SKILL/JOB RECOMMENDER APPLICATION

UNIVERSITY COLLEGE OF ENGINEERING,THIRUKKUVALAI NAGAPATTINAM-610204

NALAIYA THIRAN PROJECT BASED LEARNING
on
PROFESSIONAL READINESS FOR INNOVATION, EMPLOYABILITY AND ENTREPRENEURSHIP

A PROJECT REPORT

TEAM ID:PNT2022MID47055

SANTHOSH S(822219104035)	**TEAM LEADER**
MANIKANDAN M (822219104020)	**TEAM MEMBER-1**
ANANTHANAYAKI S(822219104002)	**TEAM MEMBER-2**
GIRIJA S(822219104010)	**TEAM MEMBER-3**
RAJKUMAR A (822219104030)	**TEAM MEMBER-4**

FACULITY MENTOR
Dr.SANTHANKRISHNAN JAYAPAL

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ABSTRACT

Machine learning is a sub-field of data science that concentrates on designing algorithms that can learn from and make predictions on the data. Presently recommendation frameworks are utilized to take care of the issue of the overwhelming amount of information in every domain and enable the clients to concentrate on information that is significant to their area of interest. One domain where such recommender systems can play a significant role to help college graduates to fulfill their dreams by recommending a job based on their skill set. Currently, there are plenty of websites that provide heaps of information regarding employment opportunities, but this task is extremely tedious for students as they need to go through large amounts of information to find the ideal job. And many students are not aware of which job is suitable for them. Nowadays, the IT fields are in a boom. Many engineering students are learning some technical skills by doing some courses but they don't know which skill is for which job. Simultaneously, existing job recommendation systems only take into consideration the domain in which the user is interested while ignoring their profile and skillset, which can help recommendobs that are tailor-made for the user. This paper examines the user's resume then compares the knowledge of degree, soft skills, hard skills, and the projects he has done and then only the system recommends the jobs for that user. The system not only recommends the jobs but also shows the score of his/her resume for the respective job. Then, the system also recommends skills to improve the scores of theirMachine learning is a subfield of data science that concentrates on designing algorithms that can learn from and make predictions on the data. Presently recommendation frameworks are utilized to take care of the issue of the overwhelming amount of information in every domain and enable the clients to concentrate on information that is significant to their area of interest. One domain where such recommender systems can play a significant role to help college graduates to fulfill their dreams by recommending a job based on their skill set. Currently, there are plenty of websites that provide heaps of information regarding employment opportunities, but this task is extremely tedious for students as they need to go through large amounts of information to find the ideal job. And many students are not aware of which job is suitable for them. Nowadays, the IT fields are in a boom. Many engineering students are learning some technical skills by doing some courses but they don't know

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CHAPTER-1

INTRODUCTION

A recent report claims that most college graduates have difficulty in choosing their domain in their job. Many engineers are trying to shift the domain from their field to IT. So, they are doing some courses in online and randomly searching for a job. Nowadays, IT fields are the targets of many students but they don't know which domain is fit for them. To avoid this situation candidates, need a Job recommendation that analyses the skills to recommend a suitable job for the candidate. The solution is to design a system that reads a resume and their skills. The resumes are going through pre-processing to make the design more efficient. For pre-processing top words and porter Stemmer, Porter Stemmer will make every word their root word, and stop words will remove every meaningless word. This makes the system more efficient. Using of-if reflectorized for both resume and job description. Then compare the skills in the resume and description. For comparing, it uses the Cosine Similarity function and finds the scores of the resume for the respective jobs. Now it sorts the list in descending order with respect to their scores. Now, he got a hierarchical order of jobs from top to bottom. So, he can go with the first job or second which the skill he had already. He can be successful in that domain. The System not only shows the job but also recommends the skills to be improved for the job. Because of this, the candidate can train himself/herself for the future purpose and be a more achievable or talented person in his/her domain. For comparing, it uses the Cosine Similarity function and finds the scores of the resume for the respective jobs. Now it sorts the list in descending order with respect to their scores. Now, he got a hierarchical order of jobs from top to bottom. So, he can go with the first job or second which the skill he had already. He can be successful in that domain. The System not only shows the job but also recommends the skills to be improved for the job. Because of this, the candidate can train himself/herself for the future purpose and be a more achievable or talented person in his/her domain.

1.1 PROJECT OVERVIEW:

To find suitable jobs and their scores, this application receives the resume and has a dataset for a job with their description. It will pre-process the resume and job description with the stop words and porter's steamer. Then it reduces into a meaningful bag of words. Now the application uses a of-id f reflectorized to convert a raw text into a matrix which makes it easy while compare. The main step is comparing the two bag words. For that, it uses the Cosine Similarity function, which is an angle dependent calculation. By using cosine, it has a list of jobs in descending order with respect to scores. The system will move on to the next progress which is finding the skills to be improved by the candidates. The system will take the resume and the skills dataset then compares both and display the skills which are all not in the resume. The major contribution of this work is as follows: The large MNC businesses use the mechanism currently in place for employment recommendations. The method is employed by businesses, not by regular people. If not, they will charge a small subscription fee to check the user's career options. The system functions for the average guy from city to village to modify this predicament. Because the students would look for employment based on their own skills, this approach will reduce unemployment. This company will also grow more quickly, which will result in more job openings.

1.2.PURPOSE:

The dataset used for this research are sourced from Stack overflow survey data which is modeled as the user data for this research. Another dataset was created by web scrapping the Job board Using R programming language to fulfill the road map.

CHAPTER-2

2 .LITERATURE SURVEY

LITERATURE SURVEY 1:
NAME OF THE PAPER : Job Recommendation based on Job Seeker Skills.
NAME OF THE AUTHOR :Jorge Valverde-Rebaza ,Ricardo Puma ,Paul Bustios,Nathalia C. Silva.
JOURNAL PUBLISHED : First Workshop on Narrative Extraction From Text co-located with 40th European Conference on Information Retrieval.
PUBLISHED MONTH : March PUBLISHED YEAR 2018
OBJECTIVE OF THE PROJECT:
➢ 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.
LITERATURE SURVEY 2: NAME OF THE PAPER : A survey of job recommender systems.
NAME OF THE AUTHOR : Shaha Alotaibi.
JOURNAL PUBLISHED : International Journal of Physical Sciences
PUBLISHED MONTH : July PUBLISHED YEAR 2012 OBJECTIVE OF THE PROJECT:
➢ 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
LITERATURE SURVEY 3:
NAME OF THE PAPER : A Research of Job Recommendation System Based on Collaborative Filtering.
NAME OF THE AUTHOR : Cheng Yang, Yingya Zhang, Zhixiang Niu.
JOURNAL PUBLISHED : 2014 Seventh International Symposium on Computation Intelligence and Design.
PUBLISHED MONTH : December PUBLISHED YEAR 2014

2.1.EXISTING PROBLEM:

The major contribution of this work is as follows: The large MNC businesses use the mechanism currently in place for employment recommendations. The method is employed by businesses, not by regular people. If not, they will charge a small subscription fee to check the user's career options. The system functions for the average guy from city to village to modify this predicament. Because the students would look for employment based on their own skills, this approach will reduce unemployment. This company will also grow more quickly, which will result in more job openings. The goal of the proposed work is to suggest a job that is ideal for the user. It displays the hierarchical jobs that are best for the user, not just one job. Additionally, it suggests skills for the jobs that were suggested for the user. This project is intended for someone who simply has no idea what they are going to do. Additionally, there are no logins available because doing so increases the likelihood that users would reject you. The subsequent chapter goes over the specifics of the implementation. The rest of the paper organizes as follows: Chapter 2 provides the literature review conducted for this project. Chapter 3 presents the System Design and Architecture of the project along with the methodology. Chapter 4 discusses the algorithms proposed in this project. Chapter 5 presents the project conclusion and future works on this project.

