SKILL/JOB RECOMMENDER APPLICATION
IBM PROJECT FINAL REPORT

SUBMITED BY

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TABLE OF CONTENTS

CHAPTER NO:1

1.INTRODUCTION

1.1 Project Overview

Finding jobs that best suits the interests and skill set is quite a challenging task for the jobseekers. The difficulties arise from not having proper knowledge on the organization's objective, their work culture and current job openings. In addition, finding the right candidate with desired qualifications to fill their current job openings is an important task for the recruiters of any organization.

1.2 Purpose

Job recommendation is primarily aimed at supporting the discovery of jobs that may interest the user. It should be dynamic in order to cater to the changing preferences of the user. The proposed system will help the Companies.

CHAPTER NO:2

2.LITERATURE SURVEY

S. NO	TITLE OF THE JOURNAL	AUTHOR NAME	JOURNAL NAME	DESCRIPTION
1	Job Recommendation based on Job Profile Clustering and Job Secker Behaviour	D.MhamdiR. MouloukiM.Y EL.Ghoumari M.AzzouazilL.Mous said.	Procedia Computer Science 2020	A recommender system that aims to help job seekers to find suitable jobs. First, job offers are collected from job search websites the they are prepared to extract meaningful attributes such as job titles and technical skills
2	A Survey of job recommender systems	Shaha T. AL Otaibi and Mourad Ykhlef	Department of Computer and information sciences 2012	Most companies put the focus on their own e-recruiting platforms as primary recruitment channels. Job ads are published automatically on the job portal as soon as they are entered into the system. On the other hands the applicant, Creates a profile to apply it for one of the listed job positions.

2.1 Existing System

Business intelligence and analytics are data management techniques used in organisations to gather historical and current data utilising software and statistics. To provide insights for enhanced decision-making by analysing unprocessed data. In the current financial environment, it is necessary to be analytical and seek for the simplest method or intelligent business model in order to survive and develop one's own firm. The main goal is to assess how well different machine learning algorithms work with the system of an online job portal. This proposed module includes three phases, including the Clusters similar kind of job search phase (CSK), which creates a visual graph displaying clusters of similar types of jobs that job seekers have searched for on the website of the job portal, the email notifications send phase (ENS), which is in charge of sending email notifications to job seekers when a job circular is posted on the website, and the extract the job circular phase (EJC), which is the method for finding relevant job postings.

2.2 References

1. F. M. Javed Mehedi Shamrat, Implementation of an Intelligent Online Job Portal Using Machine Learning Algorithms, 2020.

2. Zamiwe Tembo, Designing And Implementation Of A Graduate Job Portal System, 2019.

3. Ankit Bhatnagar1 ,Nitish Kajla2 , Mahesh Kumar Gupta3,Recruitment And Selection Process With Reference Using Job Portal Framework, 2021.

4. Aradhana Patra,Munjarin Rahman,Shared Values of E-Recruitment Portal: Determinant Factors of Job-Seekers' Intention to use Job Portals, 2020.

5. Gökçe Karaoglu, Eszter Hargittai & Minh Hao Nguyen,Inequality in online job searching in the age of social media, 2021.

2.3 Problem Statements Definitions

The existing system is handled manually. The system follows large number of paper work for maintaining job details and user can be difficult to search the part time jobs in manual process. In current system the student or user don't know about part time jobs details or company/office details and

1

location. In this existing system takes lots of time for searching Jobs.
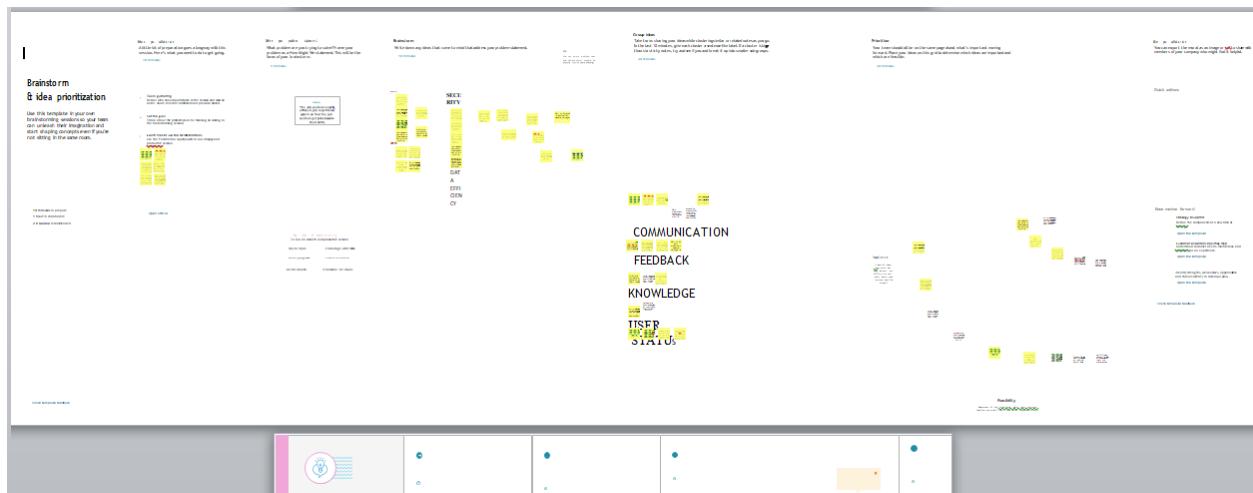

