PROJECT REPORT

SKILL/JOB RECOMMENDER APPLICATION

Submitted by

PNT2022TMID04977

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CHAPTER 1

INTRODUCTION

1.1 PROJECT OVERVIEW

This study examined the circumstances surrounding the transition from "other" professional to full-time teacher inan Ontario community college as might provide the basis for teacher development. In-depth interviews were conducted with three teachers from one college in 1991. Starting with the career change decision, each individual reflected upon his or her career and spoke from a personal perspective of the conditions, facts, events or influences involved in the transition to teacher. Key word and key phrase analysis elicited a taxonomy offactors which formed a basis for comparison between and among the participants. Research on career change and career changers, career development (especially of teachers), transitions, and personal development provided the theoretical framework. Although the conclusions suggested common threads in the transition, it was apparent that the individual stories and their meanings were unique. A model for community college professional development was proposed which acknowledged the individuality of the process.

1.2 PURPOSE

Having competitive job skills is an important part of developing your career. There are many qualities that are universally desired by employers regardless of their field. Especially if you are unsure about the career path you would like to pursue, it is important to develop skills that can transfer from one industry to another. This allows you to explore your job options freely while still creating a strong resume and performing well at work.

In this article, we share some of the top transferable job skills that apply to any industry or experience level to help you know what to prioritize in your job search and develop in your career.

Even if you are planning to stay at one company or industry for a long time, having flexible or transferable job skills can still support success in your career. Since some companies may value certain skills more than others, research potential employers to learn which skills you should focus on developing.

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING PROBLEM

We often associate the skill of problem-solving with those in senior positions. After all, they have more responsibilities, as well as the authority to tackle any issues that may arise. While it's not very likely that you will be asked to find a solution to a major business issue on your first day of a new job, the way you handle even the smallest of problems will demonstrate to an employer how well you can deal with larger ones. If your boss doubts your ability to overcome difficulties that come your way, they may not trust you with more responsibility, or consider you for a managerial role later on.

2.2 REFERENCES

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5. M Kusner et al. “From word embeddings to document distances”. In: Proc. of the 32nd Int. Conf. on Machine Learning, ICML’15. 2015, pp. 957–966.

6. T Mikolov et al. “Distributed Representations of Words and Phrases and Their Compositionality”. In: Proc. of the 26th Int. Conf. on Neural Information Processing Systems - Volume 2. NIPS’13. Lake Tahoe, Nevada, 2013, pp. 3111–3119. url: http://dl.acm.org/citation.cfm?id=2999792. 2999959

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2.3 PROBLEM STATEMENT DEFINITION

Having lots of skills but wondering which job will best suit you? Don’t need to worry! We have come up with a skill recommender solution through which the fresher or the skilled person can log in and find the jobs by using the search option or they can directly interact with the chatbot and get their dream job. To develop an end-to-end web application capable of displaying the current job openings based on the user skillset. The user and their information are stored in the Database. An alert is sent when there is an opening based on the user skillset. Users will interact with the chatbot and can get the recommendations based on their skills. We can use a job search API to get the current job openings in the market which will fetch the data directly from the webpage.