2.2.PROBLEM STATEMENT:

The dataset used for this research are sourced from Stack overflow survey data which is modeled as the user data for this research.

Another dataset was created by web scrapping the Job board Using python programming language to fulfill the road map of this dissertation.

The research question proposed by this research is "Can an efficient recommender system be modeled for the Job seekers which recommend Jobs with the user’s skill set and job domain and also addresses the issue of cold start?".

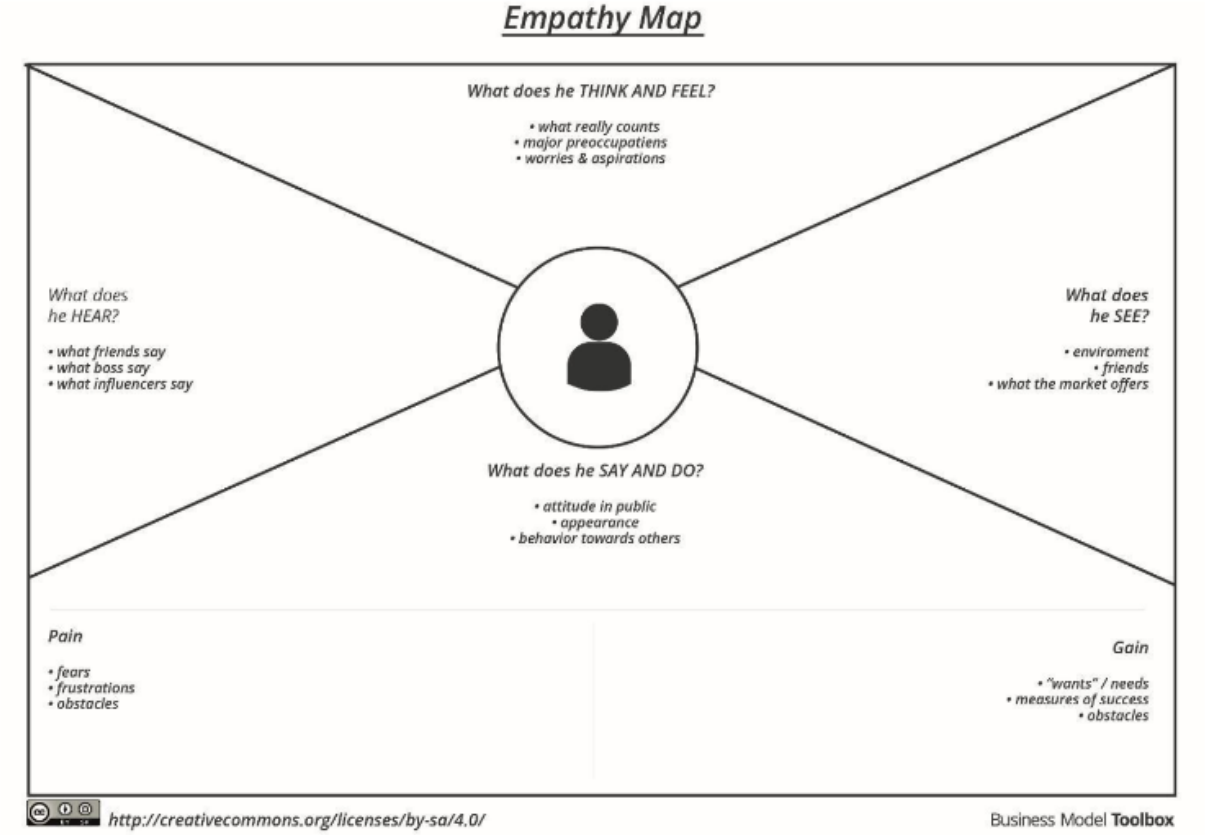
To answer the research question, below are the objectives that need to be satisfied with

