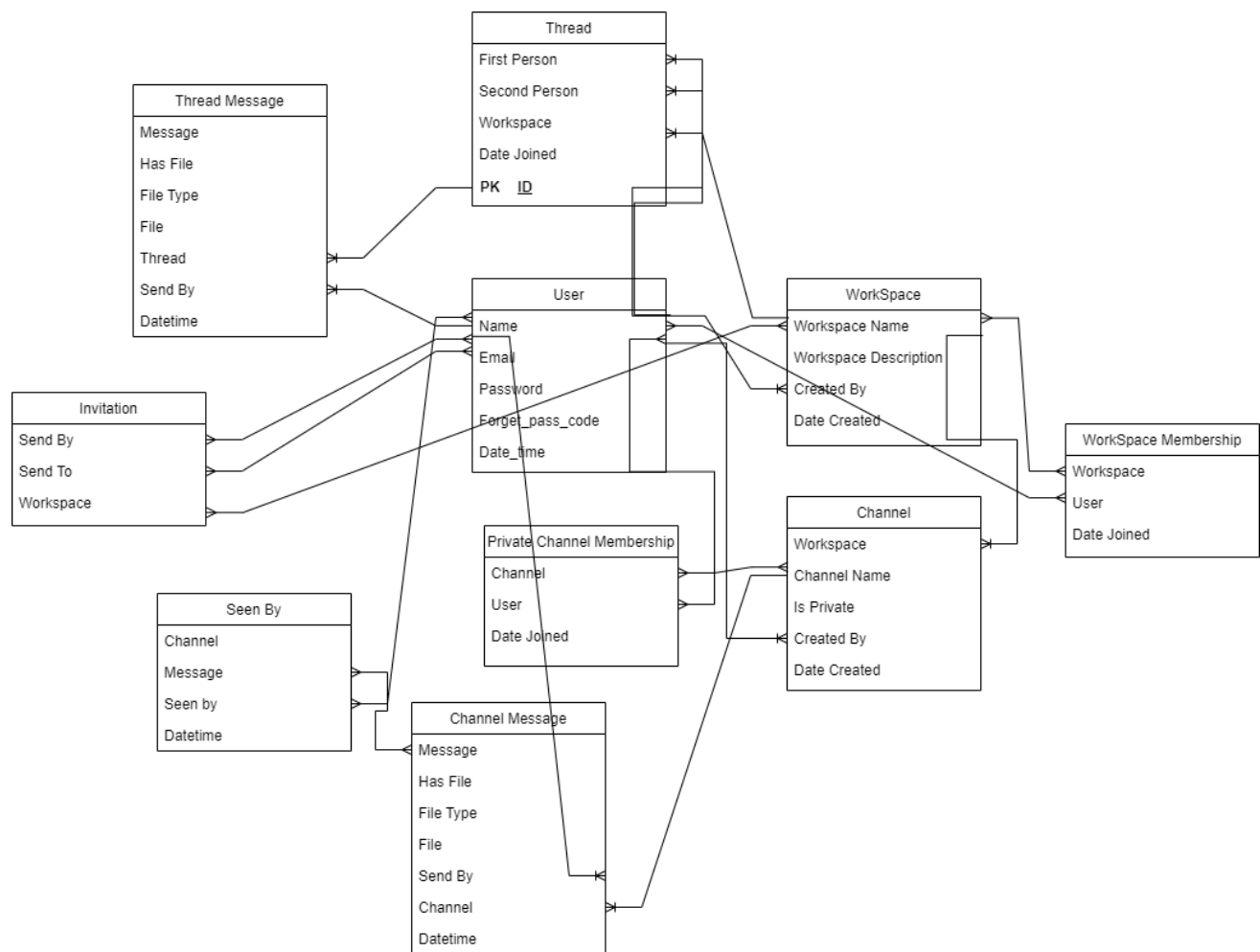

Fig-4.3: Database Relation

4.8 Performance Optimization

Optimizing the performance of ProjectHive is crucial for providing a seamless user experience and handling high volumes of user interactions. This section explores the techniques and approaches used to optimize the performance of ProjectHive, including caching mechanisms, load balancing, and asynchronous processing. It also discusses strategies for monitoring and analyzing system performance to identify bottlenecks and optimize resource utilization.[3]

4.9 Security and Privacy

Security and privacy are paramount in a communication and collaboration platform. This section addresses the security measures implemented in ProjectHive to protect user data, prevent unauthorized access, and ensure secure communication channels. It explores encryption techniques, authentication mechanisms, and access controls. Additionally, it discusses compliance with privacy regulations and data protection best practices.[6]

4.10 Summary

This chapter has provided an in-depth examination of the technical aspects of ProjectHive. It covered the technology stack, system architecture, front-end and back-end development, data management, performance optimization, scalability and deployment, as well as security and privacy considerations. Understanding the technical foundations of ProjectHive is crucial for appreciating its capabilities and ensuring a robust and reliable team communication and collaboration platform. The subsequent chapters will delve further into the evaluation and analysis of ProjectHive's technical aspects.

CHAPTER-V

Tools & Technique

5.1 Introduction

This chapter explores the various tools and techniques that used in the development and implementation of ProjectHive. These tools and techniques play a crucial role in enhancing the functionality, usability, and performance of the platform. By using the right tools and applying appropriate techniques, ProjectHive can provide a seamless and efficient team communication and collaboration experience. This chapter aims to highlight the key tools and techniques utilized in the project.

