IBM NALAIYA THIRAN

Project Report

SKILL AND JOB RECOMMENDER

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TABLE OF CONTENT

1. INTRODUCTION:

The fast growth of the Internet caused a matching growth of the amount of available online information that increased the need to expand the ability of users to manage all this information. This encourages a substantial interest in specific research fields and technologies that could benefit the managing of this information overload.

The most important fields are Information retrieval and Information filtering. Information retrieval deals with automatically matching user's information and Information filtering aims to assist users eliminating unwanted information.

Skill and Job Recommender Application helps the job seekers to find the job based on the skills. And the User can also be apply for the job.

1.1. Project Overview:

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.
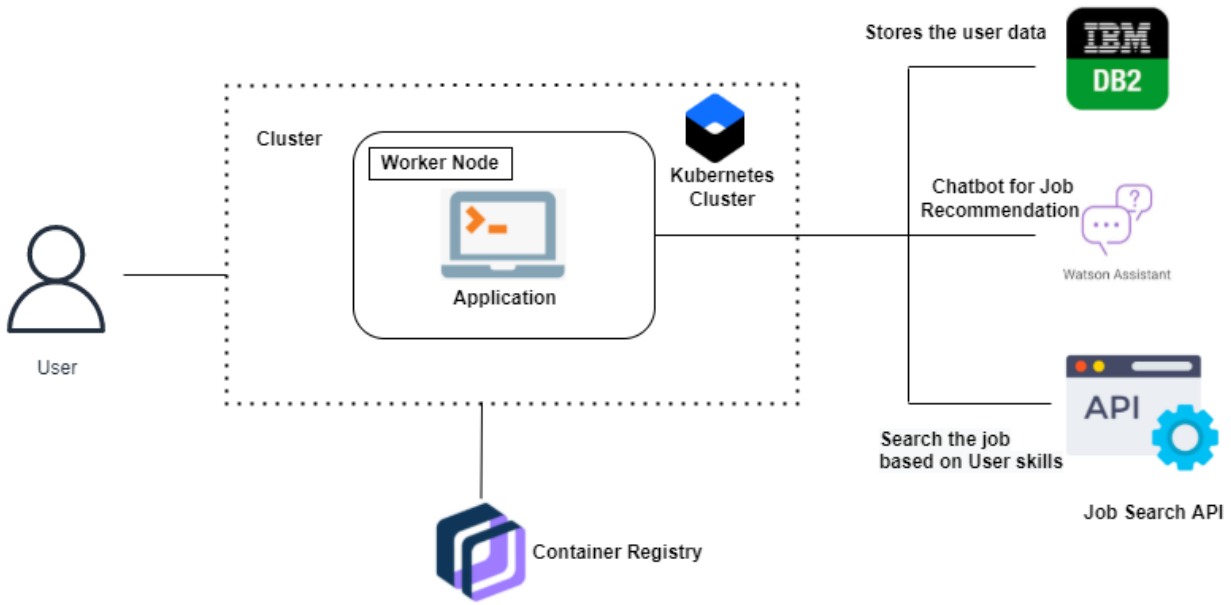
1.2. Purpose:

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. LITERATURE SURVEY:

2.1 Existing Problem

Introduction:

When the whole world is coming back on its feet, those businesses affected by this pandemic disease slowly tries to gain back the momentum it lost. Now is the time when the companies or businesses seek to invest in human resources, which would help them to gain the momentum it lost during this period. When the governments across the world ask businesses to halt the operation in the effort of controlling the pandemic, many companies asked their employees to work remotely. In contrast, many other companies started to reduce their operational cost by terminating employees who were in permanent and contract roles. Individuals who lost their job to the consequence of shutdown are waiting for their next opportunity.

Naturally, we human tries to strive through all difficulties to serve the purpose of our life. A daily job provides a sense of purpose to an individual (stillman, 2019), and he tries to get better at it, which results in leaving current employment and looking for a new one; this is a constant cycle of the hiring process. To serve the constant cycle of the hiring process in the job applicant's perspective, many job companies have come up with solutions for providing the job board. Here a seeker looks up for the job he would find relevant to him and apply for it.

As there are many job boards, applicants tend to use the tool that provides better services to them, services such as writing a CV, creating a job profile, and recommending new jobs to a job seeker. Job applicants have become more persistent and proactive in searching for new opportunities that fit their skills. However, companies that are targeting these job seekers are finding it challenging to identify the job seeker's skill and provide personalized job recommendation.

Literature Review:

A lot of research has been carried out in the field of job recommender systems. A large variety of job recommendation systems already exist that try to provide one or the other aspect of the information by applying different methods. The key problem is that most of job-hunting websites just provide recruitment information to website viewers. Students have to retrieve information among those displayed by websites to find jobs they want to apply. The whole procedure is lengthy and inefficient.

2.2 References :

1. Title: JobRecommendationbasedonJobSeekerSkills: AnEmpiricalStudy.

   Source: ResearchGate.

   Author: JorgeValverde-Rebaza.

   Date: March2018

   Website: https://www.researchgate.net/publication/362889143_JOB_

RECOMMENDATION_USING_TEXT_PROCESSING

2. Title: JobRecommenderSystems:AReview

   Source: ResearchGate

   Author: CornédeRujit

   Date: November 2021

   Website: https://www.researchgate.net/publication/325697854_Job_

   Recommendation_based_on_Job_Seeker_Skills_An_Empirical_Study

3. Title: ExtractingRelationsBetweenSectors

Source: ResearchGate

Author: AtkanKara.

Date: August,2022

Website:https://www.researchgate.net/publication/363128874_Extracting_

Relations_ Between _Sectors

4.Title : JobCandidateRankApproachUsingMachineLearningTechniques

Author : Lamiaa Mostafa.

Date : March,2020.

Website : https://www.researchgate.net/publication/349816523_Job_Candidate_

Rank_Approach_Using_Machine_Learning_Techniques

5. Title: JOB RECOMMENDATION USING TEXT PROCESSING A Project Report.

Author: DipanwitaSaha.

Source: ResearchGate

Date: July,2022

Website: https://www.researchgate.net/publication/362889143_JOB_

RECOMMENDATION_USING_TEXT_PROCESSING_A_Project_Report

6. Title: JobRecommendationBasedonExtractedSkillEmbeddings

Author: anonymous.

Source: ResearchGateDate:September2022

Website: https://www.researchgate.net/publication/363190802_Job_

Recommendation_Based_on_Extracted_Skill_Embeddings

7. Title: Jobrecommendationsystemsforenhancinge-recruitmentprocess

   Author: ShahaAlotaibi

   Source: ResearchGate.

   Date: February2014

   Website: https://www.researchgate.net/publication/323079153_Job_

   recommendation_systems_for_enhanci ng_e-recruitment_process

8. Title: Jobrecommendationsystemsforenhancinge-recruitmentprocess

   Authors: ShahaTAlotaibiAbdulrahmanAMirza

   Source: ResearchGate.

   Date: January,2012

   Website: https://www.researchgate.net/publication/323078898_Job_

   recommendation _systems_for_enhancing_e-recruitment_process

9. Title: JobRecommendationbasedon Job Seeker Skills : An Empirical Study

   Authors: JorgeValverde-Rebaza,Visibilia, Ricardo Puma

   Source: ResearchGate

   Date: March,2018

   Website: https://www.researchgate.net/publication/325697854_Job_

   Recommendation_based_on_Job_Seeker_Skills_An_Empirical_Study

10. Title: A survey of job recommender systems

    Authors: Shaha Alotaibi

    Source: ResearchGate

    Date : July,201

   Website : https://www.researchgate.net/publication/272802616_A_survey_of_job_

   recommender_systems

2.3 Problem Statement Definition:

Create a problem statement to understand your customer's point of view. The Customer Problem Statement template helps you focus on what matters to create experiences people will love. A well-articulated customer problem statement allows you and your team to find the ideal solution for the challenges your customers face. Throughout the process, you'll also be able to empathize with your customers, which helps you better understand how they perceive your product or service

I am	Describe customer with 3-4 key characteristics - who are they?	Describe the customer and their attributes here
I'm trying to	List their outcome or "job" the care about - what are they trying to achieve?	List the thing they are trying to achieve here
but	Describe what problems or barriers stand in the way — what bothers them most?	Describe the problems or barriers that get in the way here
because	Enter the "root cause" of why the problem or barrier exists — what needs to be solved?	Describe the reason the problems or barriers exist
which makes me feel	Describe the emotions from the customer's point of view — how does it impact them emotionally?	Describe the emotions the result from experiencing the problems or barriers