going forward

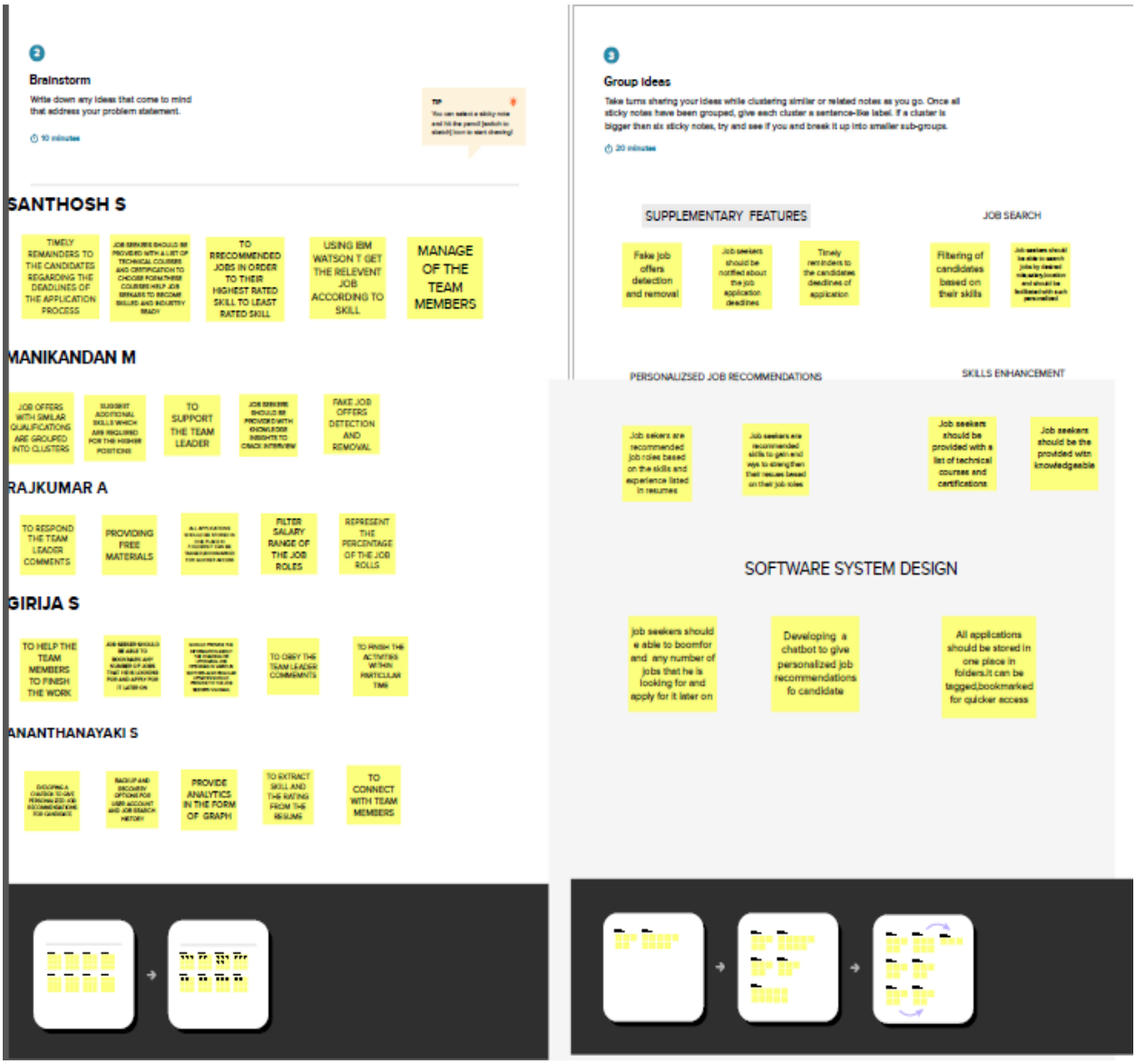
CHAPTER-3

IDEATION & PROPOSED SOLUTION

3.1. EMPATHY MAP:



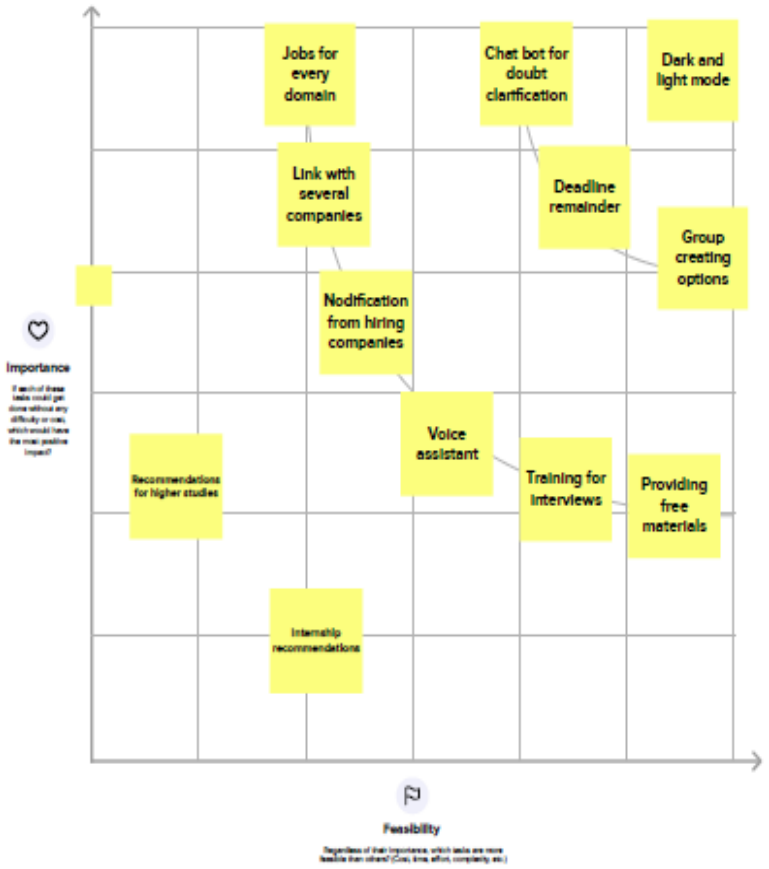
3.2.Ideation & Brain Storming:


2
Brainstorm
Write down any ideas that come to mind that address your problem statement.
10 minutes
SANTHOSH S
TIMELY REMAINDERS TO THE CANDIDATES REGARDING THE DEADLINES OF THE APPLICATION PROCESS
TO RRECOMMENDED JOBS IN ORDER TO THEIR HIGHEST RATED SKILL TO LEAST RATED SKILL
USING IBM WATSON T GET THE RELEVENT JOB ACCORDING TO SKILL
MANAGE OF THE TEAM MEMBERS
MANIKANDAN M
JOB OFFERS WITH SIMILAR QUALIFICATIONS ARE GROUPED INTO CLUSTERS
TO SUPPORT THE TEAM LEADER
FAKE JOB OFFERS DETECTION AND REMOVAL
RAJKUMAR A
TO RESPOND THE TEAM LEADER COMMENTS
PROVIDING FREE MATERIALS
FILTER SALARY RANGE OF THE JOB ROLES
REPRESENT THE PERCENTAGE OF THE JOB ROLLS
GIRIJA S
TO HELP THE TEAM MEMBERS TO FINISH THE WORK
TO OBEY THE TEAM LEADER COMMENTS
ANANTHANAYAKI S
PROVIDE ANALYTICS IN THE FORM OF GRAPH
TO EXTRACT SKILL AND THE RATING FROM THE RESUME
TO CONNECT WITH TEAM MEMBERS
3
Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.
20 minutes
SUPPLEMENTARY FEATURES
Fake job offers detection and removal
Timely reminders to the candidates deadlines of application
JOB SEARCH
Filtering of candidates based on their skills
PERSONALIZSED JOB RECOMMENDATIONS
Job seekers are recommended job roles based on the skills and experience listed in resumes
SKILLS ENHANCEMENT
Job seekers should be provided with a list of technical courses and certifications
Job seekers should be the provided with knowledgeable
SOFTWARE SYSTEM DESIGN
job seekers should e able to boomfor and any number of jobs that he is looking for and apply for it later on
Developing a chatbot to give personalized job recommendations fo candidate
All applications should be stored in one place in folders.It can be tagged,bookmarked for quicker access

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

Share the mural
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

Export the mural
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.
Open the template →

Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.
Open the template →

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
Open the template →

Share template feedback

3.3.PROPOSED SOLUTION:

S.N0	Parameter Description	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 recommendation abilities of two state-ofthe art methods, considering different configurations, within the proposed framework. We thus present a general 13 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 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. 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	Students will be benefited as they will get to know which job suits them based on their

		skill set and therefore Lack of Unemployment can be reduced.
5	Business Model (Revenue Model)	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	Data can be scaled up and scaled down according to number of current job openings available

3.4. PROBLEM SOLUTION FIT:

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

Purpose:

❑ Solve complex problems in a way that fits the state of your customers.

