“Chat box with JWT Authentication System”

A MINI-PROJECT-1 REPORT

Submitted in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

Submitted to

Dr.Babasaheb Ambedkar Technological University,Lonere.

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CERTIFICATE

This is to certify that the Mini Project-1 entitled "Chat Box with JWT Authentication" submitted by Mr. Atharv Sanjay Sabale, Mr. Atharv Shridhar Bakare , Mr. Sufiyan Jafar Khan , Mr. Utkarash Mohan Yadav is a record of the bonafide work carried out by him / her, under my guidance, and it is approved for the partial fulfillment of requirement of Dr Babasaheb Ambedkar Technological University Lonere for the award of the degree **Bachelor of Technology (Computer Science and Engineering).**

Dr. S. V. Balshetwar	**Dr. S. V. Balshetwar**	**Dr. P. Badadapure**
Guide	**Head of Department**	**Principal**

Computer Science and Engineering YSPM's YTC, Satara.

(External Examiner)

Place: Satara

Date:

Declaration by Student(s)

This is to declare that this report has been written by us. No part of the Mini Project-1 report is plagiarized from other sources. All information included from other sources has been duly acknowledged. We aver that if any part of the report is found to be plagiarized, we are shall take full responsibility for it.

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Signature of Students

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4.

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Date:

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We take this opportunity to express my sincere thanks to my guide Dr. S. V. Balshetwar for her guidance, support, encouragement and advice. We will forever remain grateful for the constant support and guidance extended by my Guide, in making this mini project -1 work.

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ABSTRACT

As the demand for seamless and secure interactions with chat-bots continues to rise, the need for robust authentication mechanisms becomes paramount. This paper introduces a novel approach by integrating JSON Web Token (JWT) authentication into chat-bot systems to ensure a secure and reliable user experience. JWT, a widely adopted open standard (RFC 7519), provides a compact and self-contained way to transmit information between parties securely.

The proposed system combines the natural language processing capabilities of chat-bots with the authentication strength of JWT, offering an efficient and user-friendly solution for various applications, including customer service, e-commerce, and information retrieval. By leveraging JWT, the system enhances security, mitigates common authentication vulnerabilities, and ensures the integrity of user interactions.

LIST OF FIGURES

ABBREVIATIONS

JWT	Json web token
UML	Unified modeling language
DFD	Data flow diagram

CONTENTS

1. INTRODUCTION

SON Web Token (JWT) is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object. This information can be verified and trusted because it is digitally signed. JWTs can be signed using a secret (with the HMAC algorithm) or a public/private key pair using RSA or ECDSA.

1.1 The Evolution of Authentication:

Traditionally, authentication involved exchanging credentials, such as usernames and passwords, between clients and servers. However, this approach has faced challenges, including vulnerabilities like phishing and the need for constant user input. JWT introduces a paradigm shift by leveraging a compact, URL-safe means of representing claims between two parties, providing a more secure and efficient authentication process.

1.2 Understanding JWT:

At its core, a JSON Web Token is a self-contained, digitally signed, and optionally encrypted token that can store a wide range of information. Consisting of three parts – header, payload, and signature – JWTs facilitate the transmission of authenticated data between parties. The information encoded within the token can include user roles, permissions, and additional metadata, making it a lightweight and versatile solution for secure communication.

1.3 Key Components and Working Mechanism:

The JWT system employs a straightforward yet robust mechanism. The header specifies the algorithm used for signature creation, the payload contains the claims, and the signature itself ensures the integrity of the token. This approach

allows for easy validation, minimizing the need for constant database queries or additional server-side storage.

1.4 Chat Box:

In the ever-expanding landscape of digital interactions, the convergence of conversational intelligence and document understanding has given rise to a remarkable innovation: the Chat Box that delivers answers through PDF documents. This transformative technology represents a paradigm shift, offering users a seamless and dynamic interface for extracting information from PDFs. This report aims to unravel the intricacies of these advanced Chat Boxes, exploring their functionality, applications, and the profound impact they have on information retrieval.

In our project, we created a Chat box named Chat Bot that reads the whole PDF and gives an answer to a question given, It helps students.

1.5 Working of Chat Box:

The unique capability of Chat Boxes to provide answers through PDFs is rooted in their ability to ingest, interpret, and extract relevant information from these documents. Users can engage in a conversation, posing queries in natural language, and the Chat Box dynamically navigates the PDF content to provide precise and contextually relevant responses.

2. PROBLEM STATEMENT

1. JWT:

1.2.1 Introduction:

- Contextualize the increasing reliance on JWT authentication systems in modern applications.

- Highlight the critical role of secure authentication in safeguarding user data and digital assets.

- Introduce the need for a comprehensive analysis of the JWT authentication system.

1.2.2 Problem Definition:

- Identify and articulate the primary challenges and concerns associated with JWT authentication.

- Explore potential vulnerabilities that may compromise the integrity and confidentiality of JWTs.

- Recognize the need for a systematic examination of security implications and best practices.

1.2.3 Scope:

- Define the scope of the report, specifying the aspects of JWT authentication to be scrutinized.

- Consideration of both theoretical aspects and practical implementations in real-world scenarios.

- Delimitations and exclusions to maintain focus within the defined boundaries.

1.2.4 Objectives:

- Establish clear research objectives to guide the investigation.

- Investigate the security features embedded in JWTs and their effectiveness.

- Examine common pitfalls and vulnerabilities associated with JWT implementation.

2. Chat Box:

2.2.1 Introduction:

- Recognize the growing importance of efficient information retrieval from PDF documents.