Reference: https://miro.com/templates/customer-problem-statement/

Example:
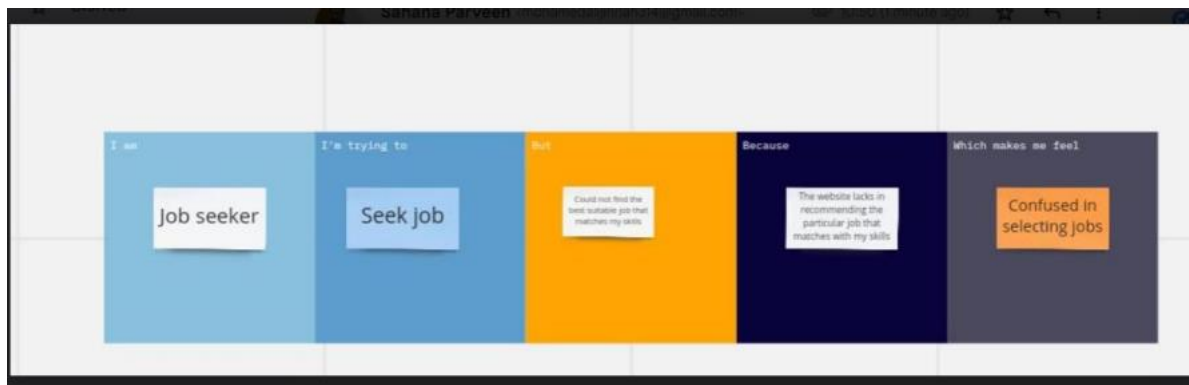
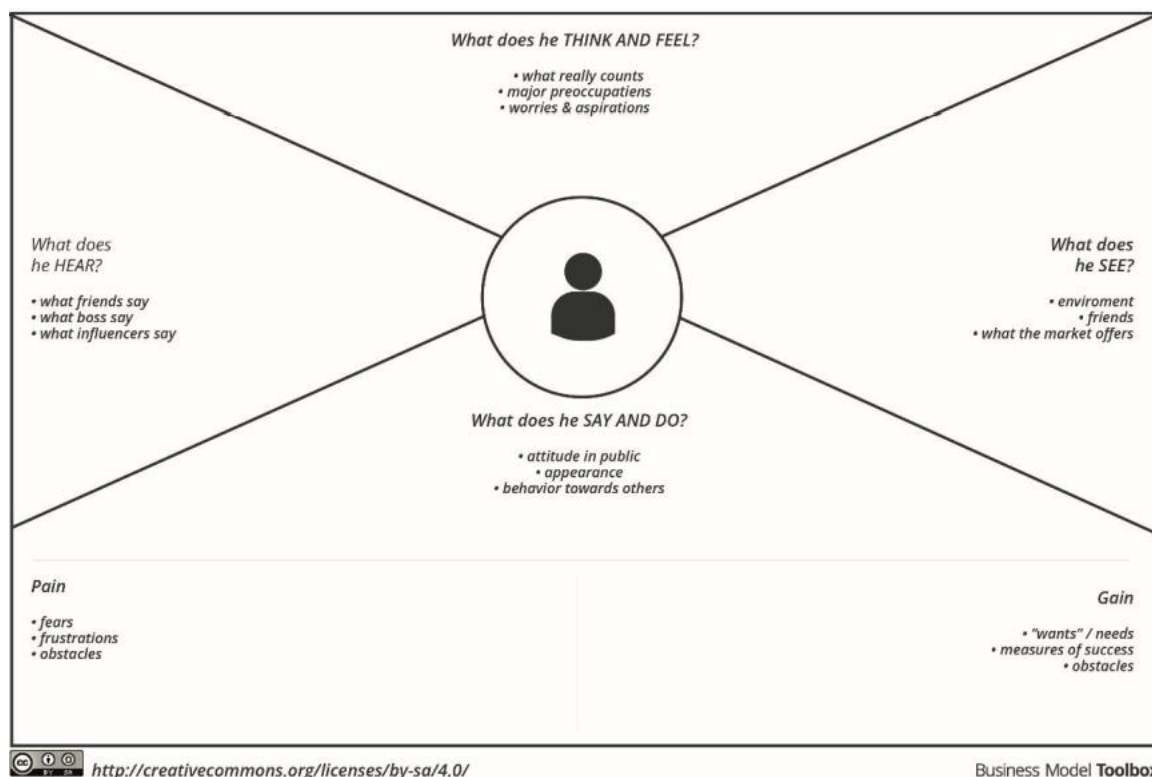| Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Job seeker	Seek job	So many old job are still open on the app	The website doesn't have filter	frustrated
PS-2	Job seeker	Seek job	Could not find the best job that matches my skills	The website could not recommend the particular jobs that maps with my skills	confused

3. IDEATION & 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

Example :

Empathy Map

What does he THINK AND FEEL?
• what really counts
• major preoccupatiens
• worries & aspirations

What does he HEAR?
• what friends say
• what boss say
• what influencers say

What does he SEE?
• enviroment
• friends
• what the market offers

What does he SAY AND DO?
• attitude in public
• appearance
• behavior towards others

Pain
• fears
• frustrations
• obstacles

Gain
• "wants" / needs
• measures of success
• obstacles

Business Model **Toolbox**

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.

Reference: https://www.mural.co/templates/empathy-map-canvas

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

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind
that address your problem statement.

🕑 10 minutes

TIP
You can select a sticky note
and hit the pencil (switch to
sketch) icon to start drawing

Bharathi G

| User can interact with chatbot to get relevant job | To recommend jobs based on highly know skill |

Insalatta Priyadharshini S

| Filter jobs for specified salary range | Send job notification alert through email |

Laxmi Narayana Sagar M

| Provide facility to create better resume | create chat area to communicate directly to recruiters |

Vetrivel A

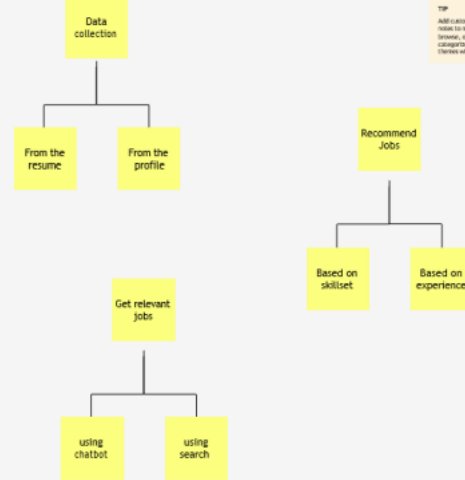| Extract skills and ratings from the resume | Provide analytics in the form of graph |

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

Data collection
- From the resume
- From the profile
- Get relevant jobs
  - using chatbot
  - using search

Recommend Jobs
- Based on skillset
- Based on experience

TIP
Add customizable tags to sticky
notes to make it easier to find,
browse, organize, and
categorize important ideas as
themes within your mural.

Step-3: Idea Prioritization

4

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

❤️ **Importance**

If each of these ideas could was
done without any
difficulty or cost,
which would have
the most positive
impact?

- Match the skillset of jobs and job seekers
- Use chatbot to recommend jobs apart from search
- Keep track of applied jobs

TIP
Participants can use their
cursors to point at where
sticky notes should go on
the grid. The facilitator can
confirm the spot by using
the laser pointer holding the
H key on the keyboard.

3.3 Proposed Solution

The Project Proposal is the initial document used to define an internal or external project. The proposal includes sections such as title, start and end dates, objectives and goals, requirements, and a descriptor of the proposed solution.

The project proposal functions as the working document between the agency and the client before a potential initiation of the project. Thus, the project proposal is used to define the objectives and requirements of a project for the external party. For the internal party, it is a method to analyse the feasibility and profitability of the project.

The main objective of the project proposal is to get the client to buy into your services. Thus, project proposals are a great way to secure funding, win new clients, or convince executives to allocate resources to projects.

Proposed Solution Template :

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	➢ In order to Enhance the Opportunities and challenges to provide job. ➢ To Protect great volume of digital data ➢ To Satisfy the on the basis of the need and requirement of satisfaction.
2.	Idea / Solution description	➢ To Reduce the Risk Assessment & Threat Analysis in the platform. ➢ Creating Prototype Solution so that user can access Easily.
3.	Novelty / Uniqueness	➢ On-demand self service which help the user to gain knowledge regarding on specified job. ➢ Mobile end point security that allows Organization to protect all the devices on their network and prevent unauthorized access.
4.	Social Impact / Customer Satisfaction	➢ Frequently updating about requirements and fulfill the needs. ➢ User will get a Responsive speed Regarding the job they have searched. ➢ User friendly Layout and approach design.
5.	Business Model (Revenue Model)	➢ Commercializing about platforms in Social media, entertainment application so that user will have knowledge about our platforms how effective it is. ➢ Generating Revenue through the advertisement that display on the platform development to the industrialization and organization.

