ASK YOUR SENIOR-YOUR PLACEMENT PARTNER

MINI PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this Report titled "**Ask Your Senior-Your Placement Partner**" is the bonafide work of **"Sakthi Lakshmi M (210701223), Raveena Sri (210701210)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

Students face difficulty while preparing for their interviews. They have various doubts like how to prepare and what to prepare for technical rounds. Ask Your Senior is a bridge between the juniors and seniors which will help them to obtain information relevant to placements and the preparation strategies for interviews. Students can clear their doubts by asking their queries to the chatbot. We are collecting the information about the placements from the seniors who have attended the interview and have experience in how to prepare for the interview. This is our creative idea which will guide the students in preparing for their placements. Our chatbot will provide details about how many companies have come to the college, number of rounds in the company, what are the questions asked in each round, topics from which questions asked and how to prepare for that round. So it will be very easy for the students to prepare for that round and easily crack their placements. This project focuses on the development of a chatbot designed to assist students in their placement preparation by incorporating insights and advice from senior students who have successfully completed the process. The chatbot, named Ask your senior, employs a large language model(LLM) to provide personalized guidance on key aspects such as resume writing, interview techniques, and aptitude test strategies. It integrates a knowledge base filled with real-world experiences and tips from seniors, offering users relevant and practical advice. Additionally, Pre features curated resources and interactive tools like quizzes and mock interviews to enhance the preparatory experience.

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Initially we thank the Almighty for being with us through every walk of our life and showering his blessings through the endeavor to put forth this report. Our sincere thanks to our Chairman **Mr. S.MEGANATHAN, B.E, F.I.E.**, our Vice Chairman **Mr. ABHAY SHANKAR MEGANATHAN, B.E., M.S.,** and our respected Chairperson **Dr. (Mrs.) THANGAM MEGANATHAN**, **Ph.D.,** for providing us with the requisite infrastructure and sincere endeavoring in educating us in their premier institution.

Our sincere thanks to **Dr. S.N. MURUGESAN, M.E., Ph.D.,** our beloved Principal for his kind support and facilities provided to complete our work in time. We express our sincere thanks to **Dr. P. KUMAR, Ph.D.**, Professor and Head of the Department of Computer Science and Engineering for his guidance and encouragement throughout the project work. We convey our sincere and deepest gratitude to our internal guide, **Dr.RAKESH KUMAR M , M.E.,** Assistant Professor, Department of Computer Science and Engineering. Rajalakshmi Engineering College for his encouragement and guiding us throughout the project to build the project.

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CHAPTER 1

INTRODUCTION

1.1 GENERAL

Nowadays, chatbots play a vital role in our daily life by addressing the queries of the people in various fields. Increase in the usage of chatbot helps the students while doing assignments, preparing presentations and to clear their doubts. Students face various difficulties in preparing for their interviews. They find it difficult to find methodologies to prepare for each round. They are not aware of questions asked in each round. So we are creating a chatbot to help students by clearing the doubts in their placement journey.

Seniors have more experience in their placement journey because they have attended various interviews of various companies. So it is very easy for the juniors to crack their placements if they communicate with their seniors. But the problem is there is a communication gap between the seniors and juniors. The main role of our chatbot is to break the communication gap and provide a bridge between the juniors and seniors.

We are using React.js to build the frontend of the website. It gives the best user experience. React.js uses component based architecture. This architecture is used to break down the complex user interface into reusable components.

We are using Flask as the backend. Flask is a lightweight and flexible Python web framework. It is ideal for building small to medium sized web applications and APIs. Flask's lightweight nature ensures fast performance.

We are using Gemini Pro API to build the chatbot. Gemini Pro API is used to interact with the professional tier models within the Gemini family of large language models by Google AI. Gemini 1.0 pro model excels at handling natural language tasks, multi-turn conversations and code generation. It has various capabilities like text generation, question answering, code understanding and generation and multimodal reasoning.

