PROJECT REPORT

IBM-Project-23303-1659877571

TITLE **:** SKILL/JOB RECOMMENDER APPLICATION

TEAM ID **:** PNT2022TMID23043

TEAM LEADER **:** N RAMAKRISHNAN

TEAM MEMBERS

- KRITHICK S
- RUBAN KUMAR S
- SANTHOSH R

1 INTRODUCTION

1.1 Project Overview

Job recommendation is an important task for the modern recruitment industry. An excellent job recommender system not only enables to recommend a higher paying job which is maximally aligned with the skill-set of the current job, but also suggests to acquire few additional skills which are required to assume the new position.

In this work, we created three types of information networks from the historical job data: (i) job transition network, (ii) job-skill network, and (iii) skill co-occurrence network. We provide a representation learning model which can utilize the information from all three networks to jointly learn the representation of the jobs and skills in the shared k-dimensional latent space.

In our experiments, we show that by jointly learning the representation for the jobs and skills, our model provides better recommendation for both jobs and skills. Additionally, we also show some case studies which validate our claim.

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.

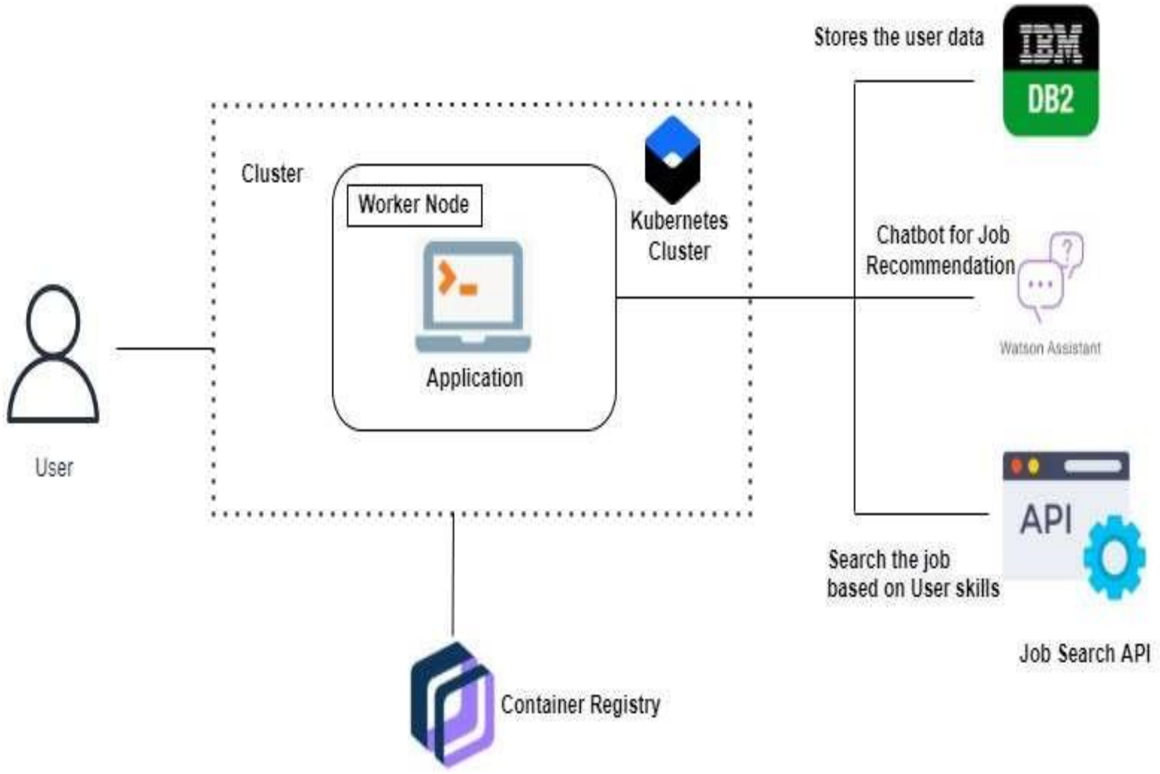
Users will interact with the chatbot and can get the recommendations based on their skills.

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

An excellent job recommender system not only enables to recommend a higher paying job which is maximally aligned with the skill-set of the current job, but also suggests to acquire few additional skills which are required to assume the new position.

To create a software that filters the job based on the skillset of the candidates who are seeking for the job. Then that filtered job is recommended for that candidates based on their skillset.



2 LITERATURE SURVEY

2.1 Existing problem

“Job Recommendation based on Job Seeker Skills. Jorge ValverdeRebaza ,Ricardo Puma ,Paul Bustios ,Nathalia C. Silva. : First Workshop on Narrative Extraction From Text co-located with 40th European Conference on Information Retrieval March 2018”

In this ,when a candidate submits his/ her profile at a job seeker engine.

Their job recommendations are mostly suggested taking their academic qualification and work experience into considerations.

A survey of job recommender systems, Shaha Alotaibi ,International Jounal of Physical Sciences July 2012”

The recommender system technology aims to help users in finding items that match their personnel interests, it has a successful usage in e-commerce applications to deal with problems related to information overload efficiently.
This article will present a survey of e-recruiting process and existing recommendation approaches for building personalized recommender systems for candidates/job matching

A Research of Job Recommendation System Based on Collaborative Filtering: Cheng Yang,Yingya Zhang,Zhixiang Niu, 2014 Seventh International Symposium on Computational Intelligence and Design, December 2014”

It analyze the candidate’s resume and the companies’ recruitment guidelines.
To compare and come to a better conclusion upon finding the best suited candidates for the job

2.2 References

[1] Schafer J B, Frankowski D, Herlocker J, et al. Collaborative _ltering recommender systems[M]//The adaptive web. Springer Berlin Heidelberg, 2007: 291-324.

[2] Pazzani M J, Billsus D. Content-based recommendation systems[M]//The adaptive web. Springer Berlin Heidelberg, 2007:325-341.

[3] Sarwar B, Karypis G, Konstan J, et al. Item-based collaborative _ltering recommendation algorithms[C]//Proceedings of the 10th international conference on World Wide Web. ACM, 2001: 285-295.

[4] Nikolaos D. Almalis ,Prof. George A. Tsihrintzis , Nikolaos Karagianniset al."FoDRA - A New Content-Based Job Recommendation Algorithm for Job Seeking and Recruiting".

[5] Anika Gupta, Dr. Deepak Garg. "Applying Data Mining Techniques in Job Recommender System for Considering Candidate Job Preferences".

[6] Dunning T. Accurate methods for the statistics of surprise and coincidence[J]. Computational linguistics, 1993, 19(1): 61-74.

[7] Emmanuel Malherbe , Mamadou Diaby , Mario Cataldi et al. "Field Selection for Job Categorization and Recommendation to Social Network Users". 2014

IEEE/ACM International Conference on Advances in Social

Networks Analysis and Mining (ASONAM 2014).

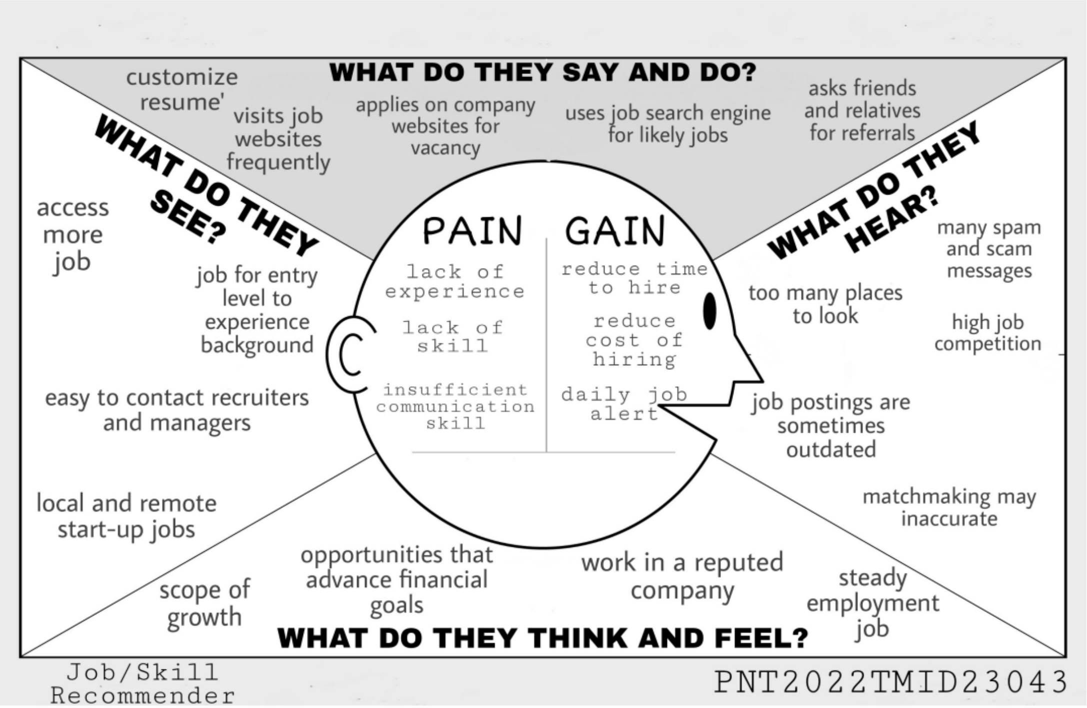
2.3 Problem Statement Definition

Having lots of skills but wondering which job will best suit you? Don't need to worry! We have come up 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

