Date	18 November 2022
Team ID	PNT2022TMID33711
Project Name	Project- skill and job Recommender
Team Leader	S.Nivetha
Team Members	P.Sangavi
	C.Priya
	R.Roshini

Project Report

1 INTRODUCTION

1.1 Project Overview

To develop an end-to-end web application capable of displaying the current job openings based on the user skillset. The user and their information are stored in the Database. An alert is sent when there is an opening based on the user skillset. Users will interact with the chatbot and can get the recommendations based on their skills. We can use a job search API to get the current job openings in the market which will fetch the data directly from the webpage.

1.2 Purpose

The main aim of the project is to building a model with a skill recommender solution through which the fresher or the skilled person can log in and find the jobs by using the search option or they can directly interact with the chatbot and get their dream job.

2.LITERATURE SURVEY

1.3 Existing problem

Skill -based recommendation services platforms wants to turn into a leading source of the job recommender platform. The job and skill recommender system is expected to reduce unemployment and improve the skills of job seekers to boost the country's economy. Job recommender is giving guidance for job seekers to get quick contact for those jobs. Immediate announcement of the latest job openings, and walk-in interviews with different locations and offers you full details of recruitment such as the number of job vacancies, eligibility criteria, interview date, required qualifications etc.

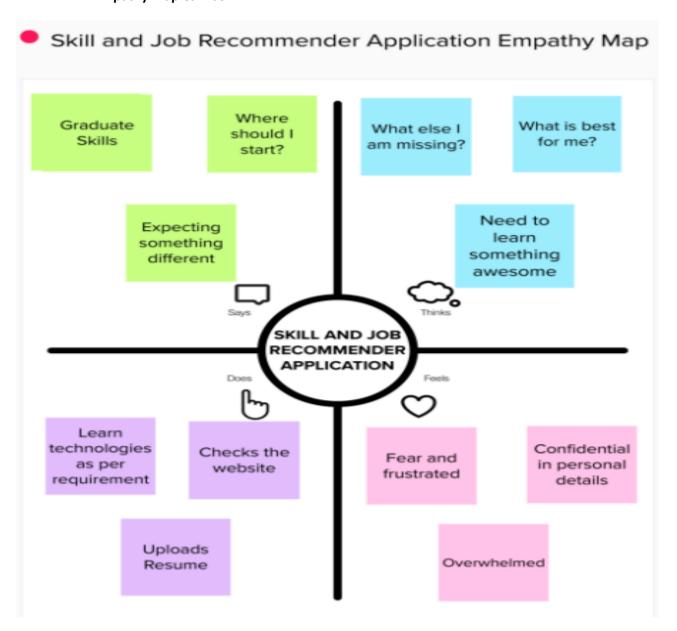
1.4 Problem Statement Definition

The main aim of the project is to develop an end-to-end web application capable of displaying the current job openings based on the user skill set. Users will interact with the chat-bot and can get recommendations based on their skills.

This Application uniquely identifies the user's skills recommend the job according to the user's interest.

2 IDEATION & PROPOSED SOLUTION

2.1 Empathy Map Canvas



2.2 Ideation & Brainstorming



2.3 Proposed Solution

S.No. 1.	Parameter Problem Statement (Problem to be solved)	Description Every industry has a lot of career opportunities, but job seekers are unaware of them. The unemployability
2.	Idea / Solution description	crisis can be solved if every job seeker receives the right career guidance and proper job role training. So, to eradicate the unemployment crisis, for the job seekers to find a job they desire, match their qualifications and skills. To develop an end-to-end web
2.	idea / Solution description	application capable of displaying the current job openings based on the user skill set. Users will interact with the chat-bot and can get recommendations based on their skills.
3.	Novelty / Uniqueness	This Application uniquely identifies the user's skills recommend the job according to the user's interest.
4.	Social Impact / Customer Satisfaction	The job and skill recommender system is expected to reduce unemployment and improve the skills of job seekers to boost the country's economy. The customer satisfaction can be measured by customer loyalty and customer reviews after deployment of the project.
5.	Business Model (Revenue Model)	A subscription model can be provided for both employees and employers with additional costs for features along with recurring monthly or yearly costs.
6.	Scalability of the Solution	It is lifelong recommender app. Once the user has login to this application, he will be notified about the job up to date.