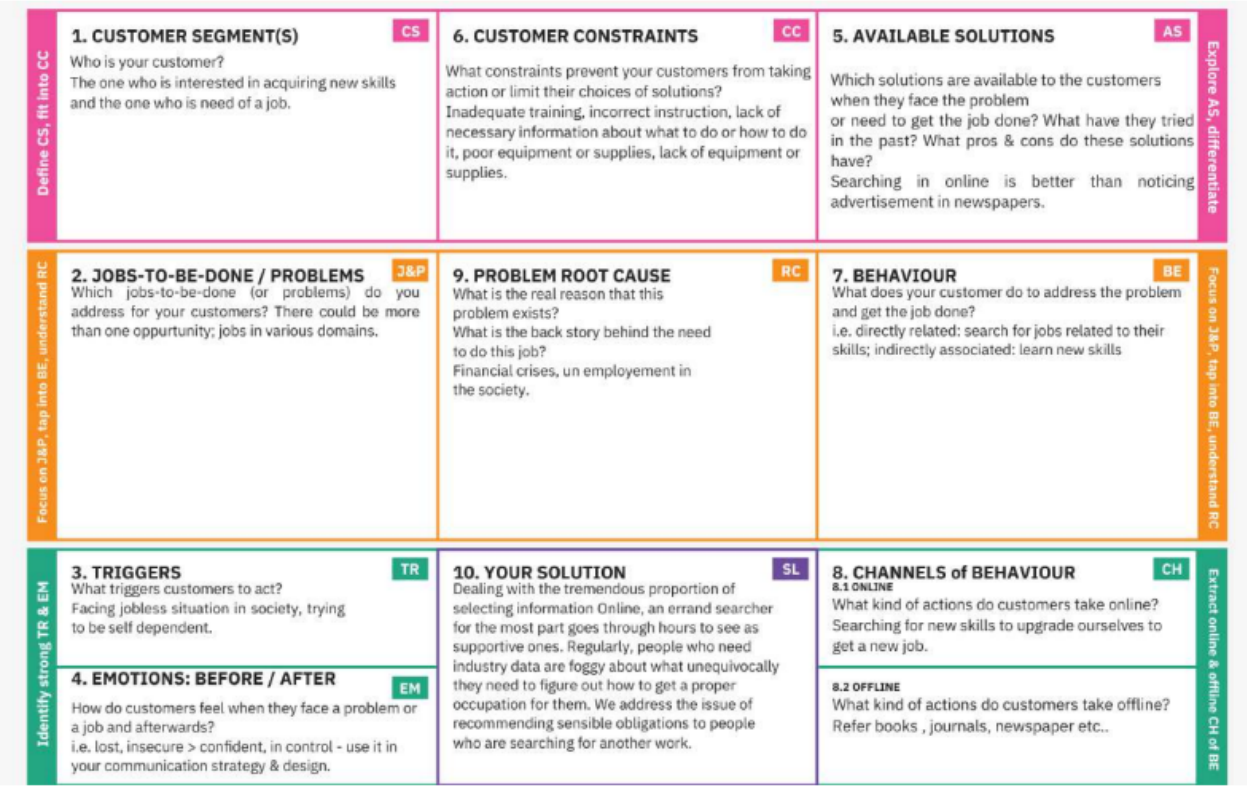
❑ Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.

❑ Sharpen your communication and marketing strategy with the right triggers and messaging.

❑ Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.

❑ Understand the existing situation in order to improve it for your target group

Template:



CHAPTER-4

REQUIREMENT ANALAYSIS:

4.1 FUNCTIONAL REQUIREMENTS:

S. No	FUNCTIONAL REQUIREMENT (Epic)	SUB REQUIREMENT (Story)
1	Sign In / Login	Register with username, password
2	Profile Registration	Register with username, password, email, qualification, skills. This data will be stored in a database.
3	Job profile display	Display job profiles based on

		availability, location ,skills
4	Chatbot	A chat on the webpage to solve user queries and issues
5	Job registration	A copy of the company the user applied for with its registration/description details will be sent to the registered email id
6	Logout	

4.2.NON-FUNCTIONAL REQUIREMENTS:

S.NO	NON-FUNTIONAL REQUIREMENT	DESCRIPTION
1	Usability	The webpage will be designed in such a way that any non-technical user can easily navigate through it and complete the job registration work. (Easy and Simple design.)
2	Security	Using of SSL certificate will provide security to the project. Database will be safely stored in DB2.
3	Reliability	To make sure the webpage doesn't go down due to network traffic.
4	Availability	This webpage will be available to all users (network connectivity is necessary) at any given point of time
55	Scalability	Increasing the storage space of database can increase the number of users. Add some features in future to make the

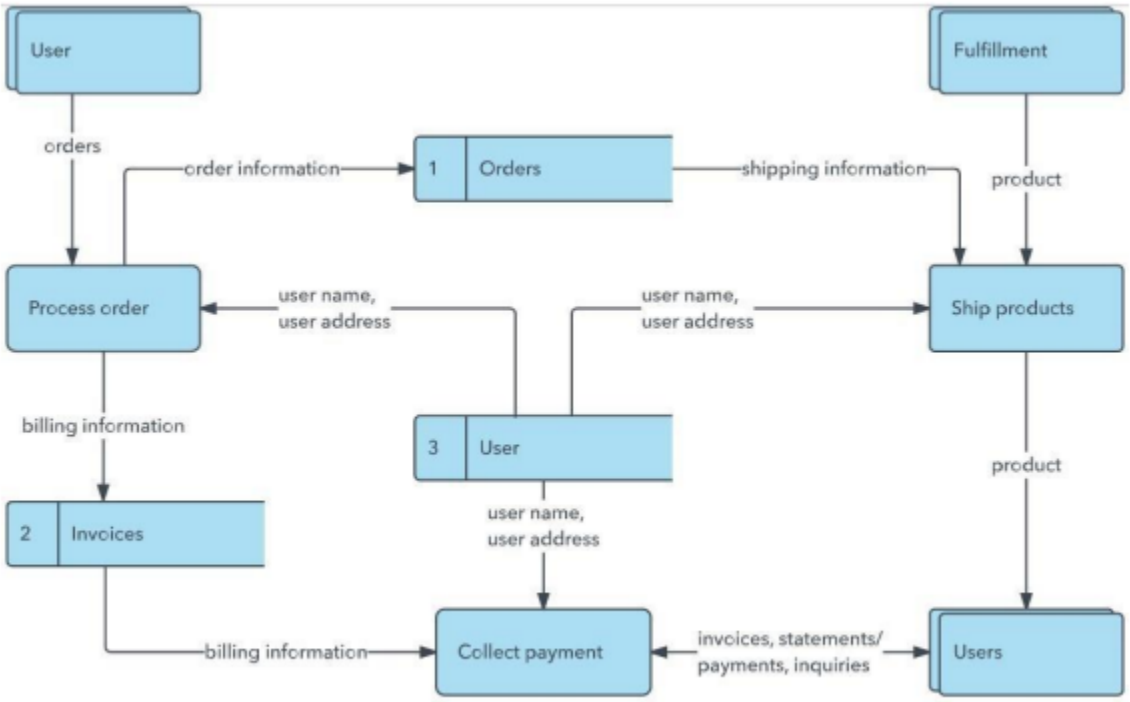
		webpage unique and attractive
6	Performance	Focus on loading the webpage as quickly as possible irrespective of the number of user/integrator traffic

CHAPTER-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.