We are using LangChain to simplify the large language model integration. It provides a set of tools and abstractions that make it easier for developers to work with LLM. This includes things like common interfaces for different LLMs, functions for managing prompts and components for building complex workflows. The benefits of

using LangChain are faster development, flexibility and modular design. The key features of LangChain include models and prompt chains, Retrieval Augmentation Generation (RAG), agents and evaluations.

1.2 OBJECTIVE

The aim of this project to develop an interactive chatbot dedicated to help students in their placement preparation by connecting them with senior mentors and recent graduates. The chatbot will help the students for their placement preparation offering personalized advice on various aspects of the placement process, including resume building, interview techniques, and industry-specific preparation. By facilitating real-time Q&A sessions, sharing of study materials, and conducting mock interviews, the chatbot aims to leverage the experience and insights of seniors to provide actionable guidance and support. Additionally, it will curate and deliver motivational content and best practices to boost students' confidence and readiness. This comprehensive approach ensures that students receive well-rounded support, helping them navigate the complexities of placement processes effectively and increasing their chances of success in securing desired job positions.

1.3 EXISTING SYSTEM

There are several applications which help students in their interview journey like Glassdoor, Preplaced, Linkedin, etc. All information is available in these applications. But the problem is that the students have to search a lot to get the required information. This process is time consuming and error prone. Because if the students do not search properly, they won't get the required information.

GLASSDOOR: Glassdoor is an American website where current and former employees anonymously review companies, operated by the company of the same name. The job seekers can search for jobs, gain inside knowledge about companies, salaries, interviews, and benefits through other users' reviews. They can also find

information about how to prepare for interviews. Complete reviews of the people working in the company will be present in this application.

INDEED: Indeed, Inc. is an American worldwide employment website for job listings launched in November 2004. It is an independent subsidiary of Japan-based Recruit Holdings. This site aggregates job listings from thousands of websites, including job boards, staffing firms, associations, and company career pages. They generate revenue by selling premium job posting and resume features to employers and companies hiring. In 2011, Indeed began allowing job seekers to apply directly to jobs on Indeed's site and offering resume posting and storage.

GEEKS FOR GEEKS: Geeks for Geeks is an educational platform that provides various useful content for placements preparation. On this website, many people write articles about their placements. Students can refer to the article and gather the required information. But this is a time consuming process.

In the above platforms, many interview preparation tips and techniques are present. But the information is overloaded here. So it is very time consuming to search for the information. So we decided to build a system which streamlines this process.

1.4 PROPOSED SYSTEM

Data Collection:

The data is collected from the seniors. We have a form on our website which collects the information from the seniors. In the form we collect the details such as name of the company, number of rounds and for each round we collect the information such as topics from which questions asked in each round, questions which are asked in each round and how to prepare for each round.

Preprocessing:

For the preprocessing we use the Recursive Character Text Splitter library. The library here is LangChain. This library in turn can be helpful if we plan to split a large document into smaller parts.

Two key parameters are: chunk_size and chunk_overlap parameter.

chunk_size: This includes provision for the maximum size of the text chunk.

chunk_overlap: The amount of characters overlapped between the adjacent chunks to support the context continuity.

Generate Embeddings and store in FAISS Database:

Text embeddings are condensed vector representations with meaning information of the text. The vectors are used in different NLP tasks such as comparison, search and text analyzation with a qualitative and relational effectiveness. Google's Generative AI models make semantic representations at a high level of quality possible due to the implementation of advanced ways of embedding.

Key Functionalities:

Model Selection: Pick up one of the models, for example, from the available ones that create the embeddings. Here the embedding model-001 is clicked.

Embedding Generation: Turn the text regions of different sizes into dense vectors which encode the meaning of the words.

Integration with Vector Stores: Analyze and accumulate these embeddings into a vector database with ease such as FAISS.