3.4 Problem Solution Fit

Problem-solution fit is a term used to describe the point validating that the base problem resulting in a business idea really exists and the proposed solution actually solves that problem.

The problem-solution fit is when you -

- **Validate that the problem exists:** When you validate your problem hypothesis using real-world data and feedback. That is, you gather information from real users to determine whether or not they care about the pain point you're trying to solve.
- **Validate that your solution solves the problem:** When you validate that the target audience appreciates the value your solution delivers to them.

1. CUSTOMER SEGMENT(S) CS	6. CUSTOMER LIMITATIONS EG. BUDGET, DEVICES CL	5. AVAILABLE SOLUTIONS PROS & CONS AS
Customers who are searching jobs with suitable skills	Not having enough money for survival Do not have place to show their skills to recruiters	Using online sites for searching jobs which only includes their qualifications not showing their skills and also taking interviews in offcampus will not provide enough opportunities to be hired at their desired company
2. PROBLEMS / PAINS + ITS FREQUENCY PR	9. PROBLEM ROOT / CAUSE RC	7. BEHAVIOR + ITS INTENSITY BE
Existing job searching websites not provide enough opportunities to be hired by reputed companies Not enough opening for job preferences	Existing solution will not provide enough opportunities for our customer to be hired, and show their skills to recruiters and this leads to poverty and also causing to lose dignity in society due to unemployment	When Users apply for fraudulent jobs, they get unhappy due to wasted time When candidates with inadequate qualifications apply for a position, employers become irritated.
3. TRIGGERS TO ACT TR	10. YOUR SOLUTION SL	8. CHANNELS of BEHAVIOR CH
More opportunities for getting a job Get job for your skill set	Recruiters can post for the job openings in our application. Use a job search API to get the current job openings in the market which will fetch the data directly from the webpage. User can interact with the chatbot via entering skills to the bot, it suggests some job based on entered skills. lists of jobs are uploaded into the database and the chatbot is also connected with the database once the user enters skills into the chatbot it will search for related jobs in the database then it displays various jobs related to skills. By using this web application job seekers directly choose their job related	ONLINE Apply for jobs Review job applications
4. EMOTIONS BEFORE / AFTER EM BEFORE — AFTER Stressed — Felling Connected Unsatisfaction — Connected to the society, Reverence of Smartness		OFFLINE Final level interview Checkout location and infrastructure of company Finalize paperwork

4. REQUIREMENT ANALYSIS:

4.1 Functional Requirements

Functional requirements define a function that a system or system element must be qualified to perform and must be documented in different forms. The functional requirements describe the behaviour of the system as it correlates to the system's functionality.

Functional requirements should be written in a simple language, so that it is easily understandable. The examples of functional requirements are authentication, business rules, audit tracking, certification requirements, transaction corrections, etc.

These requirements allow us to verify whether the application provides all functionalities mentioned in the application's functional requirements. They support tasks, activities, user goals for easier project management.

There are a number of ways to prepare functional requirements. The most common way is that they are documented in the text form. Other formats of preparing the functional requirements are use cases, models, prototypes, user stories, and diagrams.

Following are the functional requirements of the proposed solution

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Sign up page.
FR-2	User Confirmation	Confirmation via Email
FR-3	Create a profile and upload a resume	Insert the resume in a website and other details.
FR-4	Search a job and filter section	Search job by location, qualification, categories, company location, experience and keywords
FR-5	Apply for a job	After registering confirm the email and apply for the job
FR-6	Chat bot	Resolve User Simple queries
FR-7	Admin dashboard	Through admin dashboard update job posts, change the status of jobs active or inactive, Update and delete the jobs

4.2 Non-functional requirements

Non–functional requirements are not related to the software's functional aspect. They can be the necessities that specify the criteria that can be used to decide the operation instead of specific behaviours of the system. Basic non–functional requirements are – usability, reliability, security, storage, cost, flexibility, configuration, performance, legal or regulatory requirements, etc.

They are divided into two main categories:

Execution qualities like security and usability, which are observable at run time.

Evolution qualities like testability, maintainability, extensibility, and scalability that embodied in the static structure of the software system.

Non–functional requirements specify the software's quality attribute. These requirements define the general characteristics, behaviour of the system, and features that affect the experience of the user. They ensure a better user experience, minimizes the cost factor. Non–functional requirements ensure that the software system must follow the legal and adherence rules.

Following are the non-functional requirements of the proposed solution

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	This application can be used by job seekers to log in and search for a job based on their Skill set. User-Friendly Application.
NFR-2	Security	using python flask to cloud connect will project security to the project. The database will be safe.
NFR-3	Reliability	To make sure the webpage doesn't go down due to network traffic.
NFR-4	Performance	Focus on loading the webpage as quickly as possible irrespective of the number of users/integrator traffic
NFR-5	Availability	Job seekers should have a dashboard to find out which jobs are suitable for you on our website. You can use our website anytime 24*7
NFR-6	Scalability	The website must be scalable enough to support 1000+ job seeker visits at the same time while maintaining optimal performance.

5. PROJECT DESIGN :

5.1 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.

Example: (Simplified)

Second Level DFD - Online Job Portal
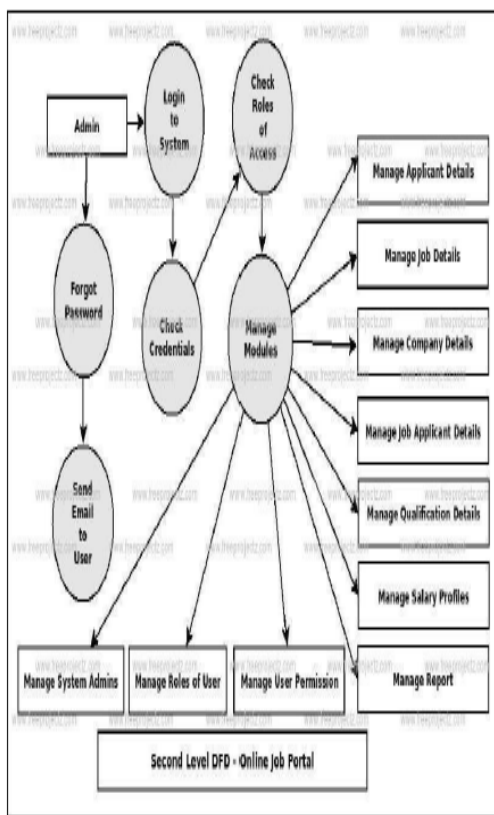
Example: DFD Level 0 (online job portal)
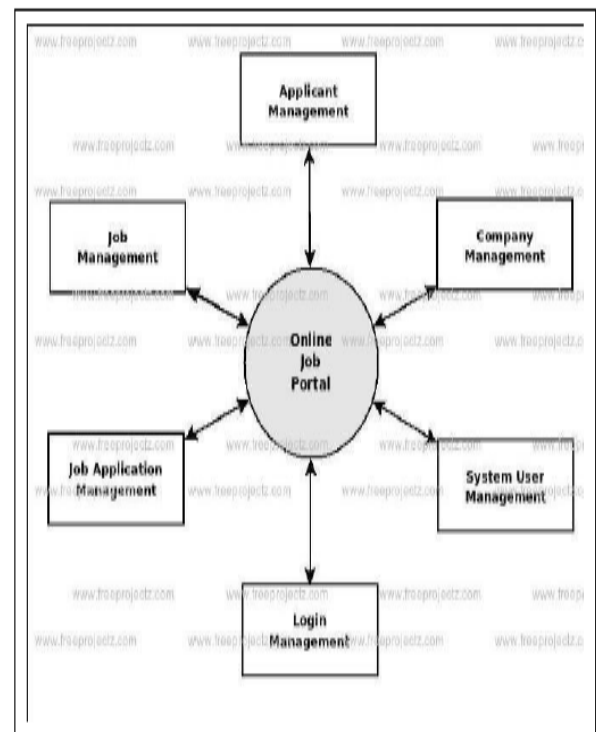
5.2 Solution and Technical Architecture

Solution 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.