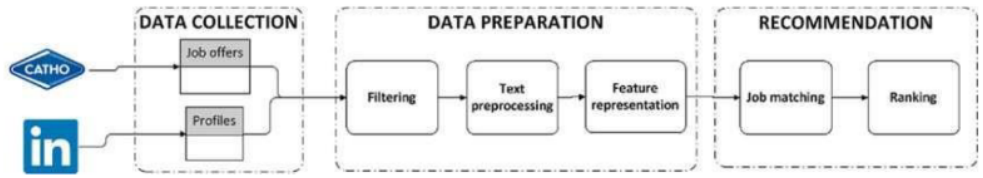


It shows how data enters and leaves the system, what changes the information, and where data is stored.

The objective of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communication tool between a system analyst and any person who plays a part in the order that acts as a starting point for redesigning a system. The DFD is also called as a data flow graph or bubble chart.

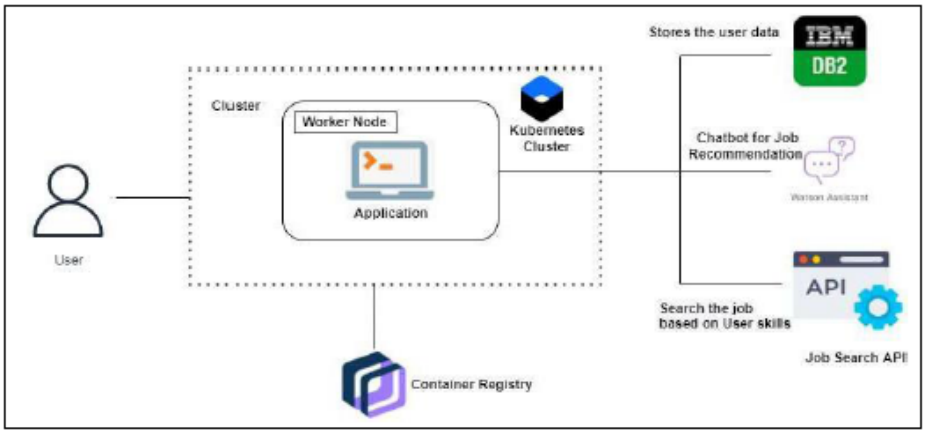
5.2.SOLUTION & TECHNICAL ARCHITECTURE:

Example - Solution Architecture Diagram:



Technology Architecture:

Project shall full fill the following information in this technology architecture .



S.No.	Parameter	Description
1.	Is the System Robust ?	Yes it is partially buildable platform as the budget required will be more as cloud is a pay per use model and time taken will be quite .
2.	Is it highly modifiable ?	Yes, the system is modifiable and it can admit to the changes by detecting errors that needs to be fixed and new functionalities. It is highly responsive to the changes .
3.	Is it Scalable ?	Yes the system proposed is highly scalable as it can handle the growing workload where good performance is also needed to work efficiently. Deployment of the platform has been done using various os virtualization platform it will handle the workload statistically.

5.3.USER STORIES:

User Type	Function al Requirem ent (Epic)	User Story Number	User Story / Task	Acceptan ce criteria	Priority	Release
Customer (Mobile user)	Registrat ion	USN-1	As a user, I can register for the applicati on by entering my email, passwor d, and	I can access my account / dashboa rd	High	Sprint-1

			confirmi ng my password			
		USN-2	As a user, I will receive confirmat ion email once I have register ed for the applicati on	I can receive confirmati on email & click confirm	High	Sprint -1
		USN-3	As a user, I can register for the applicati on through Facebo ok	I can register & access the dashboa rd with Facebo ok Login	Low	Sprint-2
		USN-4	As a user, I can register for the applicati on through Gmail	I can receive confirmat ion email & click confirm	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the applicati on by entering email & password	I can access my account / dashboa rd	High	Sprint-1
	Dashboa rd	USN-6	Create a modelset that contains those models, then assign	Assign thatgroup to the appropria te roles on the Roles page	High	Sprint-1

			it to a role			
Customer (Web user	Identityawa re	USN-7	Open, public access, Userauthen tic ated access, Employe erestricted access.	Company public website. App running on the company intranet. App with access to customer private informati on.	High	Sprint-1
Customer Care Executi ve	Communi cation	USN-8	A customer care executive is a professio nal responsi ble for communi cating the how's and why's regarding service expectati ons within a company	For how to tackle customer queries	Medium	Sprint-1
Administr ator	Device managem ent	USN-9	You can Delete/Di sable/En able devices in Azure Active Directory	Ease of use	Medium	Sprint-1

			but you cannot Add/Remove Users in the directory.			

CHAPTER-6

PROJECT PLANNING &SCHEDULING

6.1 SPRINT PLANNING AND ESTIMATION:

Sprint	Functional Requirement (Epic	User Story Number	User Story / Task	Acceptance criteria	Priority	Team Members
Sprint-1	Registration	USN - 1	As a user, I can register for the application by	I can access my account / dashboard	High	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A
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	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A
Sprint-2		USN - 3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A
Sprint-3		USN - 4	As a user, I can register for	I can receive confirmat	Medium	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S

			the applicati on through Gmail	ion email & click confirm		GIRIJA S RAJKUMAR A
Sprint-2	Login	USN - 5	As auser, I can log into the applicati on by entering email & password	I can access my account / dashboa rd	High	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A
Sprint-2	Dashboa rd	USN - 6	Create a model set that contains those models, then assign it to a role	Assign that group to the appropria te roles on the Roles page	High	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A
Sprint-4	IdentityAw are	USN - 7	Open, public access, User aut henticat ed access, Employe e restric ted access	Company public website. App running on the company intranet. App with access to customer private informati on	High	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A
Sprint-1	Communi cation	USN - 8	A customer care executive is a professio nal responsible	For how to tackle customer queries	Medium	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A

			for communicating the how's and why's regarding service expectations within a company			
Sprint-3	Device management	USN - 9	You can Delete/Disable/Enable devices in Azure Active Directory but you cannot Add/Remove Users in the directory	Ease of use	Medium	SANTHOSH S MANIKANDAN M ANANTHANAYAKI S GIRIJA S RAJKUMAR A

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	20	6 Days	14 NOV 2022	19 NOV 2022	18	19 NOV 2022
Sprint-2	20	6 Days	14 NOV 2022	19 NOV 2022	20	19 NOV 2022
Sprint-3	20	6 Days	14 NOV 2022	19 NOV 2022	19	19 NOV 2022

Sprint-4	20	6 Days	14 NOV 2022	19 NOV 2022	20	19 NOV 2022

7.CODING & SOLUTIONING

7.1. FEATURE-1(SPRINT-1)

REGISTER.HTML

```
<html>
  <head>
    <title>Registration page</title>
    <link rel="stylesheet" href="{{url_for('static', filename='css/styles.css')}}">
  </head>
  <body>
    <header>
      <nav>
        <div class="logo">
          <p>SJR.COM</p>
        </div>
        <ul>
          <li><a href="{{url_for('home')}}">Back to page</a></li>
        </ul>
      </nav>
  </header>


    <div class="container">
    <form action="/register" method="POST">

      <h2 style="text-align: center;">Registration</h2>
      <label class="form_label"for="email"><b>Email ID</b></label><br><br>
      <input class="form_input"type="email" name="email"/><br><br>
      <label class="form_label"for="user"><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>
      <label class="form_label"for="pho"><b> Enter Phone number:</b></label><br><br>
```

```
        <input class="form_input"type="text" name="phonenumber"/><br><br>
        <!-- <input type="submit" class="submitbtn"value="submit" />
        <p>Already have a account <a href="{{url_for('signup')}}">Sign in</a></p> -->
        </br></br></br>
       <center> {% 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 %} </center>
   <div style="text-align: center;"><a>
        <input type="submit" class="submitbtn"value="submit" />
        <p>Already have a account <a href="{{url_for('signup')}}">Sign in</a></p>
        </div>
     </form>
     </div>
  </body>
</html>
```