CHAPTER 2
LITERATURE SURVEY

- Piccolo, M. (2021). Job selection with a chatbot?: Ethnographic research on chatbots requirements (Master degree thesis, University of Twente). The literature puts a finger on the dual role fulfilled by the chatbot software on the candidates through the technical and social tools in the process of the selection. The technical features comprise NLP, ML, and fast integration that will allow an easy linking. Sociality for the chatbots stands for the ability of understanding human interactions, then displaying the emotion of empathy, and lastly, maintaining the context. The challenge is to determine the practically feasible ratio of technical and social elements to really connect with the candidates. Such an integration leads to creating personalized experiences and therefore, efficiency in selection processes.

- Barghi, B. (2022). How chatbots are used in recruitment and selection practices? (Master's thesis, Universitat Politècnica de Catalunya). While the literature shows that global diversity and remote work has an impact to the people acquisition process and are starting to change the recruitment strategies. It mainly reviews the series of transformation of recruitment from analog to Digital Recruiting 3. 0, as great strides are made in AI. Bots act as a job posting core, resume screening, and candidate in this AI conversational effect. Their combination improves HR processes by providing each employee with individual help and in faster recruitment processes. More precisely, AI is currently used in a variety of functions in HRM which mirrors the application of technology in keeping up with the changing face of modern workforce.

- Sonawane, B., Ombase, A., Rajmane, P., & Kamble, D. (2020). Chatbot for Institutional Purpose. no, 7, 585-601. The literature emphasizes both the purpose and architecture of chatbot systems, which are outlined in simulating human conversation through both language models and computational algorithms. Advances in data mining and machine learning have bolstered the decision-making capabilities of chatbots to expand the practicality across a range of lifestyle applications that include help desks, information retrieval, and E-commerce. Chatbots, in E-commerce, streamline tasks in product search and information retrieval to enhance the customer's decision-making process. Much emphasis is put on the user attitudes toward chatbots, though the literature does acknowledge that chatbots have the potential for being an efficient solution towards enhancing user experiences and facilitating interactions through

diverse domains.

- Reddy, V. N., Reddy, S. M., Vamshi, A. Y., Reddy, K. N., Dhanunjay, B., & Gopal, S. V. (2022). WHATSAPP CHATBOT FOR CAREER GUIDANCE. In the literature piece, the stress is on the significance of chatbots in this specific period of consumption of e-information. Chatting is a very dominant means of communication, including sales and marketing, with Reliance, Airtel, Myntra, Flipkart, and Amazon, among others, have captured this opportunity. The poll brings one to the conclusion that the problem can be viewed from multiple angles in order to identify the main goal for chatbot usage, the extent and the peculiarity of these systems, and their effect on the public. It indicates application of chatbots in customer service and marketing tactics in general, and in improvement of user experience. Ultimately, chatbots do more than that. They are becoming the necessary ingredient in the making of the customer-oriented ecosystem and the successful communication in the digital age.

- Lopez, T., & Qamber, M. (2022). The benefits and draw students at Jonkoping University. The literature shows the change in chatbots from the keyword matching to the complex conversation interfaces within the limits of the marketing and education sector. Chatbots are making a mark in the business world where they're employed in firms like Reliance, Myntra, and Amazon. The effective use of AI in these customers' applications is what creates impact. Education domain puts chatbots to good use through high levels of engagement and learning outcomes with less smoothness about the user's trust. According to some studies the advantages of the chatbot integration in the MOOCs are evident already, but more research is needed to fill the gaps of knowledge on overall effects. The inclination of chatbots is quite high among younger people, which implies that their birth rates will increase in the future.

- Patel, D., Shetty, N., Kapasi, P., & Kangriwala, I. (2023). College enquiry chatbot using conversational AI. International Journal for Research in Applied Science & Engineering Technology (IJRASET), 11(5). This literature review will cover the territory of college search chatbots that enables students to receive fast and convenient answers on major subjects quickly. It elaborates the integration of chatbots created with AI based algorithms which are utilized in SDA bot so as to amplify the whole experience and handover repetitive roles to the students. The analysis then goes further to contrast the competence of Azure versus chatbots with rule-based and Rasa chatbots showing that Azure is appropriate for massive conversational AI applications. By analyzing various projects applies the methods of ML, NLP and AIML, then

draws the strengths, weaknesses and college settings.