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

3 IDEATION & PROPOSED SOLUTION

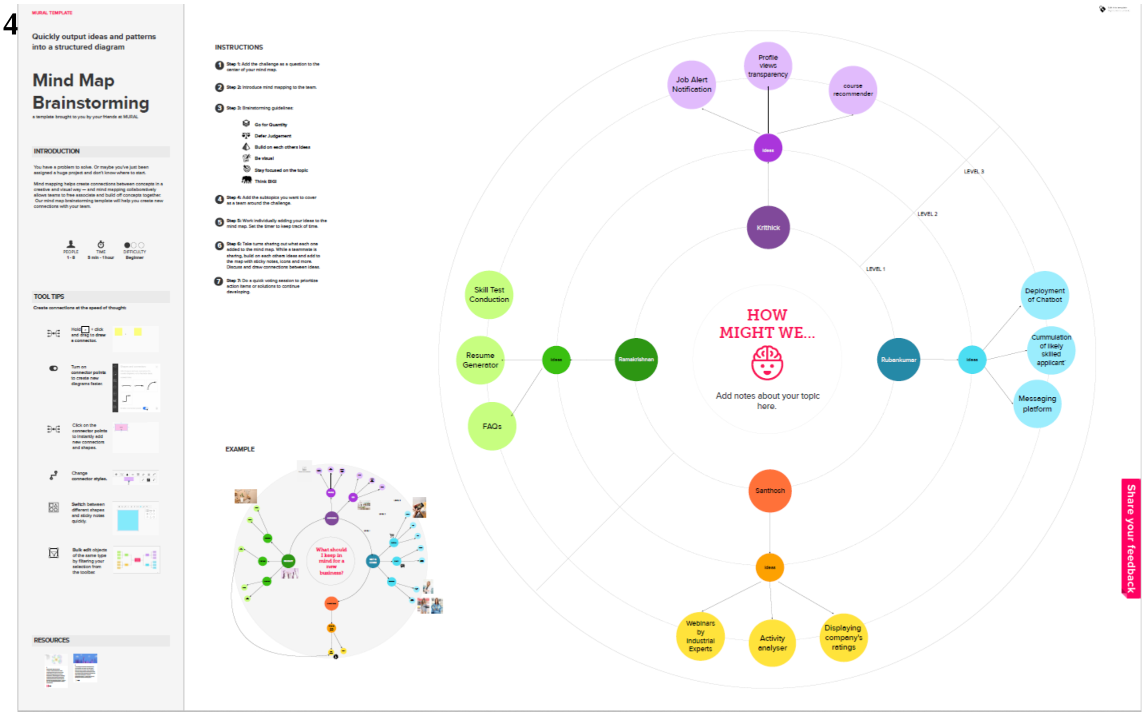
3.1 Empathy Map Canvas


WHAT DO THEY SAY AND DO?
customize resume'
visits job websites frequently
applies on company websites for vacancy
uses job search engine for likely jobs
asks friends and relatives for referrals
WHAT DO THEY SEE?
access more job
job for entry level to experience background
easy to contact recruiters and managers
local and remote start-up jobs
WHAT DO THEY HEAR?
many spam and scam messages
too many places to look
high job competition
job postings are sometimes outdated
matchmaking may inaccurate
PAIN
lack of experience
lack of skill
insufficient communication skill
GAIN
reduce time to hire
reduce cost of hiring
daily job alert
WHAT DO THEY THINK AND FEEL?
scope of growth
opportunities that advance financial goals
work in a reputed company
steady employment job
Job/Skill Recommender
PNT2022TMID23043

3.2 Ideation & Brainstorming

4

4



MURAL TEMPLATE

Quickly output ideas and patterns into a structured diagram

Mind Map Brainstorming

a template brought to you by your friends at MURAL

INTRODUCTION

You have a problem to solve. Or maybe you've just been assigned a huge project and don't know where to start.

Mind mapping helps create connections between concepts in a creative and visual way — and mind mapping collaboratively allows teams to free associate and build off concepts together. Our mind map brainstorming template will help you create new connections with your team.

PEOPLE 1 - 8 TIME 5 min - 1 hour DIFFICULTY Beginner

TOOL TIPS

Create connections at the speed of thought:

Hold + click and drag to draw a connector.

Turn on connector points to create new diagrams faster.

Click on the connector points to instantly add new connectors and shapes.

Change connector styles.

Switch between different shapes and sticky notes quickly.

Bulk edit objects of the same type by filtering your selection from the toolbar.

RESOURCES

INSTRUCTIONS

1. Step 1: Add the challenge as a question to the center of your mind map.
2. Step 2: Introduce mind mapping to the team.
3. Step 3: Brainstorming guidelines:
   - Go for Quantity
   - Defer Judgement
   - Build on each others ideas
   - Be visual
   - Stay focused on the topic
   - Think BIG!
4. Step 4: Add the subtopics you want to cover as a team around the challenge.
5. Step 5: Work individually adding your ideas to the mind map. Set the timer to keep track of time.
6. Step 6: Take turns sharing out what each one added to the mind map. While a teammate is sharing, build on each others ideas and add to the map with sticky notes, icons and more. Discuss and draw connections between ideas.
7. Step 7: Do a quick voting session to prioritize action items or solutions to continue developing.

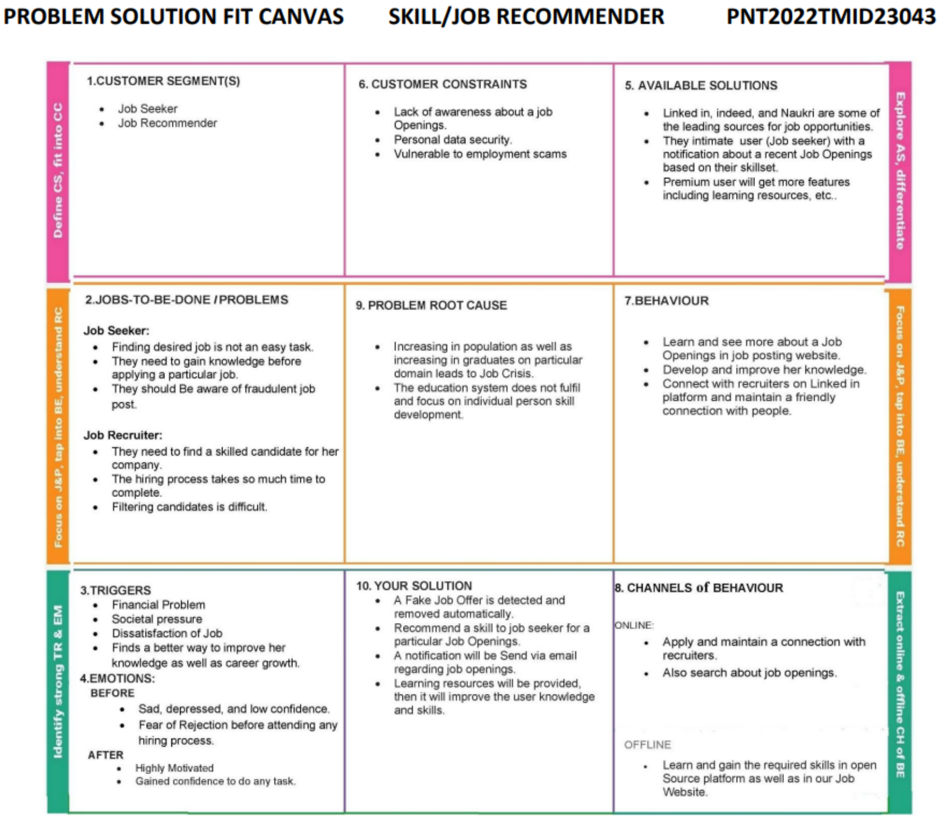
EXAMPLE

3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Having lots of skills but wondering which job will best suit you? Don’t need to worry! We have come up 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. 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.