SINGUP.HTML

```
<html>
  <head>
    <title>Login page</title>
    <link rel="stylesheet" href="{{url_for('static', filename='css/styles.css')}}">
  </head>
  <body>
    <nav>
      <div class="logo">
        <p>SJR.COM</p>
      </div>
      <ul>
        <li><a href="{{url_for('home')}}">Back to page</a></li>
      </ul>
    </nav>


    <div class="container"> <br /><br />
```

```
    <form action="/signup" method="POST">
     <h1 style="text-align: center;">Login</h1> <br /><br />
       <label class="form_label"for="email"><b>Email</b></label><br><br>
       <input class="form_input"type="text" name= "email" /><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">
          <ul>

             <p>Don't have a account <a href="{{url_for('register')}}">Create new account</a></p>
          </ul>
       </center>
    </form>
    </div>

  </body>
</html>
```

HOME.HTML

```
<!DOCTYPE html>

<html lang="en">

<head>

  <title>SJR</title>

  <link rel="stylesheet" href="{{url_for('static',filename='css/home.css')}}">

</head>

<body>

  <style>

    body{

      background-image: url({{url_for('static',filename='img2.jpg')}});

      background-size: 85% 100%;

      background-repeat: no-repeat;

    }

    </style>
```

```
<div class="main">
    <div class="navbar">
      <div class="icon">
        <h2 class="logo">SJR.COM</h2>
      </div>
      <div class="menu">
        <ul>
          <li><a href="/">HOME</a></li>
          <li><a href="/register">REGISTER</a></li>
          <li><a href="/skill">SKILL</a></li>
          <li><a href="/aboutus">ABOUTUS</a></li>
        </ul>
      </div>
    </div>
    <div class="content">
      <h1>Welcome to your<br> Professional Community</h1>
      <p class="par">When I say develop your skills,I don't mean related to every business area of that industry.This is not very realistic.I mean,the field of your expertise in that industry.
        Never chase opportunities.Let it come to you by creating a value and building rare skillsets.
      </p>
      <button class="cn"><a href="signup">Apply Job</a></button>
    </div>
  </div>
  <script src="https://unpkg.com/ionicons@5.4.0/dist/ionicons.js"></script>
</body>
</html>
```

7.2.FEATURE-2(SPRINT-2)

SERVER.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=824dfd4d-99de-440d-9991-
629c01b3832d.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;PORT=30119;SECU
RITY=SSL;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID=kcf08623;PWD=8himlHE
H6rDcSV2i",",")
except:
   print("Unable to connect: ",ibm_db.conn_error())

@app.route('/')
def home():
 return render_template('home.html')

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

```
        account=ibm_db.fetch_assoc(prep_stmt)
        print(account)


#
SENDGRID_API_KEY='SG.syXUVAihRRuGI0DvhxY6Tw.eKTfa3dnL0yimAvWO9gYgoCoVw
K3-lN9TAGPi1UT0BM'
#
SG.29Td0tbNSkyliF9SSPnQNA.4DBECk8ka8RmmYRE5OIsRKGOR2QI2raRG3CLmdsVB
Vc
        message = Mail(
           from_email='skilljob007@gmail.com',
           to_emails=email,
           subject='Hello there! Welcome to Skill And Job Recommender',
           html_content='<strong>SJR warmly welcomes YOU!!!,Thanks for taking the time
to apply for our position.we appreciate your interest in SJR.COM</strong</strong>')
        try:
          sg =
SendGridAPIClient('SG.eablvkxWThCaGaY5zvBe6g._MsF4iOdsOaR0CBOmHK_TapO0o8
SQpnXRGNBjiCCs60')
           response = sg.send(message)
           print(response.status_code)
           print(response.body)
           print(response.headers)

        except Exception as e:
          print(str(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,phonenumber)
           ibm_db.bind_param(prep_stmt,4,password)
```

```
            ibm_db.execute(prep_stmt)
            flash(" Registration successfull. Log in to continue !")
    else:
        pass
    return render_template('register.html',error=error)

@app.route('/signup',methods=['GET','POST'])
def signup():
    error = None
    if request.method=='POST':
        username=request.form['email']
        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['EMAIL']
            session["email"]=account["EMAIL"]
            flash("Logged in successfully!")
            return render_template('applyjob.html')
        else:
            error="Incorrect username / password"
            return render_template('signup.html',error=error)
    return render_template('signup.html',error=error)

@app.route('/applyjob')
def applyjob():
    return render_template('applyjob.html')

@app.route('/skill')
def skill():
  return render_template('skill.html')
```

```
@app.route('/aboutus')
def aboutus():
  return render_template('aboutus.html')

if __name__=='__main__':
   app.run(host='0.0.0.0',port=5000,debug=True)
```

APPLYJOB.PY

```
<!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">
   <link rel="stylesheet" href="{{url_for('static', filename='css/testing.css')}}">
</head>
<body>



       <nav>
         <div class="logo">
            <p>SJR.COM</p>
         </div>
         <ul>

              <li><a href="/skill">SKILL</a></li>
              <li><a href="{{url_for('home')}}">LOG OUT</a></li>

         </ul>

      </nav>

<section id="jobs">



      <img style="position:absolute;top: 250px;"src="{{url_for('static',filename='php.jpg')}}"
```

```
alt=""width="250" height="250">
      <img style="position:absolute;top: 600px;"src="{{url_for('static',filename='python.png')}}"
alt=""width="430" height="250">
      <img style="position:absolute;top: 250px;left:
540px;"src="{{url_for('static',filename='software.jpg')}}" alt=""width="250" height="250">
      <img style="position:absolute;top: 600px;left:
540px;"src="{{url_for('static',filename='java.jpg')}}" alt=""width="250" height="250">
                  <img style="position:absolute;top: 250px;left:
1050px;"src="{{url_for('static',filename='web.jpg')}}" alt=""width="250" height="250">
      <img style="position:absolute;top: 600px;left:
1050px;"src="{{url_for('static',filename='sql.jpg')}}" alt=""width="250" height="250">
                  <h2 style="position:absolute;top: 500px;left:80px"><a
href="https://in.indeed.com/PHP-Developer-jobs?vjk=10cca9575b193c7d">APPLY</a></h2>
      <h2 style="position:absolute;top: 500px;left:650px"><a
href="https://in.indeed.com/Software-Developer-
jobs?vjk=b7da08f07cac87d5">APPLY</a></h2>
      <h2 style="position:absolute;top: 500px;left:1150px"><a href="https://in.indeed.com/Web-
Developer-jobs?vjk=b81e49165da51eeb">APPLY</a></h2>
      <h2 style="position:absolute;top: 850px;left:1150px"><a href="https://in.indeed.com/SQL-
Developer-jobs?vjk=ac86b15908022123">APPLY</a></h2>
      <h2 style="position:absolute;top: 850px;left:650px"><a href="https://in.indeed.com/Java-
Developer-jobs?vjk=da306a665e00eb30">APPLY</a></h2>
      <h2 style="position:absolute;top: 850px;left:80px"><a href="https://in.indeed.com/Python-
Developer-jobs?vjk=fa7b9bd250044569">APPLY</a></h2>
   </section>
   </body>
</html>
```

