

# Major group project report

**Team:** Crimson

**Project title:** *PDF Voice Comment*

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## 1. Introduction

The **business objective** of our web application is to enhance collaboration and efficiency in document review processes. The client, end-users, or deploying organization would benefit from our application by streamlining collaborative document review processes. With voice-based commenting and annotations, communication clarity is enhanced.

Our system is a web-based application built using the **Django** framework, with **Python** and **JavaScript** as the primary programming languages. The application is compatible with most modern browsers, including Chrome (recommended), Firefox, and Edge. However, Safari is not supported due to compatibility constraints.

## 2. Features

Feature	Implementation	Purpose
<i>Describe the feature in a single line</i>	<i>Explain how the user accesses this feature in case this might not be clear to someone who did not participate in the development</i>	<i>If potentially unclear, explain how this addresses a business objective</i>
User Authentication: Enable login, signup, and	Users can register on the signup page and subsequently log in using their credentials on the login page.	Enable secure access to the web application, ensuring only authorized users can utilize its features.
Password Management: Enable users to change their password	Users can change their password through the "change password" functionality accessible after logging in.	Enhance account security by allowing users to regularly update their passwords
Profile Customization: Allow users to set up personalized avatars and profiles.	Upon registration, each user is assigned a default avatar, which can be replaced with a personalized one uploaded by the user on the "change profile" page. When the avatar is changed, all places where the avatar is used will be updated accordingly.	Enhance user personalization by allowing users to express their identity through customized avatars
Color Customization: Enable users to tailor the website's color palette to their preferences.	After registering, users can adjust the website's colors on the "Preferences" page, instantly applying these changes across the site for a tailored visual experience.	Enhance user experience by providing options to personalize the website's appearance with selectable color themes.

File Upload: users can upload files to the system	Users can upload PDF files to the system via the upload page, utilizing either the traditional file selection method or by directly dragging and dropping files. Uploaded files are securely stored on the connected AWS (Amazon Web Services) S3 Bucket Storage Service.	Streamline the process of adding content to the platform, enhancing data accessibility.
File Sharing: Facilitate sharing files among users.	Users can easily share uploaded files with other users via the share page, which includes a smart search feature to facilitate accurate user selection for sharing.	Promote seamless collaboration among users, enhancing teamwork and productivity within the platform.
Notification system: Alert users when a file is shared with them or when a comment is directed at them	Users can access their notification inbox by clicking the bell icon next to their avatar on the navigation bar. Notifications are automatically sent to users when a file is shared with them, a comment is made about them, or there are updates related to the comment.	Enhance user engagement and communication by providing timely notifications for shared files and incoming comments, ensuring users stay informed and can promptly respond to relevant activities within the application.
Theme Customization: Allow users to select preferred website themes.	Users can effortlessly switch between dark mode and light mode via a convenient toggle option located in the sidebar.	Offer users the flexibility to customize their viewing experience based on their preference and environment, thereby enhancing comfort and reducing eye strain during extended usage sessions.

<p>File Organization: Implement a system for managing and organizing uploaded files.</p>	<ul style="list-style-type: none"> <li>• On the dashboard, users can access a table list displaying their uploaded files along with relevant information.</li> <li>• Users can perform batch processes such as removal, downloads, and opening of files.</li> <li>• In the "My Files" page, files are presented as cards across pages, each equipped with functionalities including sharing, unsharring, renaming, deleting, and updating file descriptions.</li> </ul>	<p>Streamline file management by providing users with intuitive tools for organizing, accessing, and manipulating their uploaded files effectively. This enhances user productivity and ensures a structured approach to managing documents, particularly beneficial for handling research papers.</p>
<p>Team Collaboration: Enable collaborative file sharing within designated teams.</p>	<p>Users can create teams and invite collaborators to join, facilitating collaborative work on paper. Within each team, a shared folder facilitates easy access to files for all team members, promoting seamless collaboration.</p>	<p>Facilitate efficient collaboration among team members on PDF documents, simplifying co-authoring processes and providing supervisors with enhanced visibility to track progress.</p>
<p>PDF Viewing: Offer a customized viewer for PDF files.</p>	<p>The viewer has good PDF rendering performance and can display uploaded PDF files in a short amount of time. Furthermore, it offers users a well-designed interface structure and UI components which will provide better visual experiences for the users.</p>	<p>Provide users with a seamless and visually pleasing experience when viewing PDF files, this enhances user satisfaction and productivity, particularly when working with research papers.</p>