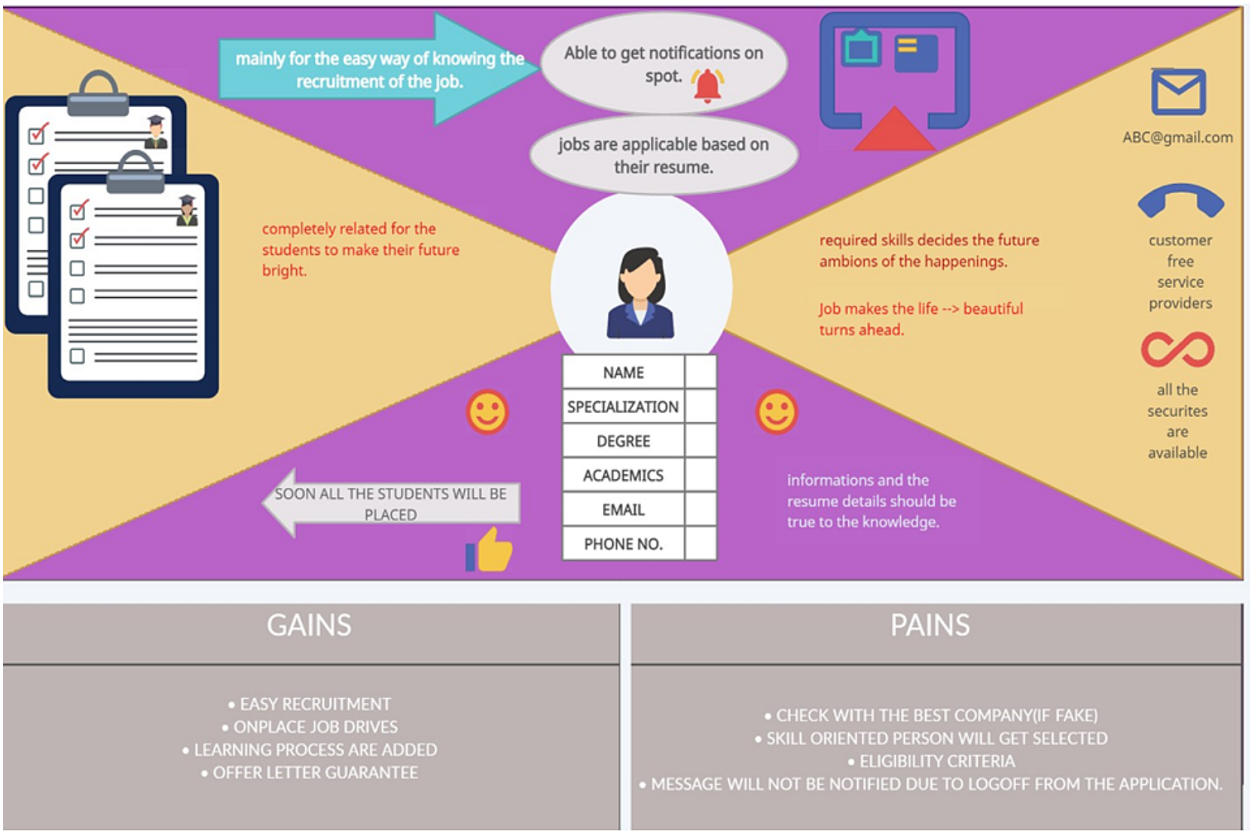
CHAPTER 3

IDEATION AND PROPOSED SOLUTION

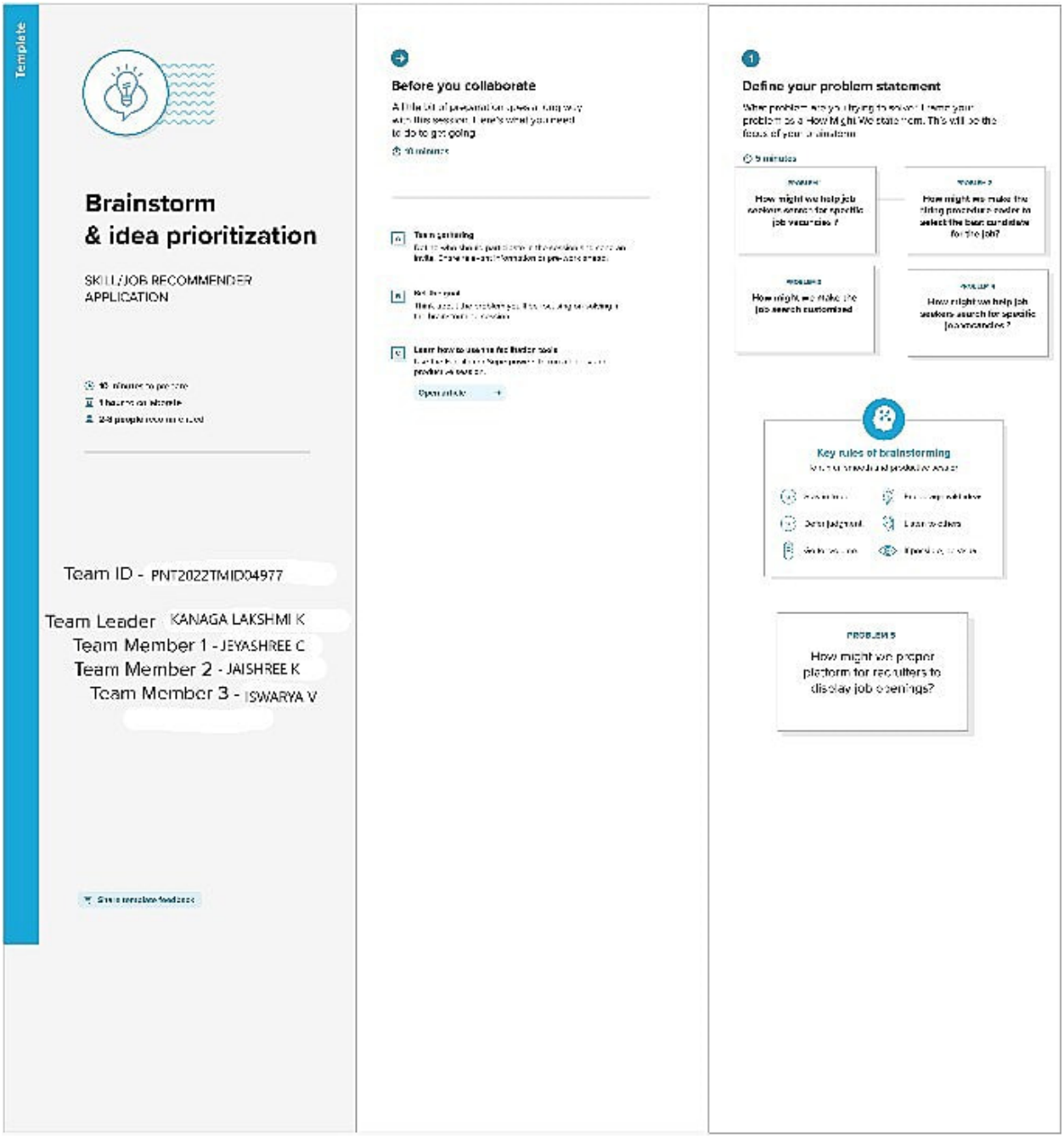
3.1 EMPATHY MAP CANVAS

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

MPATHY MAP FOR SKILL AND JOB RECOMMENDER:



3.2 IDEATION & BRAINSTORMING



3.3 PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To provide jobs to job seekers using cloud application development.
2.	Idea / Solution description	• User provides tags along with his details. • The tags represents the user's skillsets • The job provider searches their feature employees based on the skill tags attached to the job seeker profile.
3.	Novelty / Uniqueness	Usage of tag to find as well as representing skillsets. The skillset tag is the one common parameter that helps provider and seeker to find each other
4.	Social Impact / Customer Satisfaction	Upon implementing customersfeel: 1. Job seeker Satisfaction, 2. Job provider satisfaction, 3. Easy communication among seeker and provider.

5.	Business Model (Revenue Model)	• Key Partners are Third-party applications companies and users. • Activities held as user Service, System Maintenance. • Key Resources support Engineers, Multi channel. • User Relationship have 24/7 Email Support, Knowledge-based channel.

6.	Scalability of the Solution	• The real goal of scaling user service is providing an platform that will allow many user to the same skillset tags. • An environment where they will be able to spend less time on work and more time on resolving critical provider and seeker issues.

3.4 PROBLEM SOLUTION FIT

