SKILL / JOB RECOMMENDER APPLICATION

TEAMID: PNT2022TMID20598

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1.INTRODUCTION

1.1 PROJECT OVERVIEW

Finding a job in today's market is a major challenge. Using job search websites is a frequent strategy for looking for a job. instead of spending the time to look through newspapers, business websites, and other conventional job advertisements. With only one click, a job search website may complete all of these tasks. A job search engine makes it easier for job searchers and employers to connect and share available positions. Many applicants want to apply to and work for these organizations since there are a rising number of financially sound, reliable, and promising technical companies/ start-ups on the web that are currently in high demand. They frequently miss out on these postings because there are a vast number of systems already in place that display millions of jobs that are typically completely irrelevant to the users. There are various options but few that have been streamlined. Job seekers frequently discover that they are unable to obtain the right occupation for themselves based on the actual abilities or interests of an individual. Using job search engines like LinkedIn, indeed, and others, Job seekers frequently conduct their job searches online. When using these websites, a job seeker often has two options: creating and/or updating a professional profile with information about their education, professional experience, professional skills, and other, and receiving tailored job recommendations based on this information, or performing a search using keywords related to the job vacancy they are looking for. Sites that support to the former case are more widely used and have a simpler layout, but their recommendations are less reliable than those of the sites that use profile data. Personalized job recommendation sites have implemented a range of recommender system types, including content-based filtering, collaborative filtering, knowledge-based approaches, and hybrid approaches. Furthermore, the majority of these job recommender systems base their recommendations on the complete profile of job searchers in addition to taking into account additional data sources like social networking activity, web search history, etc. Despite the fact that a variety of data sources can be helpful to enhance job recommendations, prior studies revealed that the optimal person-job fit is only feasible when a job seeker's specific skills match the demands of a job offer. Numerous employment firms have developed methods for offering the job board in order to serve the continuous cycle of the recruiting process from the viewpoint of the job seeker. One searches for and applies for jobs that they believe are relevant to them. As there are numerous job boards, candidates typically use the one that offers the best services to them, such as generating a CV, building a job profile, and recommending new jobs to a job seeker. In their pursuit of new career chances that match their skills, job seekers have grown more tenacious and assertive. Companies who are focusing on these job seekers are having trouble determining their skill set and making tailored employment recommendations. With our skill recommender solution, either a skilled or a fresher user may sign up, search for jobs using the search bar, or speak with the chatbot directly to land their ideal position. Therefore, this system addresses the idea from the perspective of the data, placing more emphasis on the quality of the data than the number.

1.2 PURPOSE

Every system conceivable use recommender system, including those for books, movies, and other media. However, based on the application domain, many recommendation types may offer. In job recommendation systems, there are various job seekers, having different education levels and skills. Each job seeker anticipates receiving only those employment recommendations that are extremely pertinent to their individual background information. By using ratings and comparing applicants' talents to the needed ones, our recommendation system is created for positions. For both job suppliers and job searchers, the system may result in significant time savings in addressing their demands. The value of a job recommendation system that takes the user's skill set into account. The purpose of this recommendation application 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. A system that not only suggests jobs but also identifies the skill sets required for such jobs might aid users in learning more about those skill sets. A system that is appropriate for job seekers is needed to deal with the issues of urbanization and employment trends in this constantly changing environment. This methodology is intended to assist recruiters in making skill-based hiring decisions. It is created in a way that will assist close the gap between the two of them, making it easy for both the recruiter and the job seeker to use.

2.LITERATURE SURVEY

2.1 EXISTING PROBLEM

The existing system had some potential for proposing fraudulent jobs as well as jobs that were irrelevant to job seekers, which saddened and disappointed them. We offered our application in an effort to correct the irrelevant job recommendations and direct job seekers to the most appropriate positions.

2.2 REFERENCES

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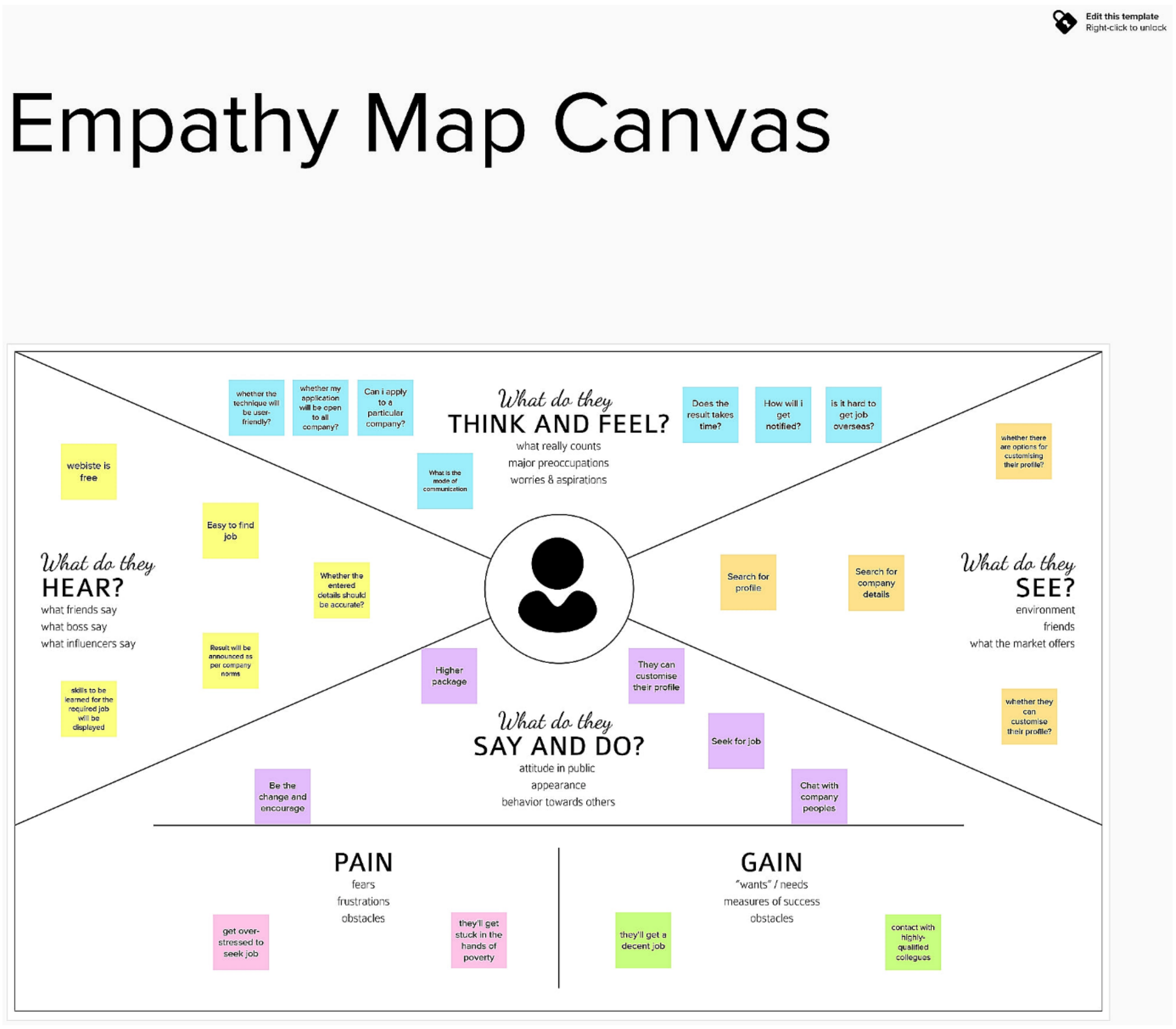
2.3 PROBLEM STATEMENT DEFINITION