<p><b>Viewer General Features:</b> Enhance viewing capabilities with features like text search, navigation, marking, zooming, thumbnails, outlines, and commenting (voice and text).</p>	<ul style="list-style-type: none"> <li>• <b>Text Search:</b> Users can search for specific keywords or phrases within the PDF document.</li> <li>• <b>Navigation:</b> Users can move between sections of PDF via Intuitive navigation controls</li> <li>• <b>Marking:</b> Users can highlight or annotate important sections of the document.</li> <li>• <b>Zooming:</b> The viewer enables users to zoom in and out to adjust the size of the document.</li> <li>• <b>Thumbnails:</b> Thumbnail previews provide a quick overview of the document's contents, aiding in navigation.</li> <li>• <b>Outlines:</b> Document outlines help users to quickly navigate through different chapters.</li> <li>• <b>Commenting (Voice and Text):</b> Users can add both text and voice comments on a marked section to share feedback or collaborate with others.</li> </ul>	<p>Thumbnails and outlines offer users a rapid overview of the paper, while commenting and marking enhance collaboration. Zooming and text search improve paper readability, fostering an efficient reading experience. Overall, these features can improve productivity when working with lengthy research papers.</p>
<p><b>Text and Voice Annotations:</b> Empower users to mark text and add comments (both voice and text) within the viewer.</p>	<p><b>Text Highlighting and Annotation Feature</b> This feature allows users to select and annotate specific sections of text. Upon selection, the highlighted text will be visually distinguished:</p> <ul style="list-style-type: none"> <li>• Initially highlighted in yellow for clarity.</li> <li>• Turns orange upon user interaction (clicking) for confirmation.</li> </ul> <p>Following user interaction, a dedicated voice/comment section will automatically appear. This section will:</p> <ul style="list-style-type: none"> <li>• Display the marked text segments.</li> <li>• Provide an independent workspace for users to further customize the annotations through</li> </ul>	<p>Highlight selecting text layer, distinguish usage when selecting marking area, enhance accessibility and comprehension.</p>

	<p>voice comments or written notes.</p> <p>This approach offers a clear and concise explanation of the feature's functionality, adhering to the formal tone of a project report.</p>	
Voice Comment Transcription: Allow users to generate transcripts for voice comments.	Users can generate accurate transcripts for the existing voice comments	Improve accessibility and comprehension by providing written transcripts for voice comments, ensuring that all users can effectively engage with and understand the content.
Comment Management: Allow users to resolve and track comments within the viewer.	<p><b>Enhanced Text Highlighting with Rich Annotations Functionality Overview</b></p> <ul style="list-style-type: none"> <li>• Users can customize the appearance of highlighted text with various styles.</li> <li>• Multiple annotations can be added to each highlighted area, enabling comprehensive notes and interpretations.</li> <li>• Text comments are automatically saved and displayed within the highlighted section upon saving the annotation.</li> <li>• Detailed comment cards provide essential information: <ul style="list-style-type: none"> <li>○ Creation date &amp; time</li> <li>○ Last edited date &amp; time</li> <li>○ Author (username)</li> </ul> </li> <li>• Each comment card includes: <ul style="list-style-type: none"> <li>○ Delete button (represented by an "X" in the top right corner) for permanent comment removal. Clicking</li> </ul> </li> </ul>	Streamlines the annotation process, fostering a richer understanding and collaboration experience.

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	<ul style="list-style-type: none"><li>refreshes the comment display area.</li><li>○ "Mark as Resolved" button that disables itself and the comment area upon clicking. This indicates the comment is read-only.</li><li>• A dedicated "Save" button allows users to confirm changes made to the comment content.</li></ul>	
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### 3. Testing

#### 1. Backend Testing using unittest for Django:

We utilize the **unittest** framework to thoroughly test our Django backend. This includes testing view functions, models, and forms. Achieving a 99%-100% code coverage ensures comprehensive testing of our backend functionalities. You can inspect the coverage report [here](#).

#### 2. Selenium Testing for Custom PDF Viewer:

To ensure the reliability and functionality of our custom PDF viewer, we employ **Selenium** testing. This involves simulating user interactions using the Chrome driver. Key functionalities such as text marking, inserting text and voice comments, as well as deleting comments, are rigorously tested. Additionally, general features like thumbnails, outlines, zooming, search in page, and page navigation undergo testing in an environment identical to the actual viewer, albeit without the saving comments functionality. Testing views are available at [test\\_viewer\\_1](#) and [test\\_viewer\\_2](#)

#### 3. Frontend Testing using QUnit:

For frontend testing, we employ **QUnit**, ensuring the reliability and functionality of our frontend features. With 25 tests passed, our frontend undergoes thorough examination. You can review the test report [here](#). Please note that access to this page is restricted to superusers.

#### 4. Stress Test of User Registration and Login via using faker:

500 virtual users were created to simulate concurrent user activity. These virtual users were programmed to execute the following actions: Registration: Each virtual user would attempt to register for an account with the system. Login: Following registration, each virtual user would attempt to log in using their newly created credentials. The test duration was determined based on achieving a statistically significant number of registration and login attempts while maintaining a reasonable testing timeframe.

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Before initiating testing procedures, it is imperative to execute the command '**python3 manage.py create\_debug\_superuser**' to establish the necessary environment setup. This step grants access to the testing views.