1. CUSTOMER SEGMENT(S) **Who is your customer?** Customers who are not able to solve their own Problem andin need fora possible solution from their agents/job providers.	**6. CUSTOMER CONSTRAINT.** **What constraint prevents yourcustomer from taking action or limiting their choice of solution?** The problem ofcontacting the agent and all the problems and procedure in it.	**1. AVAILABLE SOLUTION** **Which solutions are available to the customer when they face the problem.** They can check FAQ's Session for fast support. If the problem is not listed, they canpost the problem in new queries section. Which will be further assisted by the agent team.

1.JOBS TO-BE-DONE/PROBLEMS **Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; Explore different sides?** This Application Allows Customers to get recommended job according to their skillset They will be able posttheir resume and wait forthe solution. They will also get solutions to their queries They can also access our FAQ's Section on ourwebsite.	**9. PROBLEM ROOT CAUSE.** **What is the real reason that the problem exists?** The only realreason that this problem exists is the lackof awareness and ratio of proven results which could createtrust issues with theiragent.	**1.BEHAVIOR** **What does your customer do to address the problem and get the jobdone.** They must first Post their resumeand then wait for 2 hours. They can also use our chatbot toeasily contact our Team. They can also refer the FAQ's session They can also refer the FAQ's session.

CHAPTER 4
REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

Following are the functional requirements of the proposed solution

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	After they can logout if theywant.

