SKILL / JOB RECOMMENDER APPLICATION

Bachelor of Engineering

In

Computer Science and Engineering

Submitted by

TEAMI ID: PNT2022TMID17378

VIMALAN V	611619104113
VINOTHKUMAR K	611619104114
VISVESVARAN S	611619104115
YUVARAJ A	611619104116

MAHENDRA INSTITUTE OF TECHNOLOGY

NAMAKKAL 637 503

AUTONOMOUS

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1.INTRODUCTION

1.1 OVERVIEW

Finding jobs have always been hard - from not having proper knowledge on the organization's objective, their work culture and current job openings to finding the right candidate with desired qualifications to fill their current job openings. Online Job Search Portals have since then been introduced making job seeking convenient on both sides. Job Portal is the solution where recruiter as well as the job seeker meet aiming at fulfilling their individual requirement. They are the cheapest as well as the fastest source of communication reaching a wide range of audience on just a single click irrespective of their geographical distance.

1.2 PURPOSE

Even though online job portals have existed for a while, they only brought in more challenges, like:

- The education system does not always fulfil and focus on individual person skill development.
- Spending hours to find useful info from enormous amount of posts online.
- People who lack industry knowledge are unclear about what exactly they need to learn in order to get a suitable job for them.

2. LITERATURE SURVEY

2.1 EXISTING PROBLEM

- Job portals pretty much work using resume information to match people instead on customizing on a job seeker's skill set.
- Recruiters see very similar resumes of hundreds of applicants making it impossible to figure out which candidate seems to be relevant or better for the job at hand.

2.2 PROBLEM STATEMENT DEFINITION

The current problem recruitment is done manually, most available jobs in Nigeria can only be applied at the agency can be done for which job seekers have to go to the agency check the available jobs at the agency.

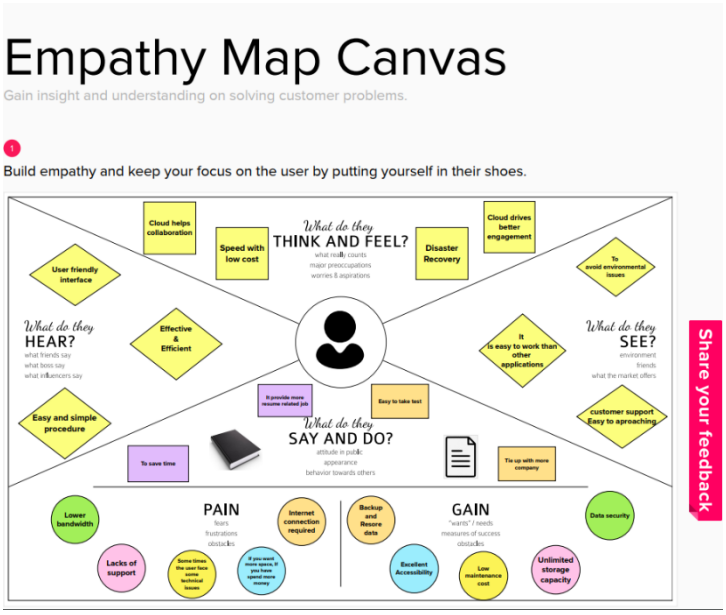
2.3 REFERENCES

- https://ieeexplore.ieee.org/document/7944917
- https://www.researchgate.net/publication325697854Job_Recommendation_based_on_Job_Seeker_Skills_An_Empirical_Study
- https://www.quora.com/Linkedln
- https://ieeexplore.ieee.org/document/8960231
- https://ieeexplore.ieee.org/document/9752295

3. IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes. It is a useful tool to helps teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

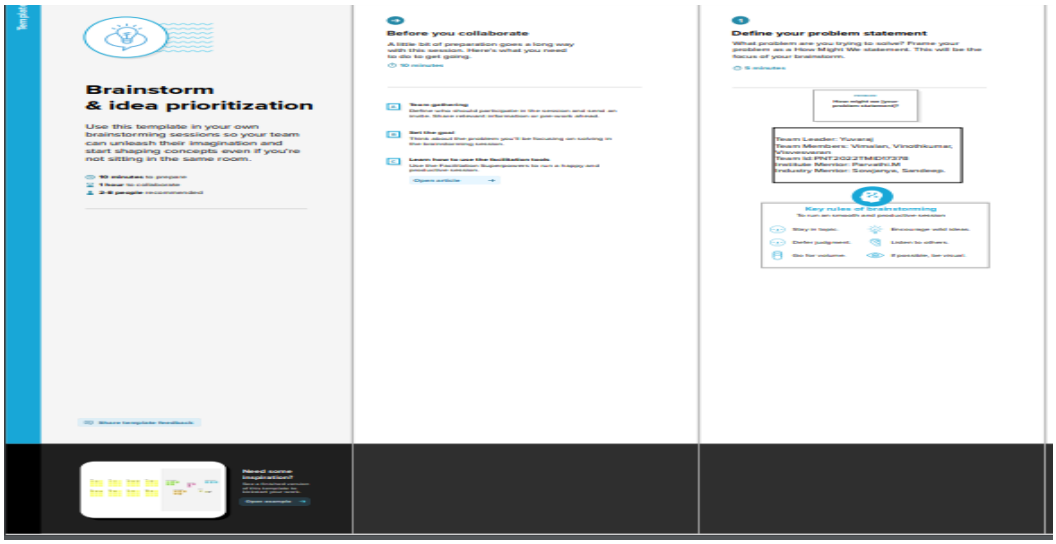


3.2 IDEATION AND BRAINSTORMING

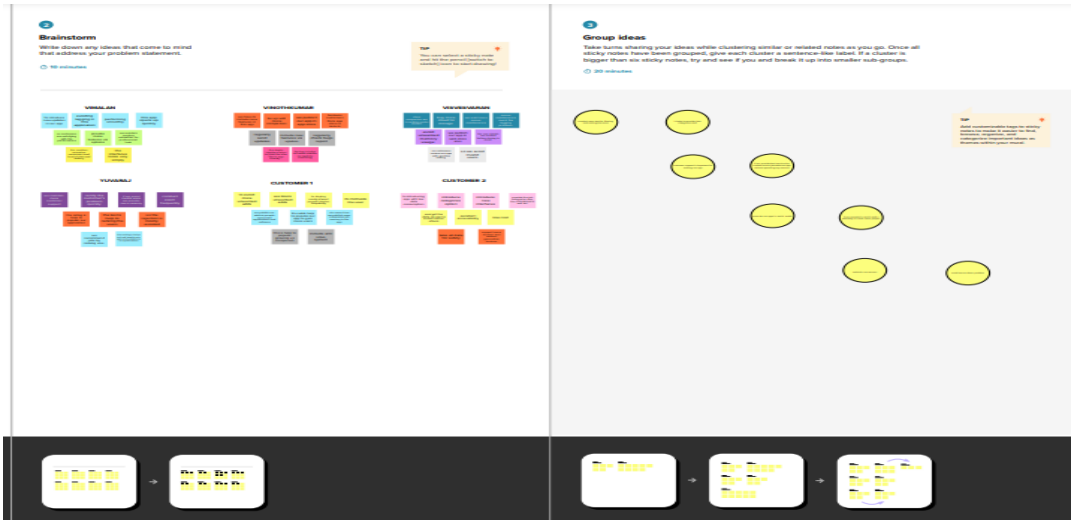
Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