2.	Idea / Solution description	The contributions of this work are threefold, we: i) made publicly available a new dataset formed by a set of job seekers profiles and a set of job vacancies collected from different job search engine sites ii) put forward the proposal of a framework for job recommendation based on professional skills of job seekers iii) carried out an evaluation to quantify
		empically the recommendation abilities of two state-of-the-art methods, considering different configurations, within the proposed fssramework. We thus present a general panorama of job recommendation task aiming to facilitate research and real-world application design regarding this important issue.
3.	Novelty / Uniqueness	The best position are suggested to any person according to her skills.While the position of known profiles are assumed

3.4 Problem Solution fit



PROBLEM SOLUTION FIT CANVAS SKILL/JOB RECOMMENDER PNT2022TMID23043

Define CS, fit into CC

1.CUSTOMER SEGMENT(S)

- Job Seeker
- Job Recommender

6. CUSTOMER CONSTRAINTS

- Lack of awareness about a job Openings.
- Personal data security.
- Vulnerable to employment scams

5. AVAILABLE SOLUTIONS

- Linked in, indeed, and Naukri are some of the leading sources for job opportunities.
- They intimate user (Job seeker) with a notification about a recent Job Openings based on their skillset.
- Premium user will get more features including learning resources, etc..

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2.JOBS-TO-BE-DONE / PROBLEMS

Job Seeker:

- Finding desired job is not an easy task.
- They need to gain knowledge before applying a particular job.
- They should Be aware of fraudulent job post.

Job Recruiter:

- They need to find a skilled candidate for her company.
- The hiring process takes so much time to complete.
- Filtering candidates is difficult.

9. PROBLEM ROOT CAUSE

- Increasing in population as well as increasing in graduates on particular domain leads to Job Crisis.
- The education system does not fulfil and focus on individual person skill development.

7.BEHAVIOUR

- Learn and see more about a Job Openings in job posting website.
- Develop and improve her knowledge.
- Connect with recruiters on Linked in platform and maintain a friendly connection with people.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3.TRIGGERS

- Financial Problem
- Societal pressure
- Dissatisfaction of Job
- Finds a better way to improve her knowledge as well as career growth.

4.EMOTIONS:

BEFORE

- Sad, depressed, and low confidence.
- Fear of Rejection before attending any hiring process.

AFTER

- Highly Motivated
- Gained confidence to do any task.

10. YOUR SOLUTION

- A Fake Job Offer is detected and removed automatically.
- Recommend a skill to job seeker for a particular Job Openings.
- A notification will be Send via email regarding job openings.
- Learning resources will be provided, then it will improve the user knowledge and skills.

8. CHANNELS of BEHAVIOUR

ONLINE:

- Apply and maintain a connection with recruiters.
- Also search about job openings.

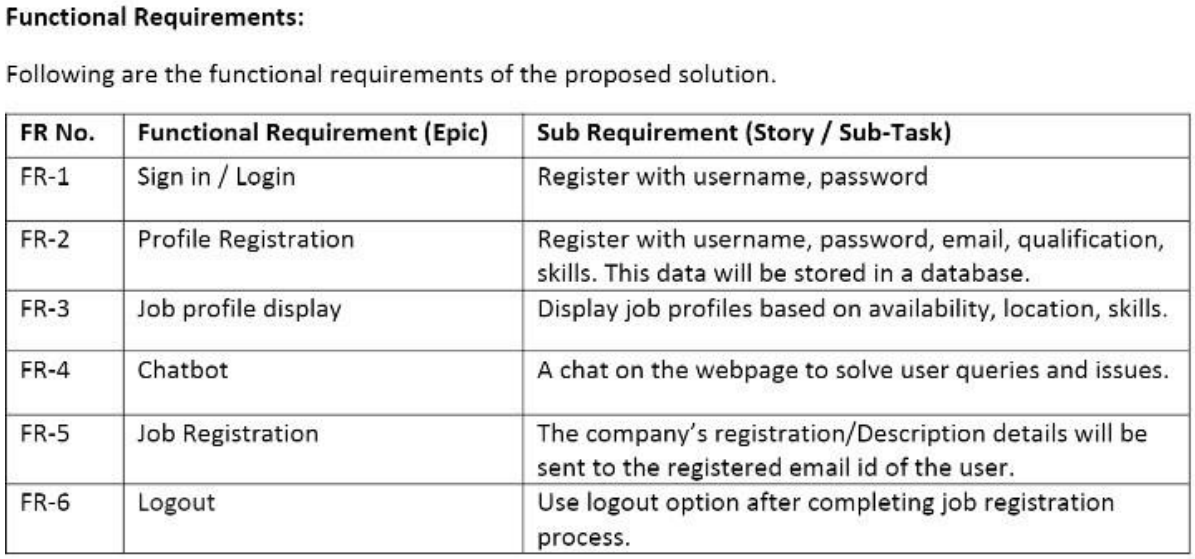
OFFLINE

- Learn and gain the required skills in open Source platform as well as in our Job Website.

Extract online & offline CH of BE

4 REQUIREMENT ANALYSIS

4.1 Functional requirement

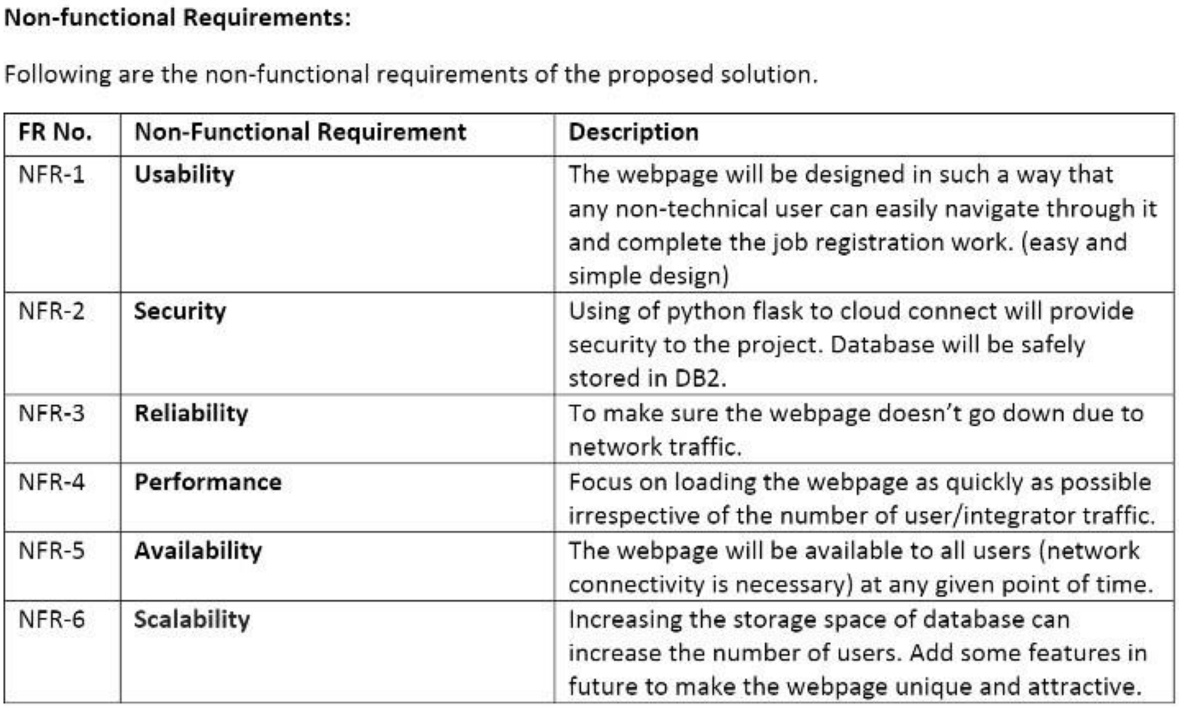


Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Sign in / Login	Register with username, password
FR-2	Profile Registration	Register with username, password, email, qualification, skills. This data will be stored in a database.
FR-3	Job profile display	Display job profiles based on availability, location, skills.
FR-4	Chatbot	A chat on the webpage to solve user queries and issues.
FR-5	Job Registration	The company's registration/Description details will be sent to the registered email id of the user.
FR-6	Logout	Use logout option after completing job registration process.