5.2 User Interface Design Tools

Creating an intuitive and visually appealing user interface (UI) is essential for a user-friendly experience in ProjectHive. This section explores the UI design tools that used in the development process, such as HTML, CSS, Bootstrap, JavaScript and jQuery. User interface design tools enhance the usability and aesthetic appeal of ProjectHive, ensuring a positive user experience.[2]
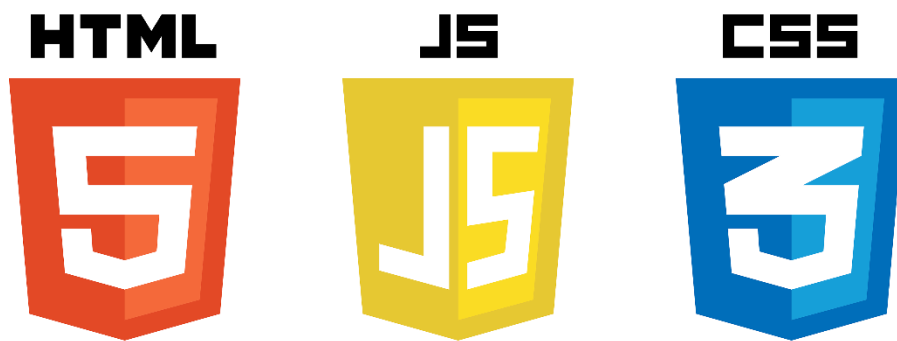

Fig-5.1: User Interface Tools

5.3 Backend

Nowadays, real time communication is the most important issue for a team communication and collaboration platform. We always have to make sure real time communication system whenever

we try to make a platform like ProjectHive. To ensure efficient performance and real time communication we used Django channel and JavaScript WebSocket in our project. To develop a real time communication server, we need a cache server and we used redis as cache server. Redis can't run in windows platform directly that's why we used docker as virtual machine to run redis. We use SQLite for database.

Fig-5.2: Backend Tools

5.4 Summary

This chapter has highlighted the key tools and techniques employed in the development and implementation of ProjectHive. The utilization of UI design tools and Backend tools contribute to the efficiency, quality, and usability of ProjectHive. These tools and techniques ensure smooth development, effective collaboration, and continuous improvement of the platform. The subsequent chapters will delve into the evaluation and analysis of ProjectHive based on these tools and techniques.

CHAPTER-VI

Feature & Functionalities

6.1 Introduction

This chapter provides an in-depth exploration of the features and functionalities of ProjectHive, highlighting its capabilities as a team communication and collaboration platform. ProjectHive offers a wide range of tools and functionalities designed to enhance teamwork, streamline communication, and foster effective collaboration. This chapter aims to present a comprehensive overview of the key features and functionalities offered by ProjectHive.

6.2 User Registration and Authentication

6.2.1 Registration:

ProjectHive begins with a user registration and authentication system (Fig: 6.1). This section discusses the user registration process, which allows individuals to create their accounts within the platform. It explores the authentication mechanisms employed, such as email verification to ensure secure and authorized access to the platform.
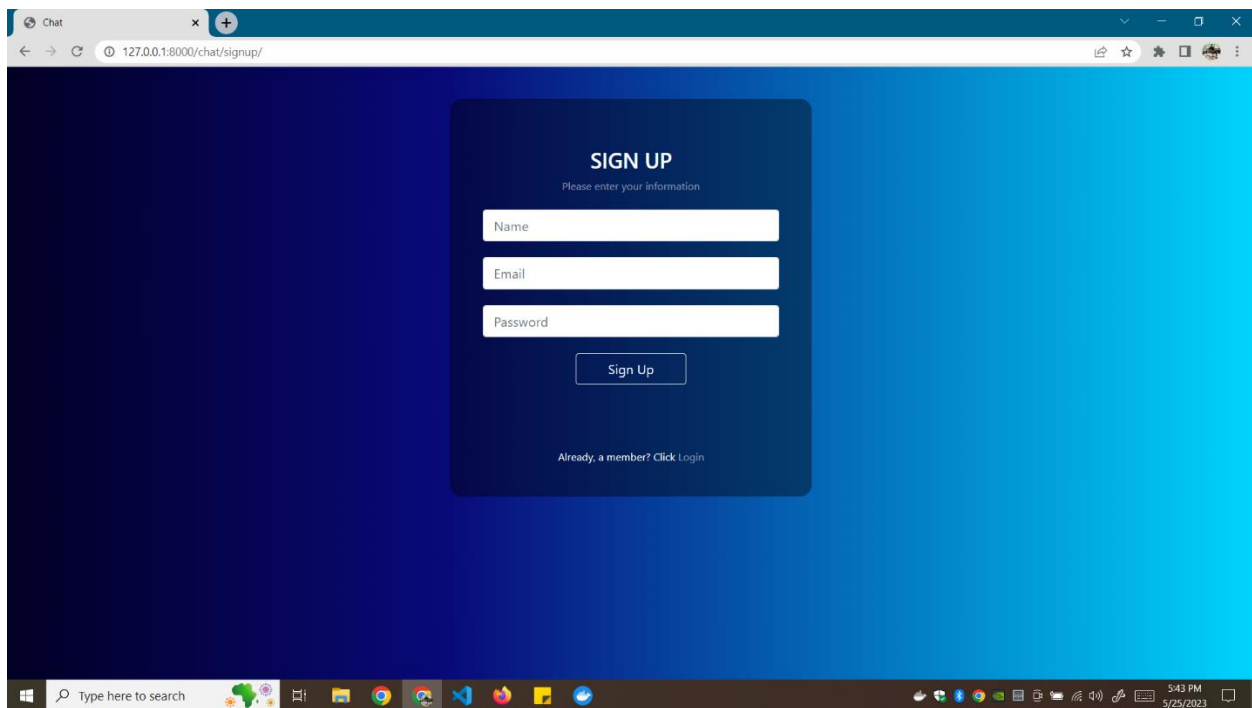

Fig-6.1: Registration Page

6.2.2 Login

The login page of ProjectHive serves as the gateway for users to access the platform and its rich collaborative features. It is designed with a focus on user convenience, security, and an intuitive user experience. (Fig: 6.2)

The login page presents users with a simple and visually appealing interface that encourages ease of use. Users are prompted to enter their login credentials, typically their username or email address, along with their password. The system verifies the provided information against the stored user database to authenticate the user's identity.