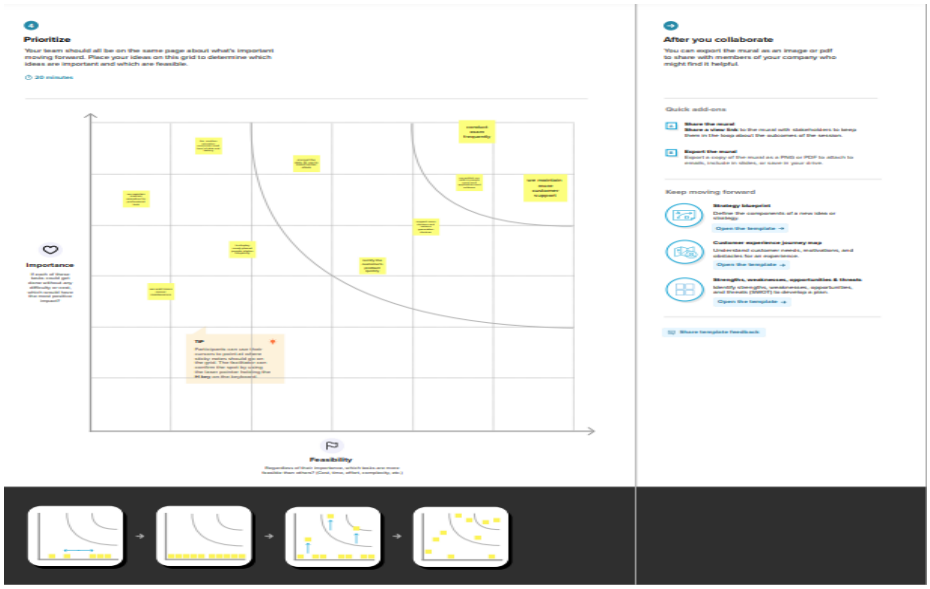
Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



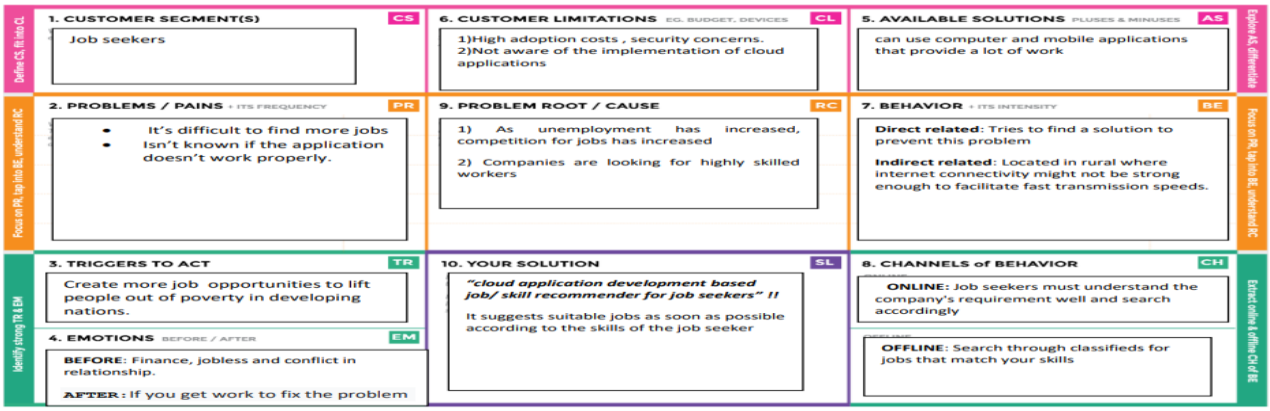
Step 3: Idea Prioritization



3.3 PROPOSED SOLUTION

The system customizes and only shows recommended jobs based on the user's skill set and preferences (Using graphql api) Similarly, the same recommendation system helps provide job applicant recommendations to the job recruiters to find the most eligible candidates for their firm. All important data - job seeker's and hoster's personal information needs to be also stored safely and securely. Using a sql database is the most easiest, safest and convienent way possible. Data needs to also be private in some cases like when information is shared with the host while applying for a job.

3.4 PROBLEM SOLUTION FIT



4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

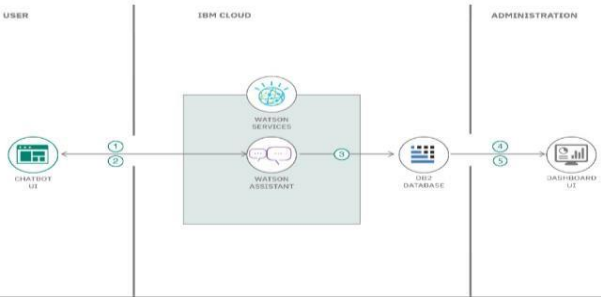
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Chat Bot	A Chat Bot will be there in website to solve user queries and problems related to applying a job, search for a job and much more.
FR-4	User Login	Login through Form Login through Gmail
FR-5	User Search	Exploration of Jobs based on job filters and skill recommendations.
FR-6	User Profile	Updation of the user profile through the login credentials
FR-7	User Acceptance	Confirmation of the Job.

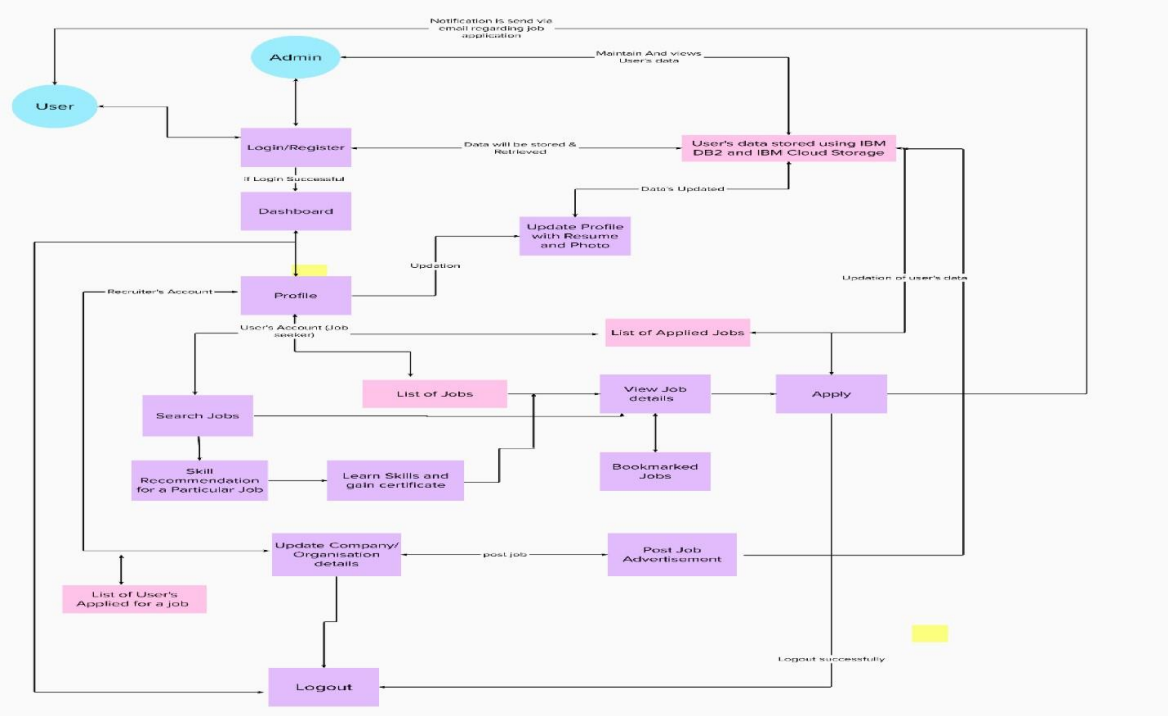
4.2 NON-FUNCTIONAL REQUIREMENTS

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	This application can be used by the job seekers to login and search for the job based on her Skills set.
NFR-2	**Security**	This application is secure with separate login for Job Seekers as well as Job Recruiters.
NFR-3	**Reliability**	This application is open-source and feel free to use, without need to pay anything. The enormous job openings will be provided to all the job seekers without any limitation.
NFR-4	**Performance**	The performance of this application is quicker response and takes lesser time to do any process.
NFR-5	**Availability**	This application provides job offers and recommends Skills for a Particular Job openings.
NFR-6	**Scalability**	The Response time of the application is quite faster compared to any other application.

5. PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS



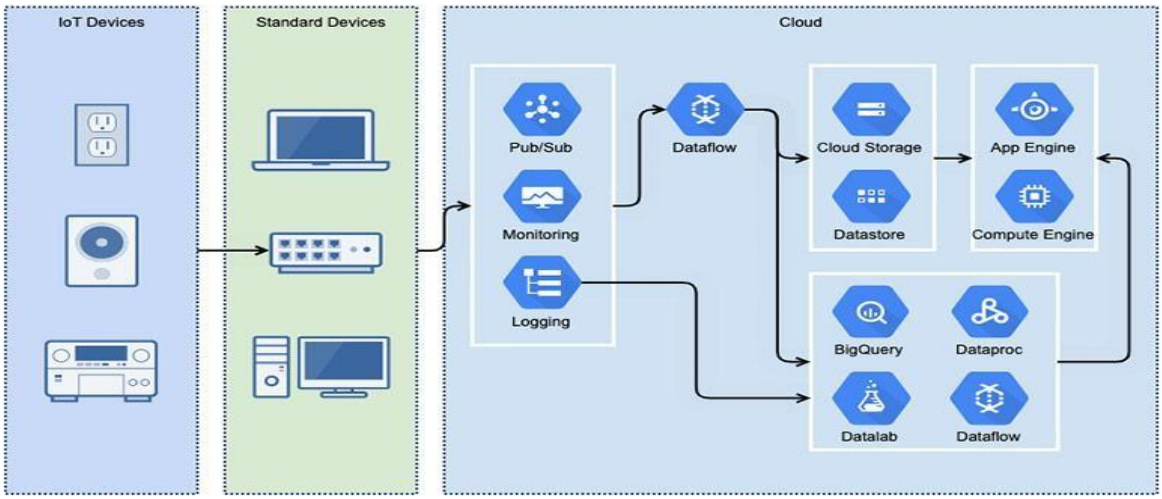


5.2 SOLUTION AND TECHNICAL ARCHITECTURE

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

Find the best tech solution to solve existing business problems.

- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.



5.3 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 online websites	I can register & access the dashboard with online website Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail	I can receive confirmation Gmail & click confirm	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password	I can receive confirmation email & click confirm	High	Sprint-1
	Dashboard					
Customer (Web user)		USN-6	As a user, I can able to take up the skill assessment and view the appropriate test score. Based on the skill sets I can able to get personalised job recommendations.	I can receive job recommendations	High	Sprint-1
Customer Care Executive		USN-7	As a customer care executive, we provide 24/7 chatbot support.	24/7 chatbot support	High	Sprint-1
Administrator		USN-8	As an administrator, I can able to view the progress and make required changes in the project	Deploy user specific and personalised job recommendations	High	Sprint-1

6. PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANNING AND ESTIMATION

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

6.2 SPRINT DELIVERABLE PLAN

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	Dineshkumar Vijayamanikandan Ramanan Vishnubala
Sprint-1	Database Connectivity	USN-2	Viewing and applying jobs Connecting UI with Database	10	High	Vijayamanikandan Ramanan
Sprint-2	SendGrid Integration	USN-3	SendGrid Integration with Python Code	10	Low	Dineshkumar Vishnubala
Sprint-2	Chatbot Development	USN-4	Building a chatbot	10	High	Vijayamanikandan Vishnubala
Sprint-3	Integration and Containerisation	USN-5	Integrating chatbot to the HTML page and containerizing the app.	20	Medium	Vijayamanikandan Ramanan Vishnubala Dineshkumar
Sprint-4	Upload Image and deployment	USN-6	Upload the image to the IBM Registry and deploy it in the Kubernetes Cluster.	20	High	Dineshkumar Vishnubala

7. CODING AND SOLUTIONING

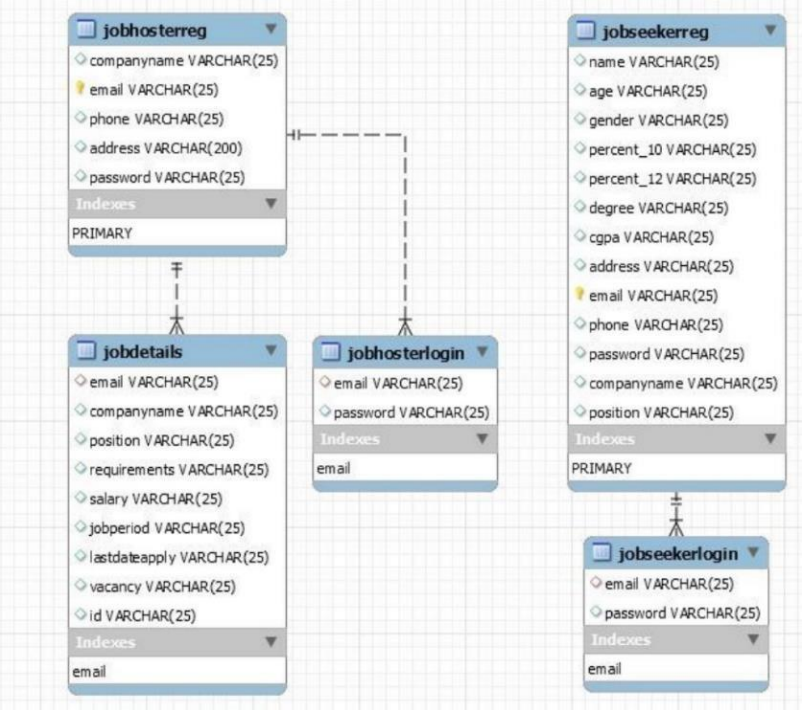
7.1 FEATURE 1

Skill based job recommendation – Jobs are recommended based on job seeker's individual skill set. This also brings in custom list of jobs that's different for different job seekers.

7.2 FEATURE 2

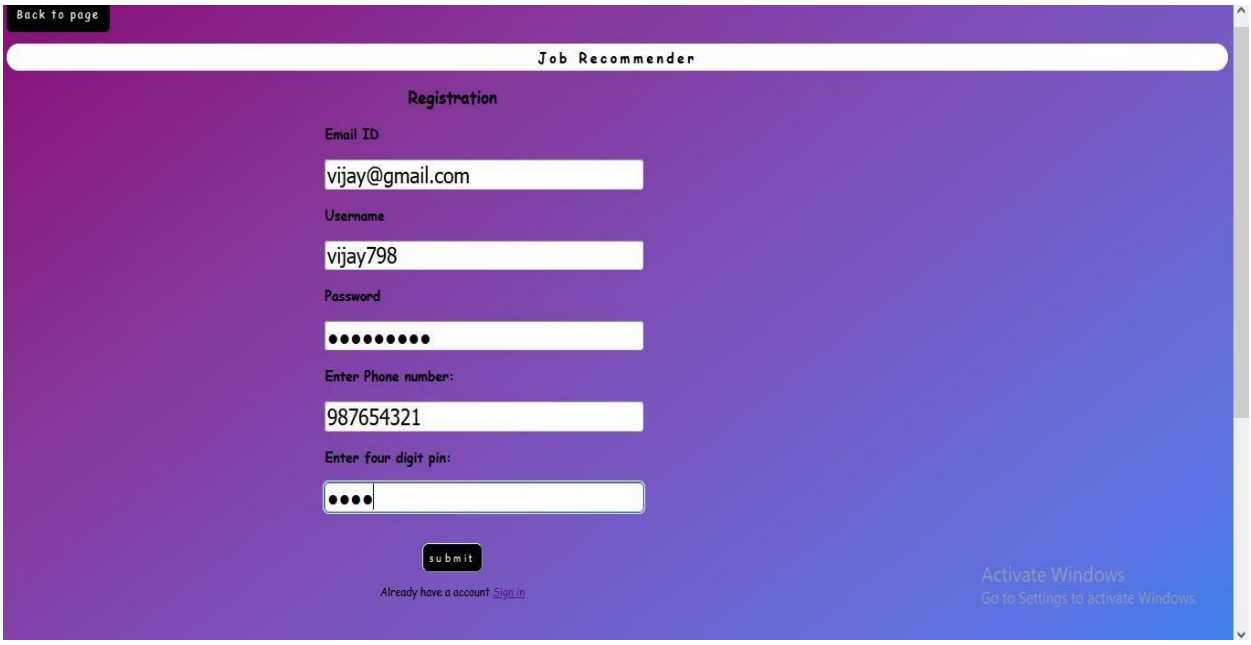
Hosting jobs– Job hoster can easily host jobs that can be accessed by a varied range of applicants. Additional feature – filtering through jobs based on skill, location, salary/stipend, mode of job (for both applying and hosting jobs).

7.3 DATABASE SCHEMA

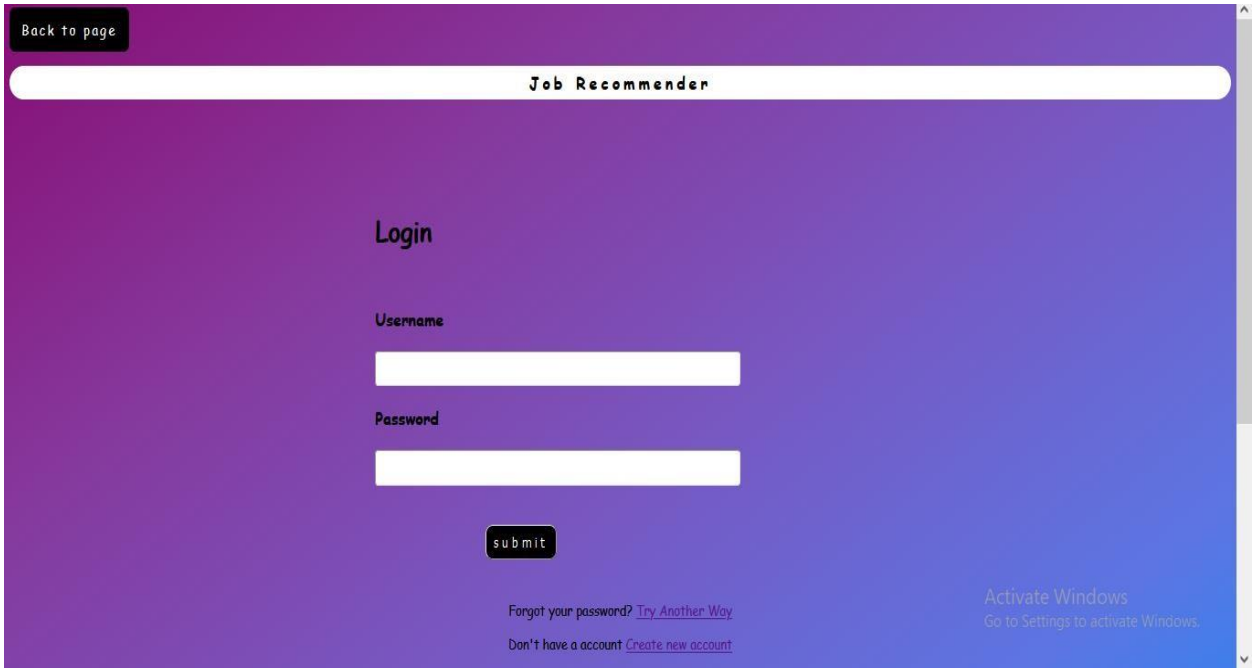


8. TESTING

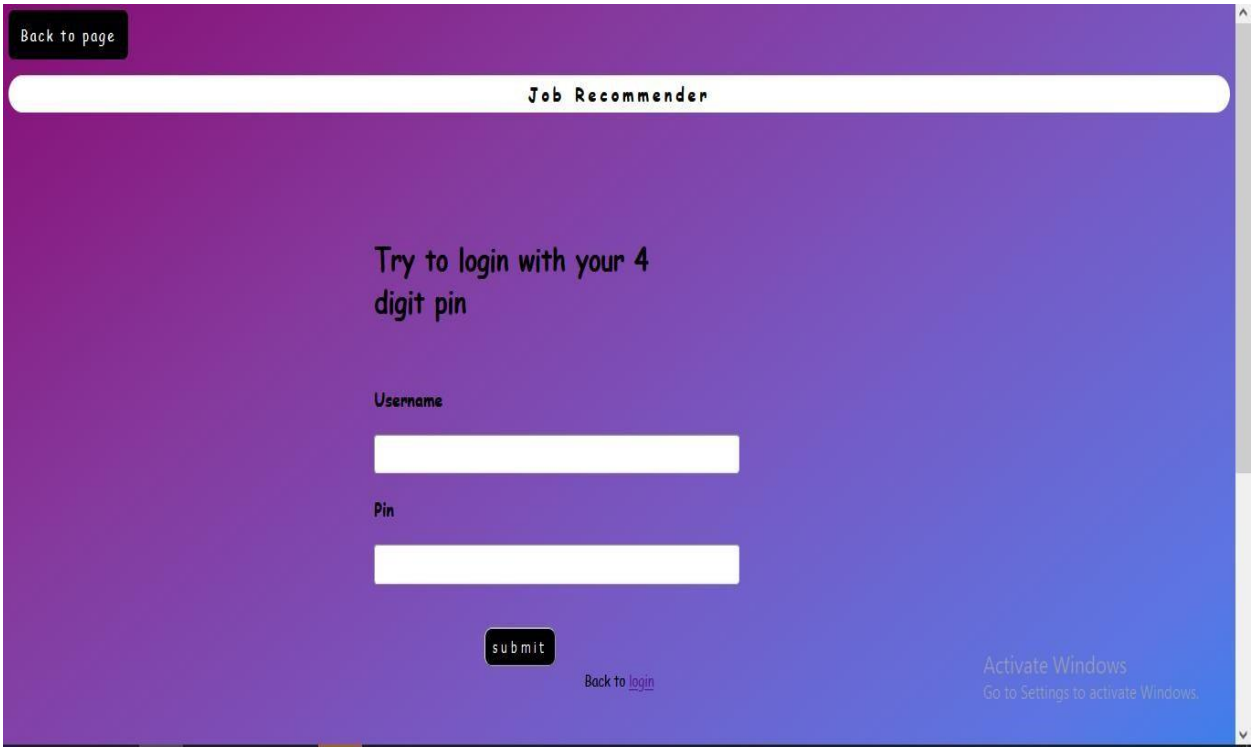
REGISTER PAGE



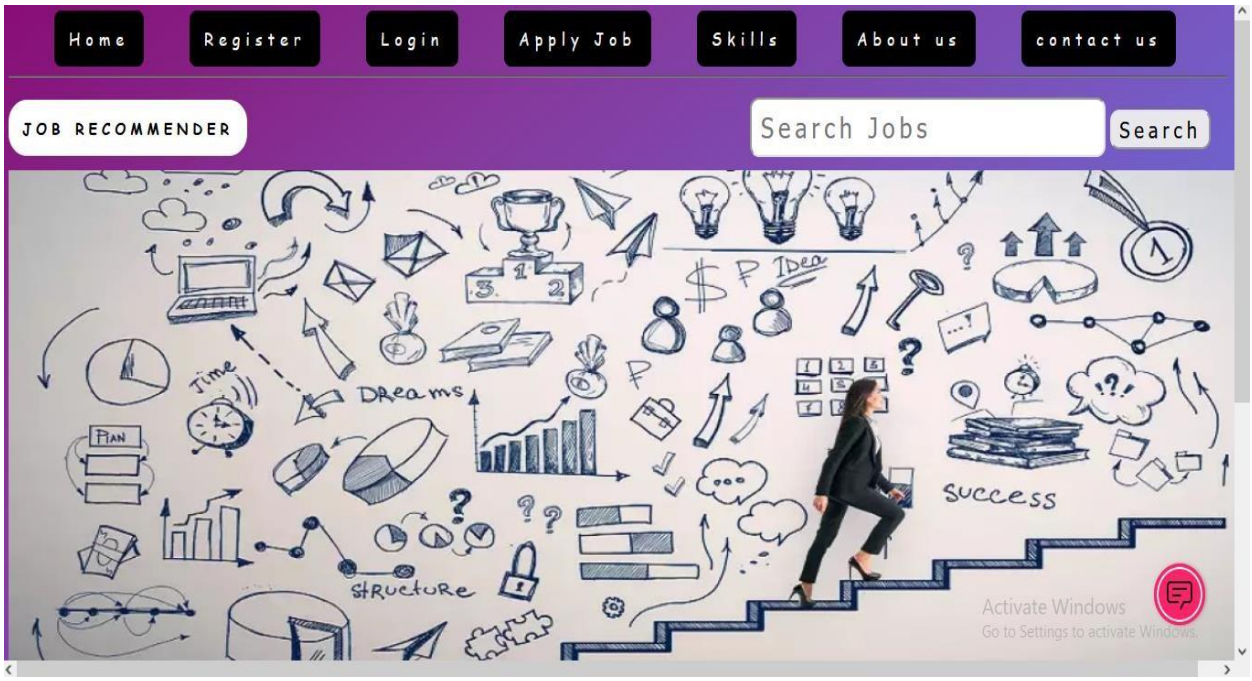
LOGIN PAGE



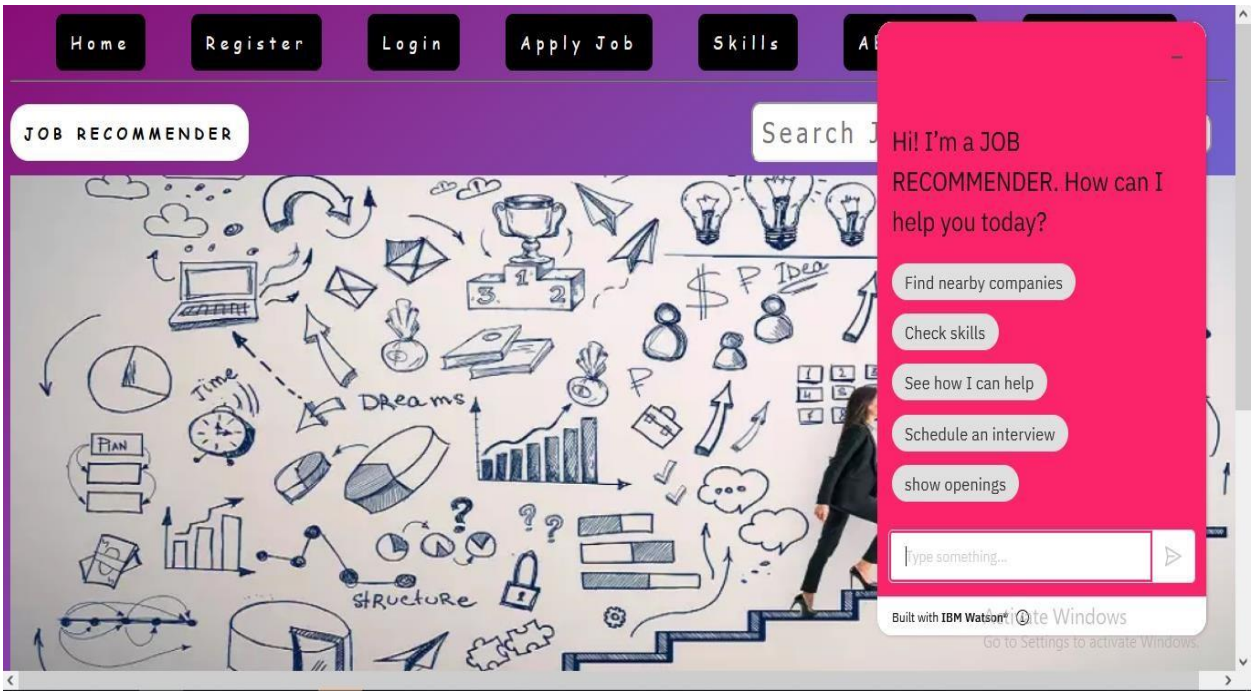
ALTERNATE WAY TO LOGIN



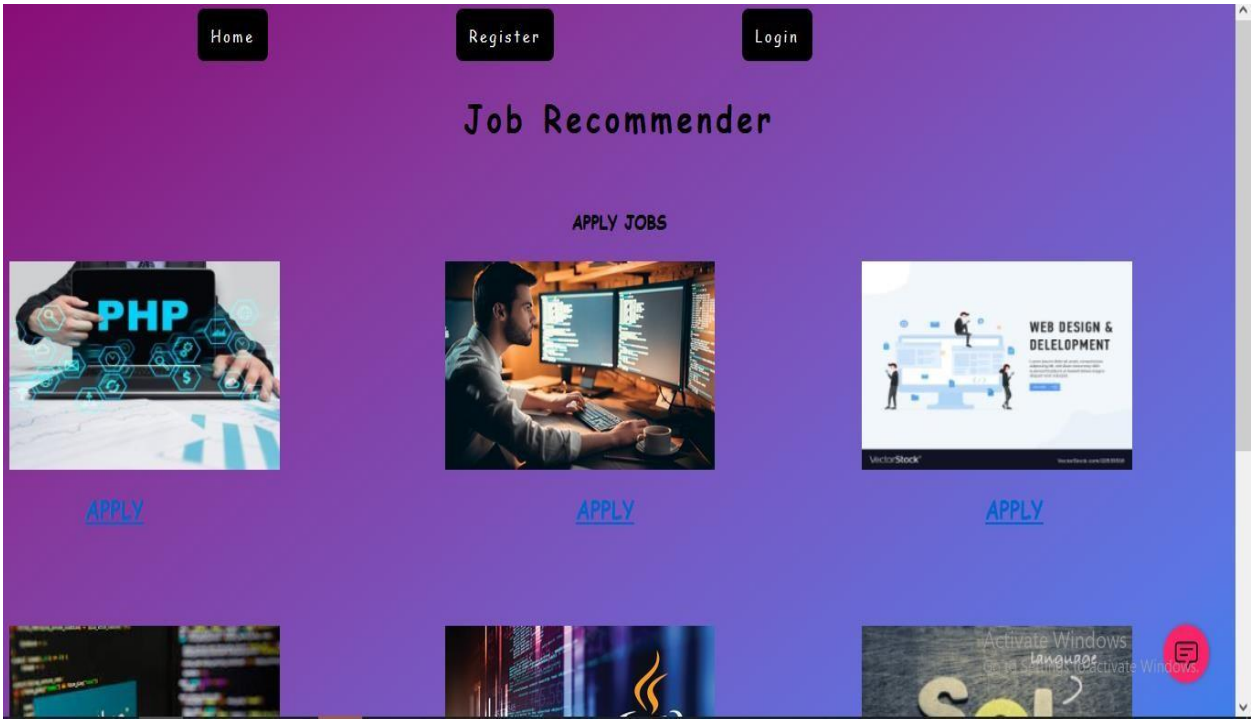
HOME PAGE



CHATBOT PAGE



APPLY PAGE



9. RESULTS

9.1 PERFORMANCE METRICS

Based on the person-job fit premise, we propose a framework for job recommendation based on professional skills of job seekers. We automatically extracted the skills from the job seeker profiles using a variety of text processing techniques. Therefore, we perform the job recommendation using TF-IDF and four different configurations of Word2vec over a dataset of job seeker profiles and job vacancies collected by us. Our experimental results show the performances of the evaluated methods and configurations and can be used as a guide to choose the most suitable method and configuration for job recommendation.

10. ADVANTAGES AND DISADVANTAGES

- Sourcing candidates requires a lot of effort, which means it can cost a company both time and money. It was found in one study that referred candidates are 55% faster to hire, compared with employees sourced through career sites. An advantage of employee referrals is that your current team member makes the connection and saves the recruiter that initial time of sourcing the candidate. Further, the candidate could be a better match

compared to other candidates who apply externally. This will also help expedite the process and cut back on the need to find alternative options.

- Employees will want to work with someone who will improve their own output and dayto-day workload. So, in most cases, you can have more confidence in the candidate's ability to perform the necessary tasks. Further, according to research done by Zao, nearly three in ten employers have caught a fake reference on an application. So, a personal recommendation that is already within the company can instill confidence that the reference is in fact valid and reputable.
- After two years, retention of referred employees is 45% compared to 20% from job boards. Employee referrals tend to stay around longer, perhaps because they are personally connected to their peers. That's not to mention that the referrer themselves may feel more respected and valued too after their company takes their recommendation. And when an employee feels respected and valued, they can become more dedicated in turn. You may also want to give an employee referrer a bonus to show your appreciation.
- While in most cases an employee's motives should be "pure," there may be circumstances where a person wants to just work with their friend or receive the referral bonus. This can result in the candidate not being as qualified as either the referrer or referee said they were. The referrer may think that they can make up for the candidate's shortcomings or give them a crash course to level-set their skills. This can impact their own production in a negative way. And now your company may have two underperforming employees—and you may have to look to fill both of these positions in the not-so-far-off future.

11. CONCLUSION

We proposed a framework for job recommendation task. This framework facilitates the understanding of job recommendation process as well as it allows the use of a variety of text processing and recommendation methods according to the preferences of the job recommender system designer. Moreover, we also contribute making publicly available a new dataset containing job seekers profiles and job vacancies. Future directions of our work will focus on performing a more exhaustive evaluation considering a greater amount of methods and data as well as a comprehensive evaluation of the impact of each professional skill of a job seeker on the received job recommendation.

12. FUTURE SCOPE

For this system to be hybrid, content-based filtering is required, which can only recommend jobs based on the user's current profile. It cannot deliver anything surprising based on the user's past searches. This paper also uses collaborative filtering which faces well-known problems of privacy breaches and cold start. The system has a broad scope that can be used to make it more robust and foolproof. Firstly, automating the crawling process is required, when a new company is added to the database. In other words, removing the one-time configuration step/process to fetch jobs of a particular new company can be done. These models can implement techniques such as KNN in collaborative filtering. Implementing NLP in content-based filtering for better and more accurate search matching can be done. Along with this, testing and collecting more user data for better performance of the collaborative filtering module is required. Lastly, improving the cleansing process of the job description and using natural language processing are required. While using collaborative filtering, this work can be improved by giving different weights to different users based on their LinkedIn skills.

13. APPENDIX

13.1 SOURCE CODE

WELCOME.HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Job Recommender</title>
   <link rel="stylesheet" href="{{url_for('static',filename='welcomestyle.css')}}">
   <script>        window.watsonAssistantChatOptions = {          integrationID: "65c01ed6-9fc1-4883-
979a-3676279ebe44", // The ID of this integration.          region: "us-south", // The region your
integration is hosted in.          serviceInstanceID: "8fcd017f-a192-420a-aafc-18cb0330efca", // 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>
</head>
<body>
  <header>
    <nav class="navbar">
      <ul>
        <li><a href="{{url_for('home')}}">Home</a></li>
        <li><a href="{{url_for('register')}}">Register</a></li>
        <li><a href="{{url_for('login')}}">Login</a></li>
</ul>
    </nav>
  </header>
  <section id="sss1">
    <center><h1 class="two" >Job Recommender</h1></center>
  </section>
  <br><br>
  <div id="jobs">

                <center><h3 class="app">APPLY JOBS</h3></center><br>
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alt=""width="330" height="200">
    <img style="position:absolute;top: 600px;"src="{{url_for('static',filename='img/python.png')}}"
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```

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href="https://in.indeed.com/PythonDeveloper-jobs?vjk=fa7b9bd250044569">APPLY</a></h2>
   </div>
</body>
</html>
```

REGISTER.HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Job Recommender</title>
   <link rel="stylesheet" href="{{url_for('static',filename='welcomestyle.css')}}">
   <script>        window.watsonAssistantChatOptions = {           integrationID: "65c01ed6-
9fc1-4883-979a-3676279ebe44", // The ID of this integration.          region: "us-south", // The
region your integration is hosted in.
        serviceInstanceID: "8fcd017f-a192-420a-aafc-18cb0330efca", // 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>
</head>
<body>
   <header>
      <nav class="navbar">
         <ul>
```

```
            <li><a href="{{url_for('home')}}">Home</a></li>
            <li><a href="{{url_for('register')}}">Register</a></li>
            <li><a href="{{url_for('login')}}">Login</a></li>
          </ul>
      </nav>
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  <section id="sss1">
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  </section>
  <br><br>
  <div id="jobs">


                    <center><h3 class="app">APPLY JOBS</h3></center><br>
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alt=""width="330" height="200">
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                    <h2 style="position:absolute;top: 450px;left:100px"><a
href="https://in.indeed.com/PHP-Developer-jobs?vjk=10cca9575b193c7d">APPLY</a></h2>
      <h2 style="position:absolute;top: 450px;left:700px"><a href="https://in.indeed.com/SoftwareDeveloper-
jobs?vjk=b7da08f07cac87d5">APPLY</a></h2>
      <h2 style="position:absolute;top: 450px;left:1200px"><a href="https://in.indeed.com/WebDeveloper-
jobs?vjk=b81e49165da51eeb">APPLY</a></h2>
      <h2 style="position:absolute;top: 800px;left:1200px"><a href="https://in.indeed.com/SQLDeveloper-
jobs?vjk=ac86b15908022123">APPLY</a></h2>
      <h2 style="position:absolute;top: 800px;left:700px"><a href="https://in.indeed.com/JavaDeveloper-
jobs?vjk=da306a665e00eb30">APPLY</a></h2>
```

```
    <h2 style="position:absolute;top: 800px;left:150px"><a href="https://in.indeed.com/PythonDeveloper-jobs?vjk=fa7b9bd250044569">APPLY</a></h2>
  </div>
</body>
</html>
```

LOGIN.HTML

```
<html>
  <head>
    <title>Login page</title>
    <link rel="stylesheet" href="{{url_for('static',filename='registerstyle.css')}}">
  </head>
  <body>
    <header>
    <nav class="navbar">
      <ul>
        <li><a href="{{url_for('welcome_page')}}">Back to page</a></li>
      </ul>
    </nav>
    </header>
    <section id="sss1">
      <center><h1 class="two" >Job Recommender</h1></center>
    </section>
    <br><br>
    <div class="container"> <br /><br />
    <form action="/login" method="POST">
     <h1>Login</h1> <br /><br />
      <label class="form_label"for="email"><b>Username</b></label><br><br>
      <input class="form_input"type="text" name= "username" /><br><br>
      <label class="form_label"for="psw"><b>Password</b></label><br><br>
      <input class="form_input"type="password" name="password"/>
      </br></br></br>
```

```
        <center><input type="submit" class="submitbtn"value="submit" /></center>
      </form>
      </div>
      <center><p>Forgot your password? <a href="{{url_for('forget')}}">Try Another Way</a></p></center>
      <center><p>Don't have a account <a href="{{url_for('register')}}">Create new
account</a></p></center>
   </body>
</html>
```

HOME.HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>JOB RECOMMENDER</title>
   <link rel="stylesheet" href="{{url_for('static',filename='homestyle.css')}}>
   <script>        window.watsonAssistantChatOptions = {          integrationID: "65c01ed6-9fc1-4883-
979a-3676279ebe44", // The ID of this integration.          region: "us-south", // The region your
integration is hosted in.          serviceInstanceID: "8fcd017f-a192-420a-aafc-18cb0330efca", // 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>
</head>
<body>
```

```
    <header>
        <nav class="navbar">
            <ul>
                <li><a href="{{url_for('home')}}">Home</a></li>
                <li><a href="{{url_for('register')}}">Register</a></li>
                <li><a href="{{url_for('login')}}">Login</a></li>
                <li><a href="{{url_for('welcome_page')}}">Apply Job</a></li>
                <li><a href="{{url_for('skills')}}">Skills</a></li>
                <li><a href="{{url_for('about')}}">About us</a></li>
                <li><a href="{{url_for('contact')}}">contact us</a></li>
            </ul>
        </nav>
    </header>
    <hr>
    <section id="sss1">
        <h1 class="two" >JOB RECOMMENDER</h1>
        <div id="ss1">
            <input class="input_search" type="text" placeholder="Search Jobs" >
            <button class="button_search">Search</button>
        </div>
        </section>
    <div>
        <img src="bg.png"alt="job" height="500" width="1360">
    </div>
</body>
</html>
```

FORGET.HTML

```
<html>
    <head>
        <title>Login page</title>
```

```
    <link rel="stylesheet" href="{{url_for('static',filename='registerstyle.css')}}">
</head>
<body>
    <header>
    <nav class="navbar">
        <ul>
            <li><a href="{{url_for('welcome_page')}}">Back to page</a></li>
        </ul>
    </nav>
    </header>
    <section id="sss1">
        <center><h1 class="two" >Job Recommender</h1></center>
    </section>
    <br><br>
{% if error %}
    <p><strong style="color:red">Error</strong>: {{error}}</p>
{% endif %}
{% with messages = get_flashed_messages() %}
     {% if messages %}
          {% for message in messages %}
              <p style="color:green">{{ message }}</p>
          {% endfor %}
     {% endif %}
  {% endwith %}
    <div class="container"> <br /><br />
    <form action="/forget" method="POST">
     <h1>Try to login with your 4 digit pin</h1> <br /><br />
        <label class="form_label"for="email"><b>Username</b></label><br><br>
        <input class="form_input"type="text" name= "username" /><br><br>
        <label class="form_label"for="psw"><b>Pin</b></label><br><br>
        <input class="form_input"type="password" name="pin"/>
        </br></br></br>
```

```
        <center><input type="submit" class="submitbtn"value="submit" /></center>
      </form>
      </div>
      <center><p>Back to <a href="{{url_for('login')}}">login</a></p></center>
   </body>
</html>
```

CONTACT.HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Job Recommender</title>
   <link rel="stylesheet" href="{{url_for('static',filename='contactstyle.css')}}">
</head>
<body>
   <header>
      <nav class="navbar">
         <ul>
            <li><a href="{{url_for('home')}}">Home</a></li>
            <li><a href="{{url_for('register')}}">Register</a></li>
            <li><a href="{{url_for('login')}}">Login</a></li>
         </ul>
      </nav>
   </header>
   <section id="sss1">
      <center><h1 class="two" >Job Recommender</h1></center>
   </section>
   <br><br>
```

```
   <center><h1 class="h1lt">Contact us</h1></center>
   <form class="container">
First name:<br>
<input type="text" name="firstname" value="">
<br>
Last name:<br>
<input type="text" name="lastname" value="">
<br>
Email:<br>
<input type="text" name="email" value="">
<br>
<br>
 <textarea name="message" rows="10" cols="30">
</textarea>
<br><br>
<input type="submit" value="Submit">
</form>
</body>
</html>
```

SKILLS.HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Job Recommender</title>
   <link rel="stylesheet" href="skillsstyle.css">
</head>
```

```
<body>
  <header>
    <nav class="navbar">
      <ul>
        <li><a href="{{url_for('home')}}">Home</a></li>
        <li><a href="{{url_for('register')}}">Register</a></li>
        <li><a href="{{url_for('login')}}">Login</a></li>
      </ul>
    </nav>
  </header>
  <section id="sss1">
    <center><h1 class="two" >Job Recommender</h1></center>
  </section>
  <br><br>
  <section id="courses">
                <center><h1>Our Courses</h1></center>

                <div class="course">
      <img src="{{url_for('static',filename='img/course-01.jpg')}}"alt="skill 1">
                        <center><h2><a href="https://www.w3schools.com/html/">HTML5 For Beginners</a></h2></center>

                        <center><h6>This course was designed for students starting out in Front End Web Development wanting to learn HTML5 to get started.....</h6></center>
                </div>

                <div class="course2">
      <img src="{{url_for('static',filename='img/course-02.jpg')}}"alt="skill 2">
                        <center><h2><a href="https://www.w3schools.com/css/">CSS3 For Beginners</a></h2></center>
                        <center><h6>This course was designed for students starting out in Front End Web Development wanting to learn CSS3 to get started.....</h6></center>
                </div>
```

```
                <div class="course3">
                <img src="{{url_for('static',filename='img/course-03.jpg')}}"alt="skill 3">
                        <center><h2><a href="https://www.w3schools.com/js/">JavaScript For Beginners</a></h2></center>
                        <center><h6>This course was designed for students starting out in Front End Web Development wanting to learn JavaScript to get started.....</h6></center> </div>

</section>
</body>
</html>
```

ABOUT.HTML

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>SKYS.com</title>
   <link rel="stylesheet" href="{{url_for('static',filename='registerstyle.css')}}">
</head>
<body>
   <header>
      <nav class="navbar">
         <ul>
            <li><a href="{{url_for('home')}}">Home</a></li>
            <li><a href="{{url_for('register')}}">Register</a></li>
            <li><a href="{{url_for('login')}}">Login</a></li>
         </ul>
      </nav>
   </header>
   <section id="sss1">
      <center><h1 class="two" ><span style="color:rgb(20, 20, 70);background-color: whitesmoke;margin-left: 30px;padding-left: 20px;padding-right: 20px;">SKYS.com</span></h1></center>
```

```
    </section>
</body>
</html>
```

APP.PY

```
from flask import Flask render_template,request,redirect,url_for,session,flash
import ibm_db import os from sendgrid import SendGridAPIClient from
sendgrid.helpers.mail import Mail import requests

app=Flask(__name__)
app.secret_key='a' try:
    conn = ibm_db.connect("DATABASE=bludb;HOSTNAME=98538591-7217-4024-b027-
8baa776ffad1.c3n41cmd0nqnrk39u98g.databases.appdomain.cloud;PORT=30875;SECURITY=SSL;SSL
ServerCertificat=DigiCertGlobalRootCA.crt;UID=chr84960;PWD=ky5p7N0JrFc3Ibvx","") except:
    print("Unable to connect: ",ibm_db.conn_error())

@app.route("/") def
dash():
    return render_template('welcome.html',msg=" ")

@app.route("/register",methods=['GET','POST'])
def register():     error = None      if
request.method=='POST':
        username=request.form['username']
email=request.form['email']
        phone_number=request.form['phonenumber']
password=request.form['password']
pin=request.form['pin']
        sql="SELECT * FROM user WHERE phone_number=?"
prep_stmt=ibm_db.prepare(conn,sql)          ibm_db.bind_param(prep_stmt,1,phone_number)
ibm_db.execute(prep_stmt)          account=ibm_db.fetch_assoc(prep_stmt)          print(account)
```

```
        #message =
Mail(from_email='btechmano@gmail.com',to_emails=session['email'],subject="Devnews -
Registration",html_content='<b>Devnews welcomes you</b><br/><p>Your account has been registered
successfully</p>')
        #try:
            #sg=SendGridAPIClient()
            # Secret key can't be submitted otherwise my
            # sendgrid accound reporting that i am exposing
            # my secret key as public and my account will terminated soon
            #response=sg.send(message)
            #print(response.status_code)
            #print(response.body)
            #print(response.headers)
#except Exception as e:
            #print(e)
if account:
            error="Account already exists! Log in to continue !"
else:
            insert_sql="INSERT INTO user values(?,?,?,?,?)"
prep_stmt=ibm_db.prepare(conn,insert_sql)
ibm_db.bind_param(prep_stmt,1,email)
ibm_db.bind_param(prep_stmt,2,username)
ibm_db.bind_param(prep_stmt,3,phone_number)
ibm_db.bind_param(prep_stmt,4,password)
ibm_db.bind_param(prep_stmt,5,pin)              ibm_db.execute(prep_stmt)
            flash(" Registration successfull. Log in to continue !") else:
      pass    return
render_template('register.html',error=error)

@app.route('/login',methods=['GET','POST'])
def login():    error = None    if
request.method=='POST':
```

```
        username=request.form['username']
password=request.form['password']         sql="SELECT * FROM user
WHERE username=? AND password=?"
stmt=ibm_db.prepare(conn,sql)         ibm_db.bind_param(stmt,1,username)
ibm_db.bind_param(stmt,2,password)         ibm_db.execute(stmt)
account=ibm_db.fetch_assoc(stmt)         print(account)         if account:
            session['Loggedin']=True
session['id']=account['USERNAME']
session["username"]=account["USERNAME"]
flash("Logged in successfully!")             return
redirect(url_for("home"))         else:
            error="Incorrect      username      /      password"
return              render_template('login.html',error=error)
return render_template('login.html',error=error)

@app.route('/forget',methods=['GET','POST']) def
forget():
    error = None if
    request.method=='POST':
    username=request.form['us
    ername']
    pin=request.form['pin']
        sql="SELECT * FROM user WHERE username=? AND pin=?"
stmt=ibm_db.prepare(conn,sql)
ibm_db.bind_param(stmt,1,username)
ibm_db.bind_param(stmt,2,pin)         ibm_db.execute(stmt)
account=ibm_db.fetch_assoc(stmt)         print(account)         if
account:
            session['Loggedin']=True
session['id']=account['USERNAME']
session["username"]=account["USERNAME"]
```

```
flash("Logged in successfully!")            return
redirect(url_for("home"))        else:
            error="Incorrect username / pin"            return
render_template('login.html',error=error)            return
render_template('forget.html',error=error)
@app.route('/welcome') def welcome_page():
return render_template("welcome.html",msg=" ")
@app.route('/home') def
home():
   return render_template("home.html",msg=" ")
@app.route('/skills') def
skills():
   return render_template("skills.html",msg=" ")
@app.route('/about') def
about():
   return render_template("about.html",msg=" ")
@app.route('/contact') def
contact():
   return render_template("contact.html",msg=" ")
if __name__=='__main__':
app.run(debug=True)
```

DEPLOY.YAML

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: flask-node-deployment
spec:
  replicas: 1
selector:
matchLabels:
```

app: flasknode

template:

metadata:

labels:

app: flasknode spec:

containers: - name: flasknode

image: us.icr.io/job-skill/job-skill

imagePullPolicy: Always ports:

- containerPort: 5000

DOCKERFILE

FROM python:3.6

WORKDIR /app

ADD . /app

COPY requirements.txt /app

RUN python3 -m pip install -r requirements.txt

RUN python3 -m pip install ibm_db

EXPOSE 5000

CMD ["python","app.py"]

SERVICE.YAML

apiVersion: v1 kind:

Service metadata:

name: flask-node-deployment

spec: ports: - port: 5000

targetPort: 5000 selector:

app: flasknode

13.2 GITHUB AND PROJECT DEMO LINK

GITHUB LINK: https://github.com/IBM-EPBL/IBM-Project-29647-1660128080

PROJECT DEMO LINK:

https://drive.google.com/file/d/1Ess7mtYrfNVbbDixVYb_36AHPkoX_DtX/view?usp=drivesdk