4.2 Non-Functional requirements



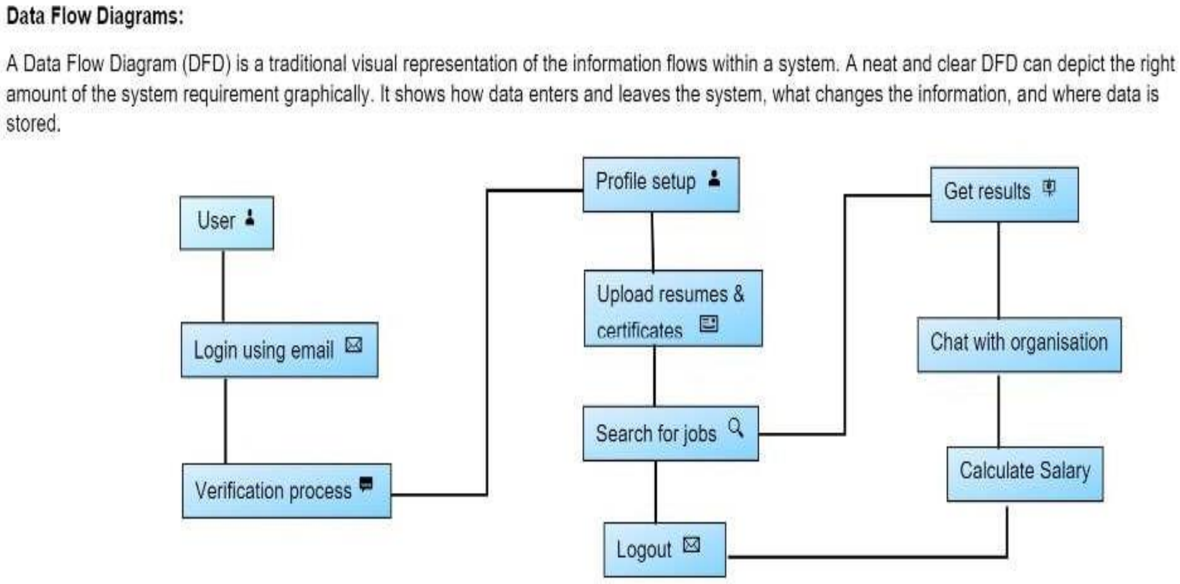
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-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. (easy and simple design)
NFR-2	**Security**	Using of python flask to cloud connect will provide security to the project. Database will be safely stored in DB2.
NFR-3	**Reliability**	To make sure the webpage doesn't go down due to network traffic.
NFR-4	**Performance**	Focus on loading the webpage as quickly as possible irrespective of the number of user/integrator traffic.
NFR-5	**Availability**	The webpage will be available to all users (network connectivity is necessary) at any given point of time.
NFR-6	**Scalability**	Increasing the storage space of database can increase the number of users. Add some features in future to make the webpage unique and attractive.

5 PROJECT DESIGN

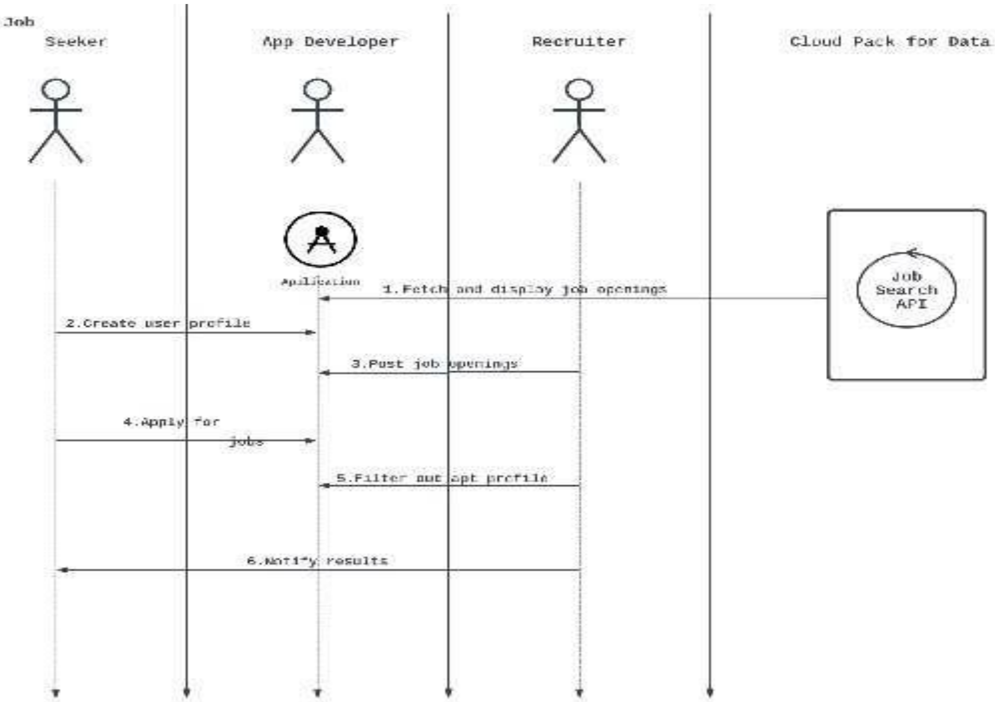
5.1 Data Flow Diagrams

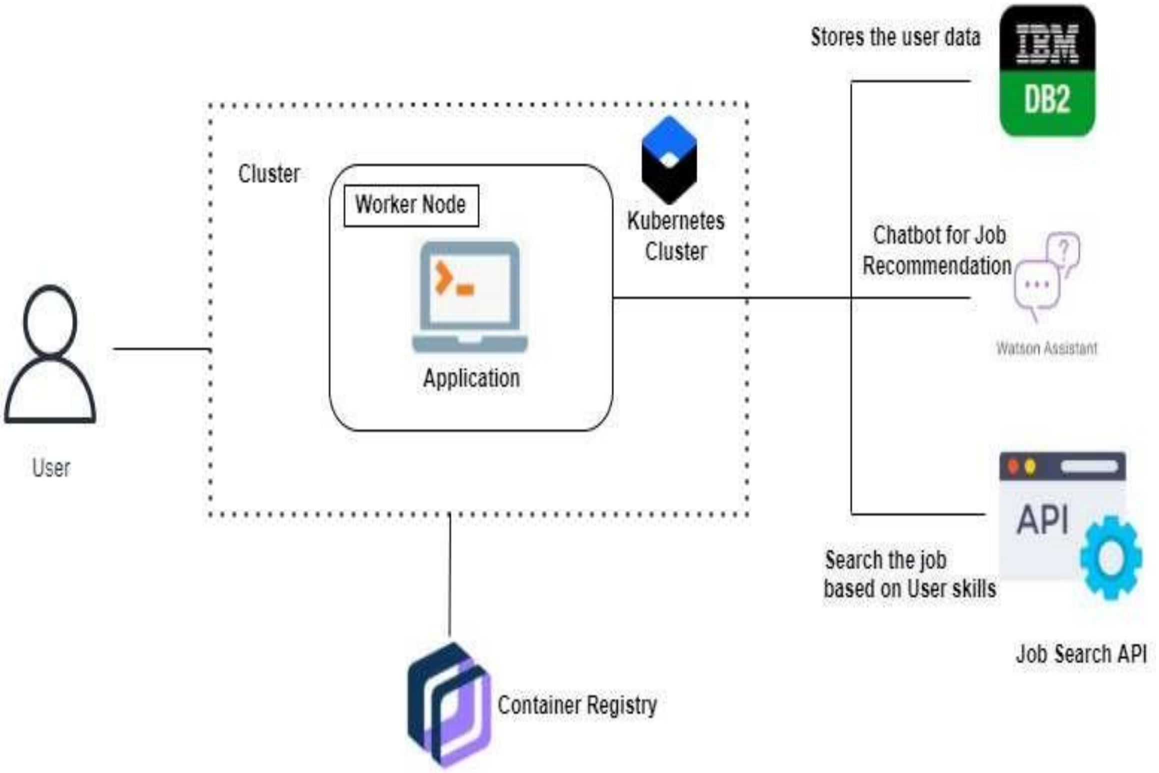


Data Flow Diagrams:

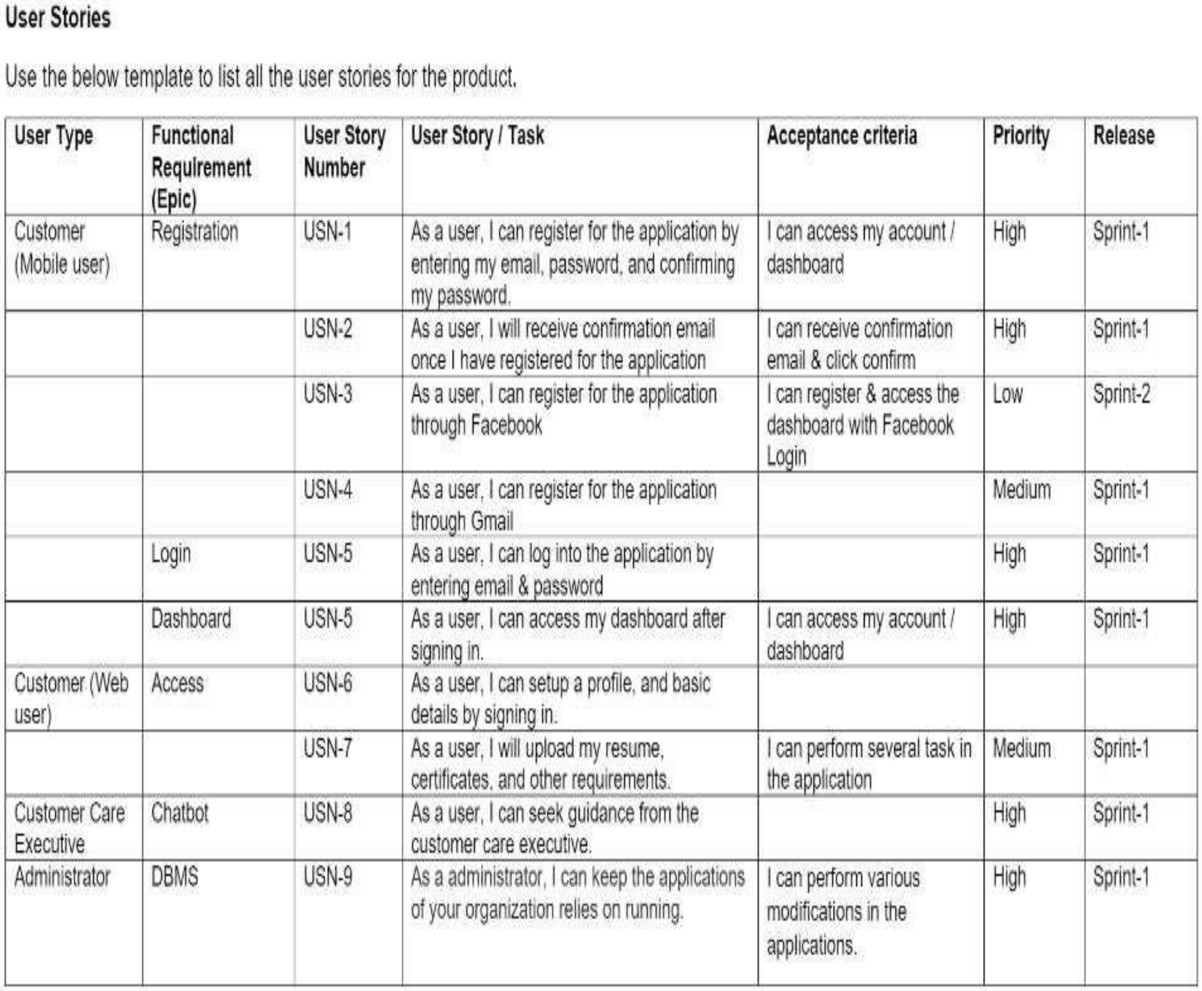
A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

5.2 Solution & Technical Architecture





5.3 User Stories



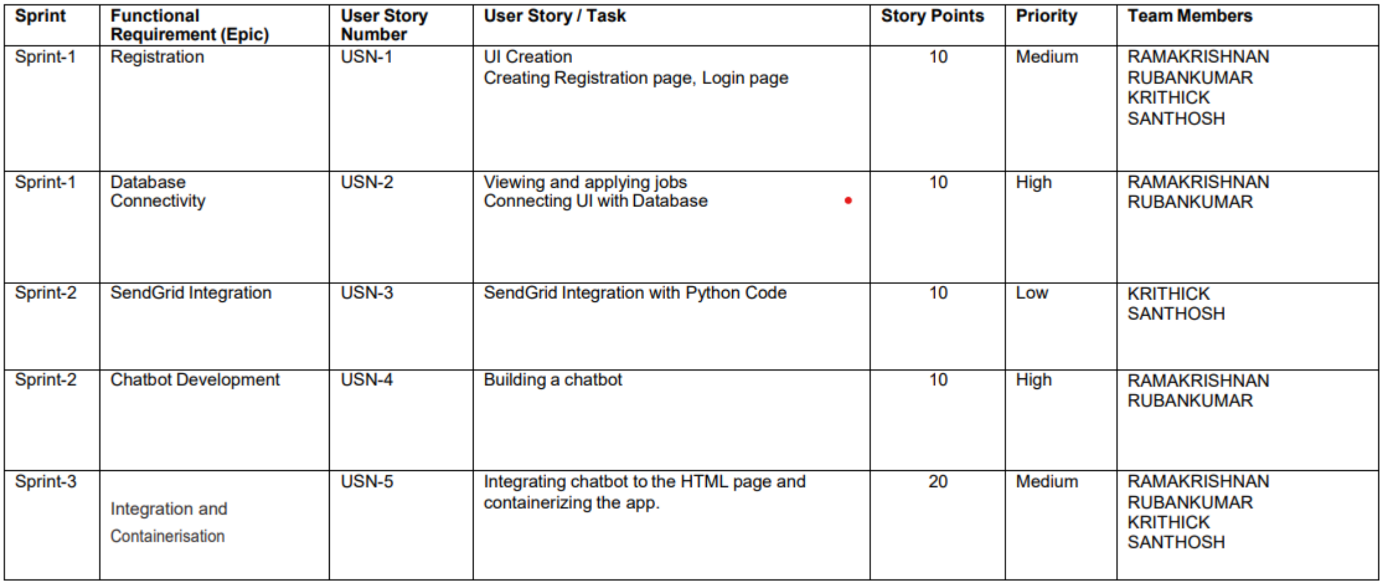
User Stories

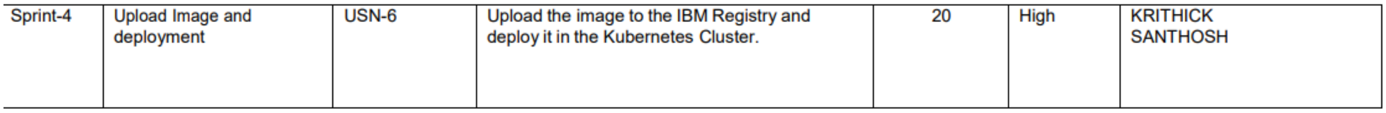
Use the below template to list all the user stories for the product.

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

6 PROJECT PLANNING & SCHEDULING

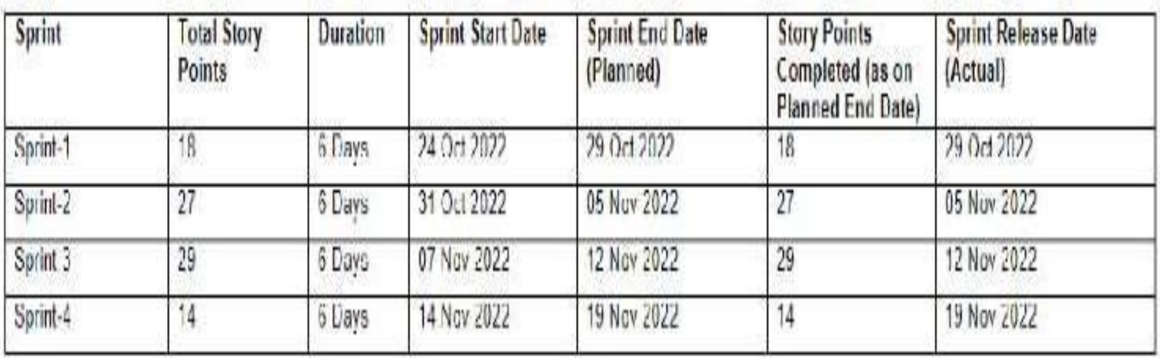
6.1 Sprint Planning & Estimation





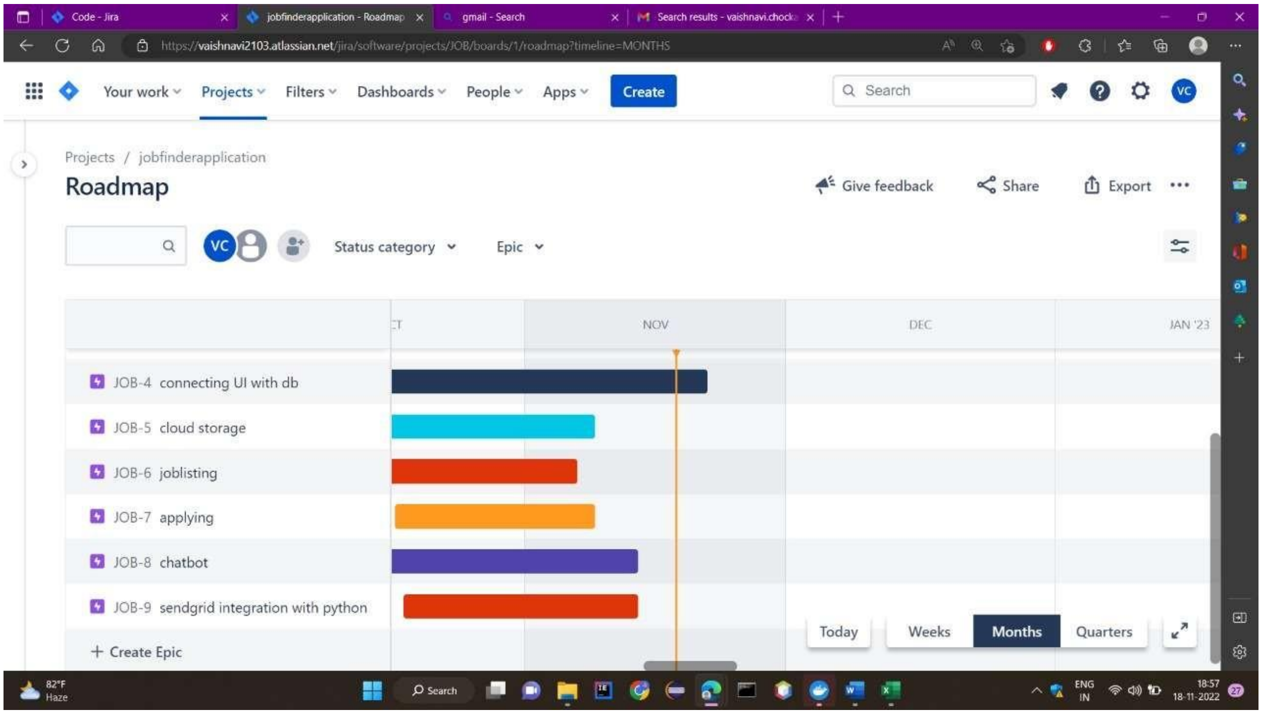
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	UI Creation Creating Registration page, Login page	10	Medium	RAMAKRISHNAN RUBANKUMAR KRITHICK SANTHOSH
Sprint-1	Database Connectivity	USN-2	Viewing and applying jobs Connecting UI with Database	10	High	RAMAKRISHNAN RUBANKUMAR
Sprint-2	SendGrid Integration	USN-3	SendGrid Integration with Python Code	10	Low	KRITHICK SANTHOSH
Sprint-2	Chatbot Development	USN-4	Building a chatbot	10	High	RAMAKRISHNAN RUBANKUMAR
Sprint-3	Integration and Containerisation	USN-5	Integrating chatbot to the HTML page and containerizing the app.	20	Medium	RAMAKRISHNAN RUBANKUMAR KRITHICK SANTHOSH
Sprint-4	Upload Image and deployment	USN-6	Upload the image to the IBM Registry and deploy it in the Kubernetes Cluster.	20	High	KRITHICK SANTHOSH

6.2 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	18	6 Days	24 Oct 2022	29 Oct 2022	18	29 Oct 2022
Sprint-2	27	6 Days	31 Oct 2022	05 Nov 2022	27	05 Nov 2022
Sprint 3	29	6 Days	07 Nov 2022	12 Nov 2022	29	12 Nov 2022
Sprint-4	14	6 Days	14 Nov 2022	19 Nov 2022	14	19 Nov 2022

6.3 Reports from JIRA



JOB-4 connecting UI with db

JOB-5 cloud storage

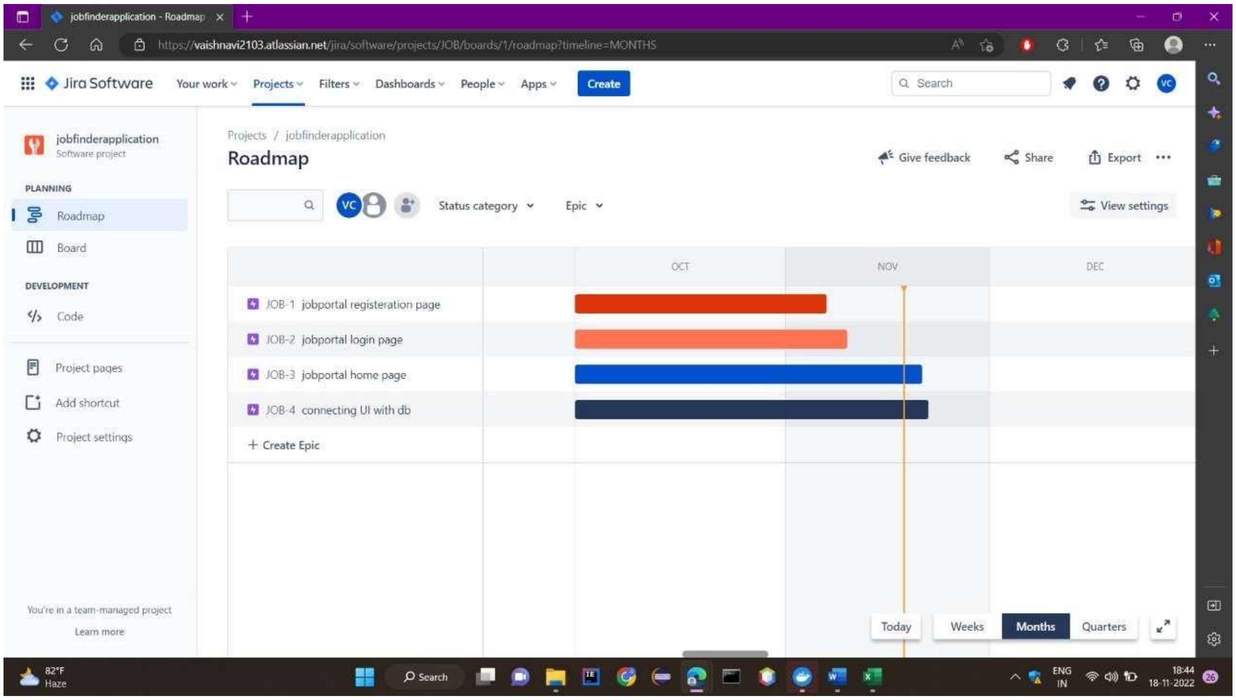
JOB-6 joblisting

JOB-7 applying

JOB-8 chatbot

JOB-9 sendgrid integration with python

+ Create Epic



JOB-1 jobportal registeration page

JOB-2 jobportal login page

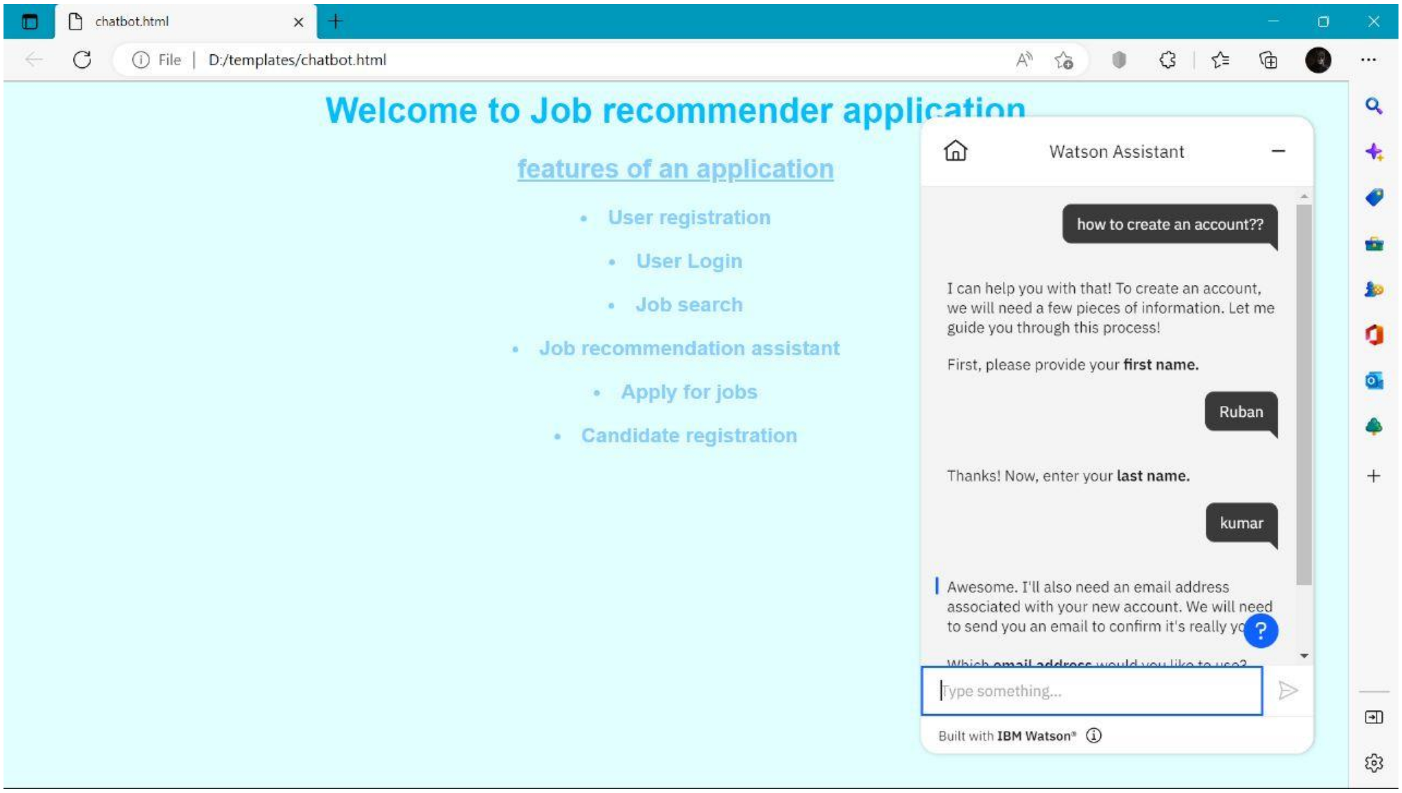
JOB-3 jobportal home page

JOB-4 connecting UI with db

+ Create Epic

7 CODING & SOLUTIONING

7.1 Feature 1



Welcome to Job recommender application

features of an application

- User registration
- User Login
- Job search
- Job recommendation assistant
- Apply for jobs
- Candidate registration

Watson Assistant

how to create an account??

I can help you with that! To create an account, we will need a few pieces of information. Let me guide you through this process!

First, please provide your **first name.**

Ruban

Thanks! Now, enter your **last name.**

kumar

Awesome. I'll also need an email address associated with your new account. We will need to send you an email to confirm it's really yo

Which **email address** would you like to use?

Type something...

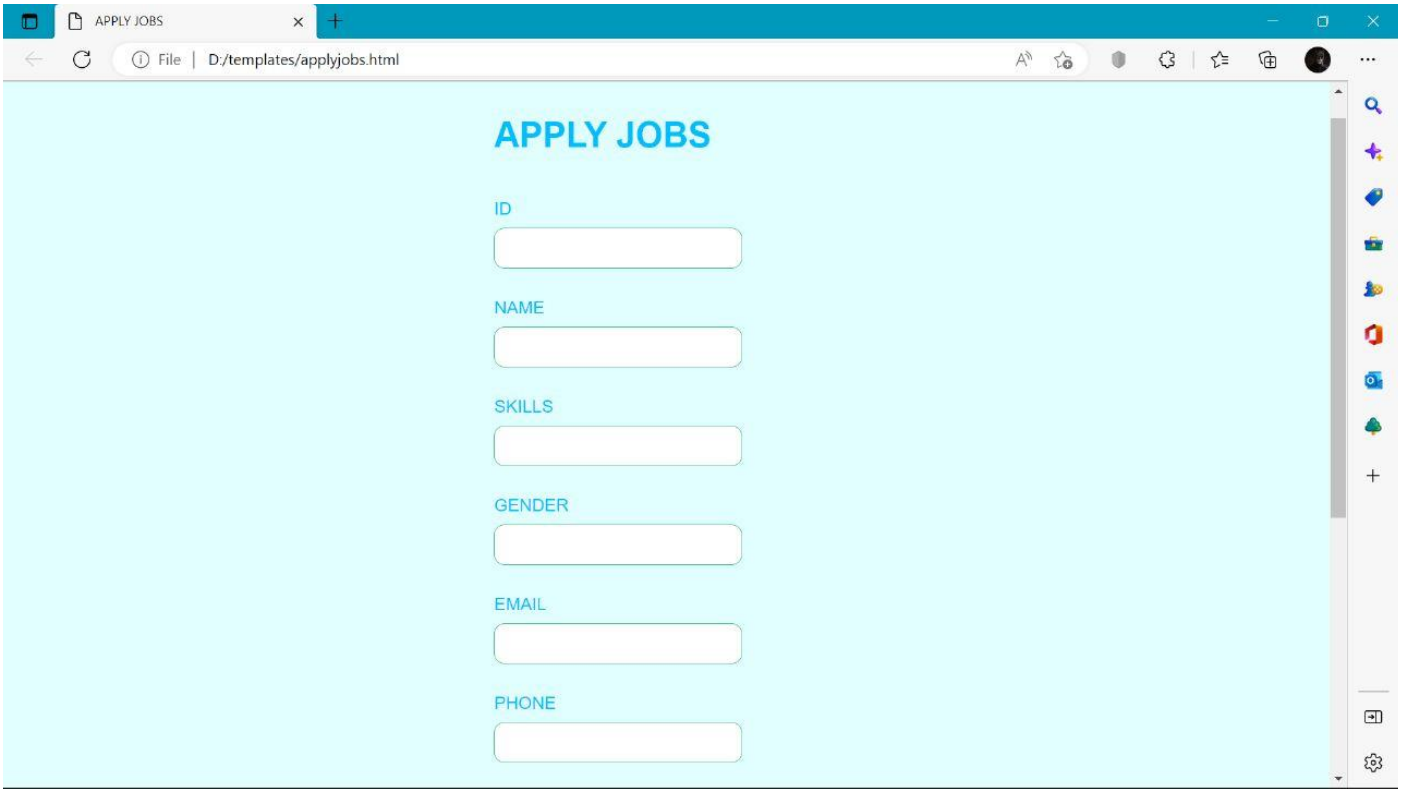
Built with **IBM Watson®**

The software has an In-built “Chat Bot” which can help assist with ongoing queries and provide fast and effective solutions to user problems which may occur and also redirect tomanagement attention if need be there any complications the customer service will be available 24*7 to assist in case of any controversial issues arise

7.2 Feature 2

In this project we have created the dashboard page to view the jobs available andto make ease to access the website

- They communicate information quickly.
- They display information clearly and efficiently.
- They show trends and changes in data over time.
- They are easily customizable.
- The most important widgets and data components are effectively presented in a limited space.



APPLY JOBS

ID

NAME

SKILLS

GENDER

EMAIL

PHONE

8 TESTING

8.1 Test Cases

Software testing is the process of evaluating and verifying that a software product or application does what it is supposed to do. The benefits of testing include preventing bugs, reducing development costs and improving performance.

This Software is tested and evaluated successfully.

8.2 User Acceptance Testing

Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Inventory Management System project at the time of the release to User Acceptance Testing (UAT)

User Acceptance Testing is carried out in a separate testing environment. A change, an update, or a new feature is requested and developed. Unit and integration tests are run. All seems to be in order. But then, after it is released to the public, serious problems appear. Rework and retesting are not the most expensive consequences when that happens.

9 RESULTS

9.1 Performance Metrics

Based on the two types of user recommendations mentioned above, we analyze the performance of all the techniques mentioned above. The resultant jobs recommended to each new user are then checked with the job that the user is originally in as per the test dataset. If the original user job is recommended in the model result, then the model appends 1 for yes else, it appends 0 for no.

This array of 0's and 1's thus received is then checked for accuracy by computing the count of 1's from the total user predictions

Among all the models made with the incorporation of different similarity metrics,

The cosine similarity based job recommendation system model outperformed rest of them all. The metrics used to analyse the model performance are: accuracy, precision, recall and F1-score.This is because cosine considers the existence of duplicate terms while computing similarity.Also, computationally, cosine has low complexity and ease over handling spare data vectors since only non-zero dimensions are considered.

Upon analyzing the result table we observe that the short-comings of some similarity measures upon recommending top 5 and highest-score based job recommendations as even uponachieving high . similarity scores is due to the fact that users are seen to have different jobs thanthe ones recommended by the models, thus resulting in 6–10% error rates.

10 ADVANTAGES

- The model doesn't need any data about other users, since the recommendations are specific to this user.
- This makes it easier to scale to a large number of users.
- The model can capture the specific interests of a user, and can recommend niche items that very few other users are interested in.

DISADVANTAGES

- Since the feature representation of the items are hand-engineered to some extent,this technique requires a lot of domain knowledge. Therefore, the model can only be as good as the hand-engineered features.
- The model can only make recommendations based on existing interests of the user.
- In other words, the model has limited ability to expand on the users' existing interests

11 CONCLUSION

In this project, Content-Based Filtering and Collaborative Filtering of recommendations have been compared. Additionally, an aggregation plus recommender system has been devised.

Content-Based Filtering recommends the results based on matching the personal preferences of the user with the given document whereas collaborative filtering recommends based on the preferences of fellow users. On evaluating both of these methods, it was concluded that a hybrid system of both of these overcomes the limitations of both of them and increases the efficiency of ranking. Problems of cold start, sparse database, scalability, and lack of trend recommendation have been eliminated. The proposal is to design a Job Recommender system that prioritizes quality over quantity. While there are websites and job listing portals already recommending jobs to job seekers based on their profiles, this research on aggregate quality recommendations has been achieved by crawling selectively, overcoming the limitations. A fully functioning user interface was developed to combine everything together to give the user a seamless experience**.**

12 FUTURE SCOPE

Future works in the case of Personalized Job Recommendation Systems are the utilization of the user-preferred location to get job recommendations based on jobs in organizations established in nearby areas. This can be done by extracting the latitudes and longitudes of the user-preferred location and computing the euclidean distances between the latitudes and longitudes of the organization location.

This filters out other jobs that fall far from the user-preferred location and gives amore accurate job recommender.