To enhance security, ProjectHive implements robust password encryption techniques, such as hashing and salting, to protect user passwords from unauthorized access. This ensures that sensitive user information remains secure within the platform.

Here is the login page. A user can login in his/her dashboard after registering himself or herself into this platform.
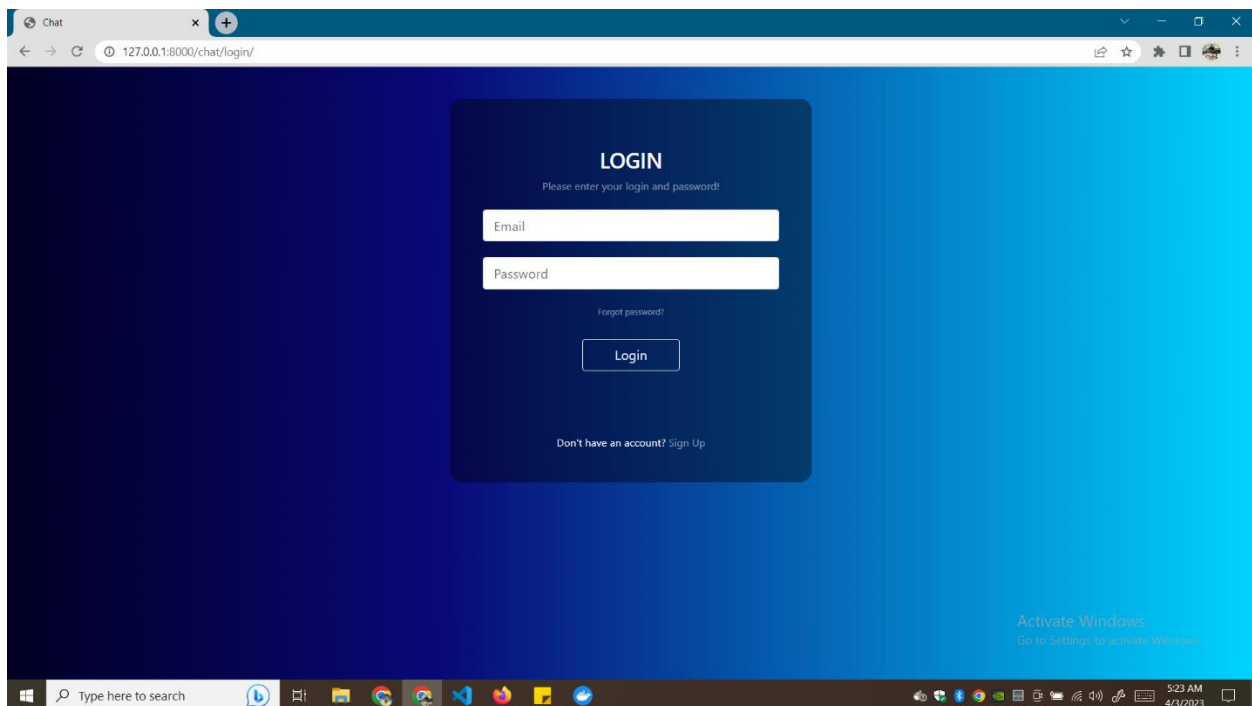

Fig-6.2: Login Page

6.2.3 Password Reset

ProjectHive incorporates a robust and user-friendly password management system that includes a password reset option to ensure the security and convenience of its users (Fig: 6.3). The password reset feature allows users who have forgotten their passwords or need to change them for security reasons to regain access to their accounts.

Once the user has successfully entered and confirmed their new password, the system securely updates their account credentials. From that point forward, the user can log in to ProjectHive using their newly set password.