2.4 Problem Solution fit

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it actually solves the customer's problem. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns

Purpose:

- Solve complex problems in a way that fits the state of your customers.
- Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.

roblem-Solution fit canvas 2.0	Purpose / Vision	
The one who is interested in acquiring new skills and the one who is need of a job.	6. CUSTOMER CONSTRAINTS What constraints prevent your customers from taking action or limit their choices of solutions? Inadequate training, incorrect instruction, lack of necessary information about what to do or how to do it, poor equipment or supplies, lack of equipment or supplies.	5. AVAILABLE SOLUTIONS Which solutions are available to the customers when they face the problem or need to get the job done? What have they trie in the past? What pros & cons do these solution have? Searching in online is better than noticing advertisement in newspapers.
2. JOBS-TO-BE-DONE / PROBLEMS Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one oppurtunity; jobs in various domains.	9. PROBLEM ROOT CAUSE What is the real reason that this problem exists? What is the back story behind the need to do this job? Financial crises, un employement in the society.	7. BEHAVIOUR What does your customer do to address the problem and get the job done? i.e. directly related: search for jobs related to their skills; indirectly associated: learn new skills
3. TRIGGERS What triggers customers to act? Facing jobless situation in society, trying to be self dependent. 4. EMOTIONS: BEFORE / AFTER	10. YOUR SOLUTION Dealing with the tremendous proportion of selecting information Online, an errand searcher for the most part goes through hours to see as supportive ones. Regularly, people who need industry data are foggy about what unequivocally they need to figure out how to get a proper	8. CHANNELS of BEHAVIOUR 8.1 ONLINE What kind of actions do customers take online? Searching for new skills to upgrade ourselves to get a new job. 8.2 OFFLINE
to be self dependent. 4. EMOTIONS: BEFORE / AFTER How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design.	occupation for them. We address the issue of recommending sensible obligations to people who are searching for another work.	What kind of actions do customers take offline? Refer books , journals, newspaper etc

3 REQUIREMENT ANALYSIS

3.1 Functional Requirement

S. No	FUNCTIONAL REQUIREMENT (Epic)	SUB REQUIREMENT (Story)
1)	Sign In / Login	Register with username, password
2)	Profile Registration	Register with username, password, email, qualification, skills. This data will be stored in a database.
3)	Job profile display	Display job profiles based on availability, location ,skills
4)	Chatbot	A chat on the webpage to solve user queries and issues
5)	Job registration	A copy of the company the user applied for with its registration/description details will be sent to the registered email id.
6)	Logout	Logging out of the webpage.

3.2 Non-Functional requirements

S. No	NON-FUNTIONAL REQUIREMENT	DESCRIPTION
1)	Usability	The webpage will be designed in such a way that any non-technical user can easily navigate through it and complete the job registration work.
2)	Security	Using of SSL certificate (Python Flask to Cloud connect) will provide security to the project. Database will be safely stored in DB2.
3)	Reliability	To make sure the webpage doesn't go down due to network traffic.
4)	Performance	Focus on loading the webpage as quickly as possible irrespective of the number of user/integrator traffic.
5)	Availability	This webpage will be available to all users at any given point of time.
6)	Scalability	Increasing the storage space of database can increase the number of users.

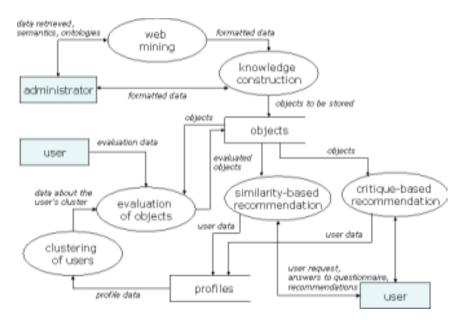
4 PROJECT DESIGN

4.1 Data Flow Diagram

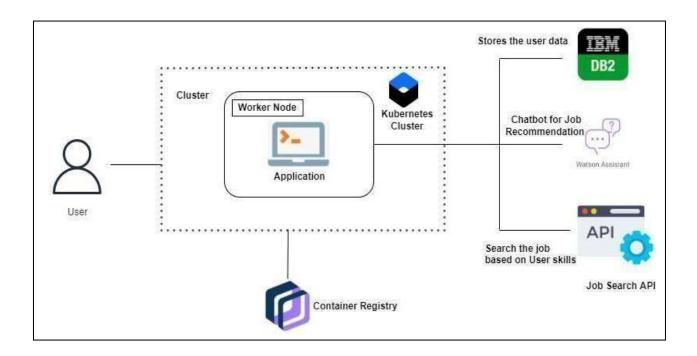
Flow



- User configures credentials for the Watson Natural Language Understanding service and starts the app.
- 2. User selects date file to process and load.
- 3. Apache Tika extracts text from the data file.
- A. Extracted text is passed to Watson NLU for enrichment.
- 5: Excided data is visualized in the UI using the D3 is library.



4.2 Solution & Technical Architecture



S.No.	Parameter	Description
1.	Is the System Robust?	Yes, it is partially buildable platform as the budget required will be more as cloud is a pay per use model and time taken will be quite.
2.	Is it highly modifiable?	Indeed, the framework is modifiable and it can own up to the progressions by recognizing blunders that requirements to be fixed and new functionalities. It is exceptionally receptive to the progressions.
3.	Is it Scalable?	Indeed, the framework proposed is exceptionally versatile as it can deal with the developing responsibility where great execution is likewise expected to effectively work. Organization of the stage has been finished utilizing different OS virtualization stage it will deal with the responsibility genuinely.

4.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application.	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook.	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail.		Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password.		High	Sprint-1
	Dashboard	USN-5	As a user, I can access my dashboard after signing in.	I can access my account / dashboard	High	Sprint-1
Customer (Web user)	Access	USN-6	As a user, I can setup a profile, and basic details by signing in.			
		USN-7	As a user, I will upload my resume, certificates, and other requirements.	I can perform several task in the application	Medium	Sprint-1
Customer Care Executive	Chatbot	USN-8	As a user, I can seek guidance from the customer care executive.		High	Sprint-1
Administrator	DBMS	USN-9	As a administrator, I can keep the applications of your organization relies on running.	I can perform various modifications in the applications.	High	Sprint-1

5 PROJECT PLANNING & SCHEDULING

5.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Priority	Acceptance criteria	Team Members
Sprint-1	UI Design	USN-1	As a job seeker experience an awesome user interface in the website	Medium	Better Impression about a website	Dinesh Raj
Sprint-1	Registration	USN-2	As a job seeker register for the application by entering my email, password, and confirming my password.	High	I can access my account I dashboard	Dasvanth
Sprint-1		USN-3	As a job seeker receive confirmation email once I have registered for theapplication	High	I can receive confirmation email & click confirm	Hari Haran
Sprint-1		USN-4	As a job seeker register for the application through Facebook	Low	I can register & access the dashboard with Facebook Login	Dharshan
Sprint-1		USN-5	As a job seeker register for the application through Gmail	Medium	I can receive confirmation email & click confirm	Dinesh Raj
Sprint-1	Login	USN-6	As a job seeker log into the application by entering email & password	High	I can access my account / dashboard	Dasvanth, Dharshan
					1	

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Priority	Acceptance criteria	Team Members
Sprint-1	Dashboard	USN-8	As a user, If I Logged in correctly, I can view my dashboard and I can navigate to any pages which are already listed there.	High	I can access all the pages/ dashboard	Hari Haran
Sprint-2	User Profile	USN-9	As a user, I can view and update my details	Medium	I can modify my details/data	Dinesh Raj
Sprint-2	Database	USN-10	As a user, I can store my details and data in the website w	Medium	I can store my data	Dasvanth
Sprint-2	Cloud Storage	USN-11	As a user, I can upload my photo, resume and much more in the website.	Medium	I can Upload my documents and details	Dharshan
Sprint-2	Chatbot	USN-12	As a user, I can ask the Chatbot about latest job openings, which will help me and show the recent job openings based on my profile	High	I can know the recent job openings	Hari Haran
Sprint-2	Identity-Aware	USN-13	As a User, I can access my account by entering by correct login credentials. My user credentials is only displayed to me.	High	I can have my account safely	Dinesh Raj

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Priority	Acceptance criteria	Team Members
Sprint-3	Sendgrid service	USN-14	As a user, I can get a notification or mail about a job opening with the help of sendgrid service.	Medium	I can get a notification in a second.	Dasvanth
Sprint-3	Learning Resource	USN-15	As a user, I can learn the course and I will attain the skills which will be useful for developing my technical skills.	High	I can gain the knowledge and skills	Dharshan
Sprint-3	Docker	USN-16	As a user, I can access the website in any device	High	I can access my account in any device	Dinesh Raj
Sprint-3	Kubernetes	USN-17	As a user, I can access the website in any device	High	I can access my account in any device	Dasvanth
Sprint-3	Deployment in cloud	USN-18	As a user, I can access the website in any device	High	I can access my account in any device	Hari Haran
Sprint-3	Technical support	USN-19	As a user, I can get a customer care support from the website which will solve my queries.	Medium	I can tackle my problem & queries.	Dharshan
Sprint-4	Unit Testing	USN-15	As a user, I can access the website without any interruption	High	I can access the website without any interruption	Dharshan
Sprint-4	Integration testing	USN-16	As a user, I can access the website without any interruption	High	I can access the website without any interruption	Hari Haran

5.2 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

7. CODING & SOLUTIONING (Explain the features added in the project along with code)

7.1 Feature 1

```
pupy DUSM PROJECTION IN appay - C...Nom project - final x

use proxity.

con = salite3.connect("myimage.db")

con.row_factory = sqlite3.flow

cur = con.cursor()

cur.execute("select * from image")

data = cur.fetchall()

con.close()

if request.method="POST':

upload_image.filename!=":

filepath-os.path.join(app.config['UPLOAD_FOLDER'],upload_image.filename)

upload_image.save(filepath)

con-salite3.connect("myimage.db")

cur.con.cursor()

cur.execute("insert into image(img)values(?)",(upload_image.filename,))

con.commit()

flash("File Upload Successfully","success")

con = sqlite3.connect("myimage.db")

con.cur.execute("select * from image")

data-cur.fetchall()

con.cursor()

cur.execute("select * from image")

data-cur.fetchall()

con.cursor()

con.execute("select * from image")

data-cur.fetchall()

con.cursor()

con.execute("delete record(string:ido'))

def delete_record(string:ido')

def delete_record(string:ido')

def delete_record(string:ido')

cur-con.cursor()

cur-con.cursor()

cur-con.cursor("myimage.db")

cur-con.cursor()
```

```
| Index.html = Assignments\( \text{Steption | Stepsion | Stepsion
```

```
| app - Flask (_name_) | app - secret_key = '//sd_5#y2L"F408z\n\xec|/' app - config('UPLOAD_FOLDER']-"static_Mages" | BEMIL='' | app - route('/') | a
```

7.2 Feature 2

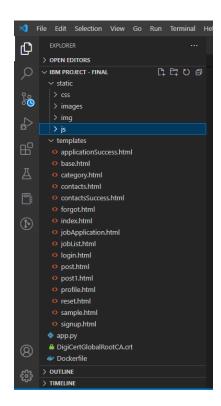
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| The strong position of the property of the property of the property of the position of the property of the p
```

```
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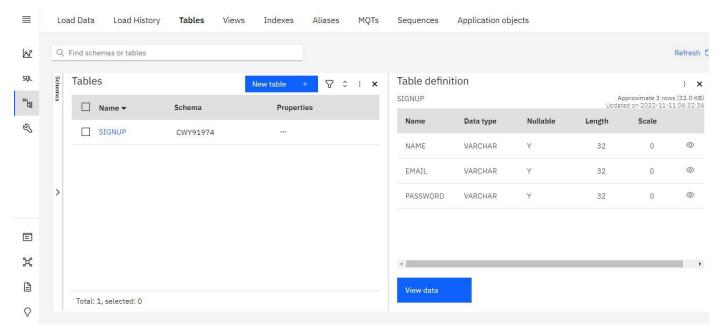
| X extends 'base.html' X |
| X block head X |
| Clink rel="stylesheet" href="static/css/style.css" >
| Clink rel="stylesheet" href="static/css/style.css" >
| Clink rel="stylesheet" href="static/css/index.css" >
| X block content X |
| Cdiv class="topban" >
| Cdiv class="topban center" >
| Cdiv class="container py-md-5" >
| Cdiv class="contain
```

8 TESTING

8.1 Test Cases



8.2 User Acceptance Testing



9 RESULTS

9.1 Performance Metrics

```
TERMINAL JUPYTER ...
                                                              -bef4-10cf081900bf.clogj3sd0tgtu0lqde00.databases.appdomain.cloud;P
ORT=32304;Security=SSL;SSLServerCertificate=DigiCertGlobalRootCA.cr
t;UID=cwy91974;PwD=aj53b8isyFaXUr2y;","","")
Exception: [BM][CLI Driver] SQL1336N The remote host "b1bc1829-6f
45-4cd4-bef4-10cf081900bf.clogj3sd0tgtu0lqde00.databases.ap" was no
t found. SQLSTATE=08001 SQLCODE=-1336
PS C:\Users\dasva\OneDrive\Desktop\ibm project - final> python -u "
  * Serving Flask app 'app'
  * Debug mode: on
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit

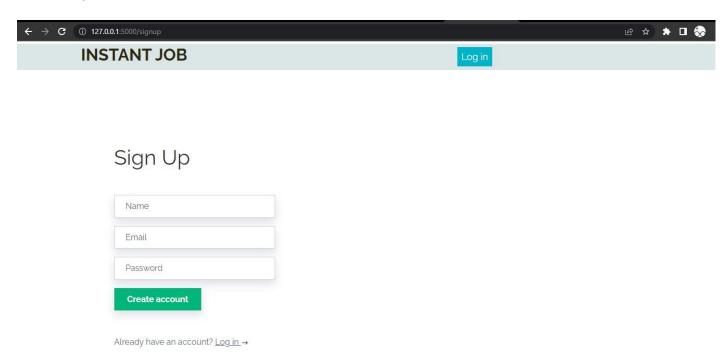
* Restarting with stat

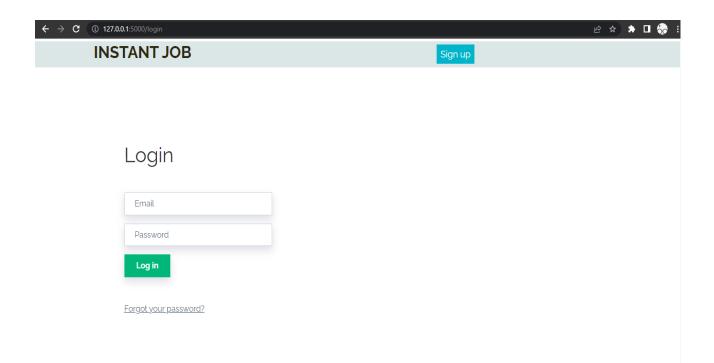
* Debugger is active!

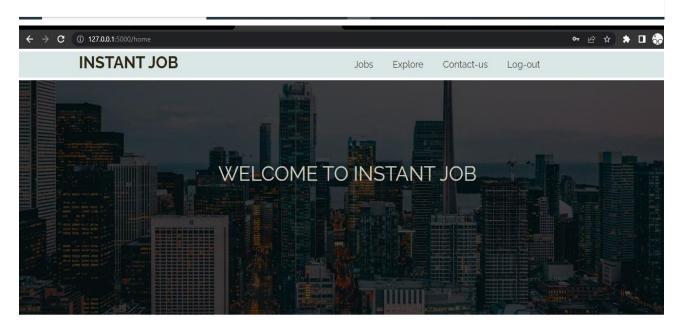
* Debugger PIN: 143-483-106
127.0.0.1 - [16/Nov/2022 11:50:42] "GET /home HTTP/1.1" 200 - 127.0.0.1 - [16/Nov/2022 11:50:43] "GET /static/js/bootstrap.min.
127.0.0.1 - -
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/css/style.css HTT
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/css/index.css HTT
P/1.1 --
127.0.0.1 - -
               - [16/Nov/2022 11:50:44] "GET /static/js/script.min.js
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/js/index.js HTTP/
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/js/chat.js HTTP/1
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/img/man3.jpg HTTP
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/img/man2.jpg HTTP
127.0.0.1 - - [16/Nov/2022 11:50:44] "GET /static/css/bg2.jpg HTTP/
```

9.2 Output

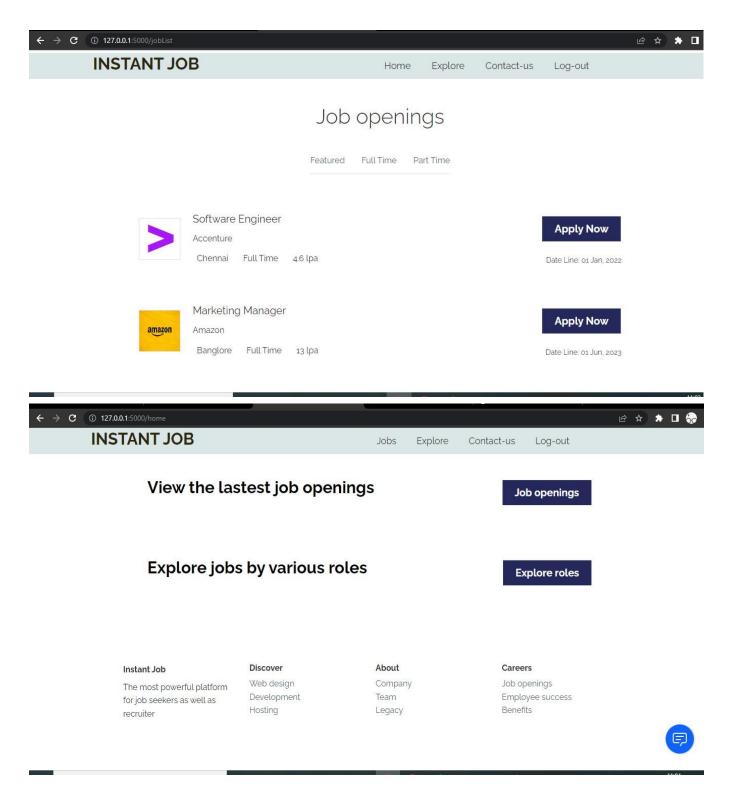
127.0.0.1:5000/login

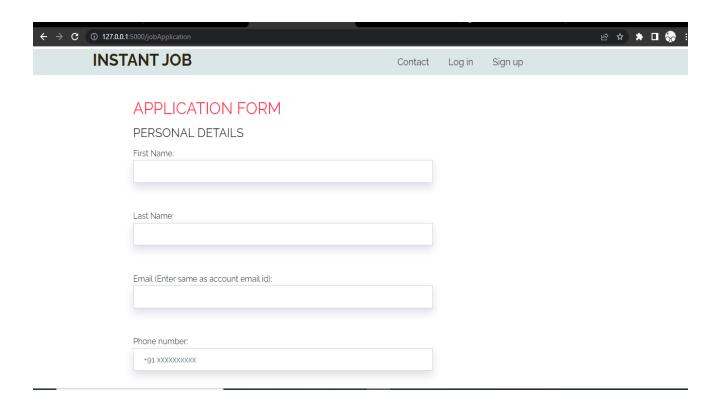


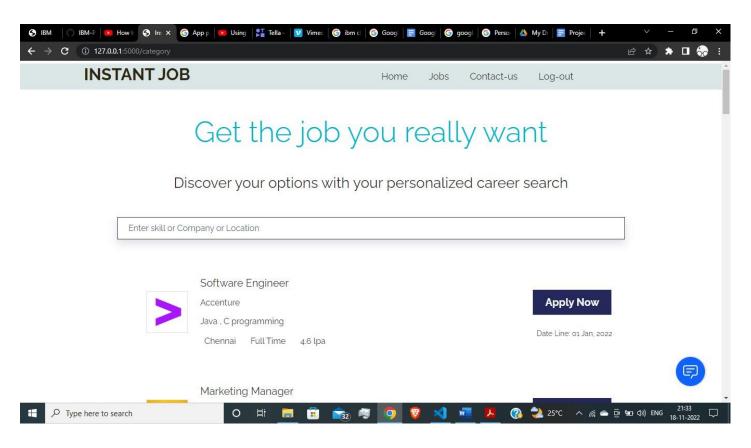


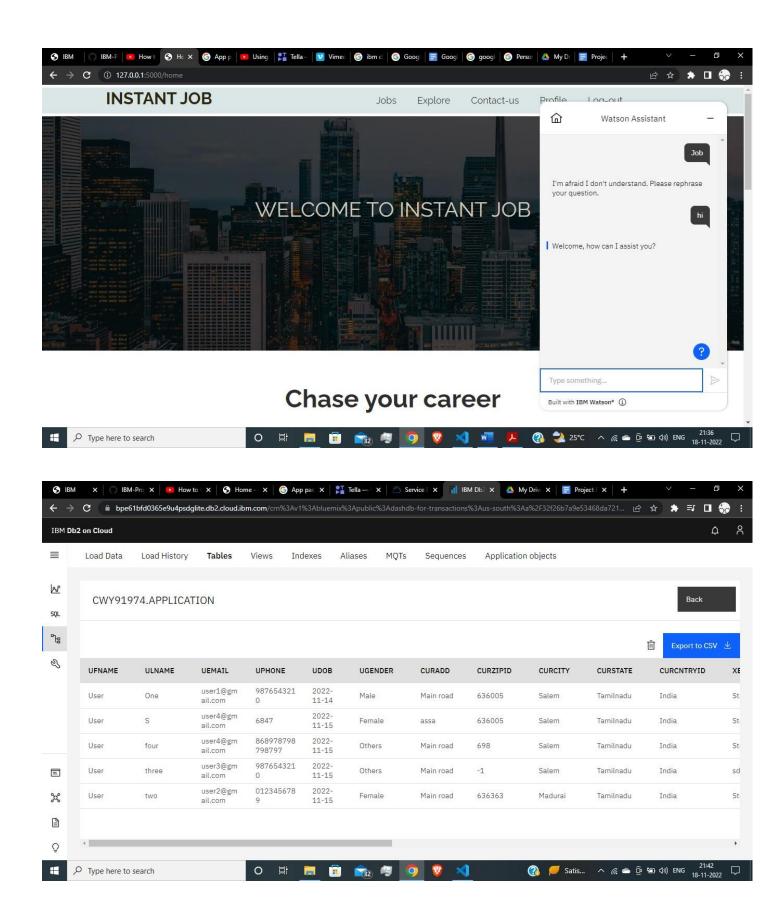












10 ADVANTAGES & DISADVANTAGES

ADVANTAGES

- When recruiting externally, hiring teams find candidates, evaluate them and, if all goes well,
 persuade them to join their company. All of which takes time.
- Everyone needs some time to adjust to a new role, but internal hires are quicker to onboard than external hires.
- May be familiar with people in their new team, especially in smaller businesses.
- Know how your company operates and most of your policies and practices.

DISADVANTAGES

- Employees who were considered for a role could feel resentful if a colleague or external candidate is eventually hired.
- While your company may have a lot of qualified candidates for specific positions, this isn't necessarily true for every open role.

11 CONCLUSION

By the end of this project we will

know fundamental concepts and techniques of recommender system.

gain a broad understanding of databases and cloud.

• know how to build a web application using the Flask framework.

know how to build chatbot.

• know how to containerize the application.

12 FUTURE SCOPE

• Al is revolutionizing the recommender systems.

• The popularity of LinkedIn and Google for jobs has proved that there is a future for job boards if

effectively managed to provide solutions

Right pricing strategies for online recruitment advertising are essential to get an effective

response.

• Recruiters and job seekers are experiencing an entirely automated process of searching and

connecting. All job boards should be perfectly indexed, highly responsive, and exhaustive in job

descriptions to establish their credibility and reliability.

13 APPENDIX

Ref: https://github.com/IBM-EPBL/IBM-Project-40069-1660622812