4.2 NON FUNCTIONAL REQUIREMENTS

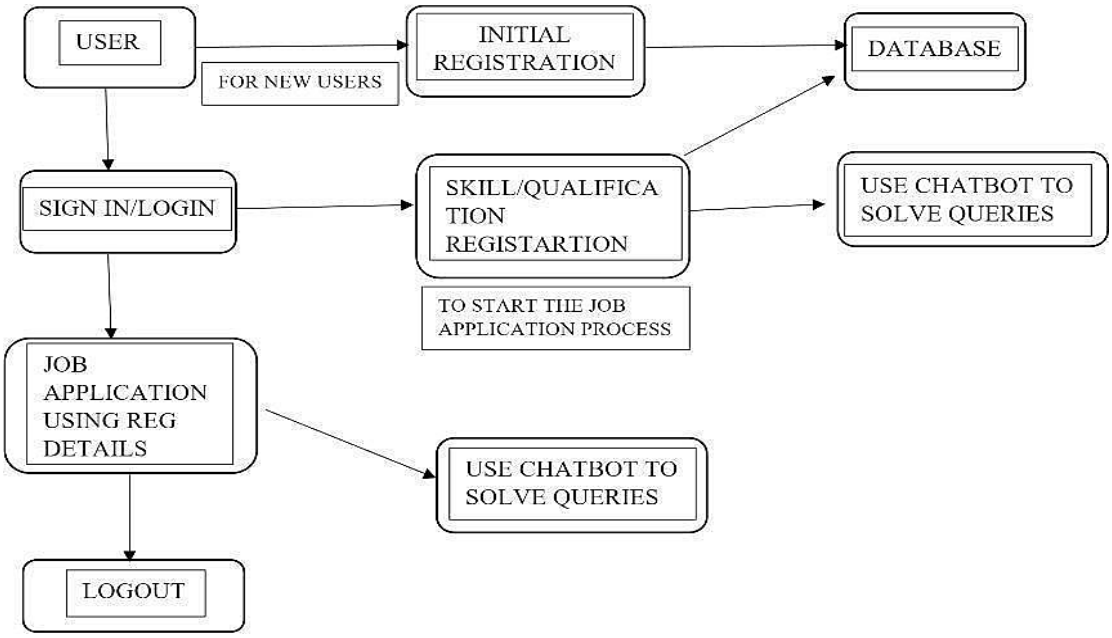
Following are the non-functional requirements of the proposed solution

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 (Python Flask to Cloud connect) 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)	Performance	Focus on loading the webpage as quickly as possible irrespective of the number of user/integrator traffic.
5)	Availability	This webpage will be available to all users (network connectivity is necessary)at any given point of time.
6)	Scalability	Increasing the storage space of database can increase the number of users. Add some features in future to make the webpage unique and attractive.

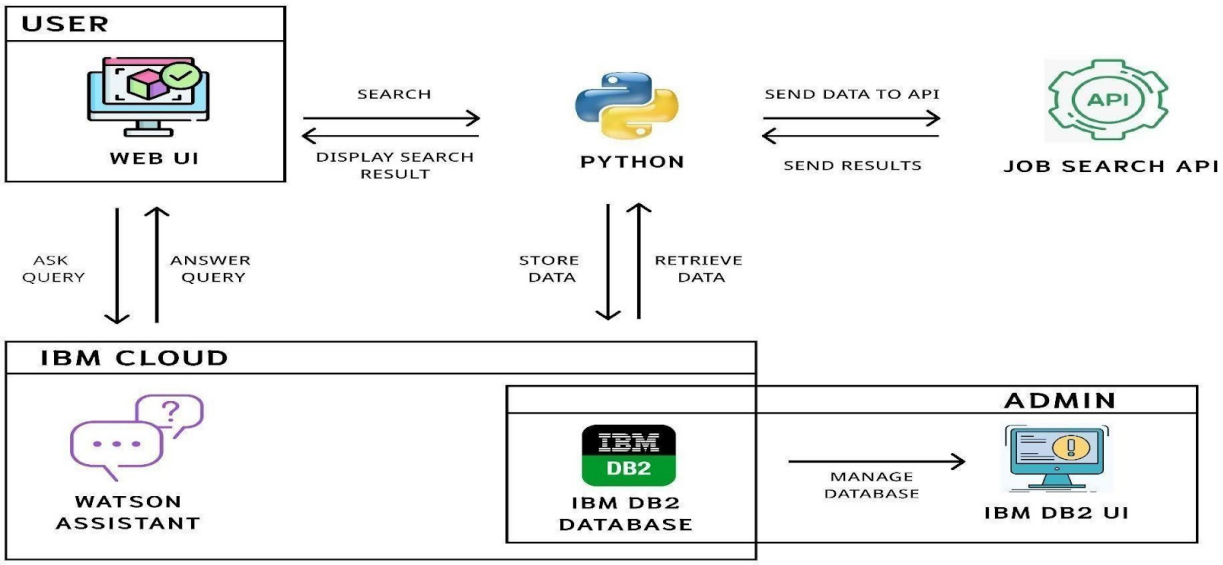
CHAPTER 5

PROJECT DESIGN

5.1 DATA FLOW DIAGRAM



5.2 SOLUTION & TECHNICAL ARCHITECTURE



5.3 USER STORIES

User Type	Functional Requirement (Epic)	User StoryNumber	UserStory /Task	Acceptance	priority	Release
Customer (Mobileuser)	Home	USN-1	I can view the usermanual and am aware of how to use this application.	I can see the limitation of this software & the awarenes of how to use it.	Low	Sprint-1
		USN-2	I'm authorized to watch the instructional film tolearn how to utilize thisapplication's interface asa user.	I can learn how to use this application through a hands on approach.	Low	Sprint-1
		USN-3	I am able to understand the directions for usingthisapplication as a user.	I am able to read the directions and utilize it.	Low	Sprint-2
	Recognize	USN-4	I get to select the image on this prediction page asa user.	I am able to select an image from our local system.	High	Sprint-2

	Predict	USN-5	I am permitted to upload and pick the image that will be submitted as a user.	From the system storage as well as any virtual storage, I may upload and select animage.	Medium	Sprint-3
		USN-6	I will train and evaluate the input as a user to ensure the output is as accurate as possible.	I am able to test and train the applicatin.	High	Sprint-4
		USN-7	I have access to the MNIST data collection asa user.	To produce the precise output, I may access it.	Medium	Sprint-3

CHAPTER 6

PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANNING AND ESTIMATION

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	As a user, I can collect the dataset from various resources with different handwritings.	10	Low	Kanagalakshmi K Jeyashree C
Sprint-1	Data Pre processing	USN-2	As a user, I can load the dataset, handling the missing data, scaling and split data into train and test.	10	Medium	Iswarya V Jaishree K

Sprint-2	Model Building	USN-3	As a user, I will get an application with ML model which provides high accuracy of recognized handwritten digit.	5	High	Kanaga lakshmi K Jeyashree C Iswarya V Jaishree K
Sprint-2	Add CNN layers	USN-4	Creating the model and adding the input, hidden, and output layers to it.	5	High	Kanaga lakshmi K Jeyashree C Iswarya V Jaishree K
Sprint-2	-2 Compiling the model	USN-5	With both the training data defined and model defined, it's time to configure the learning process.	2	Medium M	Kanagalakshmi K Jeyashree C
Sprint-2	Train & test the model	USN-6	As a user, let us train our model with our image dataset.	6	Medi um	Kanaga lakshmi K Jeyashree C Iswarya V
Sprint-2	Save the model	USN-7	As a user, the model is saved & integrated with an	2	Low	Jaishree K

			android application or web application in order to predict something.			
Sprint-3	Building UI Application	USN-8	As a user, I will upload the handwritten digit image to the application by clicking a upload button.	5	High	Kanaga lakshmi K Jeyashree C Jaishree K
Sprint-3		USN-9	As a user, I can know the details of the fundamental usage of the application.	5	Low	Jeyashree C Iswarya V
Sprint-3			As a user, I can nepredicted / zeddigits in the ion.	5		Kanaga lakshmi K
Sprint-4	Train the model on IBM	USN-11 As	A user, I train the model on IBM and integrate	10	High	Kanaga lakshmi K Jeyashree C Iswarya V

			flask/Django with scoring end point.			Jaishree K
Sprint-4	Cloud Deployment		A user, I can he web ion andmake of theproduct ywhere.	10	High	Jeyashree C Jaishree K

6.2 SPRINT DELIVERY SCHEDULE

Sprint	Total Story Points	Duration S	Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022

CHAPTER 7
CODING & SOLUTIONING

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8" />
  <link rel="icon" type="image/svg+xml" href="cv.png" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Job Search</title>
</head>

<body>
  <div id="root"></div>
  <script type="module" src="/src/main.jsx"></script>
</body>

</html>
```

CHAPTER 8

TESTING

8.1 TEST CASES

Test case ID	Feature Type	Component	Test Scenario
LoginPage_TC_OO1	Functional	Home Page	Verify user is able to see the Login/Signup popup when userclicked on My accountbutton
LoginPage_TC_OO2	UI	Home Page	Verify the UI elements in Login/Signup popup
LoginPage_TC_OO3	Functional	Home page	Verify user is ableto log into application with Valid credentials
LoginPage_TC_OO4	Functional	Login page	Verify user is ableto log into application with InValid credentials

8.2 USER ACCEPTANCE TESTING

8.2.1 DEFECT ANALYSIS

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Total
By Design	1	0	1	0	2
Duplicate	0	0	0	0	0
External	0	0	2	0	2
Fixed	4	1	0	1	6
Not Reproduced	0	0	0	1	1
Skipped	0	0	0	1	1
Total	5	1	3	3	12

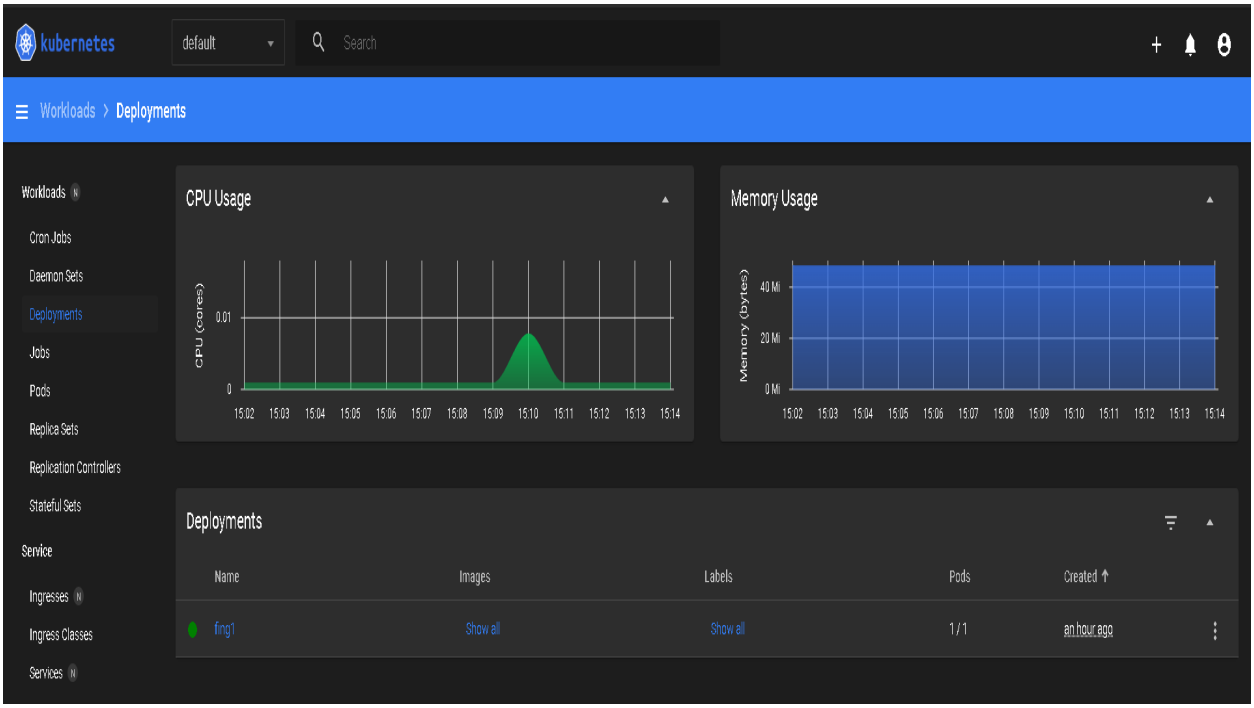
8.2.2 TEST CASE ANALYSIS

Section	Total Cases	Not Tested	Fail	Pass
Client Application	10	0	3	7
Security	2	0	1	1
Performance	3	0	1	2
Exception Reporting	2	0	0	2

CHAPTER 9

RESULTS

9.1 PERFORMANCE METRICS



CHAPTER 10

ADVANTAGES & DISADVANTAGES

ADVANTAGES

- Back-up and restore data
- Improved collaberation
- Excellent accessbility
- Low maintenance cost
- Mobility
- Data security

DISADVANTAGES

- Downtime is the one of the biggest potential
- Reduced control over data and applications
- Data security and privacy concerns
- Risk of vendor locking

CHAPTER 11

CONCLUSION

Cloud computing will affect large part of computer industry including Software companies, Internet service providers. Cloud computing makes it very easy for companies to provide their products to end-user without worrying about hardware configurations and other requirements of servers. The cloud computing and virtualization are distinguished by the fact that all of the control plane activities that center around creation, management, and maintenance of the virtual environment, are outsourced to an automated layer that is called as an API and other management servers for the cloud management.

In simple words, the virtualization is a part of cloud computing where manual management is done for interacting with a hypervisor. On the other hand, in cloud computing, the activities are self-managing where an API (Application Program Interface) is used so that the users can self-consume the cloud service.

CHAPTER 12

FUTURE SCOPE

This project is far from complete and there is a lot of room for improvement. Some of the improvements that can be made to this project are as follows:

- Add support to detect from digits multiple images and save the results
- Add support to detect multiple digits
- Improve model to detect digits from complex images
- Add support to different languages to help users from all over the world

This project has endless potential and can always be enhanced to become better. Implementing this concept in the real world will benefit several industries and reduce the workload on many workers, enhancing overall work efficiency.

APPENDIX

SOURCE CODE

MODEL CREATION