By implementing this feature, ProjectHive aims to provide a reliable and user-friendly platform that instills confidence in its users' account security and enables smooth user experiences.
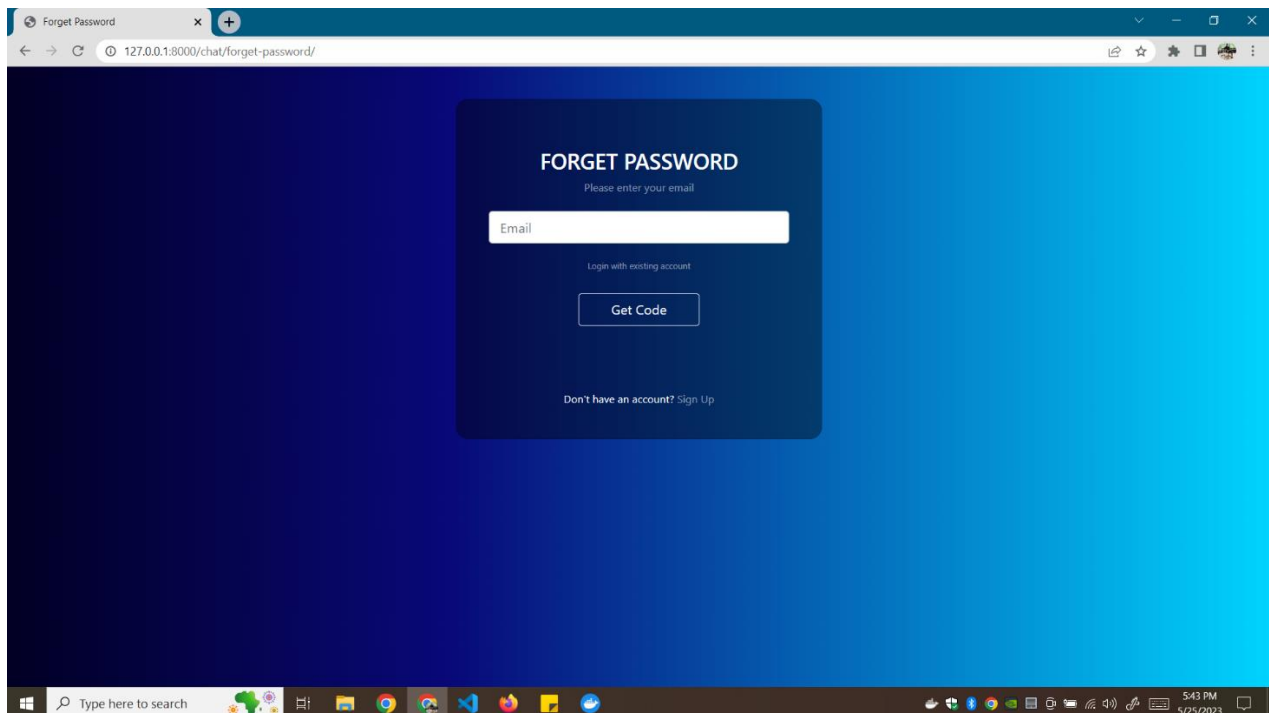
Here is the option in below:

Fig-6.3: Forget Password Page

6.3 Workspace Creation and Management

ProjectHive enables users to create and manage teams, facilitating efficient collaboration among team members by creating workspace (Fig: 6.4). This section explores the workspace creation process, which allows users to form dedicated teams based on projects, departments, or specific purposes. It discusses the functionalities for team management, including the addition or removal of team members, defining roles and permissions, and organizing team-related resources. Whenever a user log in his/her account, he/she will get a dashboard which have some different option like to open existing workspace that he/she is in. And if someone needs to create a new workspace, they can do it by clicking the "Create New Workspace" option. Then they can launch that workspace to add team member. If the user got any invitation from any other workspace that he/she isn't in they can see the invitation list in this dashboard also. A invitation can be accepted or deleted by clicking the 'Accept' or 'Delete' option.
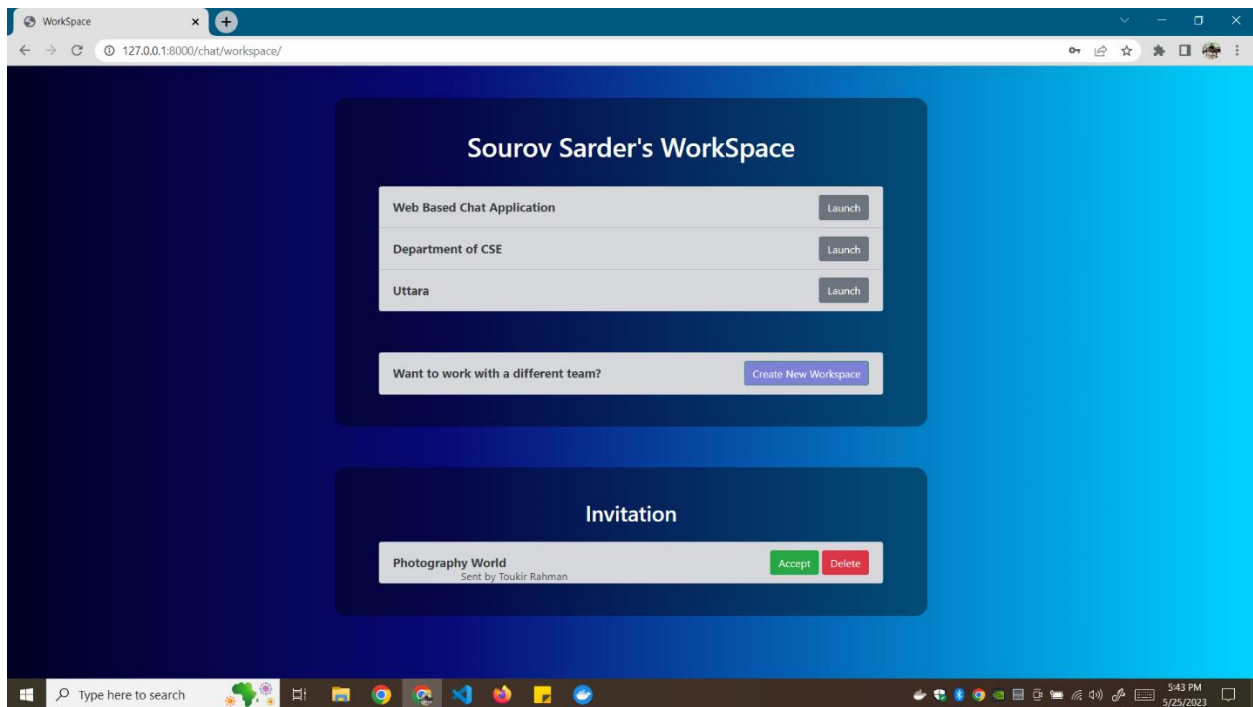
Here is the dashboard page in below:

Fig-6.4: Dashboard page after logged in

6.4 Channels and Messaging

6.4.1 Chat Interface

Channels and Messaging form the core communication infrastructure within ProjectHive. This section delves into the creation and management of channels, which serve as dedicated spaces for specific topics or projects. It discusses the different types of channels available, such as public channels for open discussions and private channels for confidential conversations. Additionally, it explores the functionalities for creating and participating in discussions, including threaded conversations and attaching files. The private channel is denoted by a lock symbol in next to the channel names (Fig: 6.5). Channel and personal are separated from each other. There is big space for messaging within channel and personal thread. There's an option also attaching files for file sharing. A user can share any kind of file within file limit 10 megabytes. ProjectHive has an attached video player so user can play the video within the chat interface.
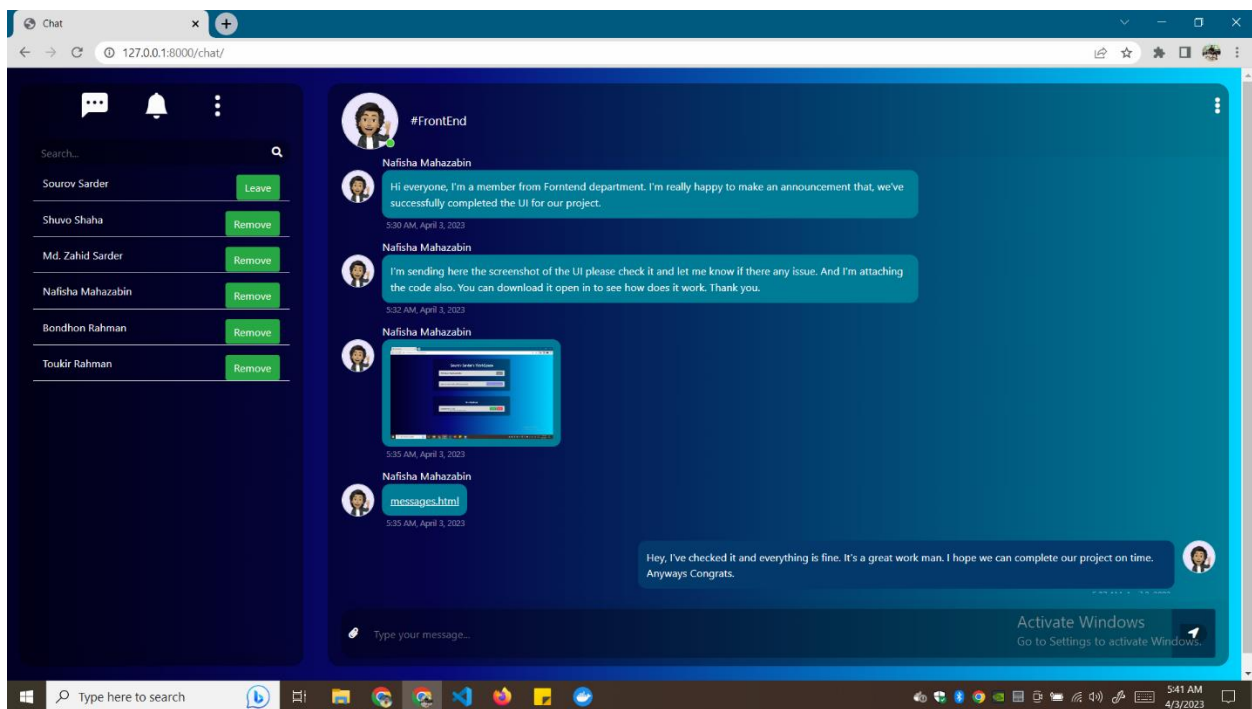
Here is the Chat Interface:

Fig-6.5: Chat Interface

6.4.2 Creating Channel

ProjectHive offers users the flexibility to create both private and open channels, providing a versatile communication environment that caters to different collaboration needs.

The ability to create both private and open channels in ProjectHive ensures that teams have the necessary flexibility to tailor their communication and collaboration approach to meet their specific requirements. Whether it is for confidential discussions or open team-wide communication, ProjectHive provides users with the tools to create channels that facilitate effective information sharing, coordination, and engagement among team members. (Fig: 6.6)

User can create channel and make is private or open channel by checking the checkbox while creating a channel.
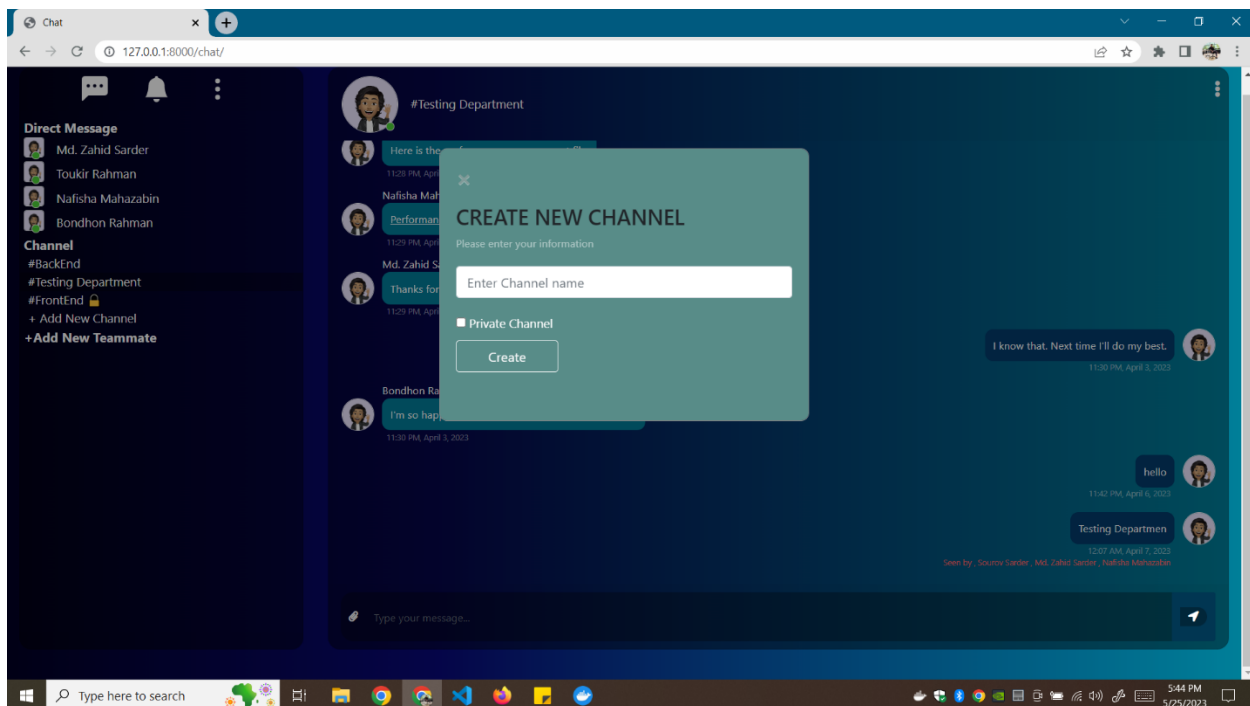
Here is the option:

Fig-6.6: Create Channel Page

6.4.3 Add Team Member

A user can send invitation from other user from here by clicking 'Add Teammate" option. (Fig: 6.7) Whenever a user clicks on this option then a pop up will be opened with a search box for searching another user by their name.
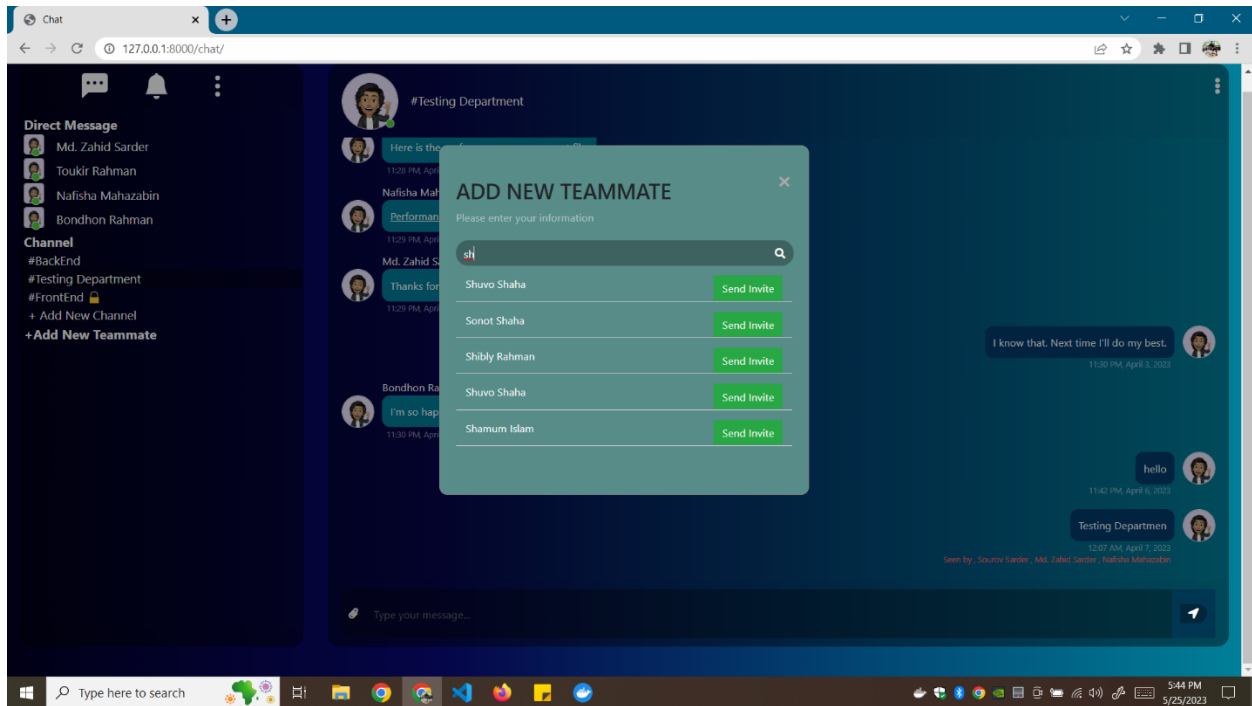
Here is the option:

Fig-6.7: Add Teammate option

6.4.4 Remove Team Member

In ProjectHive, the ability to remove a user from a workspace is an important administrative function that allows workspace owners or administrators to manage user access and maintain the integrity of the workspace. Removing a user from a workspace entail revoking their privileges, access to resources, and participation in team activities. This action may be necessary in situations such as employee departures, role changes, or security concerns.