Solution Architecture Diagram:
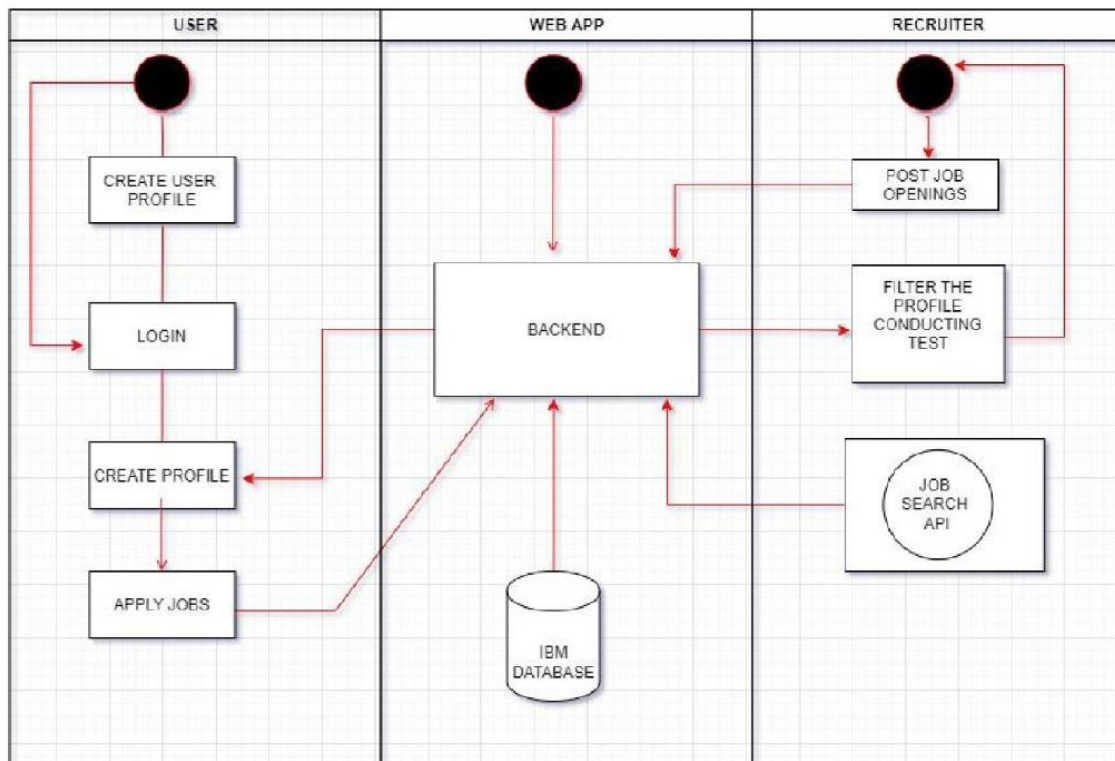
Technical Architecture:
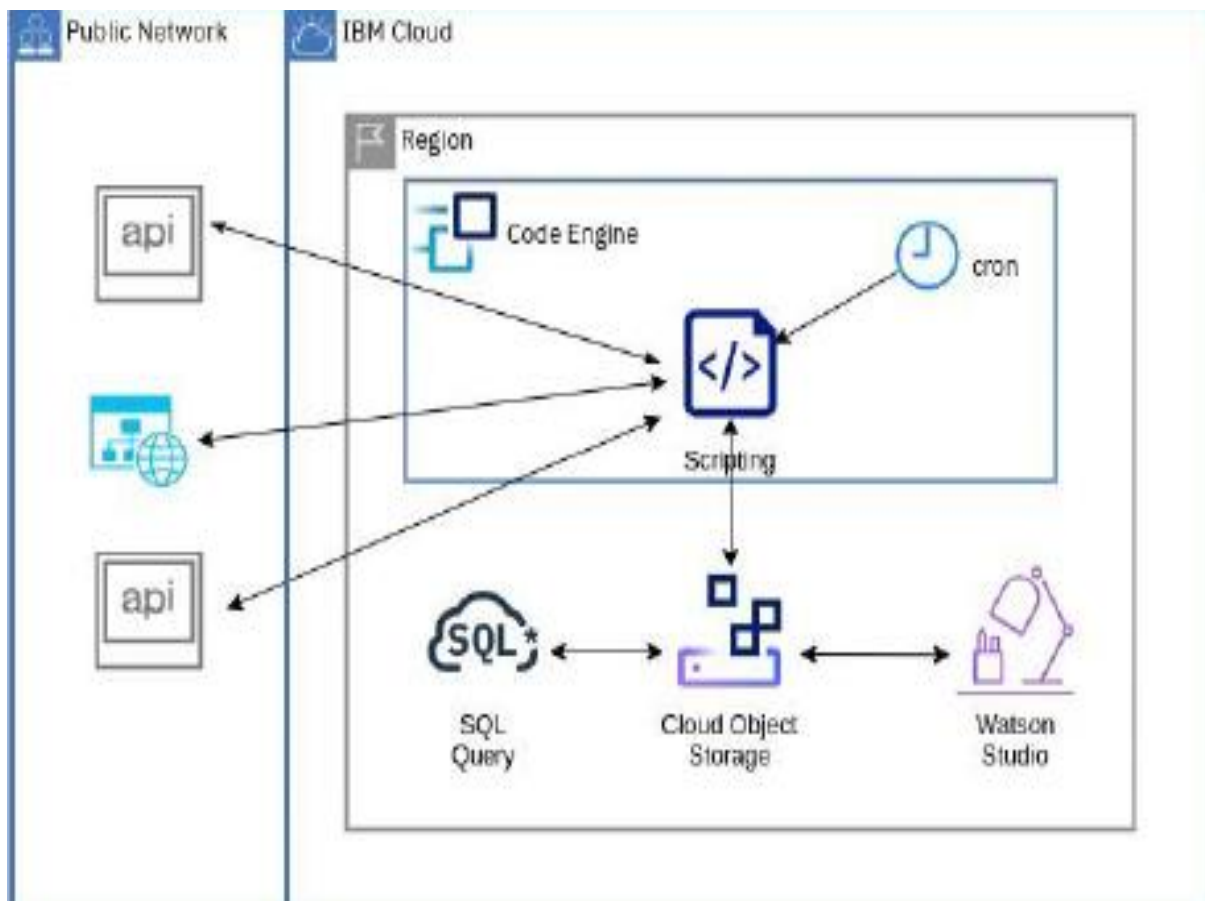
The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Guidelines:

1. Create a record of user's details (IBM db2).
2. Recommend job opening based on user's Skillset.
3. Automatic job alerts to the user's mail (SendGrid).
4. Develop chatbot to clarify user query (IBM Watson).

5.3 User Stories

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

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Registration	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	I can access my account/dashboard	High	Sprint-1
		USN-2	As a user, I will receive a confirmation email once I have registered for the application	I can receive a confirmation email & click confirm	High	Sprint-2
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Medium	Sprint-3
		USN-4	As a user, I can register for the application through Gmail	I can register & access the dashboard with Gmail Login	Medium	Sprint-3
	Login	USN-5	As a user, I can log into the application by entering email & password	I can access the dashboard	High	Sprint-1
	Dashboard	USN-6	Genera Dashboard for job seekers through this dashboard see the jobs applied and the status of jobs.	Job seekers: I can see the job status	High	Sprint-1
		USN-7	The UI which more flexible in large and small devices	Access through all devices	High	Sprint-1
	Search or Filter	USN-8	The filter section gives more flexibility to a searching job and time saver.	As a user, I can search for the desired company's	Medium	Sprint-2
	Apply	USN-9	As a user, I can apply for a company and submit the application	Able to ably jobs	High	Sprint-2
Customer Care Executive	Bot or Virtual Assistant	USN-10	As an executive to provide a quality-based service chatbot is important for assisting if any assistance is needed for the user	Able to handle user queries	Medium	Sprint-3
Administrator	Admin Dashboard	USN-11	Admin can make change the job posts and able to update the job is active or inactive.	Able to update, delete and change the status of the job posts.	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation:

Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	5	High	Bharathi, Insalatta Priyadharshini
Sprint-3		USN-2	As a user register instantly using Gmail	4	Low	Laxmi Narayana sagar, Vetrivel
Sprint-1	Login	USN-3	As a user, I can log in to the application by entering my email & password	5	High	Laxmi Narayana sagar, Vetrivel
Sprint-1	Dashboard	USN-4	As a user I can access the dashboard there able to see jobs and filter the jobs using keywords.	6	High	Bharathi, Insalatta Priyadharshini
Sprint-3		USN-5	A dashboard which shows applied for jobs	6	Medium	Bharathi, Insalatta Priyadharshini
Sprint-2		USN-6	As a user I can see my profile	4	Medium	Laxmi Narayana sagar, Vetrivel
Sprint-2		USN-7	As a user I can update my profile	4	Medium	Laxmi Narayana sagar, Vetrivel
Sprint-1	Apply	USN-8	As a user view and apply for the job successfully	4	Medium	Laxmi Narayana sagar, Vetrivel
Sprint-3		USN-9	track the status of the jobs through a dashboard or email services	4	Medium	Laxmi Narayana sagar, Vetrivel
Sprint-3	Email	USN-10	As a user get an email about new jobs	6	High	Bharathi, Insalatta Priyadharshini
Sprint-2		USN-11	A user noticed after successfully applied job	6	Medium	Bharathi, Insalatta Priyadharshini
Sprint-2	Bot	USN-12	A bot is embedded in the webpage it' help to users instant matched skill jobs active	6	High	Bharathi, Insalatta Priyadharshini
sprint-4	deploy	USN-13	Creating Docker image	5	Medium	4
Sprint-4		USN-14	Making Ui more interactive	5	Low	Bharathi, Insalatta Priyadharshini
sprint-4		USN-15	upload image to IBM container Registry	5	Medium	4
sprint-4		USN-16	Deploy on Kubernetes	5	Medium	4

Project Tracker:

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 Nov2022
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 Delivery Schedule:

| TITLE	DESCRIPTION	DATE
Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the, technical papers, research publications etc.	24 SEPTEMBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements	25 SEPTEMBER 2022

Ideation	List the by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility & importance.	27 SEPTEMBER 2022
Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, business model, social impact, scalability of solution, etc.	27 SEPTEMBER 2022
Problem Solution Fit	Prepare problem - solution fit document.	30 SEPTEMBER 2022
Solution Architecture	Prepare solution architecture document.	13 OCTOBER 2022
Customer Journey	Prepare the customer journey maps to understand the user interactions & experiences with the application (entry to exit).	18 OCTOBER 2022
Functional Requirement	Prepare the functional requirement document.	18 OCTOBER 2022
Technology Architecture	Prepare the technology architecture diagram.	18 OCTOBER 2022
Data Flow Diagrams	Draw the data flow diagrams and submit for review.	19 OCTOBER 2022
Prepare Milestone & Activity List	Prepare the milestones & activity list of the project.	26 OCTOBER 2022

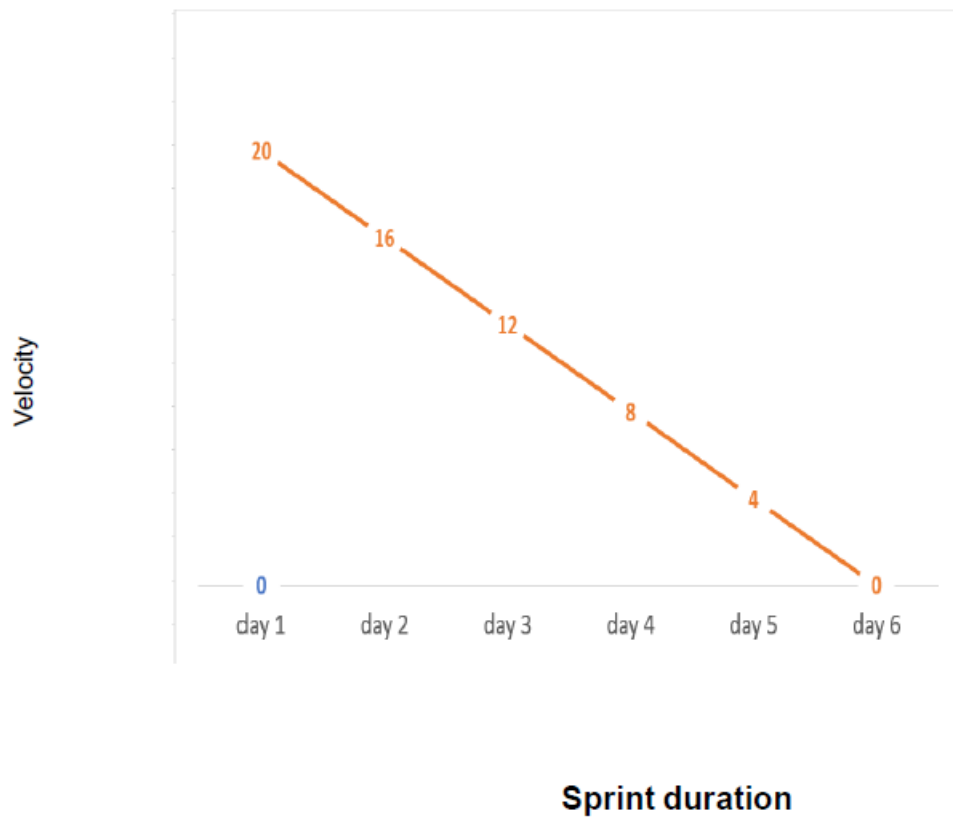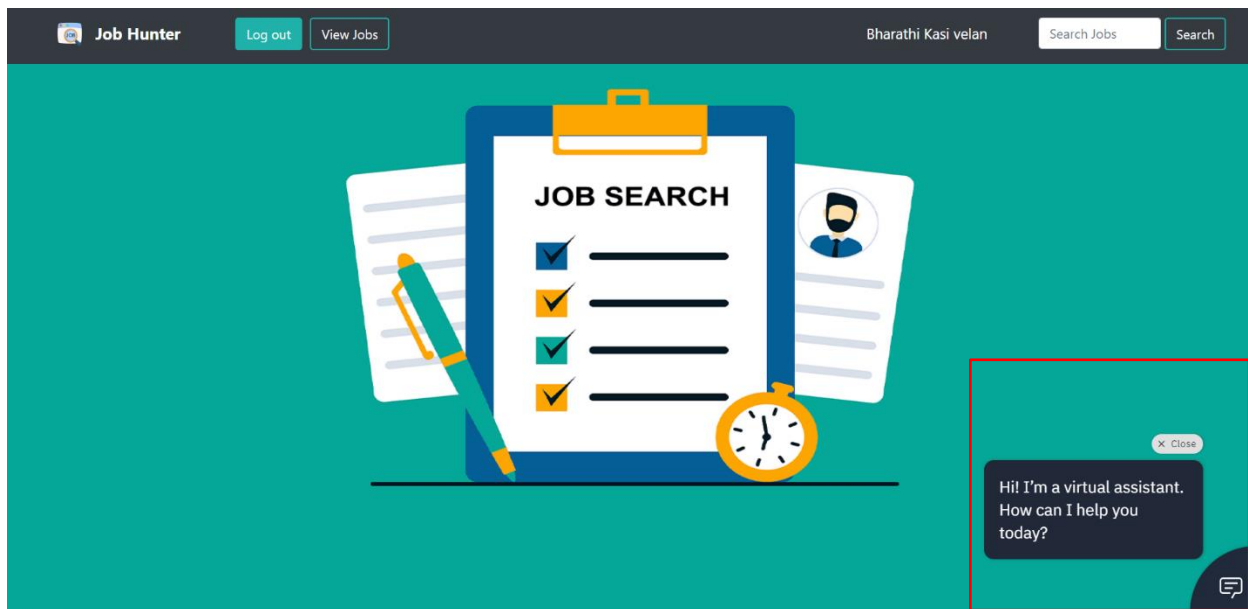| Project Development - Delivery of Sprint-1, 2, 3 & 4	Develop & submit the developed code by testing it.	26 OCTOBER 2022