```
import { BASE_URL } from "../utils/helper";

export const loginUser = async (inputs) => {
  try {
    const response = await fetch(`${BASE_URL}/auth/login`, {
      method: "POST",
      body: JSON.stringify(inputs),
      headers: {
        "Content-Type": "application/json",
      },
    });
    const data = await response.json();
    return data;
  } catch (error) {
    console.error(error);
  }
};

export const registerUser = async (inputs) => {
  try {
    const response = await fetch(`${BASE_URL}/auth/signup`, {
      method: "POST",
      body: JSON.stringify(inputs),
      headers: {
        "Content-Type": "application/json",
      },
    });
    const data = await response.json();
    return data;
  } catch (error) {
    console.error(error);
  }
};

e
```

HOME PAGE (HTML)

```html
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8" />
  <link rel="icon" type="image/svg+xml" href="cv.png" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
  <title>Job Search</title>
</head>

<body>
  <div id="root"></div>
  <script type="module" src="/src/main.jsx"></script>
</body>

</html>
```

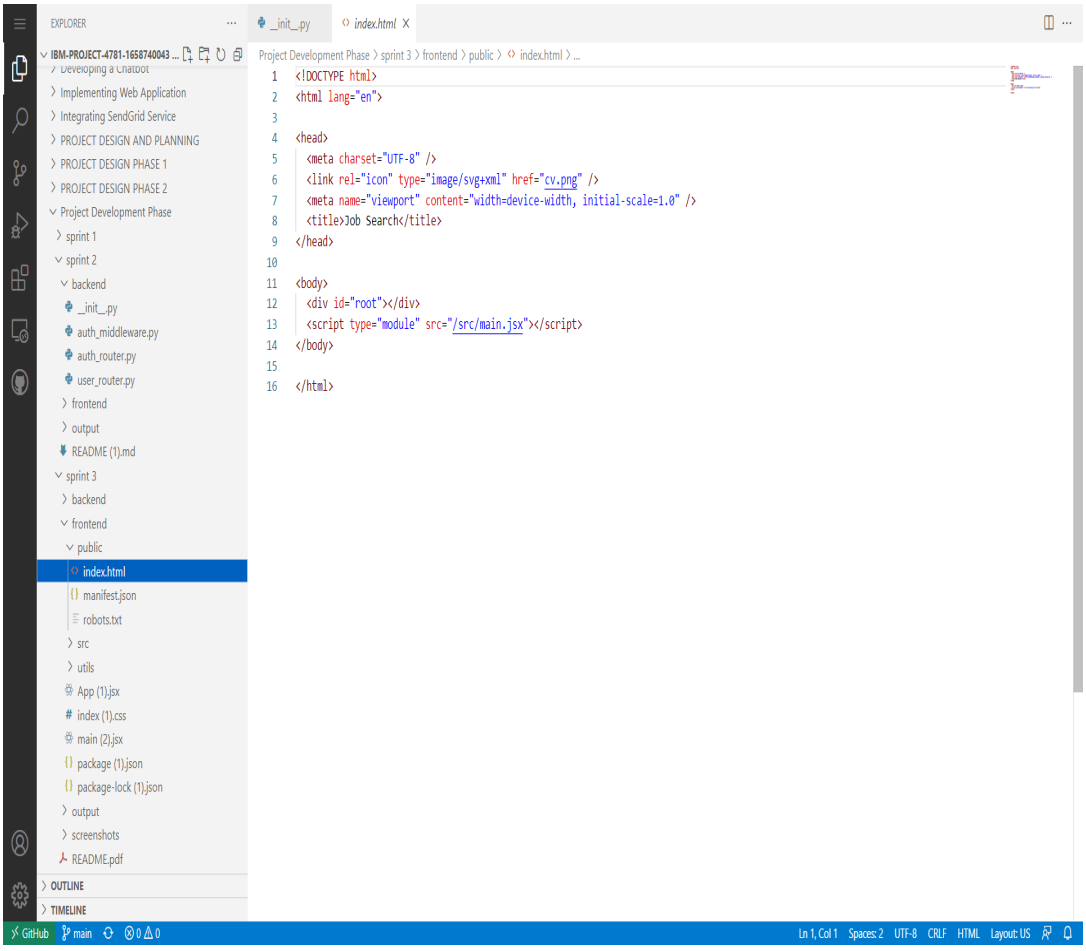
HOME PAGE (CSS)