- Introduce the concept of a chat box designed to read PDFs and provide accurate answers.

- Highlight the need for a thorough investigation into the challenges and optimizations associated with such a system.

2.2.2 Problem Definition:

- Identify the primary challenges and limitations of existing PDF-reading chat box implementations.

- Recognize potential issues related to accuracy, speed, and comprehensiveness of responses.

- Address the need for a solution that can effectively extract and interpret information from diverse PDF formats.

2.2.3 Scope:

- Clearly define the scope of the report, specifying the functionalities and capabilities of the PDF-reading chat box to be analyzed.

- Consideration of various PDF structures, document layouts, and potential challenges in parsing diverse content.

2.2.4 Objectives:

- Establish clear research objectives guiding the investigation into PDF-reading chat boxes.

- Evaluate the accuracy and reliability of current systems in interpreting information from PDF documents.

- Identify potential enhancements and optimizations for improving the overall performance of the chat box.

3. SOFTWARE REQUIREMENT SPECIFICATION

3.1 Software Requirements –

Aside from a Computer and internet connection, most of the tools you need to build an application are Software Program. Some of which may already be on your computer.

- Operating System: Windows 7,8,10, Linux.

- language used: Next.JS, React, Tailwind

- Web Browser: Google chrome.

- Software: Visual Studio Code.

3.2 Hardware Requirements -

Most current Computers and Laptop have enough specifications to be used to create an application. The most important specification to check on the computer would be the size of the RAM, which should be over 4 GB, more is better. This will ensure that the computer runs quickly and smoothly, even with heavier programs. The computer should have a keyboard and mouse attached and working as well.

- Processor: Intel dual core (32 bit)

- RAM: 4 GB.

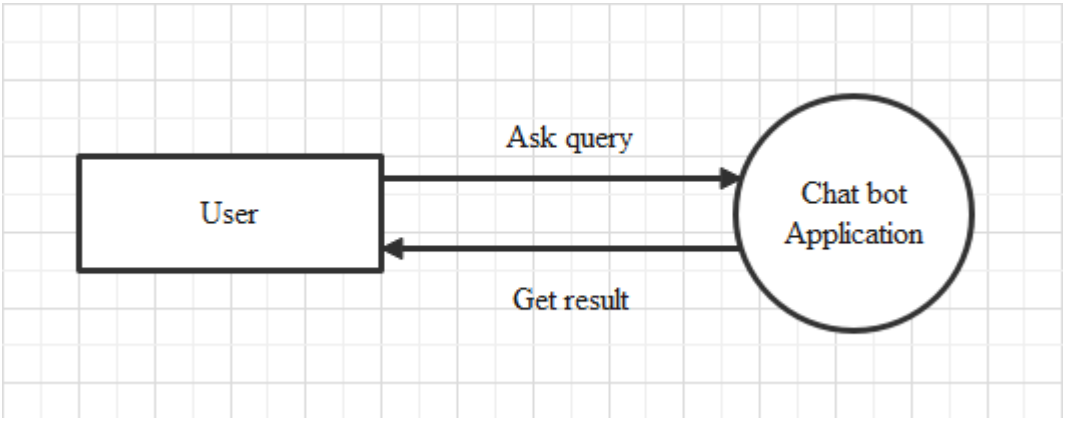
- Processor Speed: 2 GHz.

- Hard disk: 500gb.

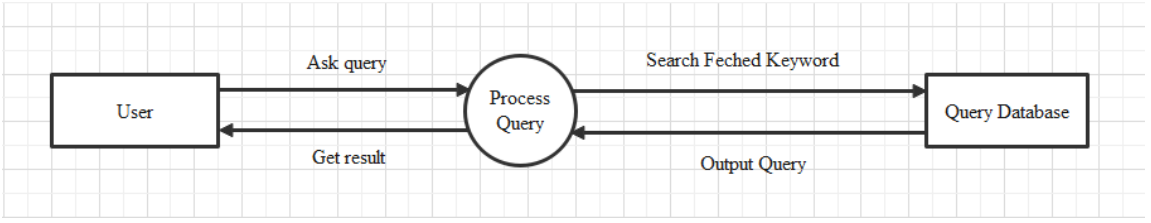
- Standard Windows Keyboard.

4. SOFTWARE DESIGN

4.1 Data flow Diagram:

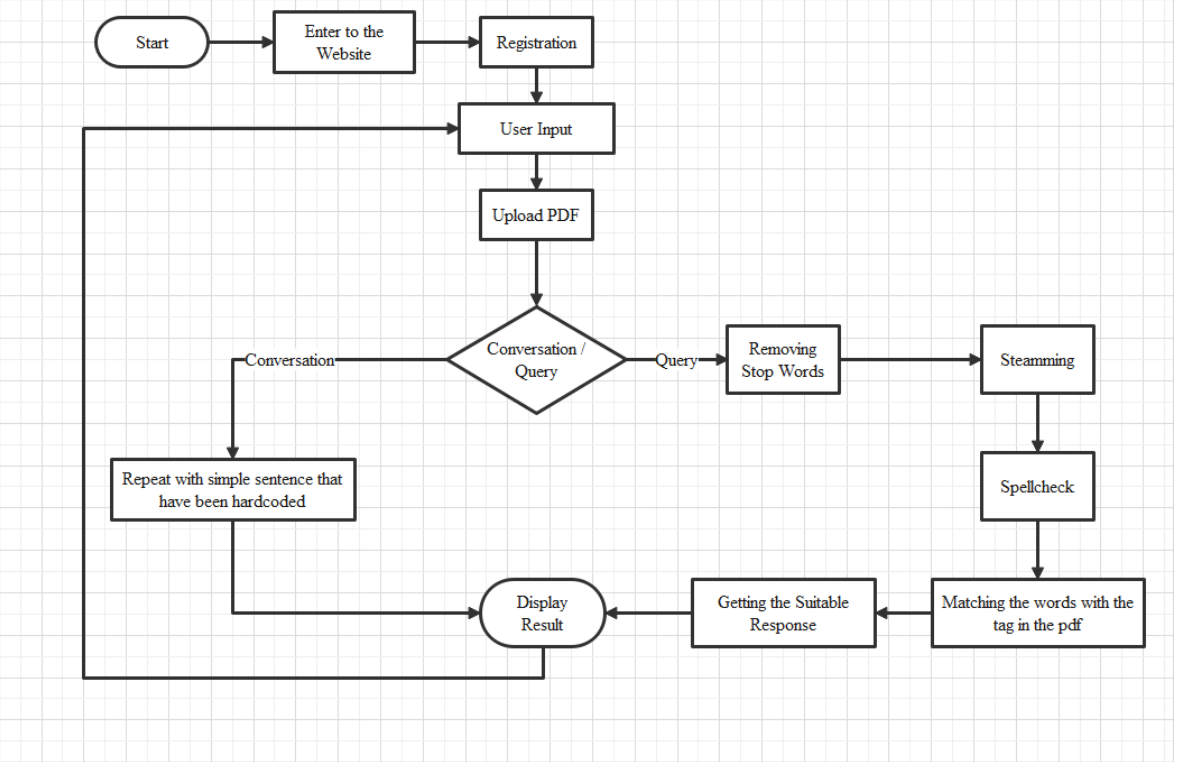


4.1.1 0 Level DFD



4.1.2 1 Level DFD

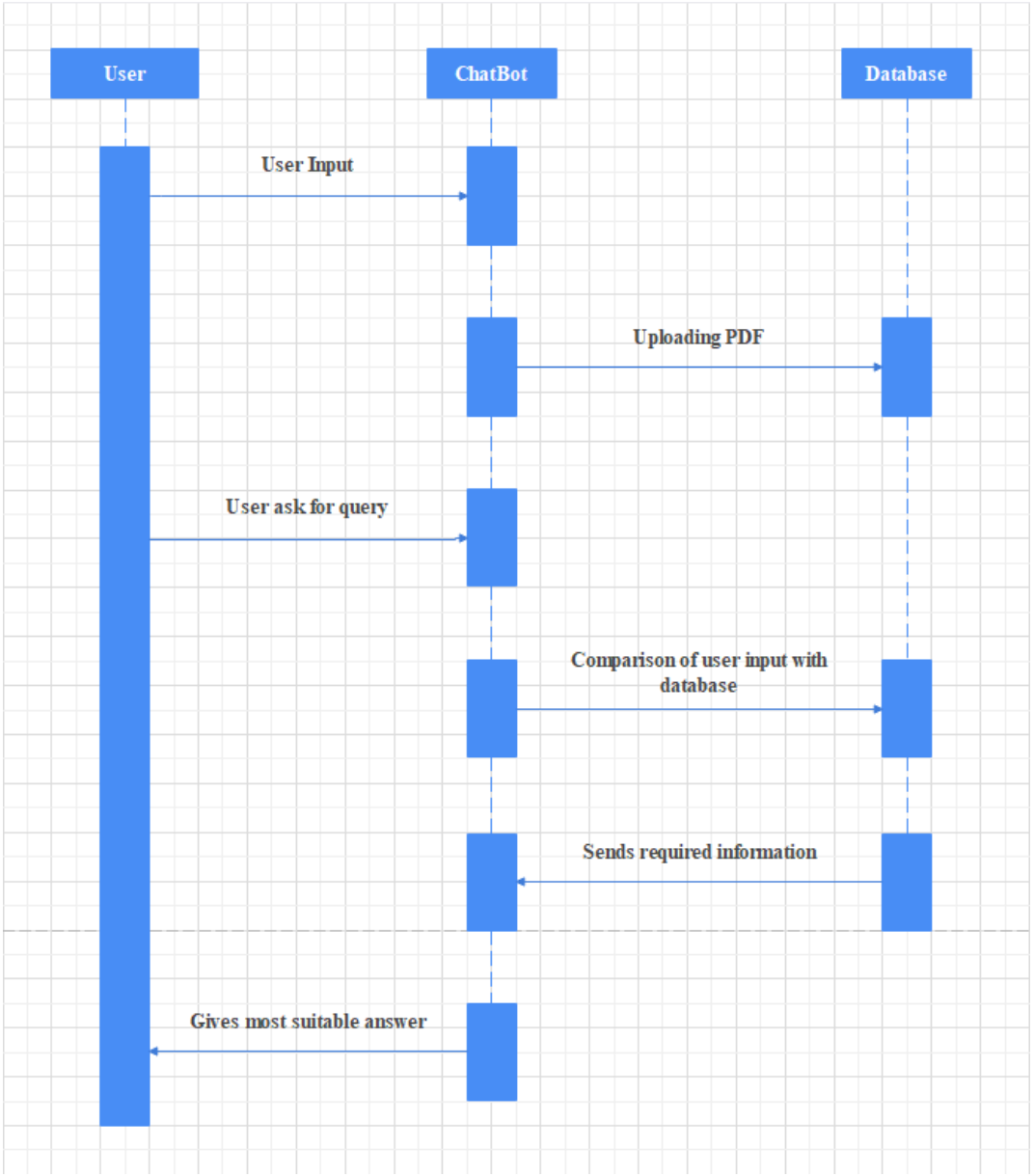
4.2 Flow Chart:



4.2.1 Flow chart of Software

4.3 UML Diagram :

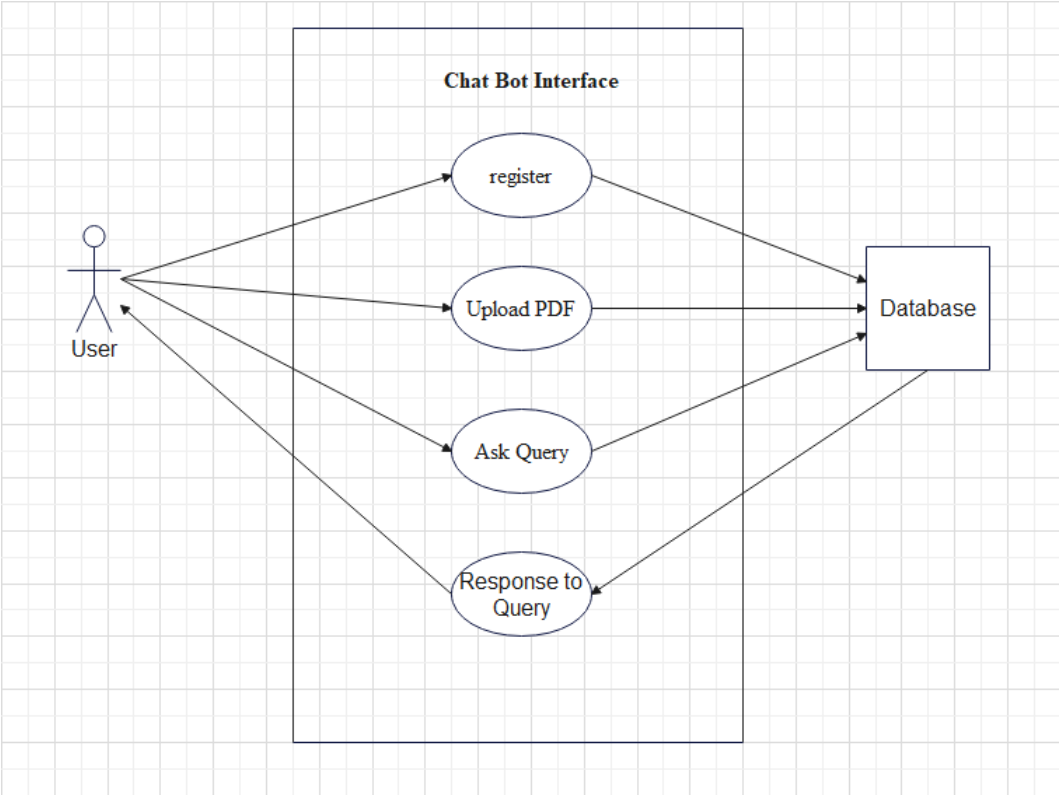
1. Sequence Diagram:



4.3.1 Sequence Diagram

4.3 UML Diagram :

2. Use Case Diagram:



4.3.2 Use Case Diagram

5. IMPLEMENTATION

5.1 Modules and Their Functionalities

1. User Module:

- User ID

- Username

- Email

- Password (hashed)

2. Dialog Management Module:

Manage the flow of the conversation, handle context, and guide the user through the interaction.

3. Response Generation Module:

Generate appropriate responses to user inputs.

6. TESTING TECHNOLOGY

Software testing technologies is a process which is used to measure the quality of software developed. It is also a process of uncovering errors in a program and makes it a feasible task. It is useful process of executing program with the intent of finding bugs. In order to prove that a piece of software works, the software must be tested to determine if the requirements of the application are met. There are several different types used throughout the development process. These are various types of testing. Some of which are mentioned

below:

- Component Testing: Where each and every component related to the software project is tested. Component testing should focus on testing component interfaces.

- System Testing: The testing implemented on overall software project after component integration is system testing. System testing tests the emergent behavior of a system.

- Acceptance Testing: It is performed after software installation in user environment with data supplied by customers.

Following are the technologies are going to use:

1. Unit testing: It is a level of software testing where individual units or components of a software are tested. It is process of testing individual component in isolation.

2. Integrated testing: It is a level of software testing where individual units are combined and tested to verify if they are working properly.

3. Beta testing: It is one of the types of user acceptance testing. Where a release of the software is made available to large group of users to allow them to experiment and to raise problems that they discover with system developers.

7. SNAPSHOTS/ GUI

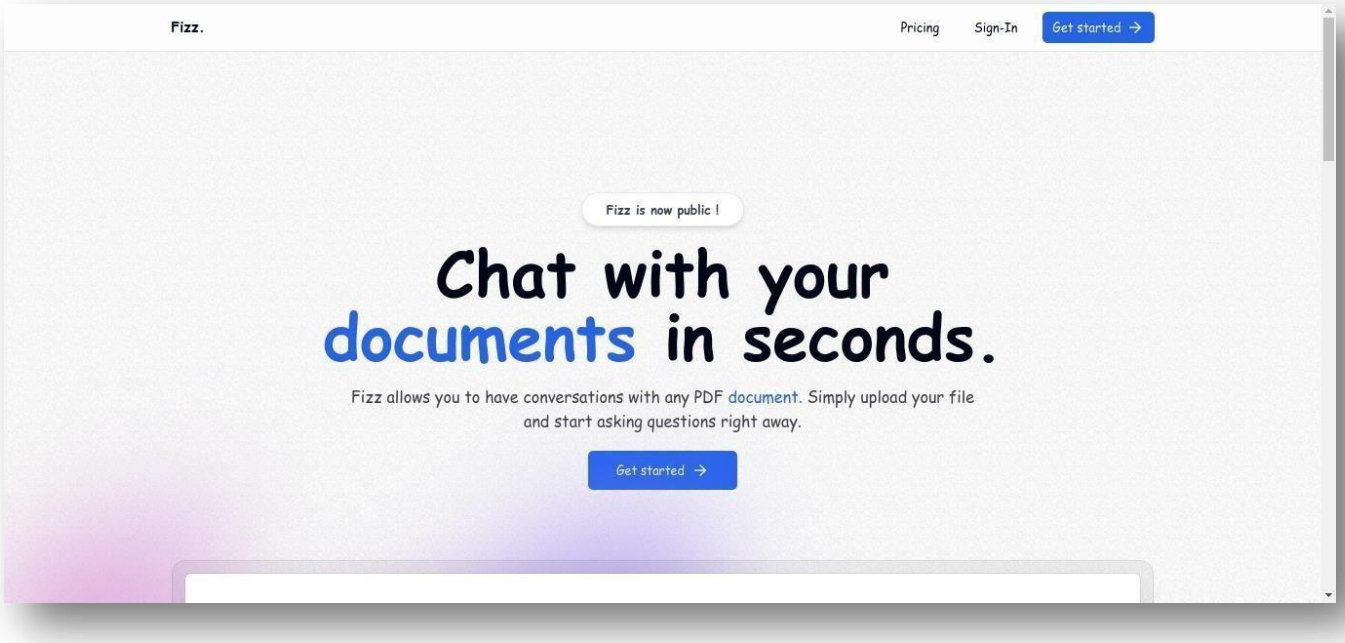


Fig. Home Page

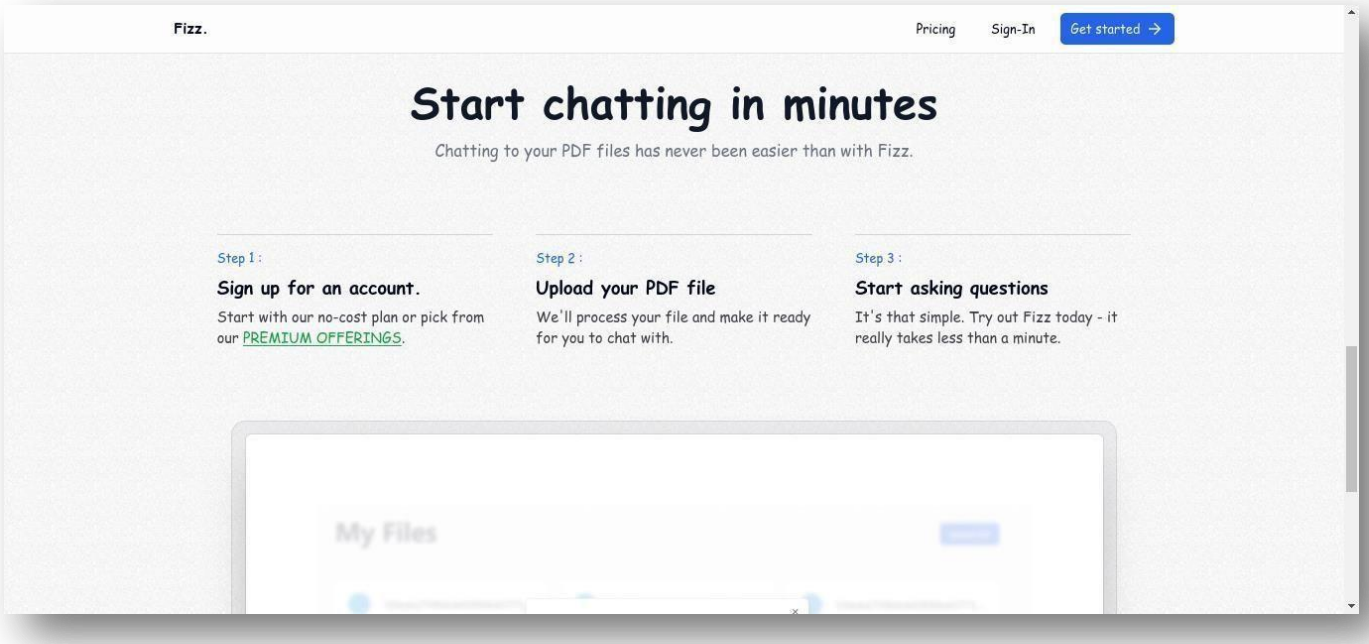


Fig. Steps to use website

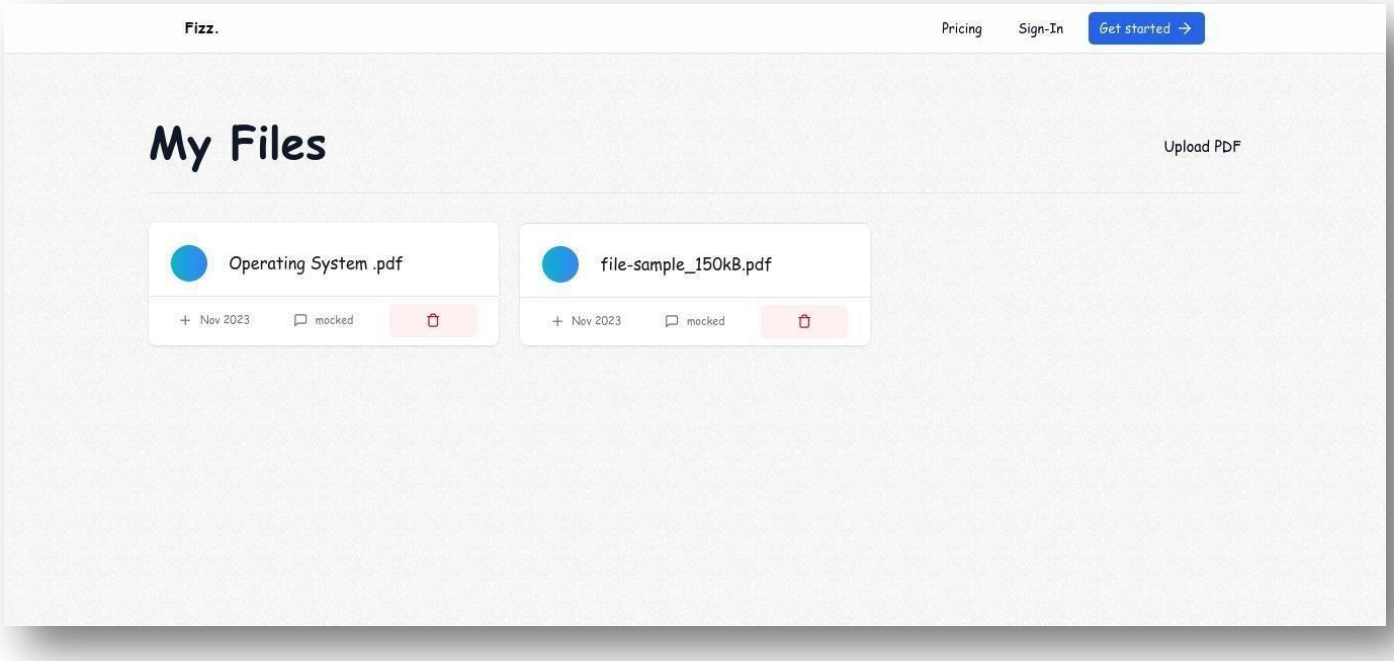


Fig. Uploaded PDF

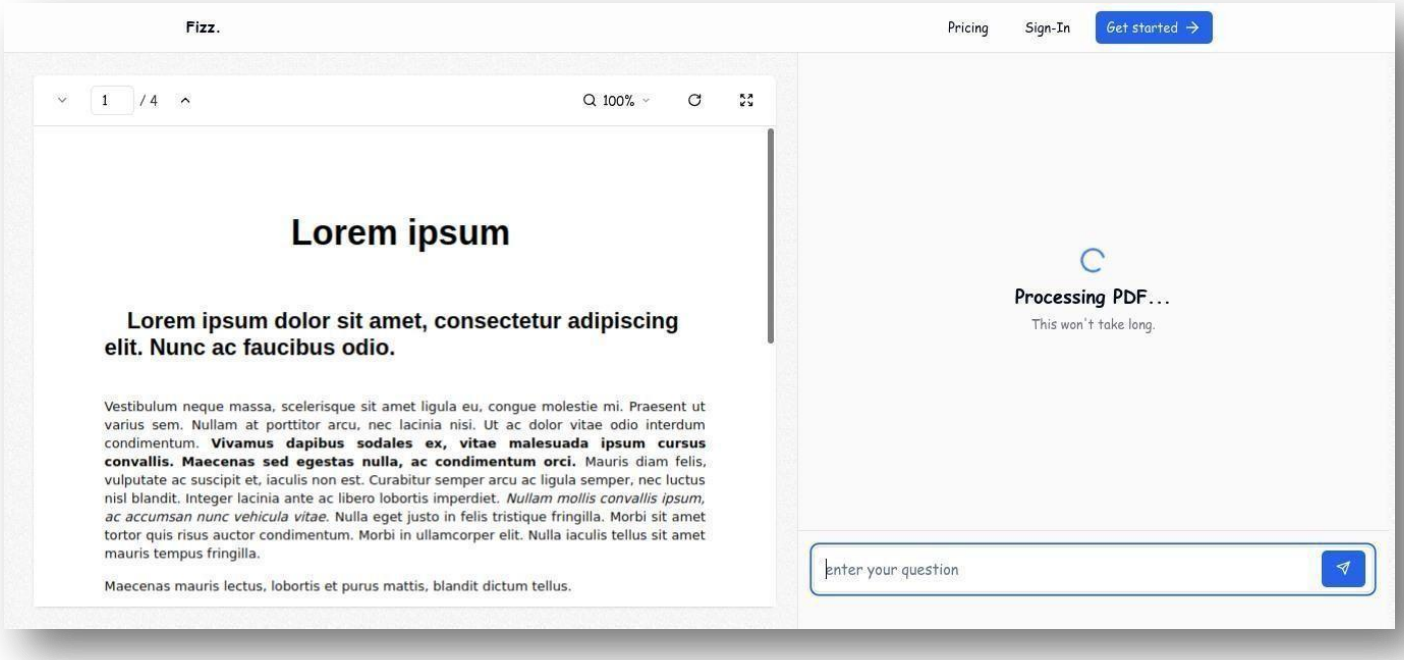


Fig. Chat Bot Interface

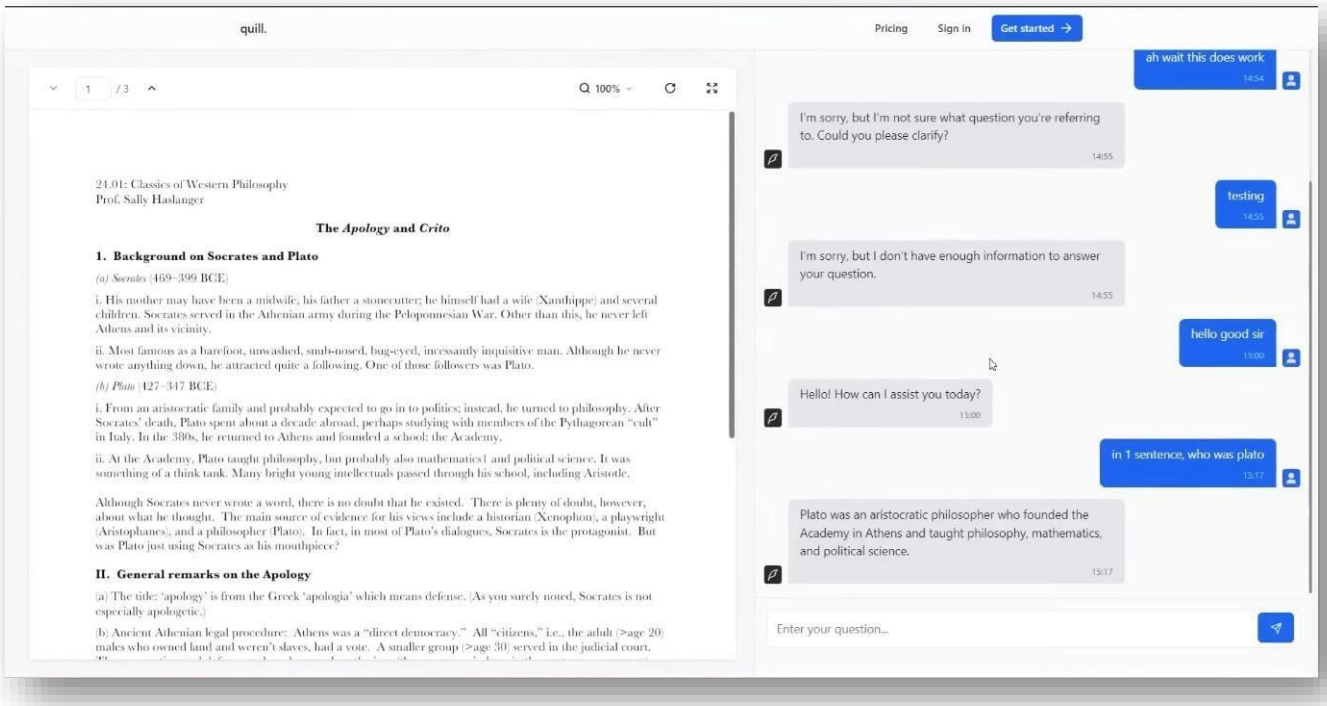


Fig. Question And Answer

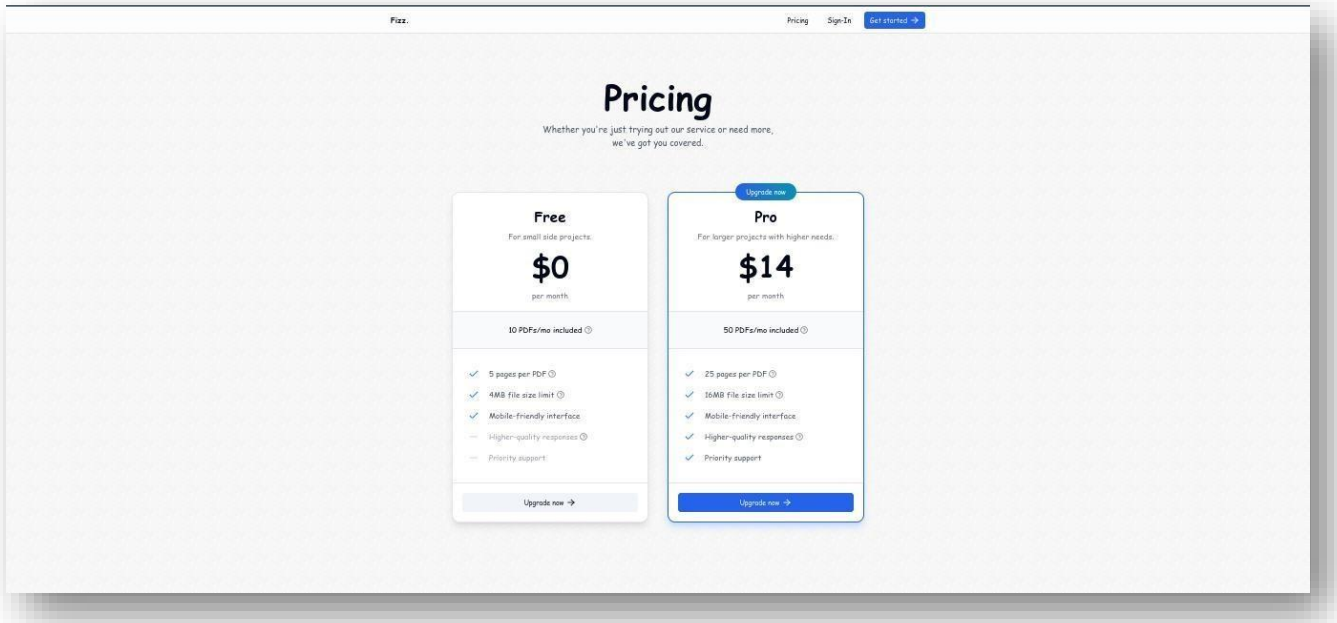


Fig. Pricing Interface

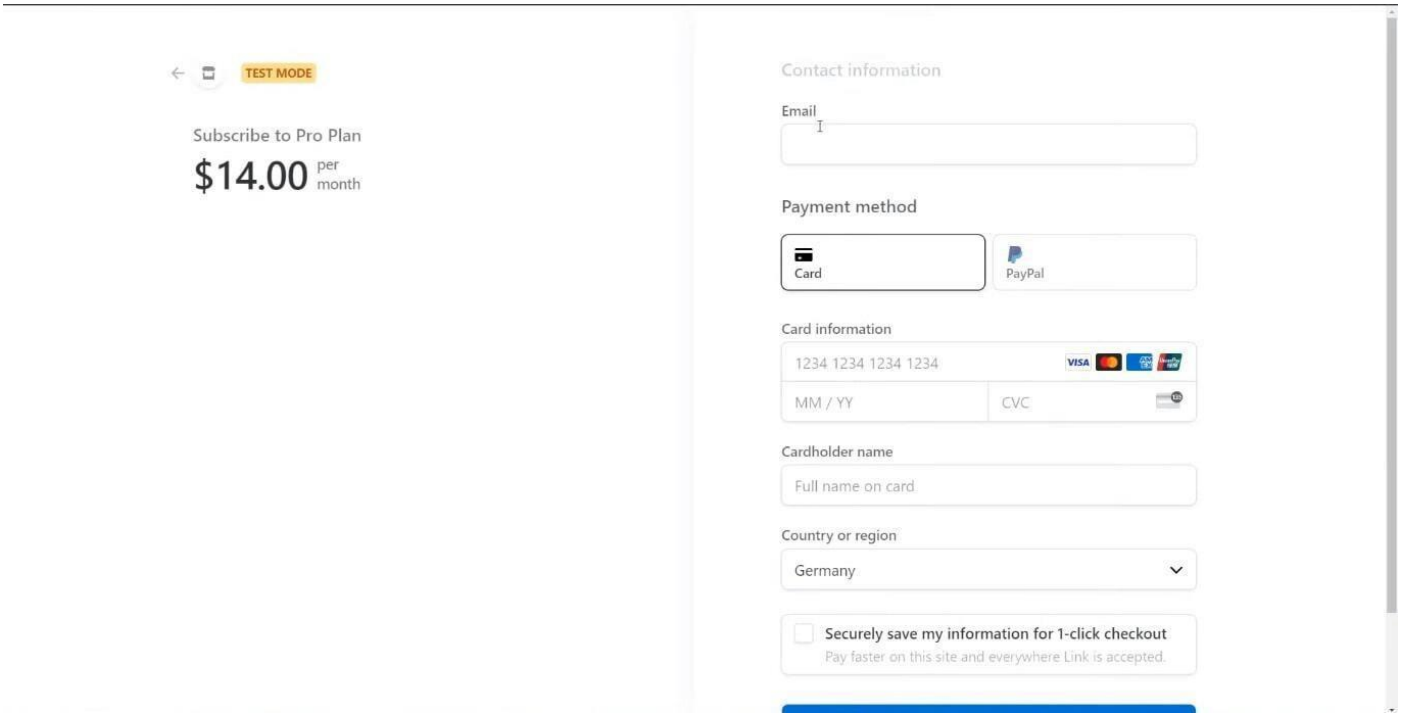


Fig.Subscription For Pro Plan

8. FUTURE SCOPE

1. Educational Sector:

A chatbot could assist students by reading and summarizing educational materials in PDF format, helping them understand and retain information.

The chatbot could generate quizzes based on the content of PDF documents, providing an interactive learning experience for students.

2. Corporate Document Management:

In a corporate environment, a chatbot could help employees quickly retrieve information from extensive policy documents, reports, or manuals.

Chatbots could assist in employee onboarding by providing answers to common questions from training materials and company policies.

3. Healthcare Sector:

Chatbots could assist healthcare professionals in analyzing medical research papers, patient records, and other healthcare-related documents.

4. Legal Industry:

Chatbots could be developed to assist legal professionals in researching and summarizing legal documents, cases, and statutes.

A chatbot could review contracts in PDF format, extracting key clauses and providing insights or highlighting potential issues.

9. CONCLUSION

In conclusion, the implementation of a chatbot capable of reading and comprehending PDF documents to provide accurate and contextually relevant answers holds significant promise across various sectors. The convergence of natural language processing, machine learning, and document understanding technologies has paved the way for innovative solutions that can streamline information retrieval, enhance learning experiences, and improve overall efficiency in diverse industries.

This report has outlined the potential applications of a PDF-reading chatbot in fields such as education, corporate document management, legal services, healthcare, customer support, research and development, e-commerce, and more. The ability of such a system to analyze and extract pertinent information from PDF files not only facilitates rapid data retrieval but also empowers users with instant access to knowledge, ultimately fostering a more informed and productive environment.

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