6.3 Repots Form Jira
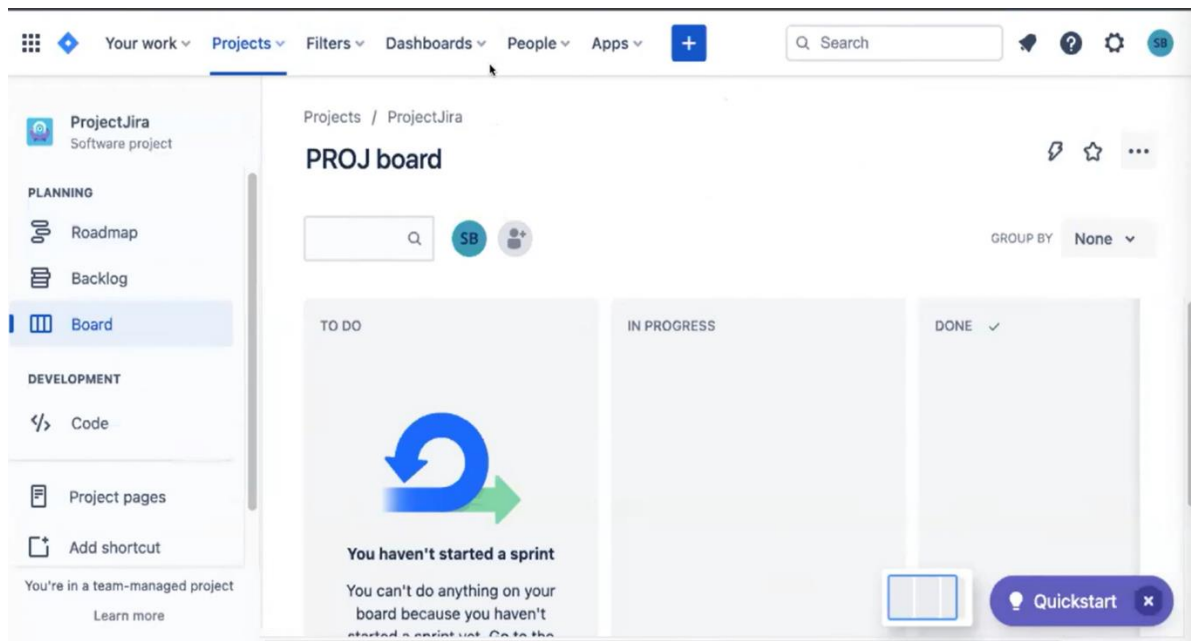
BURN DOWN CHART:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time

Sprint duration

7. CODING AND SOLUTIONING:

No of Features:

1. Watson Chatbot:

Job Hunter   Log out   View Jobs   Bharathi Kasi velan   Search Jobs   Search

JOB SEARCH

× Close

Hi! I'm a virtual assistant. How can I help you today?

```
<img class="bg-img" src="https://jobs.s3.eu.cloud-object-storage.appdomain.cloud/Job-Search-Checklist.png" alt="job image">
74          <footer>
75
76          </footer>
77    </body>
78    <script>
79      window.watsonAssistantChatOptions = {
80        integrationID: "d5588636-650f-4cb5-8a14-8aa00dc77c71", // The ID of this integration.
81        region: "au-syd", // The region your integration is hosted in.
82        serviceInstanceID: "c8eca7e5-2f31-4d65-84c9-44e8b5ec57bd", // The ID of your service instance.
83        onLoad: function(instance) { instance.render(); }
84      };
85      setTimeout(function(){
86        const t=document.createElement('script');
87        t.src="https://web-chat.global.assistant.watson.appdomain.cloud/versions/" + (window.watsonAssistantChatOptions.client
88        document.head.appendChild(t);
89      });
90    </script>
91  </html>
```
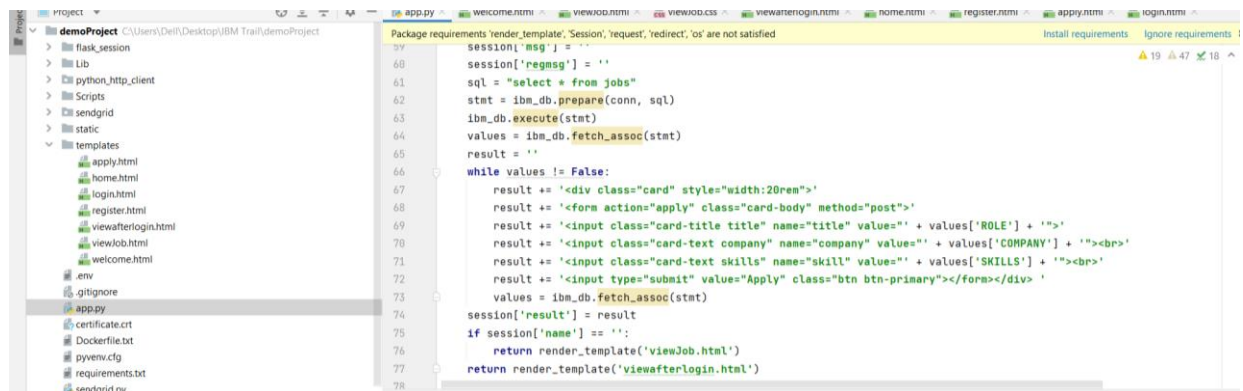
Project ▼
demoProject C:\Users\Dell\Desktop\IBM Trail\demoProject
> flask_session
> Lib
> python_http_client
> Scripts
> sendgrid
> static
∨ templates
   apply.html
   home.html
   login.html
   register.html
   viewafterlogin.html
   viewJob.html
   welcome.html
   .env
   .gitignore
   app.py
   certificate.crt
   Dockerfile.txt
   pyvenv.cfg
   requirements.txt