```css
@import url("https://fonts.googleapis.com/css2?family=Ubuntu&display=swap");

@tailwind base;
@tailwind components;
@tailwind utilities;

:root {
  font-family: Inter, Avenir, Helvetica, Arial, sans-serif;
  font-size: 16px;
  line-height: 24px;
  font-weight: 400;

  color-scheme: light;
  /* color: rgba(255, 255, 255, 0.87);
  background-color: #242424; */

  font-synthesis: none;
  text-rendering: optimizeLegibility;
  -webkit-font-smoothing: antialiased;
  -moz-osx-font-smoothing: grayscale;
  -webkit-text-size-adjust: 100%;
}

* {
  margin: 0;
  padding: 0;
  font-family: "Ubuntu", sans-serif;
}

#profile-card {
  background-image: url("data:image/svg+xml,%3csvg xmlns='http://www.w3.org/2000/svg' version='1.1' xmlns:xlink='http://www.w3.org/
  background-size: contain;
  background-repeat: repeat-x;
  background-position: center;
}
```

app.py

```python
from dotenv import dotenv_values
from flask import Flask
from flask_cors import CORS
import ibm_db

# Get the environment variables
config = dotenv_values("backend/.env")

# Connect to db
try:
    # conn = 'dd'
    conn = ibm_db.pconnect(
        f"DATABASE={config['DB2_DATABASE']};HOSTNAME={config['DB2_HOSTNAME']};PORT={config['DB2_PORT']};SECURITY=SSL; SSLServerCert
    print("Connected to IBM_DB2 successfully!!")
    print(conn)
except:
    print("Failed to connect to Database!")


def create_app():
    # Tell flask to use the build directory of react to serve static content
    app = Flask(__name__, static_folder='../build', static_url_path='/')

    CORS(app)

    # Set the secret key for flask
    app.config['SECRET_KEY'] = config['APP_SECRET']

    # Import and register auth_router
    from .auth_router import auth
    app.register_blueprint(auth, url_prefix='/api/auth')

    from .files_router import files
    app.register_blueprint(files, url_prefix='/api/files')

    from .user_router import user
    app.register_blueprint(user, url_prefix='/api/user')

    # In production serve the index.html page at root

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

index.html


EXPLORER
init.py
index.html
Project Development Phase > sprint 3 > frontend > public > index.html > ...
IBM-PROJECT-4781-1658740043 ...
Developing a Chatbot
Implementing Web Application
Integrating SendGrid Service
PROJECT DESIGN AND PLANNING
PROJECT DESIGN PHASE 1
PROJECT DESIGN PHASE 2
Project Development Phase
sprint 1
sprint 2
backend
init.py
auth_middleware.py
auth_router.py
user_router.py
frontend
output
README (1).md
sprint 3
backend
frontend
public
index.html
manifest.json
robots.txt
src
utils
App (1).jsx
index (1).css
main (2).jsx
package (1).json
package-lock (1).json
output
screenshots
README.pdf
OUTLINE
TIMELINE
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8" />
<link rel="icon" type="image/svg+xml" href="cv.png" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<title>Job Search</title>
</head>
<body>

<script type="module" src="/src/main.jsx"></script>
</body>
</html>
GitHub
main
Ln 1, Col 1
Spaces: 2
UTF-8
CRLF
HTML
Layout: US

GITHUB

https://github.com/IBM-EPBL/IBM-Project-4781-1658740043

PROJECT DEMO LINK

https://drive.google.com/file/d/1Jhn2nItBTeTNsyYtmH9vIrnBVKlpHqo/view?usp=share_link