Dealing with the enormous amount of recruiting information on the Internet, a job seeker always spends hours to find useful ones. Many times, people who lack industry knowledge are unclear about what exactly they need to learn in order to get a suitable job for them. We address the problem of recommending suitable jobs to people who are seeking for a new job. 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.

3.IDEATION AND PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

Following is the Empathy Map Canvas of Skill/ Job Recommender System.



Edit this template
Right-click to unlock
Empathy Map Canvas
What do they THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations
whether the technique will be user-friendly?
whether my application will be open to all company?
Can i apply to a particular company?
What is the mode of communication
Does the result takes time?
How will i get notified?
is it hard to get job overseas?
What do they HEAR?
what friends say
what boss say
what influencers say
webiste is free
Easy to find job
Whether the entered details should be accurate?
Result will be announced as per company norms
skills to be learned for the required job will be displayed
What do they SEE?
environment
friends
what the market offers
whether there are options for customising their profile?
Search for profile
Search for company details
whether they can customise their profile?
What do they SAY AND DO?
attitude in public
appearance
behavior towards others
Higher package
They can customise their profile
Seek for job
Be the change and encourage
Chat with company peoples
PAIN
fears
frustrations
obstacles
get over-stressed to seek job
they'll get stuck in the hands of poverty
GAIN
"wants" / needs
measures of success
obstacles
they'll get a decent job
contact with highly-qualified collegues

3.2 IDEATION AND BRAINSTORMING

Following are the Ideation and Brainstorm of Skill/ Job Recommender System.

3.3 PROPOSED SOLUTION

Following is the Proposed Solutions of Skill/ Job Recommender System.

S.No.	**Parameter**	**Description**
1.	Problem Statement (Problems to be solve)	1. Having better skills but wondering which job will best suits you? 2. We are giving opportunity to job Seekers. 3. User can access large no of data. 4. 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. 5. 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.

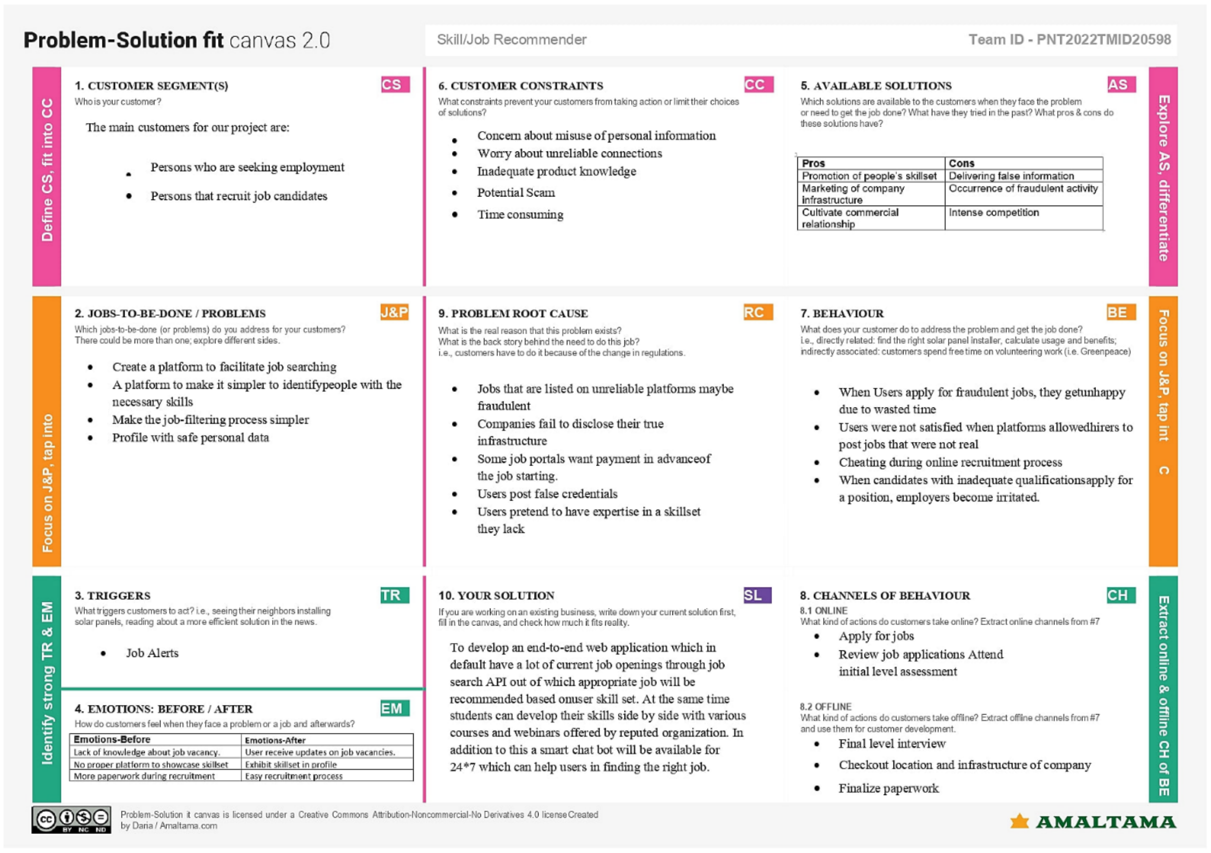
	Idea/ Solution description	1. To focuses on fit for feature. 2. To provide user what company expect. 3. Made publicly available a new dataset formed by a set of job seekers profiles and a set of job vacancies collected from different job search engine sites. 4. Put forward the proposal of a framework for job recommendation based on professional skills of job seekers. 5. Carried out an evaluation to quantify empirically the recommendation abilities of two state of the art methods, considering different configurations, within the proposed framework. 6. 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	1. We provide high Data Security. 2. We provide Mobile and computer both platforms. 3. The best position is suggested to any person according to her skills. While the position of known profiles is assumed to be correct, it should be noted that there are usually multiple advisable positions corresponding to a set of skills. A recommendation system should return a set of most likely positions and all of them can be equally valid. 4. The recommendation method we use is simply based on representing both positions and profiles as comparable vectors and seeking for each profile the positions with the most similar vectors.
4.	Social Impact / Customer Satisfaction	1. At last, we believe that two people with equal talent should have equal access to opportunity and we're committed to making this vision reality through our project. 2. We are providing Friendly approach and employability. 3. Students will be benefited as they will get to know which job suits them based on their skills.

5.	Business Model (Revenue Model)	1. We are connecting you with other professionals also with companies and recruiters. Along with professionals, it also serves companies and even charges for providing certain premium services. 2. We can provide the application for job seekers in a subscription based and we can share the profiles with companies and generate the revenue by providing them best profiles
6.	Scalability of the Solution	1. Scalability is a custom training and organizational development firm dedicated to helping businesses scale. 2. Data can be scaled up and scaled down according to number of current job openings.

3.4 PROBLEM SOLUTION FIT

Following is the Problem Solution Fit of Skill/ Job Recommender System.



Problem-Solution fit canvas 2.0

Skill/Job Recommender

Team ID - PNT2022TMID20598

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Who is your customer?

The main customers for our project are:

- Persons who are seeking employment
- Persons that recruit job candidates

6. CUSTOMER CONSTRAINTS CC

What constraints prevent your customers from taking action or limit their choices of solutions?

- Concern about misuse of personal information
- Worry about unreliable connections
- Inadequate product knowledge
- Potential Scam
- Time consuming

5. AVAILABLE SOLUTIONS AS

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have?

Pros	Cons
Promotion of people's skillset	Delivering false information
Marketing of company infrastructure	Occurrence of fraudulent activity
Cultivate commercial relationship	Intense competition

Explore AS, differentiate

Focus on J&P, tap into

2. JOBS-TO-BE-DONE / PROBLEMS J&P

Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.

- Create a platform to facilitate job searching
- A platform to make it simpler to identifypeople with the necessary skills
- Make the job-filtering process simpler
- Profile with safe personal data

9. PROBLEM ROOT CAUSE RC

What is the real reason that this problem exists?
What is the back story behind the need to do this job?
i.e., customers have to do it because of the change in regulations.

- Jobs that are listed on unreliable platforms maybe fraudulent
- Companies fail to disclose their true infrastructure
- Some job portals want payment in advanceof the job starting.
- Users post false credentials
- Users pretend to have expertise in a skillset they lack

7. BEHAVIOUR BE

What does your customer do to address the problem and get the job done?
i.e., directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

- When Users apply for fraudulent jobs, they getunhappy due to wasted time
- Users were not satisfied when platforms allowedhirers to post jobs that were not real
- Cheating during online recruitment process
- When candidates with inadequate qualificationsapply for a position, employers become irritated.

Focus on J&P, tap int C

Identify strong TR & EM

3. TRIGGERS TR

What triggers customers to act? i.e., seeing their neighbors installing solar panels, reading about a more efficient solution in the news.

- Job Alerts

4. EMOTIONS: BEFORE / AFTER EM

How do customers feel when they face a problem or a job and afterwards?

Emotions-Before	Emotions-After
Lack of knowledge about job vacancy.	User receive updates on job vacancies.
No proper platform to showcase skillset	Exhibit skillset in profile
More paperwork during recruitment	Easy recruitment process

10. YOUR SOLUTION SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.

To develop an end-to-end web application which in default have a lot of current job openings through job search API out of which appropriate job will be recommended based onuser skill set. At the same time students can develop their skills side by side with various courses and webinars offered by reputed organization. In addition to this a smart chat bot will be available for 24*7 which can help users in finding the right job.

8. CHANNELS OF BEHAVIOUR CH

8.1 ONLINE

What kind of actions do customers take online? Extract online channels from #7

- Apply for jobs
- Review job applications Attend initial level assessment

8.2 OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

- Final level interview
- Checkout location and infrastructure of company
- Finalize paperwork

Extract online & offline CH of BE

AMALTAMA

4.REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

Following are the functional requirements of the proposed solution.

FR No.	**Functional Requirement (Epic)**	**Sub Requirement (Story / Sub-Task)**
FR-1	User Registration	1. Registration through Form 2. Registration through Gmail 3. Registration through LinkedIn
FR-2	User Confirmation	1. Confirmation via Email 2. Confirmation via OTP
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 issue
FR-5	Job registration	Copy of the company the user applied for with its registration/description details will be sent to the registered email id.
FR-6	Logout	

4.2 NON-FUNCTIONAL REQUIREMENTS

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

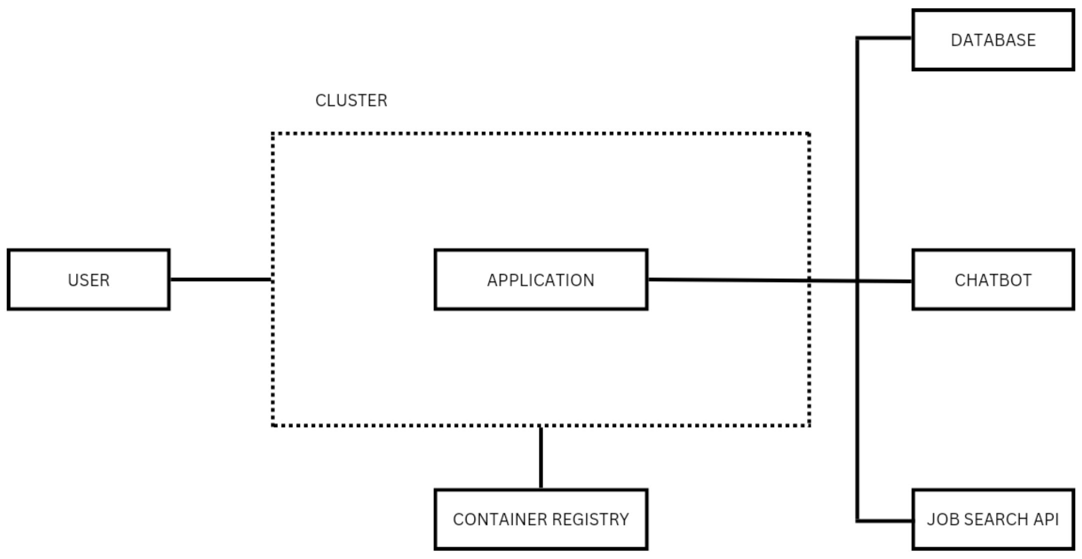
FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	1. The webpage will be designed in such a way that any non-technical user can easily navigate through it and complete the job registration work. (Easy and Simple design.) 2. Reduce information overload by generating personalized job suggestions.
NFR-2	**Security**	1. Using of SSL certificate (Python Flask to Cloud connect) will provide security to the project. 2. 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**	1. Focus on loading the webpage as quickly as possible irrespective of the number of user/integrator traffic. 2. Carry out an evaluation to quantify empirically the recommendation abilities of two state-of-the-art methods, considering different configurations, within the proposed framework

NFR-5	**Availability**	1. The scraper is set up to avoid duplicate job offers, thus all the job offers are unique. 2. To making the user reliable. This webpage will be available to all users (network connectivity is necessary) at any given point of time. 3. 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.
NFR-6	**Scalability**	1. Increasing the storage space of database can increase the number of users. 2. Add some features in future to make the webpage unique and attractive

5.PROJECT DESIGN

5.1 DATA FLOW DIAGRAM

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.

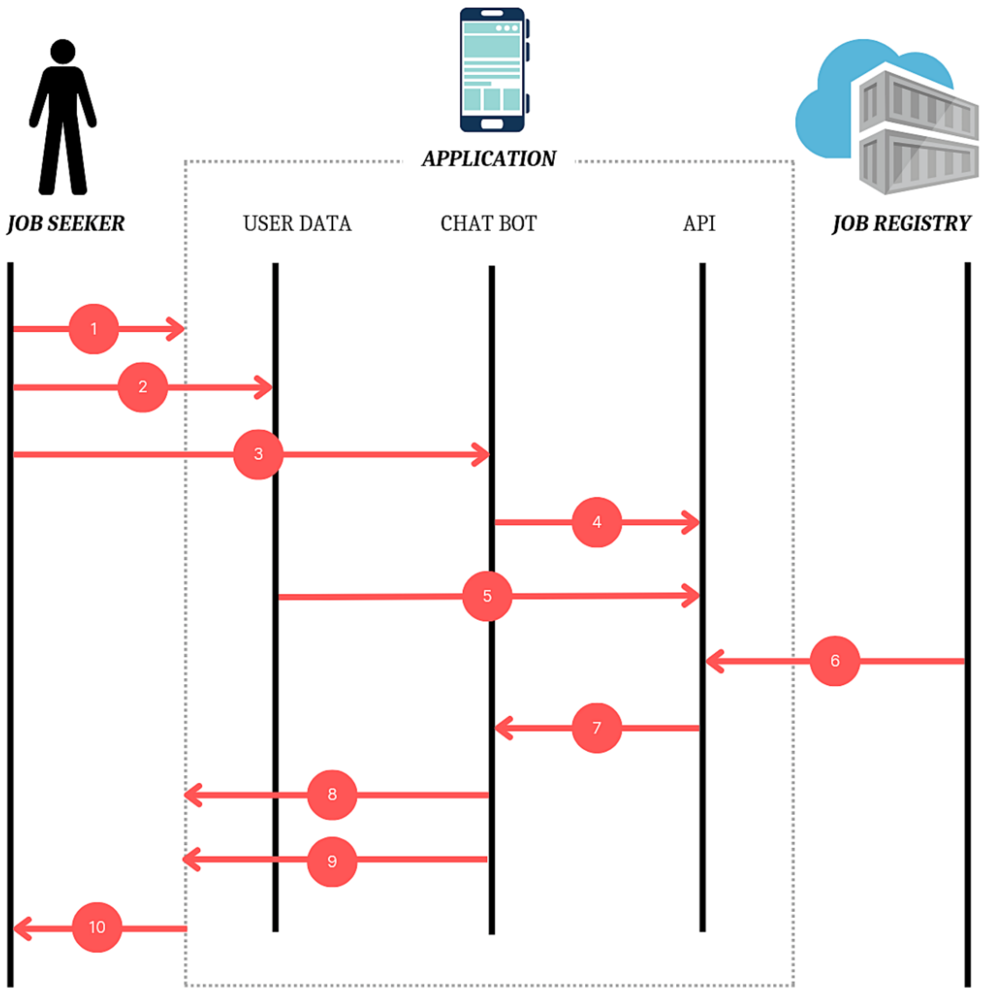


5.2 SOLUTION AND TECHNICAL ARCHITECTURE

To resolve this problem, 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.

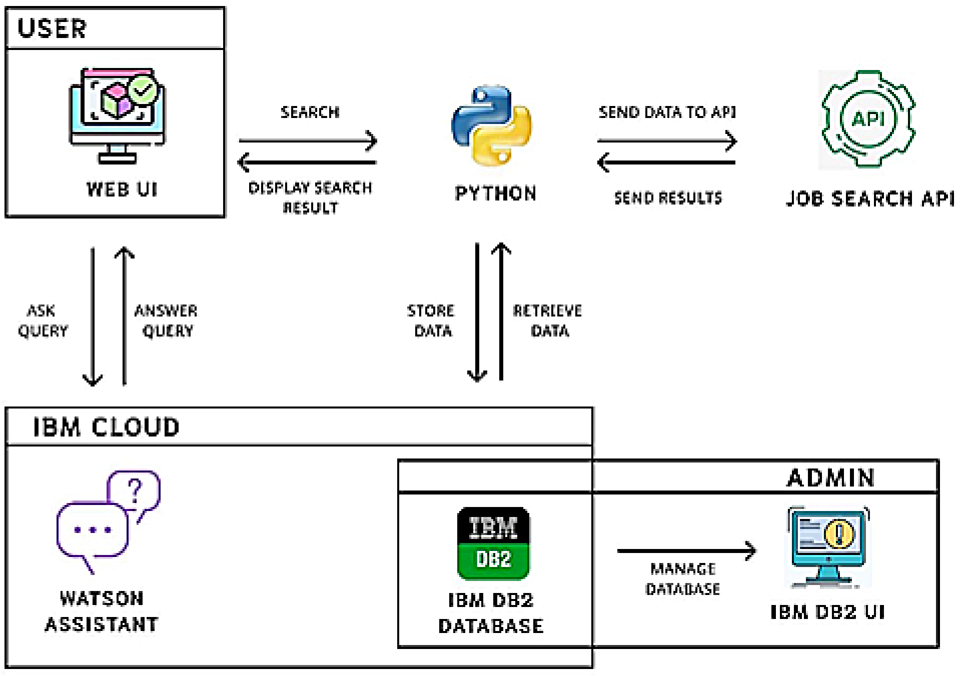
Solution Architecture

Title: Skill/Job Recommender
Technology: Cloud Application Development
Team ID: PNT2022TMID20598



1. Create user profile
2. Stores user data
3. Make chat request using assistant
4. Search jobs based on user details
5. Fetch jobs based on user skills
6. Search job openings
7. Post job openings
8. Display job openings
9. Filter appropriate Job profile
10. Notify results

TECHNICAL ARCHITECTURE



5.2.1 COMPONENTS AND TECHNOLOGY

S No	Component	Description	Technology
1.	User Interface	How userinteracts with application e.g.,Web UI, Mobile App,Chatbot etc.	HTML, CSS, JavaScript, Bootstrap
2.	Application Logic -1	Logic for a process in the application	Python
3.	Application Logic -2	Logic for a process in the application	IBM WatsonSTT service
4.	Application Logic -3	Logic for a process in the application	IBM WatsonAssistant

5.	Database	Data Type,Configurations etc.	MySQL
6.	Cloud Database	Database Serviceon Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	File storage requirements	IBM Block Storage or Other StorageService or Local Filesystem
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System/ CloudLocal Server Configuration:Cloud ServerConfiguration:	Local, CloudFoundry, Kubernetes, etc.

5.2.2 APPLICATION CHARACTERISTICS

S.No	**Characteristics**	**Description**	**Technology**
1.	Open-Source Frameworks	List the open-source frameworks used	IBM cloud Kubernetes service
2.	Security Implementations	List allthe security / access controls implemented,use of firewalls etc.	e.g., SHA-256, Encryptions, IAMControls, OWASPetc.

3.	Scalable Architecture	Justify the scalability of architecture (3 – tier,Micro-services)	Technology used
4.	Availability	Justify the availability of application (e.g.,use of loadbalancers, distributed servers etc.)	Technology used
5.	Performance	Design consideration for the performance of theapplication (numberof requests per sec, useo f Cache, use of CDN's)etc.	Technology used

5.3 USER STORIES

User Type	**Functional Requirement (Epic)**	**User Story Number**	**User Story/ Task**	**Acceptance criteria**	**Priority**	**Release**
Customer (Mobil euser)	Registration	USN-1	As a user, I can register for the application byentering 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 emailonce I have registered for the application	I can receive confirmationemail& click confirm	High	Sprint-1

		USN-3	As a user, I can register for the applicationthrough Linked In	I canregister & accessthe dashboard with Linkedin Login	Low	Sprint-2
		USN-4	As a user, I can register for the applicationthrough Gmail	I can register and access the dashboard through Gmail also	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application byentering email& password	I can log on to the application through emailidand password	High	Sprint-1
	Dashboard	USN-6	As a user, I can login and chat with thechatbot	Once I logged on the application I can chat withthechatbot	High	Sprint-3
Customer (Webuser)	Registration	USN-7	As a user, I can log on and register the application for the services being provided	I can access my account /dashboard	High	Sprint-1

		USN-8	As a user, I will receive confirmation emailonceI have registered for the application	I can receive confirmationemail& click confirm	High	Sprint-1
	Login	USN-9	As a user, I can log into the application byentering email& password	I can log on to the application through emailidand password	High	Sprint-1
Customer careexecutive	Should Regularize the Send grid service	USN-10	As a executive and service operator of the service they should make sure that service provided are properly send and received by the user.		High	Sprint-2
	Should monitor the chatbot regularly whether working or not	USN-11	As a executive to provide a quality based service chatbot is important for assisting if anyassistance is needed for the user		High	Sprint-2

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 date)	Sprint ReleaseDate(actual)
S-1	20	6 Days	24 Oct2022	29 Oct 2022	20	29 Oct2022
S-2	20	6 Days	31 Oct2022	05 Nov 2022	20	05 Nov 2022
S-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
S-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.2 SPRINT DELIVERY SCHEDULE

Sprint	Functional Requirements (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
S-1	User Panel	USN-1	The user will access the website and view the products it provides after registering in.	20	High	Thatchaini S Muthulakshmi A Venkatraman S Pradeep Rajadurai W
S-2	Admin panel	USN-2	The administrator's task is to look over the stock database and monitor on everything that people are buying.	20	High	Thatchaini S Muthulakshmi A Venkatraman S Pradeep Rajadurai W

S-3	Chat Bot	US N- 3	The user can directly talk to Chatbot regarding the products. Get the recommendations based on information provided by the user.	20	High	Thatchaini S Muthulakshmi A Venkatraman S Pradeep Rajadurai W
S-4	final delivery	USN-4	Container of applications using docker kubernetes and deployment the application. Create the documentation and final submit the application	20	High	Thatchaini S Muthulakshmi A Venkatraman S Pradeep Rajadurai W

7.CODING AND SOLUTION

7.1 FEATURE 1

```
from flask import Flask, render_template, request, redirect, url_for, session

import ibm_db

import re

app = Flask(__name__)


app.secret_key = &#39;a&#39;

conn=ibm_db.connect(&quot;DATABASE=bludb;HOSTNAME=824dfd4d-99de-440d-
9991-

629c01b3832d.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;PORT=30119;SECURIT

Y=SSL;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID=rzg70177;PWD=xHVRjmaJ
8

pjbvjva&quot;,&#39;&#39;,&#39;&#39;)

@app.route(&#39;/&#39;)

def homer():

    return render_template(&#39;homeCpy.html&#39;)

@app.route(&#39;/login&#39;,methods =[&#39;GET&#39;, &#39;POST&#39;])

def login():

    global userid

    msg = &#39;&#39;


    if request.method == &#39;POST&#39; :

        username = request.form[&#39;username&#39;]
        password = request.form[&#39;password&#39;]

        sql = &quot;SELECT * FROM users WHERE username =? AND password=?&quot;

        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[&#39;loggedin&#39;] = True

            session[&#39;id&#39;] = account[&#39;USERNAME&#39;]

            session[&#39;mail&#39;] = account[&quot;EMAIL&quot;]

            userid=  account[&#39;USERNAME&#39;]

            session[&#39;username&#39;] = account[&#39;USERNAME&#39;]

            msg = &#39;Logged in successfully !&#39;


            msg = &#39;Logged in successfully !&#39;

            return render_template(&#39;dashboardCpy.html&#39;, msg = msg)

        else:

            msg = &#39;Incorrect username / password !&#39;

    return render_template(&#39;login.html&#39;, msg = msg)


@app.route(&#39;/register&#39;, methods =[&#39;GET&#39;, &#39;POST&#39;])

def register():
```

```
msg = &#39;&#39;

if request.method == &#39;POST&#39; :

    username = request.form[&#39;username&#39;]

    email = request.form[&#39;email&#39;]

    password = request.form[&#39;password&#39;]

    sql = &quot;SELECT * FROM users WHERE username =?&quot;

    stmt = ibm_db.prepare(conn, sql)

    ibm_db.bind_param(stmt,1,username)

    ibm_db.execute(stmt)

    account = ibm_db.fetch_assoc(stmt)

    print(account)

    if account:

        msg = &#39;Account already exists !&#39;

    elif not re.match(r&#39;[^@]+@[^@]+\.[^@]+&#39;, email):

        msg = &#39;Invalid email address !&#39;

    elif not re.match(r&#39;[A-Za-z0-9]+&#39;, username):

        msg = &#39;name must contain only characters and numbers !&#39;

    else:

        insert_sql = &quot;INSERT INTO  users VALUES (?, ?, ?)&quot;

        prep_stmt = ibm_db.prepare(conn, insert_sql)

        ibm_db.bind_param(prep_stmt, 1, username)

        ibm_db.bind_param(prep_stmt, 2, email)

        ibm_db.bind_param(prep_stmt, 3, password)

        ibm_db.execute(prep_stmt)
```

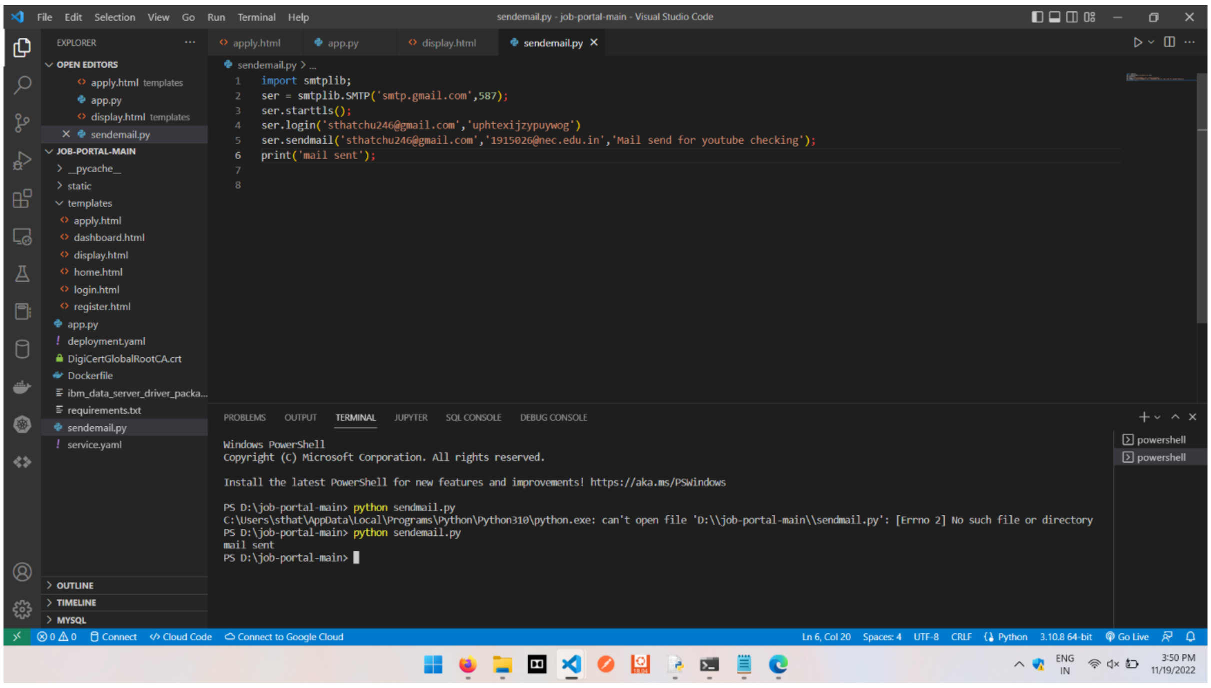
```
            msg = &#39;You have successfully registered !&#39;
            return redirect(url_for(&#39;login&#39;))
    elif request.method == &#39;POST&#39;:
        msg = &#39;Please fill out the form !&#39;
    return render_template(&#39;register.html&#39;, msg = msg)
@app.route(&#39;/dashboard&#39;)
def dash():


    return render_template(&#39;dashboardCpy.html&#39;)


@app.route(&#39;/logout&#39;)
def logout():
   session.pop(&#39;loggedin&#39;, None)
   session.pop(&#39;id&#39;, None)
   session.pop(&#39;username&#39;, None)
   return render_template(&#39;homeCpy.html&#39;)


if __name__ == &#39;__main__&#39;:
   app.run(host=&#39;0.0.0.0&#39;)
```

7.2 FEATURE 2



```python
import smtplib;
ser = smtplib.SMTP('smtp.gmail.com',587);
ser.starttls();
ser.login('sthatchu246@gmail.com','uphtexijzypuywog')
ser.sendmail('sthatchu246@gmail.com','1915026@nec.edu.in','Mail send for youtube checking');
print('mail sent');
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\job-portal-main> python sendmail.py
C:\Users\sthat\AppData\Local\Programs\Python\Python310\python.exe: can't open file 'D:\\job-portal-main\\sendmail.py': [Errno 2] No such file or directory
PS D:\job-portal-main> python sendemail.py
mail sent
PS D:\job-portal-main>
```

8.TESTING

8.1 TEST CASES

- User
- Existing user - check database
- New user - create new user
- Skills - Job recommendation related to skills input
- Skills - appropriate entry
- Job opening verificcation

8.2 USER ACCEPTANCE TESTING

User Acceptance Testing (UAT), which is performed on most UIT projects, sometimes called beta testing or end-user testing, is a phase of software development in which the software is tested in the "real world" by the intended audience or business representative. Gather the key Acceptance Criteria, Define the scope of QA involvement. Analyze product requirements and define key deliverables. Choose the time and form of end-user testing. Recruit users and form UAT team. Implement end-user testing tools and onboard testers. Create user acceptance environment and run training. Run the tests. Collect output information and analyze it.

9.RESULTS

9.1 PERFORMANCE METRICS

- Predictive Accuracy Metrics.
- Classification Accuracy Metrics.
- Rank Accuracy Metrics.
- Click-Through Rates.
- Adoption and Conversion.
- User Behavior and Engagement.
- The Customer Feedback metric.
- The Service Efficiency Metric.
- Quality, Consistency and Compliance.
- Employee Engagement.
- Customer satisfaction score.
- Average handle time.
- Mean average precision.
- Mean absolute error.

10.ADVANTAGES AND DISADVANTAGES

10.1 ADVANTAGES

- Bidirectional recommendation.
- Effective matching methods.
- Includes many attributes.
- Relational aspects are included.
- Qualitative and quantity representation (proficiency level for skills is included).
- Use two levels in skills matching (constrains and preferences).

10.2 DISADVANTAGES

- Knowledge acquisition and Knowledge engineering problems.
- Tools and technologies skills excluded.
- Scalability, ramp-up, and data sparsity problems.

11.CONCLUSION

As a result, we draw the conclusion that a job recommendation system that analyses the job description and suggests a job based on the user's abilities and preferences qualifies as a good Recsys model for proposing open opportunities to people looking for new jobs.In light of this, we decided to model the recommender system utilising content-based filtering among the many threshold and filtering strategies.

12.FUTURE SCOPE

Future work in this area of employment recommendation systems has a wide range of potential applications, including:

- We may compare the results of different similarity measures to discover which one provides the most accurate response.
- We can evaluate their mean absolute error if we consider the recommender system's recommendations in comparison to actual preferences.
- By assigning them corresponding weights, we may take into account a vast variety of parameters for more accurate Content-Based recommendation.
- Hybrid recommendations can be created by merging methods or by integrating the results of collaborative and content-based recommendations.
- Natural language processing can be used to to extract information from jobseekers resume and then recommending him the jobs.

13.APPENDIX

SOURCE CODE:

```
from flask import Flask, render_template, request, redirect, url_for, session

import ibm_db

import re

app = Flask(__name__)

app.secret_key = 'a'

conn=ibm_db.connect("DATABASE=bludb;HOSTNAME=824dfd4d-99de-440d-9991-629c01b3832d.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;PORT=30119;SECURITY=SSL;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID=rzg70177;PWD=xHVRjmaJ8pjbvjva","","")
```

```
@app.route('/')

def homer():

    return render_template('homeCpy.html')


@app.route('/login',methods =['GET', 'POST'])

def login():

    global userid

    msg = ''

    if request.method == 'POST' :

        username = request.form['username']

        password = request.form['password']

        sql = "SELECT * FROM users 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['mail'] = account["EMAIL"]

            userid=  account['USERNAME']

            session['username'] = account['USERNAME']
            msg = 'Logged in successfully !'
            msg = 'Logged in successfully !'
            return render_template('dashboardCpy.html', msg = msg)
        else:
            msg = 'Incorrect username / password !'
    return render_template('login.html', msg = msg)



@app.route('/register', methods =['GET', 'POST'])
def register():
    msg = ''
    if request.method == 'POST' :
        username = request.form['username']
        email = request.form['email']
        password = request.form['password']
        sql = "SELECT * FROM users WHERE username =?"
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt,1,username)
        ibm_db.execute(stmt)
        account = ibm_db.fetch_assoc(stmt)
        print(account)
        if account:
            msg = 'Account already exists !'
        elif not re.match(r'[^@]+@[^@]+\.[^@]+', email):
            msg = 'Invalid email address !'
        elif not re.match(r'[A-Za-z0-9]+', username):
            msg = 'name must contain only characters and numbers !'
        else:
            insert_sql = "INSERT INTO  users VALUES (?, ?, ?)"
            prep_stmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(prep_stmt, 1, username)
            ibm_db.bind_param(prep_stmt, 2, email)
            ibm_db.bind_param(prep_stmt, 3, password)
            ibm_db.execute(prep_stmt)
            msg = 'You have successfully registered !'
            return redirect(url_for('login'))
    elif request.method == 'POST':
        msg = 'Please fill out the form !'
    return render_template('register.html', msg = msg)


@app.route('/dashboard')
def dash():
    return render_template('dashboardCpy.html')


@app.route('/apply',methods =['GET', 'POST'])
def apply():
    msg = ''
    if request.method == 'POST' and 'username' in request.form and 'skills' in request.form:
```

```
username = request.form['username']
email = request.form['email']
qualification= request.form['qualification']
skills = request.form['skills']
jobs = request.form['s']
sql = "SELECT * FROM users WHERE username =?"
stmt = ibm_db.prepare(conn, sql)
ibm_db.bind_param(stmt,1,username)
ibm_db.execute(stmt)
account = ibm_db.fetch_assoc(stmt)
print(account)
if account:
    # msg = 'there is only  1job position! for you'
    insert_sql = "INSERT INTO  job VALUES (?, ?, ?, ?, ?)"
    prep_stmt = ibm_db.prepare(conn, insert_sql)
    ibm_db.bind_param(prep_stmt, 1, username)
    ibm_db.bind_param(prep_stmt, 2, email)
    ibm_db.bind_param(prep_stmt, 3, qualification)
    ibm_db.bind_param(prep_stmt, 4, skills)
    ibm_db.bind_param(prep_stmt, 5, jobs)
    ibm_db.execute(prep_stmt)
    msg = 'You have successfully applied for job !'
    return render_template('dashboardCpy.html', msg = msg)
```

```
        # session['loggedin'] = True
        # TEXT = "Hello sandeep,a new appliaction for job position" +jobs+"is requested"
        #  #sendmail(TEXT,"sandeep@thesmartbridge.com")
        #  sendgridmail("sandeep@thesmartbridge.com",TEXT)
    elif request.method == 'POST':
        msg = 'Please fill out the form !'
    return render_template('apply.html', msg = msg)


@app.route('/display')
def display():
    sql = "SELECT * FROM job WHERE USERNAME = '"+session['id']+"'"
    stmt = ibm_db.exec_immediate(conn,sql)
    acnt = []
    # abc = ibm_db.fetch_row(stmt)
    # print(session['id'] + " abc : "+ abc)
        # print(abc)
    while ibm_db.fetch_row(stmt)!=False:
        account = dict()
        account["USERNAME"] = ibm_db.result(stmt,"USERNAME")
        account["EMAIL"] = ibm_db.result(stmt,"EMAIL")
        account["QUALIFICATION"] = ibm_db.result(stmt,"QUALIFICATION")
        account["SKILLS"] = ibm_db.result(stmt,"SKILLS")
        account["JOBS"] = ibm_db.result(stmt,"JOBS")
        print(account)
        acnt.append(account)

        # abc = ibm_db.fetch_row(stmt)


    return render_template('display.html',acnt = acnt)


@app.route('/logout')


def logout():

   session.pop('loggedin', None)

   session.pop('id', None)

   session.pop('username', None)

   return render_template('homeCpy.html')



if __name__ == '__main__':

   app.run(host='0.0.0.0')
```

GITHUB LINK: https://github.com/IBM-EPBL/IBM-Project-33061-1660214230