CHAPTER NO:3

3.IDEATION&PROPOSED SOLUTION

3.1EMPATHY MAP CANVAS

3.2 IDEATION & BRAINSTORMING

3.3 PROPOSED SOLUTION

The proposed system is developed after a detailed study about the requirements requested by the user. Proposed system is a computerized one, where all the limitations of manual system are compensated. jobs details of web application for skill based Job application system have simplified the working information and make a user friendly environment, where the user is provided with much flexibility to manage effectively. It helps the admin to generate desirable interface more quickly and also to produce better results.

3.4 PROBLEM SOLUTION FIT

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

CHAPTER NO:4

4.REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

● Create interface

This module offered a framework for job platform application to the user, to get answers without any human assistance. Admin can train keywords with answers for future processing. Chatbots are such kind of computer programs that interact with users using natural languages.

● Registration

There is registration form available where new user can create their account by providing required information to the system. The registration form details are like name, email, gender, mobile number, address, and etc. These details are stored in the database. And then can getting to the

username and password in the system. After the login process, the user can login in the system using username and password.

- Update job details

The company can register to this application, the registered details like company name, id, email address; mobile number etc. after the registration process, the company can update the job details.

- Update skills

The user can upload the skill details to this application. And the user will interact with the Chabot and can get the recommendations based on their skills.

- Recommend job with alert

After updating the skills details, the system will recommend the job openings based skill.

- Apply job

After get the job alert, the user can apply the job through this application.

4.2 NON FUNCTIONAL REQUIREMENTS

Usability

The system shall allow the users to access the system with pc using web application. The system uses a web application as an interface. The system is user friendly which makes the system easy

Availability

The system is available 100% for the user and is used 24 hrs a day and 365 days a year. The system shall be operational 24 hours a day and 7 days a week.

Scalability

Scalability is the measure of a system's ability to increase or decrease in performance and cost in response to changes in application and system processing demands.

Security

A security requirement is a statement of needed security functionality that ensures one of many different security properties of software is being satisfied.

Performance

The information is refreshed depending upon whether some updates have occurred or not in the application. The system shall respond to the member in not less than two seconds from the time of the requestsubmittal. The system shall be allowed to take more time when doing large processing jobs. Responses to view information shall take no longer than 5 secondsto appear on the screen.

Reliability

The system has to be 100% reliable due to the importance of data and the damages that can be caused by incorrect or incomplete data. The system will run 7 days a week. 24 hours a day.

CHAPTER NO:5

5. PROJECT DESIGN

5.1 DATA FLOW DIAGRAMS

A two-dimensional diagram explains how data is processed and transferred in a system. The graphical depiction identifies each source of data and how it interacts with other data sources to reach a common output. Individuals seeking to draft a data flow diagram must identify external inputs and outputs, determine how the inputs and outputs relate to each other, and

explain with graphics how these connections relate and what they result in. This type of diagram helps business development and design teams visualize how data is processed and identify or improve certain aspects.

Data flow Symbols:

Symbol	Description
	An **entity**. A source of data or a destination for data.
	A **process** or task that is performed by the system.

	A **data store**, a place where data is held between processes.
	A **data flow**.