8.TESTING

8.1 TEST CASES:

TestcaseID	FeatureType	Component	TestScenario
LoginPage_TC_O O1	Functional	HomePage	Verifyuser is able to see theLogin/Sign up popup when userclickedon My accountbutton
LoginPage_TC_O O2	UI	HomePage	Verify the UI elements inLogin/Signu ppop up
LoginPage_TC_O O3	Functional	HomePage	Verify user is able to log intoapplication

			withV alidcredenti also
LoginPage_TC _O O4	Functional	Loginpage	Verify user is able to log intoapplication withI nValidcredenti also
LoginPage_TC _O O5	Functional	Loginpage	Verify user is able to log intoapplication withI nValidcredenti also

Pre-Requisite	**StepsToExecute**	**TestData**
	1.EnterURLandclick go 2.Click on My Account dropdownbutton	index.html

	3.Verifylogin/Singup popupd isplayed ornot	
	1.EnterURLandclick go 2.Click on My Account dropdownbutton 3.Verify login/Singup popup withbelow UI elements: a.email textbox b.password text boxc.Loginbutton d.New customer? Create account linke.Last password? Recovery password	index.html
	1.Enter URL(index.html) and click go 2.Click on My Account dropdownbutton	Username: manikandanpkl2002@gmai l. com password:Mani@123

	3.Enter Valid username/email in Emailtextbox 4.Entervalidpasswordinpas swordte xtbox 5.Clickonloginbutton	
	1.Enter URL(index.html) and click go 2.Click on My Account dropdownbutton 3.Enter InValid username/email inEmailtext box 4.Entervalidpasswordinpas swordte xtbox 5.C	Username: manikandanpkl2002@gmai l. com password:Mani@123
	1.Enter URL(index.html) and click go2.Click on My Account	Username: manikandanpkl2002@gmai l. com password:Mani@1

	dropdownbutton 3.Enter Valid username/email in Emailtextbox 4.Enter Invalid password in passwordtextbox 5.Clickonloginbutton	23
	1.Enter URL(index.html) and click go2.Click on My Account dropdownbutton 3.Enter InValid username/email inEmailtext box 4.Enter Invalid password in passwordtextbox 5.Clickonloginbutton	Username: manikandanpkl2002@gmail. com password:Mani@123

Expected Result	**ActualResult**	**Status**	**Commnets**
Login/Signupp	Working	pass	

opup shoulddisplay	asexpected		
Application should show below Ulelements: a.email text boxb.passwordtext box c.Login button with orange colourd.New customer? Create account linke.Last password	Working asexpected	pass	
User should navigate to user accounthomepage	Working asexpected	pass	
Application should show	Working asexpected	pass	

'Incorrectemail or password ' validationmes sage.			
Application should show 'Incorrectemail or password ' validationmes sage	Working asexpected	pass	
Application should show 'Incorrectemail or password ' validationmes sage	Working asexpected	pass	

8.2.USER A CCEPTANCE T ESTING:

Purpose of Document:

Thepurposeofthisdocumentistobrieflyexplainthetestcoverageandopenissue softhe[ProductName]projectatthetimeofthereleasetoUserAcceptanceTesting (UAT)

DefectAnalysis:

This report shows the number of resolved or closed bugsateachseverity level,andhowthey wereresolved.

Resolution	Severity4	Severity4	Severity4	Severity4	subtotal
ByDesign	10	4	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won'tFix	0	5	2	1	8
Totals	24	14	13	26	77

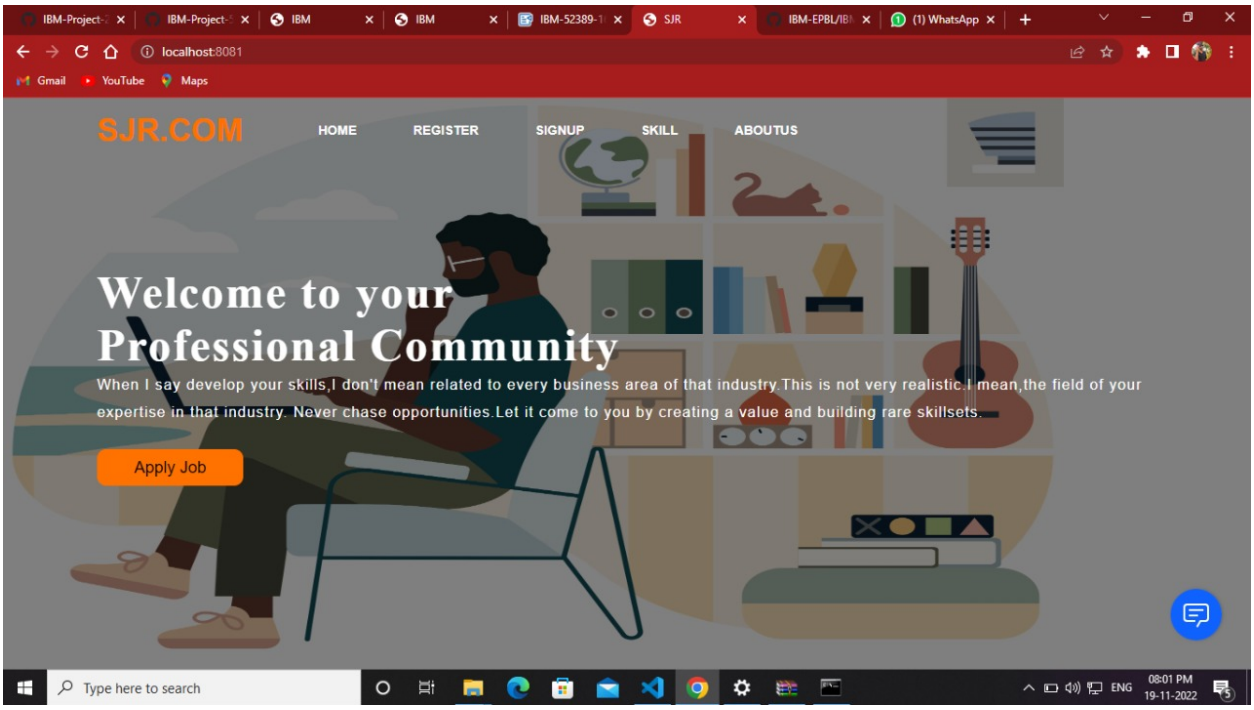
TestCaseAnalysis:

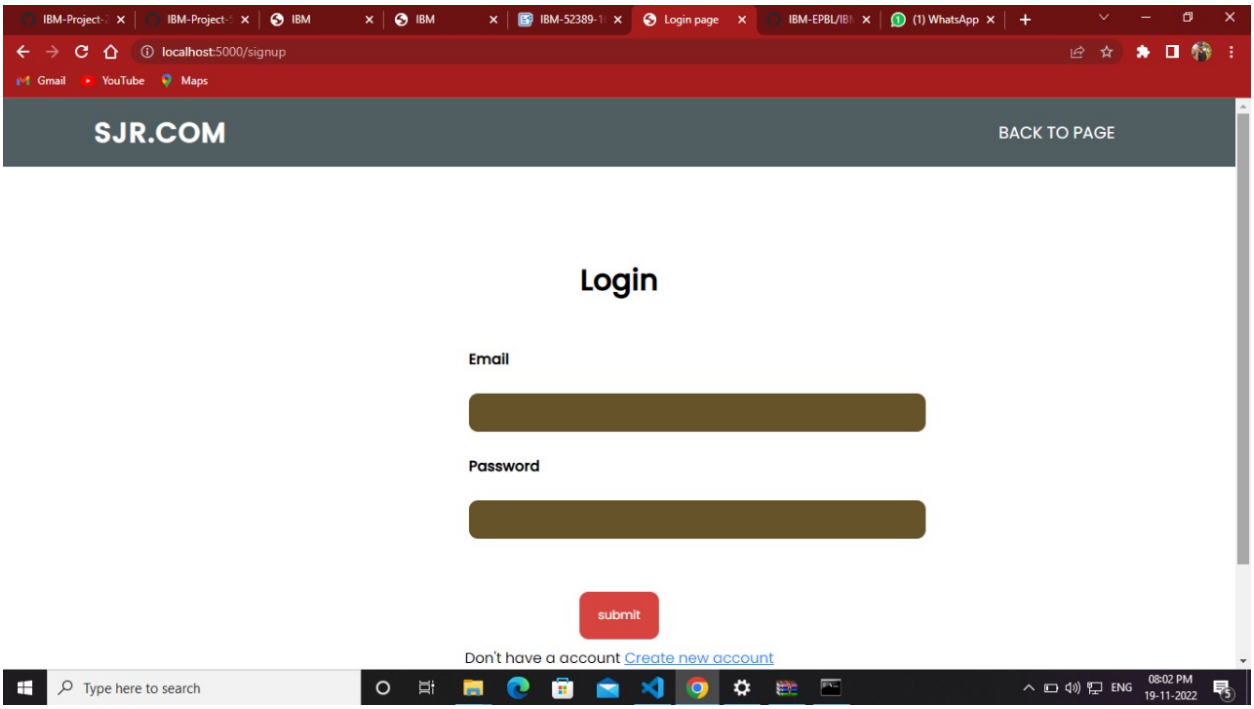
Thisreportshowsthenumberoftestcasesthathavepassed,failed,anduntested

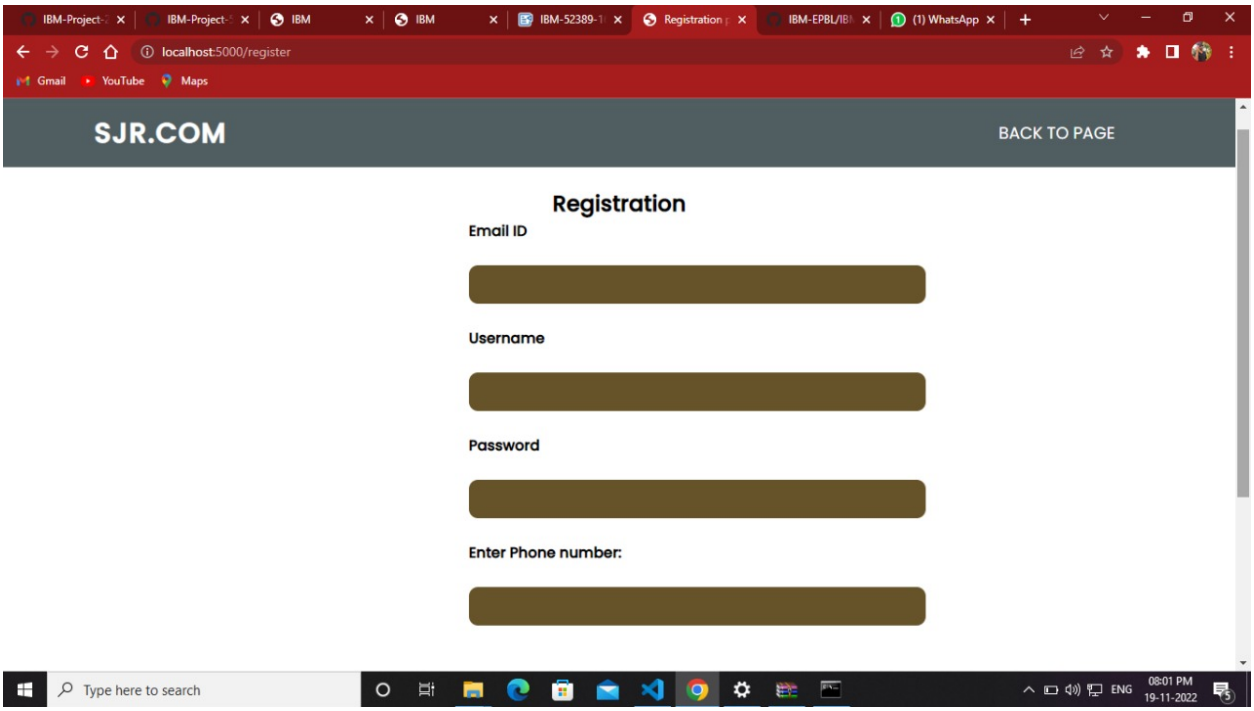
Section	TotalCases	NotTested	Fail	Pass
PrintEngine	7	0	0	7
ClientApplication	51	0	0	51
Security	2	0	0	2
OutsourceShipping	3	0	0	3
ExceptionReporting	9	0	0	9
FinalReportOutput	4	0	0	4
VersionControl	2	0	0	2

9 .RESULTS

9.1.PERFORMANCE METRICS:







10.CONCLUSION

Job Recommendation System has a major role to play among recommending systems. With the presence of new algorithms and techniques, the system needs to evolve along with it. The main objective of this project is to recommend a suitable job for the candidates. Thisproject has two pre-processing methods, one text mining method and one similarity function. The pre-processing methods are stop words and porterstemmer. The text mining method is tf-idf. The similarity function is a cosine similarity function. Pre-processing methods are used with resumes and with jobs description, to make the system more efficient by avoiding some garbage words. Tf-idif is used in processed resumes and processed jobs descriptions to convert it from text to matrix to compare. Cosine Similarity will measure the similarity between the resume and each job description.

Finally, it will display the scores for the jobs in a sorted way. There is also a pie chart which is used to visualize the percentage of the scores which is got by the candidate for the jobs. Then use a list compare method to compare the resume and job skills to recommend the skills to be improved by the candidate.

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GIthub Link :

https://github.com/IBM-EPBL/IBM-Project-52389-1661000466