And that's why we give an option to remove a user from the workspace(Fig: 6.8). Only the workspace owner can remove a user from the workspace. A user also can leave from the workspace by own. Here is the option in below:
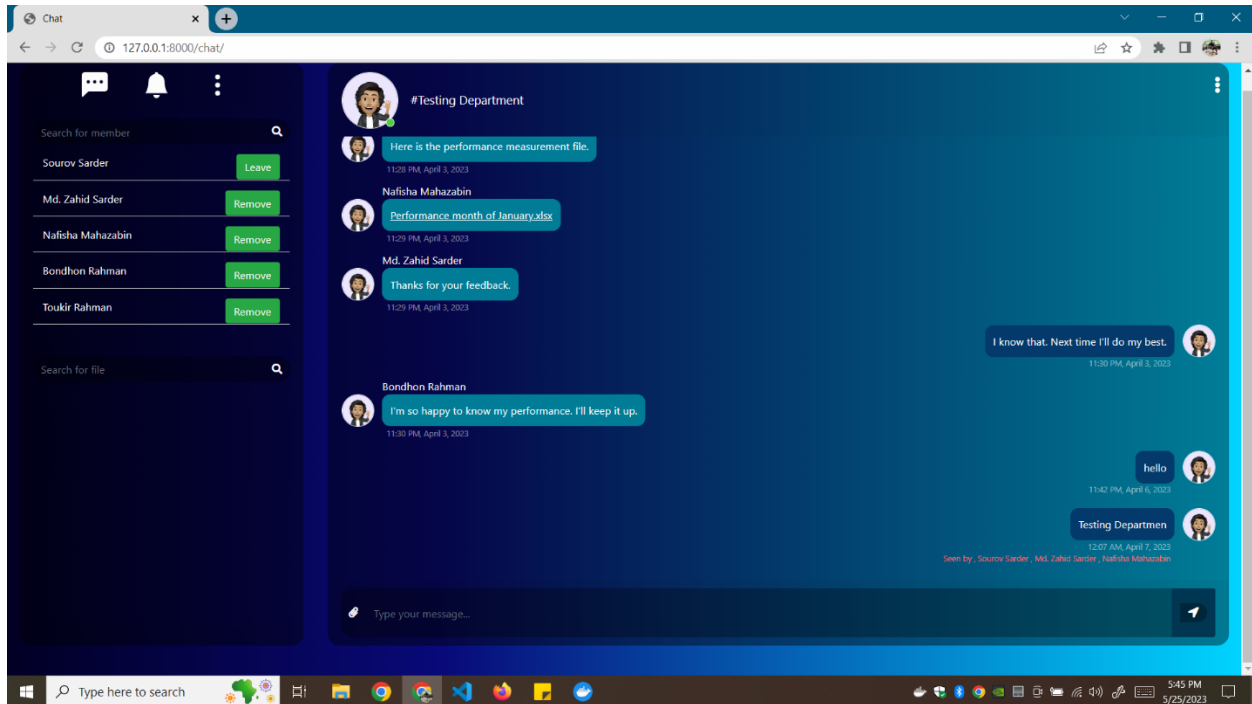

Fig-6.8: Remove a user option.

6.5 File and Document Sharing

Efficient file and document sharing are crucial for seamless collaboration within ProjectHive. This section explores the file and document sharing functionalities, allowing users to upload, organize, and share files within teams and channels(Fig: 6.9). It discusses the support for various file formats, version control, and the ability to collaborate on shared documents in real-time. File and document sharing capabilities streamline information exchange and facilitate collaborative work processes.

In ProjectHive, file searching functionality is a valuable feature that enables users to quickly locate and retrieve specific files within the workspace. With the increasing volume of files shared and stored in team collaboration platforms, an efficient file search capability becomes essential for

optimizing productivity and saving time. So, user can search for a specific file by their name from within the workspace.
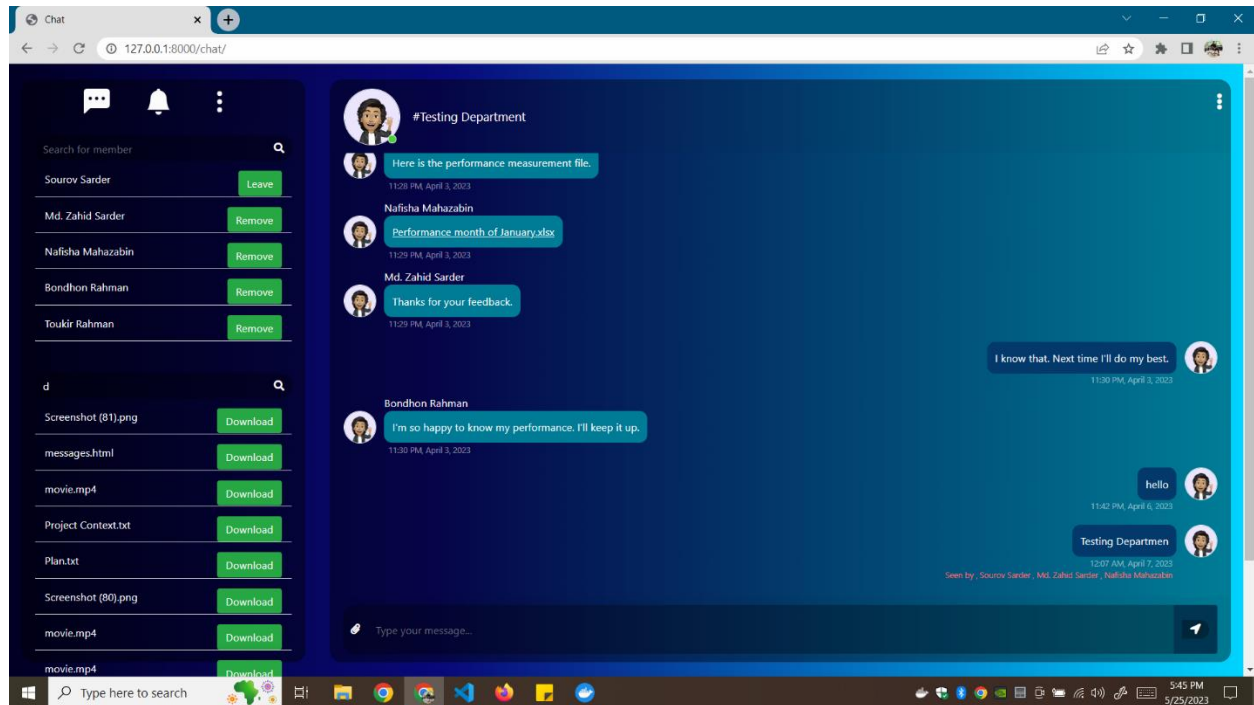
Here is the option:

Fig-6.9: Searching for File Option

6.6 Summary

This chapter has provided a comprehensive overview of the features and functionalities of ProjectHive. The user registration and authentication system, Workspace creation and management, channels and discussions and file and document sharing collectively contribute to a robust team communication and collaboration platform. The subsequent chapters will delve into the evaluation and analysis of these features and functionalities, assessing their effectiveness and impact on team productivity and collaboration.

CHAPTER-VII

Conclusion

7.1 Summary

In this thesis, we presented ProjectHive, a team communication and collaboration software designed to revolutionize the way teams work together. Inspired by popular platforms like Slack, ProjectHive offers a user-friendly and intuitive interface that enables seamless team communication and collaboration. Throughout this thesis, we explored the design, development, and technical aspects of ProjectHive, highlighting its key features and functionalities.

7.2 Achievements

Through the development of ProjectHive, we have successfully created a platform that provides teams with a centralized hub for communication and collaboration. The software offers features such as private and open channels, real-time messaging, file sharing, and collaborative task management, empowering teams to work together effectively on projects of any scale. We have also implemented flexible login options, allowing users to authenticate using their ID and password, offering an alternative to relying solely on Google login.

7.3 Impact and Significance

ProjectHive holds immense potential to transform team dynamics, streamline workflows, and foster a culture of collaboration and innovation. By providing a user-friendly interface and essential communication tools, ProjectHive can significantly enhance team productivity and efficiency. Its availability as a free platform ensures accessibility for individuals and organizations with limited resources, democratizing the benefits of effective team communication and collaboration.

7.4 Future Directions

While ProjectHive has achieved considerable milestones, there are opportunities for future enhancements and expansions. Some areas that could be explored include the integration of additional third-party applications, such as project management tools or document editors, to further enhance the collaborative experience. Improving mobile accessibility and developing dedicated mobile applications could also broaden the reach of ProjectHive.[14]

7.5 Conclusion

In conclusion, ProjectHive is a powerful team communication and collaboration software that empowers teams to work together seamlessly. Through its user-friendly interface, extensive features, and flexible login options, ProjectHive offers a comprehensive solution for effective teamwork. The development of ProjectHive has been a significant achievement, and its potential impact on team productivity and collaboration is promising. As we conclude this thesis, we look forward to witnessing the growth and success of ProjectHive in the hands of users, fostering a new era of efficient and collaborative teamwork.

REFERENCES

1. **C. April Yue, Linjuan Rita Men, Mary Ann Ferguson** (March-2020) *Examining the Effects of Internal Communication and Emotional Culture on Employees' Organizational Identification.* DOI:10.1177/2329488420914066

2. **Najwa Samrgandi (January 2021)** *User Interface Design & Evaluation of Mobile Applications.*

3. **Shannon L. Marlow, Christina Lacerenza, Jensine Paoletti, Shawn Burke** (September 2017). *A meta-analysis of team communication and performance.* DOI:10.1016/j.obhdp.2017.08.001

4. **Jamal M. Assbeihat.** (September-2016). *The Impact of Collaboration among Members on Team's Performance.*

5. **Nader Ale Ebrahim, Shamsuddin Ahmed Mohammed Shahadat, Zahari Taha** (January-2009). *Virtual Teams and Management Challenges.* DOI:10.58809/UIOS1776

6. **Shuliang Zhao, Peng Xiaobao, Yanhong Jiang, Jin Hong** (March-2020). *Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter?* DOI:10.1108/EJIM-09-2019-0244

7. **Abram Anders** (January, 2016). *Team Communication Platforms and Emergent Social Collaboration Practices.* https://doi.org/10.1177/2329488415627273

8. **Joanna F. DeFranco, Phillip A. Laplante** (February, 2017). *Review and Analysis of Software Development Communication Research.* DOI:10.1109/TPC.2017.2656626

9. **Hélène Delerue-vidot, Hélène Sicotte** (March, 2017). *Effective communication within project teams: The role of social media.* 5(1):2357-2787

10. **Slack Guideline and FAQ**. https://slack.com/help

11. **Microsoft Teams help & learning.** https://support.microsoft.com/en-us/teams

12. **Jeffrey M. Perkel** (January, 2017). *How scientists use Slack.*

13. **Stefan Müller** (January, 2023). *How Slack Facilitates Communication and Collaboration in Seminars and Project-Based Courses.* https://doi.org/10.1177/00472395231151910

14. **Kristiana Nathalia Wea, Agustina Dua Kuki** (March, 2021). *Students' Perceptions of Using Microsoft Teams Application in Online Learning During the Covid-19 Pandemic.* DOI:10.1088/1742-6596/1842/1/012016

15. **Eden M. Laquindanum** (April, 2022). *Effectiveness of Microsoft Teams: A Study of Perception among Tertiary Learners.* https://doi.org/10.5281/zenodo.6477320

16. **Longqi Yang, David Holtz, Sonia Jaffe, Siddharth Suri, Shilpi Sinha, Jeffrey Weston, Connor Joyce, Neha Shah, Kevin Sherman, Brent Hecht & Jaime Teevan** (September, 2021). *The effects of remote work on collaboration among information workers.*

17. **Jonny Gifford** (March, 2022). *Remote working: unprecedented increase and a developing research agenda.* https://doi.org/10.1080/13678868.2022.2049108