LEVEL 0

The Level 0 DFD shows how the system is divided into 'sub-systems' (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts system.
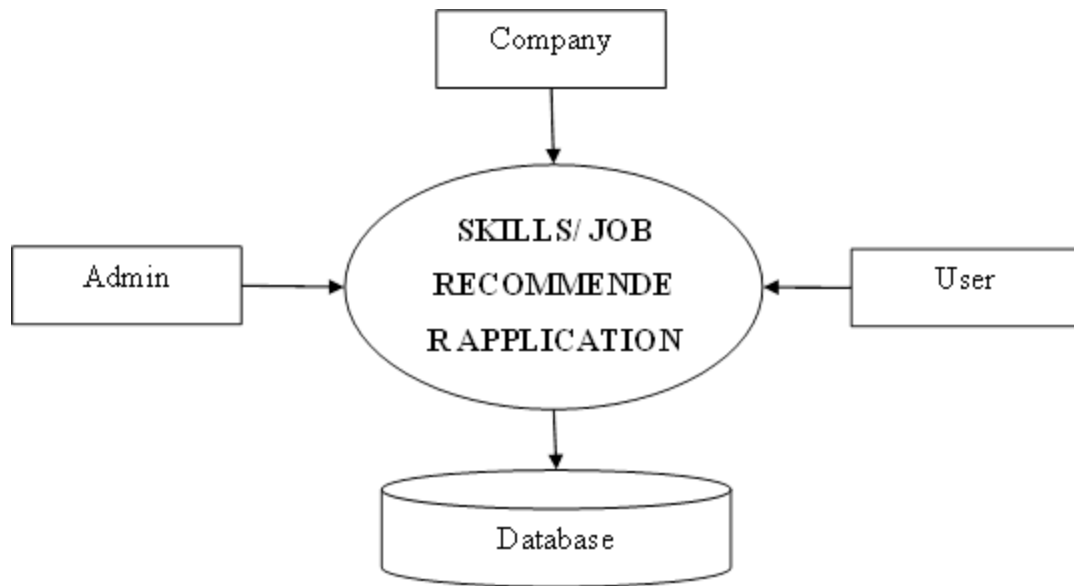
LEVEL 1

The next stage is to create the Level 1 Data Flow Diagram. This highlights the main functions carried out by the system. As a rule, to describe the system was using between two and seven functions - two being a simple system and seven being a complicated system. This enables us to keep the model manageable on screen or paper.

LEVEL 2

A Data Flow Diagram (DFD) tracks processes and their data paths within the business or system boundary under investigation. A DFD defines each domain boundary and illustrates the logical movement and transformation of data within the defined boundary. The diagram shows 'what' input data enters the domain, 'what' logical processes the domain applies to that data, and 'what' output data leaves the domain. Essentially, a DFD is a tool for process modelling and one of the oldest.

```
┌──────────┐          ╭─────────────────╮
│   User   │─────────▶│     Register    │
└──────────┘          ╰─────────────────╯
                               │
                               ▼
                      ╭─────────────────╮
                      │      Login      │
                      ╰─────────────────╯
                               │
                               ▼
                      ╭─────────────────╮
                      │  Update skills  │
                      ╰─────────────────╯


                      ╭─────────────────╮
                      │ Alert recommend │
                      │       job       │
                      ╰─────────────────╯
                               │
                               ▼
                      ╭─────────────────╮      ┌──────────────┐
                      │    Apply job    │─────▶│   User TB    │
                      ╰─────────────────╯      └──────────────┘
```
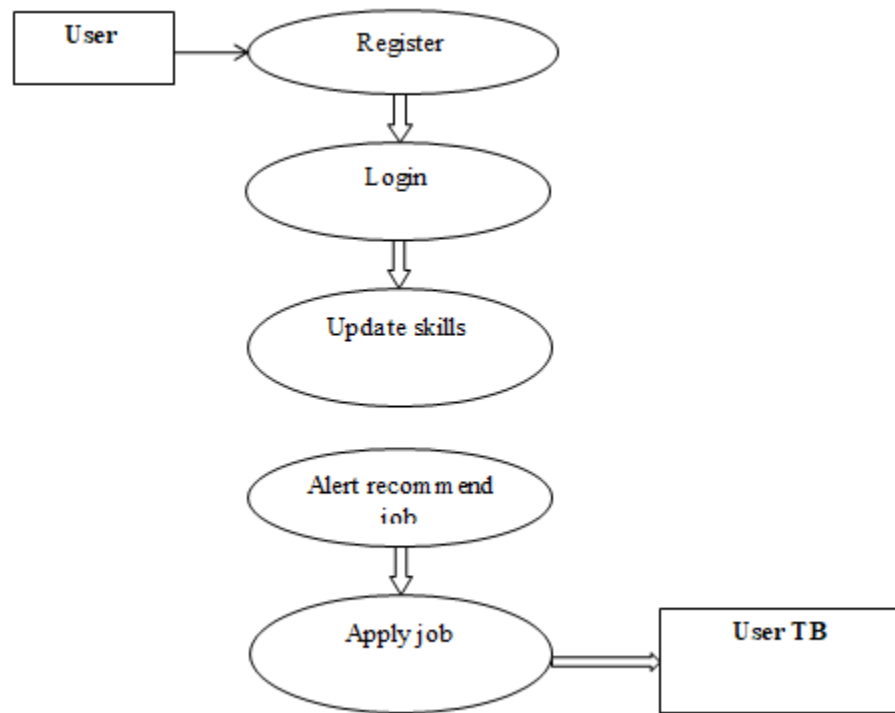
5.2 SOLUTION & TECHNICAL ARCHITECTURE

Admin

Chat with user

Upload job vacancies

Upload skills

Login

Login
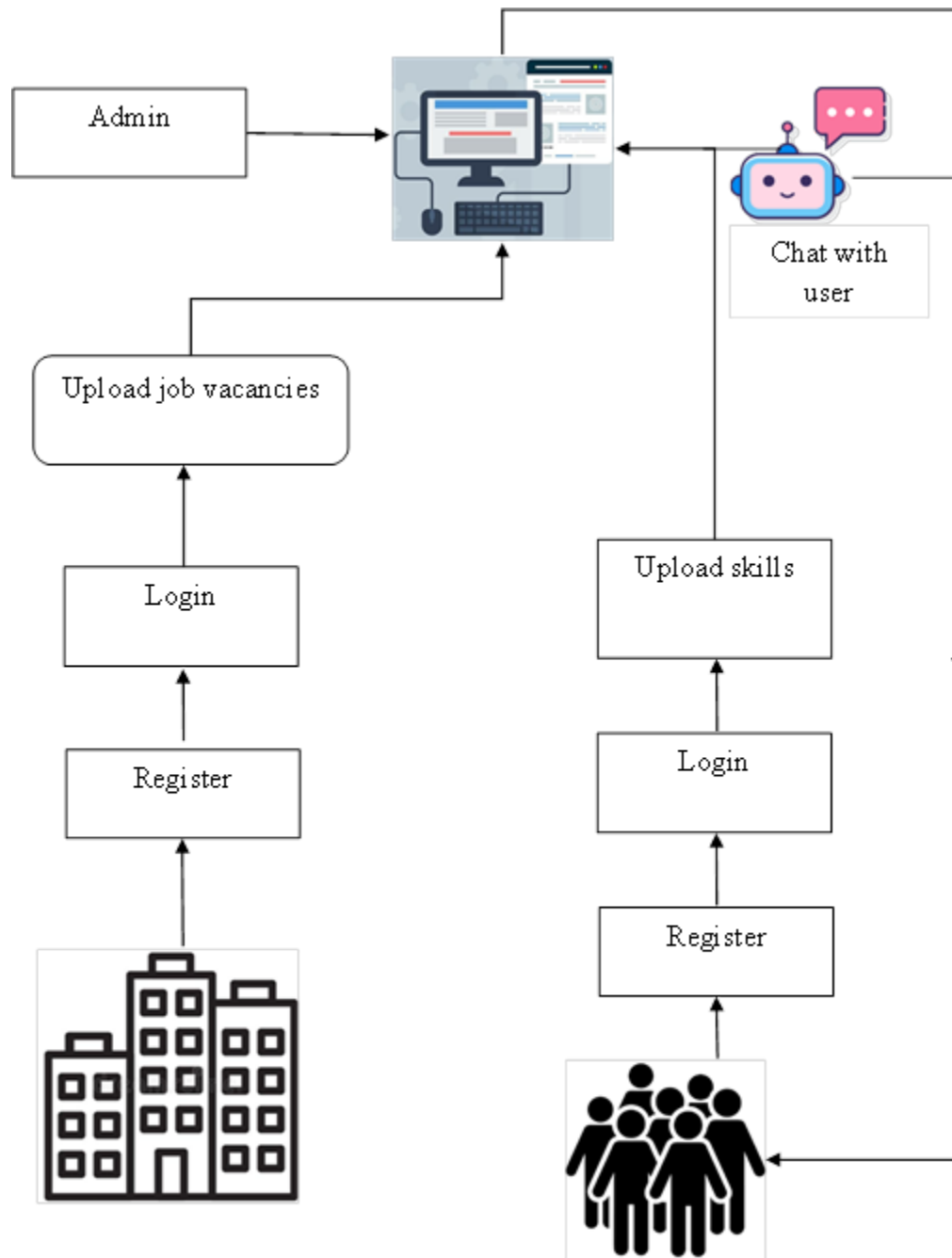
Register

Register

5.3 USER STORIES

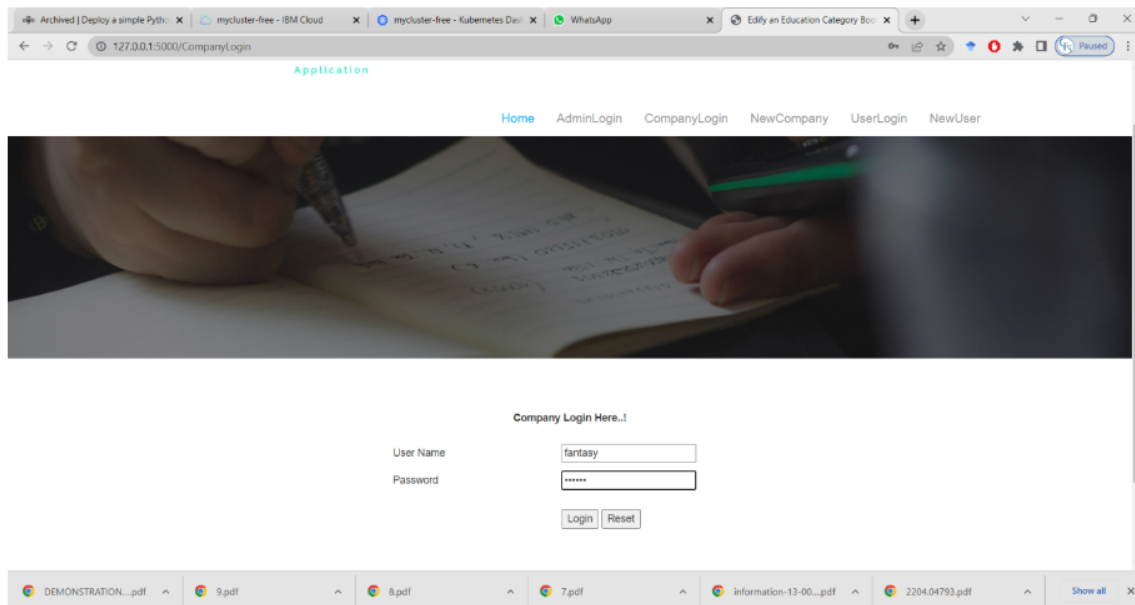| User Type	Functional Requirement(Epic)	User Story Number	User Story/Task	Acceptance criteria	Priority	Release
Customer	Registration	USN-1	As a user, I can register for the application by entering myemail, and password.	I can access my account/dashboard	High	Sprint-1
		USN-2	As a user, I will receive a confirmationemail once I have registered for the application	I can receive a confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Microsoft account	I can register & access the dashboard with Microsoft Login	Low	Sprint-2
		USN-4	As a user, I can register for theapplication through Gmail	I can register & access the dashboard with Gmail Login	Medium	Sprint-1

	Apply	USN-7	As a user, I can apply for a company	Application is submitted to the company	High	Sprint-2
	Review	USN-8	As a user, I can review and comment my opinions about the company	The review is listed on the company's profile	Medium	Sprint-2
Admin	Forward	USN-9	As an admin, I must forward the applications to the respective companies	The application is received by the company	High	Sprint-1
	Send Confirmation	USN -10	A confirmation mail is sent from the respected company	Confirmation is received by the user	High	Sprint-2
	Manage Review	USN-11	As an admin, I must make the reviews appear on the company's profile	Reviews appear on the company's page	Low	Sprint-2

1

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	UI Creation Creating Registration page, Login page	10	Medium	K.Arthi K.Harini K.Hemalatha
Sprint-1	Database Connectivity	USN-2	Viewing and applying jobs Connecting UI with Database	10	High	K.Arthi K.Harini
Sprint-2	SendGrid Integration	USN-3	SendGrid Integration with Python Code	10	Low	K.Arthi K.Harini K.Hemalatha
Sprint-2	Chatbot Development	USN-4	Building a chatbot	10	High	S.Kalaiyarasi K.Hemalatha

CHAPTER NO:6

6.PROJECT PLANNING AND SCHEDULING

6.1 Sprint Planning&Estimation

OUTPUT

New Job Registration

CompanyName	java
Contact No	9874563210
Address	trichy
JobLocation	trichy
Vacancy	1
Job Title	developer
Department	CSE
website	www.fantasy.com

Submit Reset

6.2 Sprint Delivery Schedule

job_url	company_name	company_url	job_title	job_location	posted_date
https://in.linkedin.com/jobs/view/java-application-developer-at-kpmg-india-3353857797	KPMG India	https://in.linkedin.com/company/kpmgindia	Java Application Developer	Bengaluru, Karnataka, India	2022-11-10
https://in.linkedin.com/jobs/view/java-developer-at-infosys-3363599845	Infosys	https://in.linkedin.com/company/infosys	Java Developer	India	2022-11-17
https://in.linkedin.com/jobs/view/java-at-innovation-groups-3357093384	Innovation Groups	https://ph.linkedin.com/company/innovation-groups	JAVA	New Delhi, Delhi, India	2022-11-17
https://in.linkedin.com/jobs/view/java-software-engineer-at-jio-3344044853	Jio	https://in.linkedin.com/company/jio	Java Software Engineer	Mumbai, Maharashtra, India	2022-11-09
https://in.linkedin.com/jobs/view/java-developer-at-infosys-3363622627	Infosys	https://in.linkedin.com/company/infosys	Java Developer	India	2022-11-17
https://in.linkedin.com/jobs/view/java-developer-with-rcp-ejb-at-mercedes-benz-research-and-development-india-3348032044	Mercedes-Benz Research and Development India	https://in.linkedin.com/company/mercedes-benz-research-and-development-india	Java Developer with RCP/EJB	Bengaluru, Karnataka, India	2022-11-11
https://in.linkedin.com/jobs/view/java-software-engineer-at-tech-mahindra-3357546503	Tech Mahindra	https://in.linkedin.com/company/tech-mahindra	Java Software Engineer	Chennai, Tamil Nadu, India	2022
			Senior Java	Bangalore	

6.3 Reports From JIRA

MILESTONES	ACTIVITY	
Project development phase	Delivery of Sprint-1,2, 3, 4	
Implementing web application	Create UI to interact with the application	
	Create IBM DB2 and connect with the Python	
Integrating send grid service	SendGrid integration with the Python	

CHAPTER NO:7

7.CODING AND SOLUTIONING

7.1 Features 1

```
<
!--
    Author: W3layouts
    Author URL: http://w3layouts.com
    License: Creative Commons Attribution 3.0 Unported
    License URL: http://creativecommons.org/licenses/by/3.0/
    -->
    <!DOCTYPE html>
    <html lang="en">
    <head>
    <title>Edify an Education Category Bootstrap Responsive Template | Home ::
    w3layouts</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
    <meta name="keywords" content="Edify Responsive web template, Bootstrap
    Web Templates, Flat Web Templates, Android Compatible web template,
     SmartPhone Compatible web template, free WebDesigns for Nokia, Samsung,
    LG, Sony Ericsson, Motorola web design" />
    <script type="application/x-javascript"> addEventListener("load", function() {
    setTimeout(hideURLbar, 0); }, false); function hideURLbar(){
    window.scrollTo(0,1); } </script>
    <!-- Custom Theme files -->
```

```html
<link href="static/css/bootstrap.css" type="text/css" rel="stylesheet"
media="all">
<link href="static/css/style.css" type="text/css" rel="stylesheet" media="all">
<link href="static/css/font-awesome.css" rel="stylesheet"><!-- font-awesome
icons -->
<!-- //Custom Theme files -->
<!-- js -->
<script src="static/js/jquery-2.2.3.min.js"></script>
<!-- //js -->
<!-- web-fonts -->
<link
href="//fonts.googleapis.com/css?family=Roboto+Condensed:300,300i,400,400i
,700,700i" rel="stylesheet">
<link
href="//fonts.googleapis.com/css?family=Raleway:100,100i,200,200i,300,300i,4
00,400i,500,500i,600,600i,700,700i,800,800i,900,900i" rel="stylesheet">
<!-- //web-fonts -->

<style>
 /*--
Author: W3layouts
Author URL: http://w3layouts.com
License: Creative Commons Attribution 3.0 Unported
License URL: http://creativecommons.org/licenses/by/3.0/
--*/
body{
 margin:0;
 font-family: 'Roboto Condensed', sans-serif;
 background: #fff;
}
```

1

```css
body a{
 transition: 0.5s all;
 -webkit-transition: 0.5s all;
 -moz-transition: 0.5s all;
 -o-transition: 0.5s all;
 -ms-transition: 0.5s all;
 text-decoration:none;
}
h1,h2,h3,h4,h5,h6{
 margin:0;
 font-family: 'Raleway', sans-serif;
}
p{
 margin:0;
}
ul,label{
 margin:0;
 padding:0;
}
body a:hover,body a:focus{
 text-decoration:none;
 outline:none;
}
/*-- header --*/
.header {
    border-top: 3px solid #01edc9;
}
.navbar-header h1 {
    font-size: 4em;
```

```css
    font-family: 'Raleway', sans-serif;

    text-align: center;

}
.navbar-header h1 img {

    margin-right: 0.3em;

}
.navbar-header h1 a {

    color: #00b3fe;

    text-decoration: none;

    display: inline-block;

    background: #fff;

    margin: .4em 0em;

    font-weight: 400;

    text-transform: capitalize;

}
.navbar-header h1 a span {

    font-size: .23em;

    display: block;

    letter-spacing: 3px;

    text-transform: capitalize;

    font-weight: 600;

    color: #01edc9;

}
.navbar-default .navbar-brand,.navbar-default .navbar-brand:hover, .navbar-default .navbar-brand:focus{

 color:#fff;

}
.navbar-default .navbar-nav > .active > a, .navbar-default .navbar-nav > .active > a:hover, .navbar-default .navbar-nav > .active > a:focus {

 background:none !important;
```

```
    }
/*-- top-nav --*/



    <!-- footer -->

    <div class="footer-w3copy w3-agileits">
    <p>©. All Rights Reserved | Design by <a href="#"
    target="_blank">College job</a></p>
    </div>
    <!-- //footer -->
    <!-- banner Slider starts Here -->
    <script src="static/js/responsiveslides.min.js"></script>
    <script>
     // You can also use "$(window).load(function() {"
     $(function () {
     // Slideshow 3
     $("#slider3").responsiveSlides({
     auto:false,
     pager: true,
     nav: false,
     speed: 500,
     namespace: "callbacks",
     before: function () {
     $('.events').append("<li>before event fired.</li>");

     },
     after: function () {
     $('.events').append("<li>after event fired.</li>");
```

```
        }
    });


    });
</script>
<!-- //End-slider-script -->
<script src="static/js/bootstrap.js"></script>
</body>

<!-- footer -->
```

```
        <div class="footer-w3copy w3-agileits">
        <p>© All Rights Reserved | Design by <a href="#"
        target="_blank">College job</a></p>
        </div>
        <!-- //footer -->
        <!-- banner Slider starts Here -->
        <script src="static/js/responsiveslides.min.js"></script>
        <script>
        // You can also use "$(window).load(function() {"
        $(function () {
        // Slideshow 3
        $("#slider3").responsiveSlides({
        auto:false,
        pager: true,
```

```
nav: false,
speed: 500,
namespace: "callbacks",
before: function () {
$('.events').append("<li>before event fired.</li>");
},
after: function () {
$('.events').append("<li>after event fired.</li>");
}
});

});
</script>
<!-- //End-slider-script -->
<script src="static/js/bootstrap.js"></script>
</body>
</html>
```

OUTPUT

New User Registration

Name	[ ]
Gender	● Male ○ Female
Age	[ ]
Email	[ ]
Phone	[ ]
Address	[ ]
Degree	Select ▼
Department	Select ▼
UserName	[ ]
Password	[ ]
	Submit cencal

7.3 DATABASE SCHEMA

A table is a data structure that organizes information into rows and columns. It can be used to both store and display data in a structured format. For example, databases store data in tables so that information can be quickly accessed from specific rows. Websites often use tables to display multiple rows of data on page. Spreadsheets combine both purposes of a table by storing and displaying data in a structured format.

Databases often contain multiple tables, with each one designed for a specific purpose. For example, a company database may contain separate tables for employees, clients, and suppliers. Each table may include its own set of fields, based on what data the table needs to store. In database tables, each field is considered a column, while each entry (or record), is considered a row. A specific value can be accessed from the table by requesting data from an individual column and row.

Company table

Field	Type
companyname	nvarchar(50)

1

Field	Type
regno	nvarchar(50)
mobile	nvarchar(50)
email	nvarchar(50)
website	nvarchar(50)
address	nvarchar(50)
username	nvarchar(50)
password	nvarchar(50)

Job table

Field	Type
Company name	nvarchar(50)
Contact no	nvarchar(50)
address	nvarchar(50)
location	nvarchar(50)
vacancy	nvarchar(50)
job	nvarchar(50)
department	nvarchar(50)
Website	nvarchar(50)
cname	nvarchar(50)

Registration table

Field	Type
Name	nvarchar(50)

gender	nvarchar(50)
age	nvarchar(50)
Email	nvarchar(50)
Phone	nvarchar(50)
Address	nvarchar(50)
degree	nvarchar(50)
department	nvarchar(50)
Username	nvarchar(50)
password	nvarchar(50)

CHAPTER NO:8

8.TESTING

8.1 TEST CASES

A test case has components that describe input, action and an expected response, in order to determine if a feature of an application is working correctly.A test case is a set of instructions on "HOW" to validate a particular test objective/target, which when followed will tell us if the expected behavior of the system is satisfied or not.

Characteristics of a good test case:

- Accurate: Exacts the purpose.

- Economical: No unnecessary steps or words.

- Traceable: Capable of being traced to requirements.

- Repeatable: Can be used to perform the test over and over.

- Reusable: Can be reused if necessary.

S.NO	Scenario	Input	Excepted output	Actual output
1	Admin Login Form	User name and password	Login	Login success.

| 2	User Registration Page	User Basic Details	Registered successfully	User registration details are stored in database.
3	User Login Form	User name and password	Login	Login success.
4	Update Skills Details	Skills Details	Updated successfully	Skills details are stored in database.

8.2 **USER ACCEPTANCE TESTING**

This is a type of testing done by users, customers, or other authorised entities to determine application/software needs and business processes. Acceptance testing is the most important phase of testing as this decides whether the client approves the application/software or not. It may involve functionality, usability, performance, and U.I of the application. It is also known as user acceptance testing (UAT), operational acceptance testing (OAT), and end-user testing.

CHAPTER NO:9

9.RESULTS

9.1 PERFORMANCE METRICS
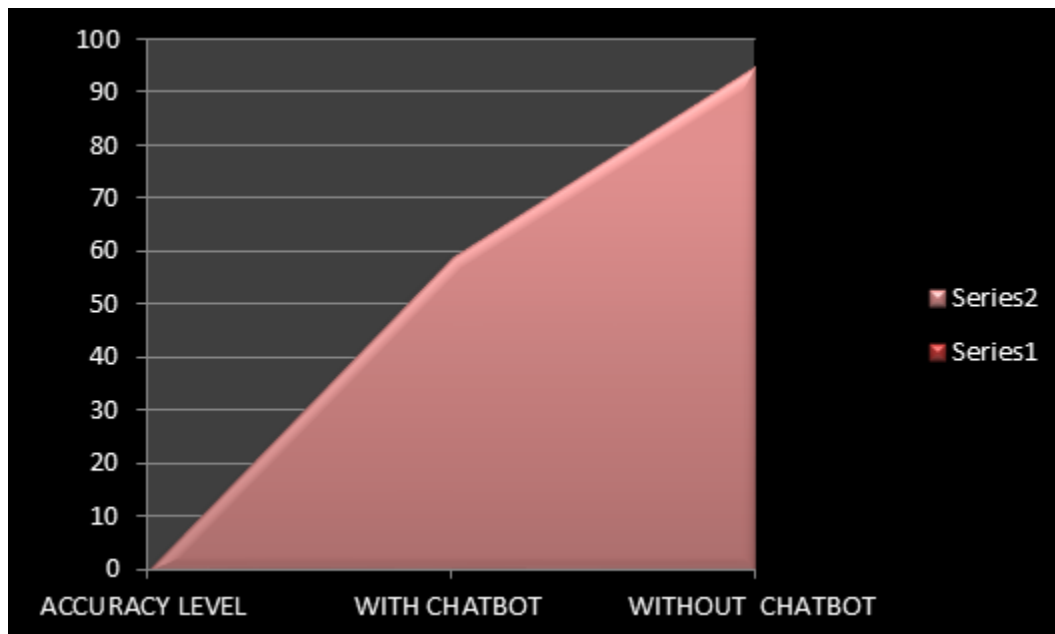
CHAPTER NO:10

10.ADVANTAGES & DISADVANTAGES

ADVANTAGES

1. User can easily know about the company details.

2. Automation of existing manual information systems.

3. Reduction of manual processing

4. Users will interact with the Chabot and can get the recommendations based on their skills.

5. Keep track of daily information exchange at the server by the administrator.

6. Increase in processing and transfer speeds of information over the network.

7. Decrease in processing time

DISADVANTAGES

1. Poor communication between user and company officer, so here intimating about new job is a hard task.

2. Know the company job vacancy information is very difficult

3. Immediate response to the queries is difficult.

4. More stationary use so they are expensive.

CHAPTER NO:11

11.CONCLUSION

In this essay, we suggested a structure for the duty of job recommendations. The use of a variety of text processing and recommendation methods in accordance with the preferences of the job recommender system creator is permitted by this framework, which also makes it easier to comprehend the job suggestion process. Furthermore, we make a new dataset with profiles of job seekers and open positions publicly accessible. The coding is done in a simplified and easy to understandable manner so that other team trying to enhance the project can do so without facing much difficulty. The documentation will also assist in the process as it has also been carried out in a simplified and concise way.

CHAPTER NO:12

12. FUTURE SCOPE

In future we can develop this project in android application. This system is developed such a way that additional enhancement can be done without much difficulty. The renovation of the project would increase the flexibility of the system. Also the features are provided in such a way that the system can also be made better and efficient functionality

- Try to all user contact with online.

- Add more features in site future.

CHAPTER NO:13

13. APPENDIX

SOURCE CODE

Github and Project Demo Link:

https://github.com/IBM-EPBL/IBM-Project-33932-1660229329

Demo Link:http://youtu.be/QYB714AiWo

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