2. SendGrid : Email

3.ViewJob Pages:
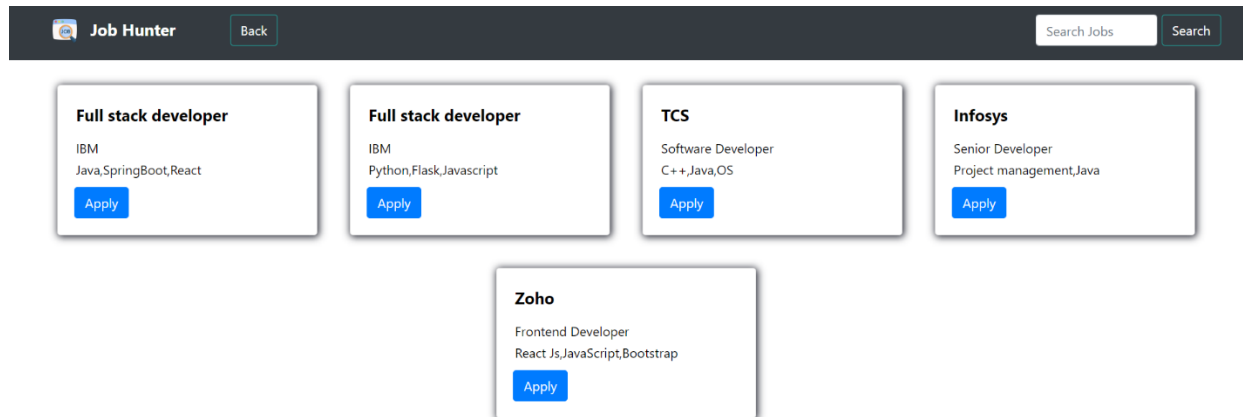
4.Home Page with Logout Button:
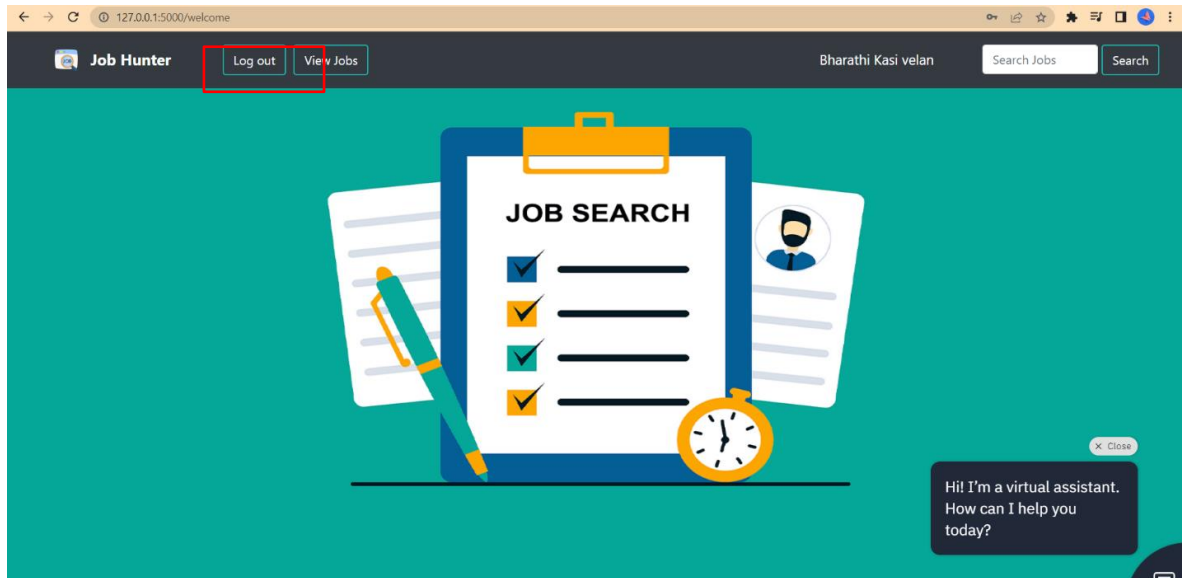
5.TestCases:
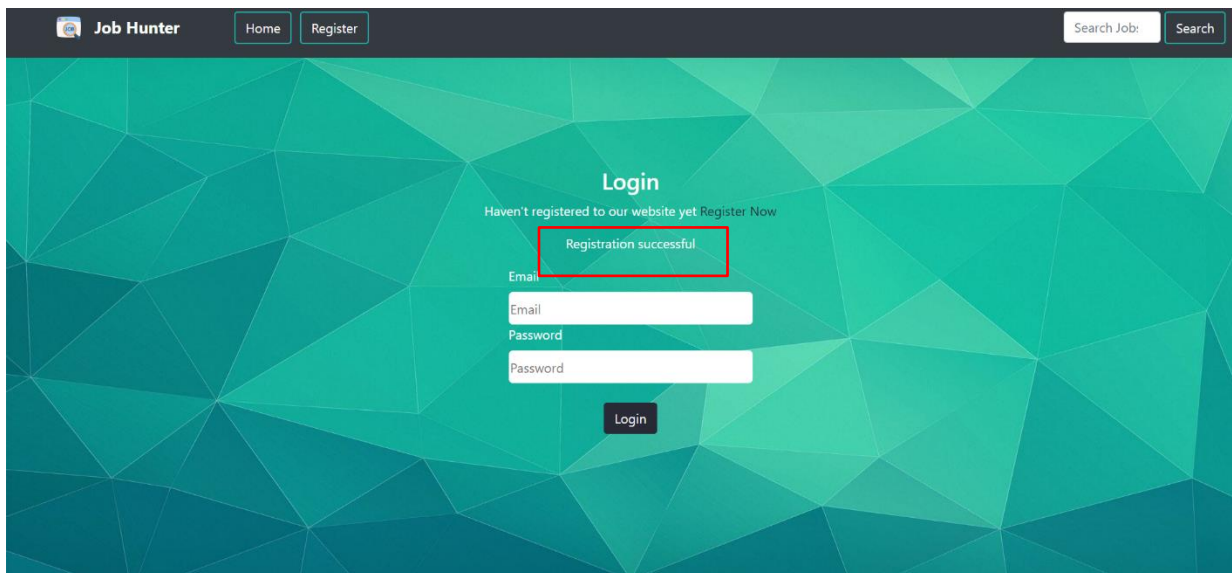
```
File  Edit  View  Navigate  Code  Refactor  Run  Tools  VCS  Window  Help        app.py - app.py                                                    —  □  ✕
demoProject ) app.py                                                                                    ▲ ▾  app ▾  C  ☼  ⬡  ■  Q
Project ▾  ⊕ 丟 ÷  ☼  —   app.py ×   welcome.html ×   viewJob.html ×   viewJob.css ×   viewafterlogin.html ×   home.html ×   register.html ×   apply.html ×   login.html ×
  demoProject C:\Users\Dell\Desktop\IBM Trail\demoProject    Package requirements 'render_template', 'Session', 'request', 'redirect', 'os' are not satisfied    Install requirements   Ignore requireme
    flask_session                                      92    # ----------- tablename = jobregister-----------------              ▲ 19  ▲ 47  ≤ 18
    Lib                                                93    sql="SELECT * FROM jobregister WHERE name=? "
    python_http_client                                 94    stmt=ibm_db.prepare(conn,sql)
    Scripts                                            95    ibm_db.bind_param(stmt,1,name)
    sendgrid                                           96    ibm_db.execute(stmt)
    static                                             97    account =ibm_db.fetch_assoc(stmt)
    templates                                          98    if account:
      apply.html                                       99        msg='Account already exists !'
      home.html                                        100       return render_template('register.html',msg=msg)
      login.html                                       101   elif not re.match(r'[^@]+@[^@]+\.[^@]+',email):
      register.html                                    102       msg='Invalid email Address'
      viewafterlogin.html                              103       return render_template('register.html',msg=msg)
      viewJob.html                                     104   elif not re.match(r'[A-Za-z0-9]+',name):
      welcome.html                                     105       msg='Name must contain atleast one character and Number'
    .env                                               106       return render_template('register.html',msg=msg)
    .gitignore                                         107   else:
    app.py                                             108       # ----------- tablename = jobregister-----------------
    certificate.crt                                    109       sql = 'INSERT INTO jobregister values(?,?,?)'
    Dockerfile.txt                                     110       prepare_stmt = ibm_db.prepare(conn,sql)
    pyvenv.cfg                                         111       ibm_db.bind_param(prepare_stmt,1,name)
    requirements.txt
    sendgrid.py                                       login()
```

8. TESTING:

8.1 Testcases:

Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested.

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	29	0	0	29
Security	4	0	0	4

|													
Outsource Shipping				6		0		0				6	
Exception Reporting				7		0		0				2	
Final Report Output				5		0		0				5	
Version Control				1		0		0				1	

8.2. UserAcceptance Testing:

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comment	TC for Automation	BUG ID	Executed By
TC_O01	UI	Home Page	Verify user is able to see the Home page of the application	None	1. Go to website 2. Home page appears		User should be able to view the application home page	Working as expected	Pass	-			Laxmi Narayana Sagar
					1. Go to website 2. Click login button		Application should show below UI elements: a. E	Working in					

TC ID	Type	Module	Test Description	Field	Steps	Test Data	Expected Result	Actual Result	Status				Tester
TC_002	UI	Home Page	Verify user is able to navigate to login page	Home			mail textbox b. Password textbox c. Login button with black colour	as expected	Pass	-			Vetrivel
TC_003	Functional	Login page	Verify user is able to log into application with Valid credentials	Email & password	1. Go to website 2. Enter details and click login	Email: insalatt apriya @gmail.com password: 123	User should navigate to user account homepage	Working as expected	Pass	-			Insalatta
TC_004	Functional	Login page	Verify user is not able to log into application with InValid credendials	Username & password	1. Go to website 2. Enter details and click login	Username: test password: 123456	Application should show 'Incorret mail or password ' validation message.	Working as expected	Pass	-			Bharathi
TC_005	UI	Register page	Verify user is able to navigate to register page on register button click in the home page		1. Go to website 2. click register button		Application should show the below UI elements: a. Name text box b. Email id text box c. Password text box d. Register button with black color	Working as expected	Pass	-			Laxmi Narayana Sagar
			Verify user is able to navigate	Name, e,	3. Go to website 4. click register button	Name: Insalatta	User should be able to navigate to login page after	Workin					

TC ID	Type	Module	Description	Precondition	Test Steps	Test Data	Expected Result	Actual Result	Status				Author
TC_OO6	Functional	Register page	to login page successful registration	email and password		email: insalatapriya@gmail.com password: 123456	successful registration.	gas expected	Pass	-			Insalatta
TC_OO7	Functional	Register page	Verify already registered user will not be able to register again.	Name, email and password	5. Go to website 1. click register button	Name: Insalatte mail: insalatapriya@gmail.com password: 123456	A pop up showing user already registered	Working pass expected	Pass	-			Bharathi
TC_OO8	UI	View page	Verify whether user is able to see the view page		1. Go to website home page 2. Click view jobs button		User should be able to navigate to view jobs page where all the available jobs are listed	Working pass expected	Pass	-			Vetrivel
TC_009	Functional	View page	Verify login user can navigate to apply page on apply button click	User already login to the	1. Go to view page 2. Click apply button		Application should show the apply page	Working	Pass				Laxmi Narayana Sagar

				applica tion				n g a s e x p e ct e d					
TC_01 0	Functional	View page	Verify the user is redirected to login page on apply button click if the user is not login to the application		1. Go to view page 2. Click apply button		Application should redirect the user to login page.	W o r ki n g a s e x p e ct e d	P a s s				Insalatta
TC_01 1	Functional	Apply page	Verify user details other than phone number and resume were already filled for login user.	User alread y login to the applica tion	1. Go to view page 2. Click apply button		Application should show the apply page with details already filled in the form for login user.	W o r ki n g a s e x p e ct e e d	P a s s				Vetrivel
TC_01 2	Functional	Apply page	Verify an email is sent to user on click of apply button.		1.Go to apply page 2.Click apply button		An email should be sent to the user.	W o r ki n g a s e x p e ct e d	P a s s				Bharathi