As part of the future work, we plan to use features of similar candidates and jobs in sequence information. As of now, recommendation using similar candidates an jobs forms part of non-machine learning based recommendations and the initial result seem promising.Finally, it would be interesting to extend our methodology to other recommender systems

13 APPENDIX

Source Code

```
      <html><style>
    body{
      background-color: #1E135E ;
      }
      h1{
        font-family: 'Open Sans', sans-serif;
          color: #4BC38A;
      }
      h2,h3{
        font-family: 'Open Sans', sans-serif;
          color: #FFF;
      }
    </style>
      <script>
          window.watsonAssistantChatOptions = {
            integrationID: "15e9c4fc-b3f9-455a-a098-957aceffbb9c", // The ID of this
integration.
            region: "au-syd", // The region your integration is hosted in.
            serviceInstanceID: "20178e4c-5064-41eb-af43-e9f7bc20beea", // The ID of your
service instance.
            onLoad: function(instance) { instance.render(); }
          };
          setTimeout(function(){
            const t=document.createElement('script');
            t.src="https://web-chat.global.assistant.watson.appdomain.cloud/versions/" +
(window.watsonAssistantChatOptions.clientVersion || 'latest') +
"/WatsonAssistantChatEntry.js";
            document.head.appendChild(t);
          });
        </script>
        <center>
    <h1>Welcome to Job recommender application</h1>
    <h2><u>features of an application</u></h2>
      <h3><li>User registration</li></h3>
      <h3><li>User Login</li></h3>
      <h3><li>Job search</li></h3>
      <h3><li>Job recommendation assistant</li></h3>
      <h3><li>Apply for jobs</li></h3>
      <h3><li>Candidate registration</li></h3>
        </center>
</html>
<html>
      <head>
          <style>
              #customers {
                font-family: Arial, Helvetica, sans-serif;
                border-collapse: collapse;
                width: 50%;
              }

              #customers td, #customers th {
                border:  1px  solid  #4BC38A;
                padding: 8px;
                color: #4BC38A
              }

              #customers tr:nth-child(even){background-color: #f2f2f2;}

              #customers tr:hover {background-color: #ddd;}
          #customers th {
            padding-top: 12px;
            padding-bottom: 12px;
            text-align: left;
            background-color:  #4BC38A;
            color: white;
          }
          body{
            font-family: 'Open Sans', sans-serif;
      color: #4BC38A;
background-color: #1E135E ;

}
          </style>
      </head>
      <body><center><h1>User List</h1>
                <table border="1" id="customers">
                <tr> <th>Names</th><th>Skills</th>    </tr>
                 <tr>
                  <td>{{ names[0] }}</td>
                      <td>{{skills[0]}}</td>
                  </tr>
                  <tr>
                      <td>{{ names[1] }}</td>
                              <td>{{skills[1]}}</td>
                  </tr>
                  <tr>
                      <td>{{ names[2] }}</td>
                              <td>{{skills[2]}}</td>
                  </tr>
          <tr>
            <td>{{ names[3] }}</td>
                  <td>{{skills[3]}}</td>
          </tr>
          <tr>
            <td>{{ names[4] }}</td>
                  <td>{{skills[4]}}</td>
          </tr>
          </table>
          </center>
          </body>
          </html>


   <html>
   <head><title>JOB SEARCH</title>
<head><style>.c input{
   padding: 10px;
   width: 30%;
   padding-right: 12px 20px;
     margin: 8px 0;
     bottom: 80px;

   display: inline-block;
   border: 1px solid #4BC38A;
   border-radius: 10px;
   box-sizing: border-box;
   }
   body{
       font-weight: bold;
       font-family: 'Open Sans', sans-serif;
```

```
    color: #4BC38A;
  background-color: #1E135E ;
  margin-left: 37%;
  margin-top: 5%;
  }
  button {
   font-weight: bold;
   font-family: 'Open Sans', sans-serif;
   background-color: #4BC38A;
   color: #1E135E ;
   padding-right: 12px 20px;
   margin: 8px 0;
   bottom: 80px;
   width: 30%;
   padding:1%;

   display: inline-block;
  border: 1px solid #4BC38A;
  border-radius: 10px;
  box-sizing: border-box;
}</style></head>
  <body>
    <div class="c">
  <form method="post" action="api">
    <h1>JOB SEARCH</h1><br><br>
    <label>Search for a job .... !</label><br>
    <input type="text" name="search"><br><br>
    <input type="submit">
  </div>
  </body>
  </form>
```

```
</html><html>

<head>
  <title>API</title>

    <style>
      #customers {
        font-family: Arial, Helvetica, sans-serif;
        border-collapse: collapse;
        width: 50%;
      }

      #customers td, #customers th {
        border: 1px solid #4BC38A;
        padding: 8px;
        color: #4BC38A
      }

      #customers tr:nth-child(even){background-color: #f2f2f2;}

      #customers tr:hover {background-color: #ddd;}

      #customers th {
        padding-top: 12px;
        padding-bottom: 12px;
        text-align: left;
        background-color: #4BC38A;
        color: white;
      }
      body{
          font-family: 'Open Sans', sans-serif;
        color: #4BC38A;
    background-color: #1E135E ;


    }
            </style>
</head>


<body>
    <div class=d>
        <center>
            <h1>Recommended list of jobs for your search...!</h1>
        <table id="customers">
            <tr> <th>Job title</th><th>Company Name</th><th>Location</th><th>Job Description</th>    </tr>
                   <tr>
            <tr >
                <td>
                    <h6>JOB Title:{{title1}}</h6>
                </td>
                <td>
                    <h6>Comapny Name:{{company1}}</h6>
                </td>
                <td>
                    <h6> Location:{{location1}}</h6>
                </td>
                <td>
                    <h6> Description:{{description1}}</h6>
                </td>
            </tr >
            <tr>
        <td>
          <h6>JOB Title:{{title2}}</h6>
        </td>
        <td>
          <h6>Comapny Name:{{company2}}</h6>
        </td>
        <td>
          <h6> Location:{{location2}}</h6>
        </td>
        <td>
          <h6> Description:{{description2}}</h6>
        </td>
      </tr>
      <tr >
        <td>
          <h6>JOB Title:{{title3}}</h6>
        </td>
        <td>
          <h6>Comapny Name:{{company3}}</h6>
        </td>
        <td>
          <h6> Location:{{location3}}</h6>
        </td>
        <td>
          <h6> Description:{{description3}}</h6>
        </td>
      </tr>
      <tr >
        <td>
          <h6>JOB Title:{{title4}}</h6>
        </td>
```

```
                <td>
                  <h6>Comapny Name:{{company4}}</h6>
                </td>
                <td>
                  <h6> Location:{{location4}}</h6>
                </td>
                <td>
                  <h6> Description:{{description4}}</h6>
                </td>
              </tr>
              <tr >
                <td>
                <h6>JOB Title:{{title5}}</h6>
                </td>
                <td>
                  <h6>Comapny Name:{{company5}}</h6>
                </td>
                <td>
                  <h6> Location:{{location5}}</h6>
                </td>
                <td>
                  <h6> Description:{{description5}}</h6>
                </td>
              </tr>
            </table>
            </center>
        </div>
    </body>

    </html>
    <html>
    <head>
      <style>
        #customers {
          font-family: Arial, Helvetica, sans-serif;
          border-collapse: collapse;
          width: 50%;
        }

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        #customers th {
          padding-top: 12px;
          padding-bottom: 12px;
          text-align: left;
          background-color:  #4BC38A;
          color: white;
        }
        body{
          font-family: 'Open Sans', sans-serif;
      color: #4BC38A;
    background-color: #1E135E ;

    }
  </style>
      </head>
```

```
        <body><center><h1>CANDIDATE LIST</h1>
                  <table border="1" id="customers">
                  <tr> <th>Id</th> <th>Names</th><th>Skills</th>  <th>Experience</th>
                    <th>Gender</th> <th>Email</th> <th>Phno</th> <th>Address</th>
<th>Salary</th>  </tr>
                   <tr>
                    <td>{{id[0]}}</td>
                    <td>{{ names[0] }}</td>
                        <td>{{skills[0]}}</td>
                        <td>{{experience[0]}}</td>
                        <td>{{gender[0]}}</td>
                        <td>{{email[0]}}</td>
                        <td>{{phno[0]}}</td>
                        <td>{{address[0]}}</td>
                        <td>{{salary[0]}}</td>
                    </tr>
                    <tr>
                      <td>{{id[1]}}</td>
                      <td>{{ names[1] }}</td>
                          <td>{{skills[1]}}</td>
                          <td>{{experience[1]}}</td>
                          <td>{{gender[1]}}</td>
                          <td>{{email[1]}}</td>
                          <td>{{phno[1]}}</td>

                   <td>{{address[1]}}</td>
                          <td>{{salary[1]}}</td>
                    </tr><table>
                    </center>
                    </body>
                    </html>
```

GitHub Link:

https://github.com/IBM-EPBL/IBM-Project-23303-1659877571

Project Demo Link:

https://youtu.be/jTUo3uuQdg0