- Bansal, Latesh, et al. "PLACEMENT PORTALS WITH APPIAN." (2023). The Placement Driver project has been instituted to increase efficiency in job search for students of the organization. An access to such information through the dedicated website of the college is very much convenient and can easily be done by the students who are interested in placements. In this regard, the subunit provides such information as the companies recruitment procedures, which puts students in a better position to learn the basics for their interviews. Similarly, the website will showcase a question bank which will address the students on the most commonly asked interview questions, providing them with a coordinated way to perfect their interview skills. With this resource, students will be able to learn about the requirements of recruiters and carry out appropriate responses so that they could claim these jobs. In addition to the main functions of the Placement Driver website, other features like a forum for conversations and interactions among students will be incorporated where students can talk, seek information from fellow students and professionals. This platform by its nature gives a hint of community where knowledge is passed on and shared thus improving the confidence of the students before their real time placement.

- Vardhan, Alaukika, et al. "EDUSPACE–A SIMPLE PLACEMENT PREPARATION SITE."The modern business world is a competitive place, anybody who is looking to develop a successful career must be prepared for this. Students are supported by building a web platform with a lot of resources such as handouts, tips, advice chats, educational information, videos designed to help them during the placements. The aim of the platform is to enhance the readiness of the course for business registration and help the placement team to see the promising researchers who require development of their skills and relationships. It is a hub that contains all pages for the placement resources such as job descriptions, professional cover letters and resumes, interview preparation tips, and tips on how to get the employer to love you. This architecture is achieved through integrating extensive information which eases job search and researchers can begin their careers with full confidence.

- Godiwala, Bhumi, et al. "Training and placement cell android application." Proceedings of the 3rd International Conference on Advances in Science & Technology (ICAST). 2020, Placement and Training (PAT) cell is the bridge between the students and companies that visit

the campus for recruitment so that all PAT cell information and activities are important . By automating critical PAT cell tasks such as displaying notifications, holding student information, student qualifications, company requirements, training sessions, schedule of interviews, planning seminars, etc. The program aims to reduce human resources and errors. To achieve that automation, we developed an Android framework. The proposed system is an Android application to monitor mobile student information and keep them up to date on the latest activities at the college,recruitment drives etc . The program will be used by the students, teachers and parents.

CHAPTER 3
SYSTEM DESIGN

3.1 GENERAL

System design involves the formulation and creation of systems that meet the specific needs of users. Fundamentally, the essence of studying system design lies in comprehending the individual elements and how they interact with each other.

3.2 DEVELOPMENT ENVIRONMENT

3.2.1 HARDWARE SPECIFICATIONS

This document offers a comprehensive overview of the hardware and its implementation, detailing the key components, their interactions, and the necessary requirements for seamless connectivity to utilities and installation.

Table 3.2.1 Hardware Specifications

| PROCESSOR	Intel Core i5
RAM	4GB or above (DDR4 RAM)
GPU	Intel Integrated Graphics
HARD DISK	6GB
PROCESSOR FREQUENCY	1.5 GHz or above

3.2.2 SOFTWARE SPECIFICATIONS

The below table constitutes a thorough evaluation of requirements that precedes the more detailed phases of system design, aiming to minimize the need for subsequent revisions. Furthermore, it should offer a practical foundation for estimating product expenses, potential risks, and project timelines.

Table 3.2.2 Software Specifications

FRONT END	React Js
BACK END	Flask
CODE EDITOR	Visual Studio Code

3.3 SYSTEM DESIGN

3.3.1 ARCHITECTURE DIAGRAM
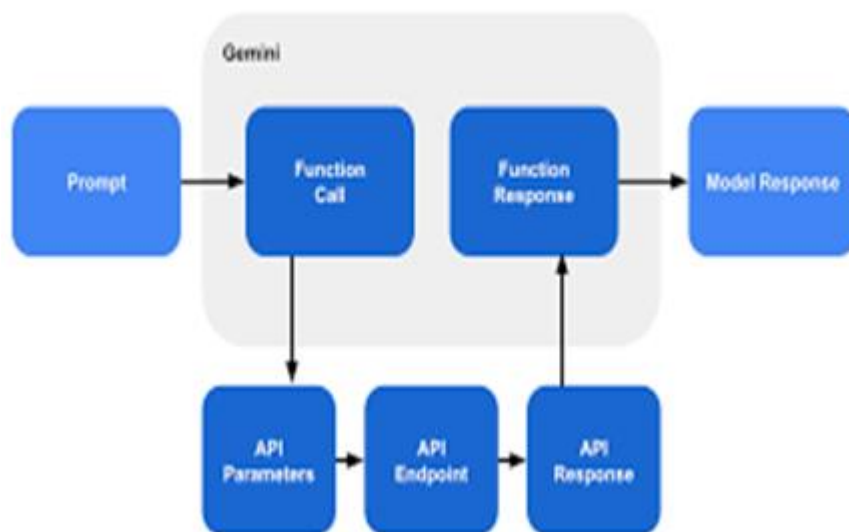
CHAPTER 4
PROJECT DESCRIPTION

4.1 PROJECT DESCRIPTION:

● Data Collection:

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● Preprocessing:

For the preprocessing we use the Recursive Character Text Splitter library. The library here is LangChain. This library in turn can be helpful if we plan to split a large document into smaller parts. Two key parameters are: chunk_size and chunk_overlap parameter.

chunk_size: This includes provision for the maximum size of the text chunk.

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● Generate Embeddings and store in FAISS Database:

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Integration with Vector Stores: Analyze

and accumulate these embeddings into a vector database with ease such as FAISS.

●   Creation of conversational chain: Prompt Template:

There is a prompt template which is a predefined code and which is used to define a model about how to organize its replies.

The sentence chosen here contains the prompt template that tells the model to give elaborate responses. The prompt passes further information about context and question appearing in the sentence. If the answer isn't available among the lines, the model is taught to say "answer is not available in the context".

AI Model:

The appropriate AI model employed is called ChatGoogleGenerativeAI with model ID: gemini-pro.

The system is installed at a temperature of 0.3. As has been mentioned above, depending upon the nature of the system requirements and facilities, the installation process may vary accordingly. The third constituent is the function, however, having to do with the depths and randomness of output in relation to NN architecture, is commonly taken to mean the function. Predictability, which is higher at lower technical analysis values, is the other aspect to note.

Question-Answering Chain:

load_qa_chain is a function that loads the question-answering chain with the model and the prompt type that is said. This chain will apply the procedure by using the contextual question and then we pass them to the model which will then proceed to provide an appropriate response.

●   Interactive frontend:

The frontend is built using React Js to give the best user experience. The user interface is easy to navigate and explore.

●   Home Page:

The home page features the navigation to the various parts of the website and it also provides details of the website.

CHATBOT:

This chatbot is built using LangChain and Google Generative AI. The backend is designed using Flask. We will process the text file and convert it into manageable chunks. We will embed it using Google's Generative AI. We will store the embeddings in the FAISS vector database. We will handle the queries of the user by generating responses using conversational AI model. We have to secure the API key so we are using dotenv to load the environment variables.

The function 'get_text_from_files' is used to read the text from the file. Next we use the Recursive Character Text Splitter library from LangChain. The text is then taken from the file and, using the 'get_text_chunks' from the Recursive Character Text Splitter, it is split into usable parts. This splitter function breaks down the text in to portions that are equivalent to 10,000 characters only. It has an overlap of 1000 characters when the end of text in the source language is aligned with the beginning or within the first 100 characters of the target language. This is used to ensure continuity from one chunk to another so that chunks make sense as smaller parts of a whole text. Splitter library from LangChain. The text from the file is processed using the 'get_text_chunks' from the Recursive Character Text Splitter. This splitter function divides the text into chunks which contain 10,000 characters.

CHAPTER 5

IMPLEMENTATION AND RESULTS

5.1 IMPLEMENTATION

server.py

```python
from flask import Flask, request, jsonify
from langchain.text_splitter import RecursiveCharacterTextSplitter
from langchain_google_genai import GoogleGenerativeAIEmbeddings
import google.generativeai as genai
from langchain_community.vectorstores import FAISS
from langchain_google_genai import ChatGoogleGenerativeAI
from langchain.chains.question_answering import load_qa_chain
from langchain.prompts import PromptTemplate
from dotenv import load_dotenv
import os


load_dotenv()
os.getenv("GOOGLE_API_KEY")
genai.configure(api_key=os.getenv("GOOGLE_API_KEY"))


def get_text_from_files(txt_files):
    text = ""
    for txt_file in txt_files:
        with open(txt_file, 'r', encoding='utf-8') as file:
            text += file.read()
    return text
def get_text_chunks(text):
    text_splitter        =        RecursiveCharacterTextSplitter(chunk_size=10000,
chunk_overlap=1000)
    chunks = text_splitter.split_text(text)
    return chunks
```

```python
def get_vector_store(text_chunks):
    embeddings = GoogleGenerativeAIEmbeddings(model = "models/embedding-001")
    vector_store = FAISS.from_texts(text_chunks, embedding=embeddings)
    vector_store.save_local("faiss_index")


def get_conversational_chain():
    prompt_template = """
    Answer the question as detailed as possible from the provided context, make sure to provide all the details, if the answer is not in
    provided context just say, "answer is not available in the context", don't provide the wrong answer\n\n
    Context:\n {context}?\n
    Question: \n{question}\n

    Answer:
    """
    model = ChatGoogleGenerativeAI(model="gemini-pro",
                    temperature=0.3)

    prompt = PromptTemplate(template = prompt_template, input_variables = ["context", "question"])
    chain = load_qa_chain(model, chain_type="stuff", prompt=prompt)

    return chain


def user_input(user_question):
```

```python
    embeddings = GoogleGenerativeAIEmbeddings(model = "models/embedding-001")

    new_db = FAISS.load_local("faiss_index", embeddings,allow_dangerous_deserialization=True)
    docs = new_db.similarity_search(user_question)

    chain = get_conversational_chain()

    response = chain(
        {"input_documents":docs, "question": user_question}
        , return_only_outputs=True)
    return response["output_text"]


app = Flask(__name__)


@app.route('/api/append',methods=['POST'])
def append_to_file():
    company = request.json.get('company')
    rounds = request.json.get('rounds')
    description = request.json.get('description')
    others = request.json.get('others')
    print(company,rounds,description,others)
    if not company or not rounds:
        return jsonify({'error':'Content is required. '}),400
    print(company,rounds)
    file_path = "./data/file.txt"
    try:
        with open(file_path,'a') as file:
```

```python
        file.write("\n")
        file.write("The company name is "+company+"\n")
        file.write(company+" "+"has "+str(rounds)+" rounds"+"\n")
        file.write("The following points give the desciption of the rounds of the
company.\n")
        for i in range(len(description)):
            file.write("In Round "+str(i+1)+" topics from which questions asked:
"+description[i]['inputField1']+"\n")
            file.write("In Round "+str(i+1)+" list of questions asked:
"+description[i]['inputField2']+"\n")
            file.write("For Round "+str(i+1)+" the preparation strategies are:
"+description[i]['inputField3']+"\n")
        file.write(others)
        file.write("\n")
    return jsonify({'message': 'Content appended successfully.'}),200
    except Exception as e:
        return jsonify({'error':str(e)}),500


@app.route('/api/getAns',methods=['POST'])
def getAns():
    directory_path = "./data"
    text_files = [os.path.join(directory_path, file) for file in os.listdir(directory_path) if
file.endswith('.txt')]
    combined_text = get_text_from_files(text_files)
    print("DVFGDFGEGFDGDFSG>>>>>>>>>>>>>>>"+combined_text)
    query = request.json.get("query")
    text_chunks = get_text_chunks(combined_text)
    print(text_chunks)
    get_vector_store(text_chunks)
    if query:
        text=user_input(query)
        print(text)
```

```
        return jsonify({'message':text}),200
    print(query)


    return jsonify({'message': 'Content appended successfully.'}),200


if __name__ == '__main__':
    app.run(debug=True)
```

5.2 OUTPUT SCREENSHOTS
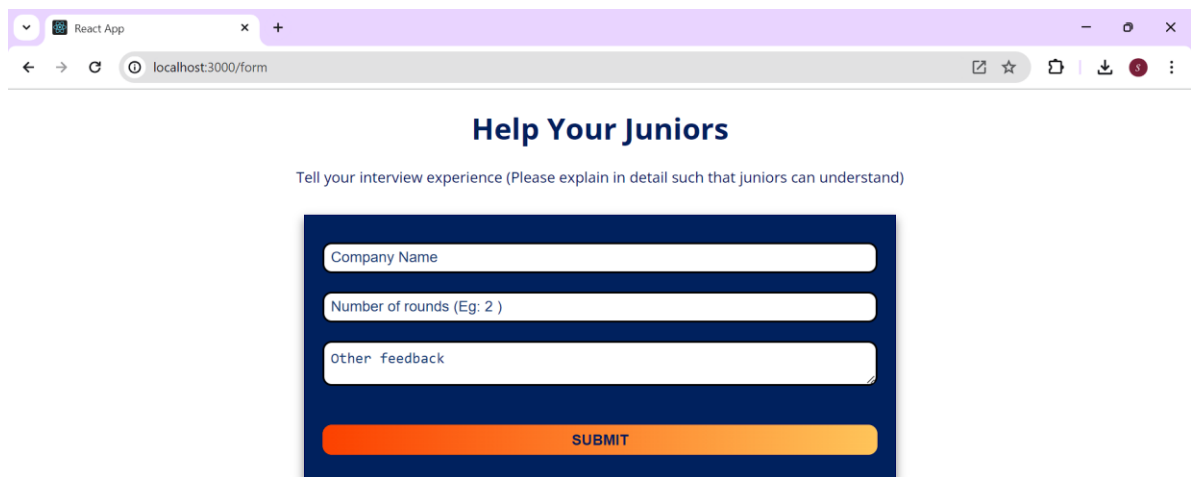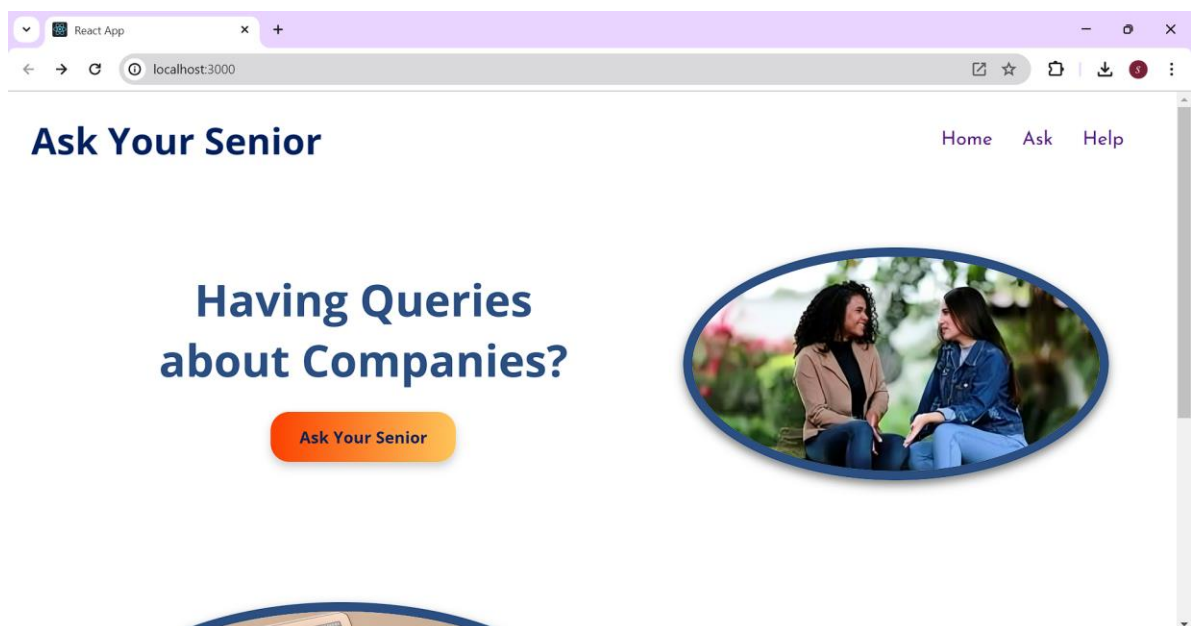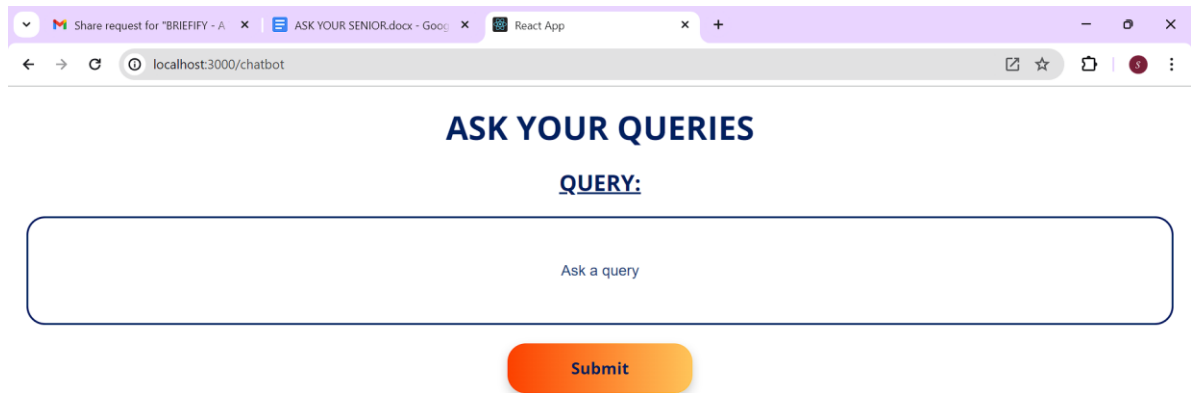
CHAPTER 6
CONCLUSION AND FUTURE ENHANCEMENTS

6.1 CONCLUSION

The development of an intuitive chatbot for placement preparation significantly enhances the support system available to students. By leveraging the knowledge and experience of senior mentors and recent graduates, the chatbot provides personalized guidance on crucial aspects such as resume building, interview techniques, and industry-specific preparation. Through interactive features like real-time Q&A sessions, study material sharing, and mock interviews, students gain valuable insights and practical advice that bolster their confidence and readiness. This innovative tool not only streamlines the placement preparation process but also fosters a sense of community and collaboration among students, leading to better preparedness and higher success rates in securing job positions.

6.2 FUTURE ENHANCEMENTS

Looking ahead, several enhancements can further improve the chatbot's effectiveness and reach. Integrating machine learning algorithms can enable more personalized and adaptive responses based on individual user profiles and their progress. Expanding the database to

include advice from professionals across various industries can provide more comprehensive guidance. Additionally, incorporating advanced features such as video-based mock interviews with real-time feedback, AI-driven resume analysis, and integration with professional networking platforms can offer even more robust support. Finally, implementing multilingual support will make the chatbot accessible to a broader range of students, ensuring that language barriers do not impede access to valuable placement preparation resources.

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