9. RESULTS:

9.1. Performance Metrics:
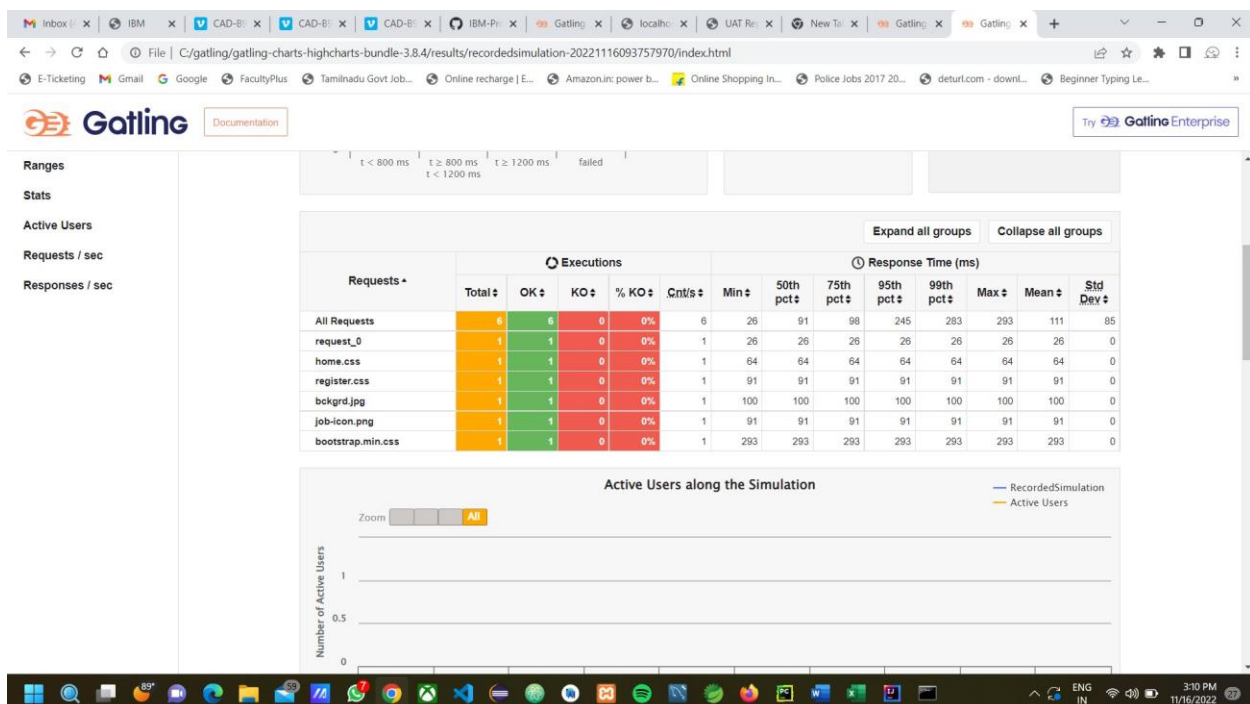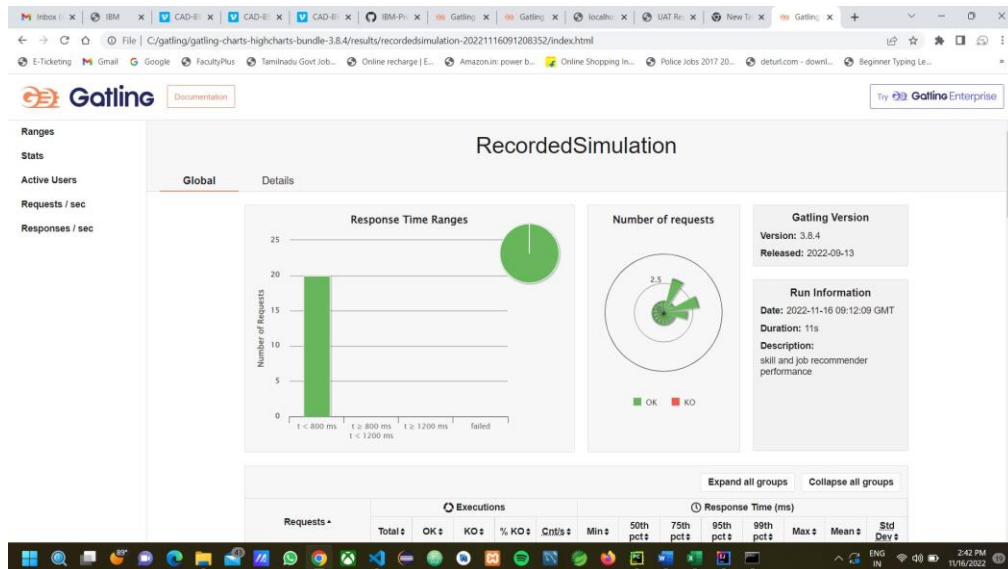
10. ADVANTAGES & DISADVANTAGES:

Prons:

- ✓ Job seeker are finds the job through the website based on their skills.
- ✓ Improve the Employment.
- ✓ Easy to evaluate the skill of the individuals.

Cons:

- ✓ Paid Version is also available.

11. CONCLUSION:

Thus the Skill and Job recommender Application is developed and deployed successfully. People are uses this application and to get the job and also improves their skills.
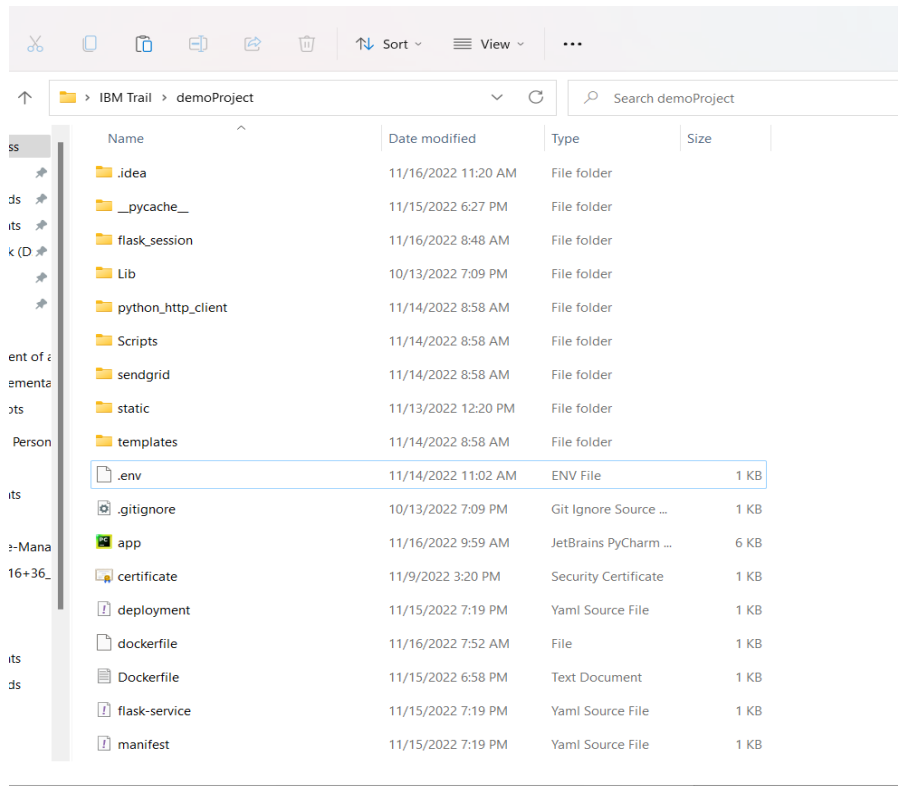
12. FUTURE SCOPE:

4 Conclusion

In this paper, we have considered the job recommender system (JRS) literature from several perspectives.

These include the influence of data science competitions, the effect of data availability on the choice of method and validation, and ethical considerations in job recommender systems.

Now-a-days the world is full of internet and application, that's why the skill and job recommender application makes a great impact in the world. And also that application will improves the employment of the human.

13. APPENDIX:

Source code:

GitHub & Project Demo Link:

GitHub Id: https://github.com/IBM-EPBL/IBM-Project-32286-1660209100

Demo Link: