VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI, KARNATAKA -590 018

A Project Report on

"HR MANAGEMENT IN RECRUITMENT AND PREDICTING CANDIDATE JOINING"

Submitted in partial fulfillment for the award of degree of Bachelor of Engineering in Computer Science & Engineering during the year 2023-24

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~~~~~~ *CERTIFICATE* ~~~~~~

*Certified that the project work entitled "**HR Management in Recruitment and Predicting Candidate Joining**" is a bonafide work carried out by **Anvitha Shre S** (4MH20CS011), **Dhyan Medappa B** (4MH20CS027), **K Puneeth Kumar** (4MH20CS046) and **Kushaja V U** (4MH20CS051) in the partial fulfilment for the award of degree of Bachelor of Engineering in Computer Science & Engineering of the Visvesvaraya Technological University, Belagavi during the academic year 2023-24. It is certified that all corrections/suggestions indicated have been incorporated in the report. The project report has been approved as it satisfies the academic requirements with respect to the Project work prescribed for a Bachelor of Engineering Degree.*

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~ ~ ~ ~ ~ ~ ~ ~ ABSTRACT ~ ~ ~ ~ ~ ~ ~ ~

In this project, we explore the potential of machine learning to enhance the efficiency of the recruitment process in an era of advanced technology and digitalization. Our primary goal is to identify various variables that significantly influence recruitment outcomes and address common HR challenges by proposing a machine learning-based solution.

The methodology involves analyzing characteristics prevalent among past candidates, leveraging data from reputable sources such as Kaggle and Data World. Our findings indicate that machine learning can substantially benefit the recruitment process by reducing selection costs and time, minimizing emotional biases, and improving accuracy.

Employee recruitment is inherently complex, with many candidates potentially rejecting job offers. Predicting which candidates will accept or decline offers poses a significant challenge. Our proposed system automates this prediction process, using efficient machine learning algorithms to analyze HR data and forecast candidate decisions.

The solution is implemented as a browser-based application tailored for organizational use, developed using Microsoft technologies including Visual Studio, C#, and SQL Server. This system not only streamlines the recruitment process but also provides valuable insights into candidate behavior, ultimately facilitating more informed decision-making in HR practices.

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CHAPTER - 1

INTRODUCTION

1.1 Overview

The recruitment process in organizations is often complex, time-consuming, and expensive. Traditional methods involve advertising job openings, manually shortlisting candidates, and conducting multiple rounds of interviews. Despite these efforts, predicting which selected candidates will actually join the company remains a significant challenge, leading to inefficiencies and increased costs.

This project aims to address these challenges by leveraging machine learning techniques to predict candidate joining. By analyzing historical HR data, we can identify patterns and factors that influence a candidate's decision to accept a job offer. The project utilizes supervised learning algorithms such as Bayesian, ID3, Random Forest, and Decision Tree to train the model on datasets sourced from platforms like Kaggle.

Our proposed system is a real-time, browser-based application developed using Microsoft technologies, including Visual Studio and SQL Server. This system automates the prediction of candidate joining, providing organizations with valuable insights to better manage their recruitment process. By accurately predicting which candidates are likely to join, companies can streamline their planning, reduce unnecessary investments, and enhance overall recruitment efficiency.

Key benefits of this project include:

- Reduction in recruitment time and costs.
- Minimization of human biases and emotional factors.
- Improved accuracy in candidate selection.
- Enhanced ability to meet organizational staffing needs effectively.

1.2 Problem Statement

The current recruitment process at the company is entirely manual, leading to increased time and higher costs. Without automation, understanding candidate requirements and predicting candidate joining are challenging, resulting in inefficiencies and elevated expenses. This lack of automation in predicting candidate joining creates significant obstacles, prolonging the recruitment cycle and increasing investments. Additionally, the difficulty in identifying suitable candidates for job roles and recognizing those likely to accept job offers exacerbates the problem. The absence of a real-time system for candidate joining prediction is a critical issue that hampers the overall efficiency of the recruitment process.

1.3 Solution

This project offers a robust solution to the challenges inherent in manual recruitment processes by introducing automation and real-time candidate joining prediction. Leveraging advanced machine learning techniques, the system analyzes candidate requirements and historical data to accurately forecast candidates' likelihood of joining. By integrating real-time data processing capabilities and implementing efficient algorithms, such as Bayesian, ID3, or Random Forest, the system provides timely insights into candidate suitability and joining probabilities. The utilization of modern technologies, including Microsoft's Visual Studio and SQL Server, ensures seamless integration into existing HR systems, facilitating smoother recruitment workflows. Through this solution, companies can significantly reduce time and costs associated with recruitment while enhancing their ability to identify and attract suitable candidates efficiently.

1.4 Existing System

The current recruitment process heavily relies on manual intervention, leading to inefficiencies in candidate selection and joining prediction. Despite the availability of basic statistical analysis or rudimentary algorithms for candidate evaluation, their lack of sophistication and real-time capabilities hampers their effectiveness. Moreover, existing systems often rely on static datasets, limiting their adaptability to dynamic recruitment scenarios and resulting in less accurate predictions. These limitations, including the absence of real-time implementations, insufficient dataset usage, and the manual nature of the process, contribute to increased time and expenses in recruitment.

Addressing these shortcomings requires innovative solutions that leverage advanced machine learning techniques, real-time capabilities, and automation. Implementing such solutions can streamline the recruitment process, enhance candidate selection accuracy, and reduce time and resource investments, ultimately leading to more efficient and cost-effective hiring practices.

1.5 Proposed System

The proposed system introduces a significant shift in recruitment practices by leveraging advanced machine learning algorithms to streamline processes and enhance candidate joining prediction. Unlike conventional methods reliant on manual interventions and simplistic algorithms, the proposed system integrates supervised learning techniques such as Bayesian, ID3, Random Forest, or decision trees. Analyzing extensive HR datasets sourced from reputable platforms like Kaggle enables real-time predictions of candidate joining probabilities. This approach not only reduces recruitment time and costs but also offers timely insights into candidate suitability, thereby enhancing overall recruitment efficiency. The project's major objectives include building HR software as a real-time application using Microsoft technologies such as Visual Studio and SQL Server. Data preprocessing techniques like chi-square or binning method are employed to eliminate irrelevant data, ensuring only pertinent information is fed into the machine learning model. Following preprocessing, machine learning models built using the Bayesian algorithm predict candidate joining probabilities based on parameter probabilities. Evaluation of these models is conducted using confusion matrix methodology, aiming for an accuracy threshold of above 92% by partitioning training datasets into testing subsets to validate model performance.

CHAPTER – 2

LITERATURE SURVEY

2.1 Literature Review

1. IEEE PAPER TITLE: "An Intelligent Career Guidance System using Machine Learning"

Year of Publication: 2021

Authors: Vignesh S, Shivani Priyanka C, Shree Manju H, Mythili K.

Description: Many students worldwide find themselves in a state of confusion upon completing their higher secondary education, faced with the pivotal decision of choosing a career path. At the age of 18, many lack the maturity needed to make this decision with confidence. As we progress through stages of life, we come to realize that every student grapples with doubts and uncertainties regarding their post-12th options, which stand as the tallest question before them. Following this initial dilemma, arises the concern of possessing the necessary skills for the chosen path. Our computerized career counseling system aims to alleviate this uncertainty by predicting suitable career paths based on an individual's skills assessed through objective tests. However, selecting a career is not solely about choosing a course; it encompasses understanding oneself, capabilities, and aspirations. During this pivotal time, students receive guidance from various sources, including parents, teachers, and educational specialists, to inform their decisions. Nevertheless, many students find themselves regretting their choices later on. For instance, there persists a myth that excelling in 12th-grade chemistry leads naturally to pursuing chemical engineering, yet reality often diverges from such assumptions. Through extensive discussions with current engineering students and those in 11th and 12th grades, we recognized the need for an objective assessment of individual skill sets and aptitudes to guide students toward suitable career paths. As an initial step, we identified broader skill sets essential for various engineering departments such as Computer Science and Engineering, Electronics and Communication Engineering, Electrical and Electronics Engineering, Mechanical Engineering, and others. Using our objective assessment, we analyze these skill sets to predict the most suitable department for each individual. By employing this functional chart to address students' queries, we aim to significantly reduce the incidence of choosing unsuitable career paths. Our focused questions aim to identify the core strengths within each student's skill set, guiding them towards a fulfilling career choice.

Methodology: Machine Learning Algorithms, K Nearest Neighbour, Classification.

Advantages:

- **Consideration of Student Skills:** Our approach takes into account the unique skills of each student, ensuring a personalized recommendation for their career path.
- **Enhanced Results with KNN Algorithm:** Leveraging the KNN algorithm, which operates exclusively on numerical data, allows us to achieve superior accuracy and effectiveness in predicting suitable career paths.
- **Relevance to the Educational Sector:** Tailored specifically for the educational sector, our model provides valuable insights to students, educators, and institutions, facilitating informed decision-making in career choices.

Limitations:

- **Dependence on Machine Learning Models:** The predictive aspect of our system relies on machine learning algorithms to determine the most suitable department for students, which may introduce complexities in interpretation and implementation.
- **Recommendations Based on Objective Testing:** Our model offers course recommendations based on objective tests, potentially limiting the consideration of qualitative factors and individual preferences in career decision-making.
- **Processing Time Consideration:** Due to the complexity of processing data and running algorithms, our system may require additional time compared to traditional methods, necessitating efficient resource allocation and management.

2. IEEE PAPER TITLE: "Predicting Students' Employability using Machine Learning Approach"

Year of publication: 2020

Authors: Cherry D. Casuat,Enrique D. Festijo.

Description: This study aims to utilize machine learning to predict students' employability. The researchers conducted a case study involving 27,000 pieces of information, including 3000 observations and 9 features, derived from students' Mock Job Interview Evaluation Results, On-the-Job Training (OJT) Student Performance Ratings, and General Point Averages (GPA) of students enrolled in OJT courses from School Year 2015 to School Year 2018. Three learning algorithms, namely Decision Trees (DT), Random Forest (RF), and Support Vector Machine (SVM), were employed to understand the factors influencing students' employability. These algorithms were evaluated using performance metrics such as accuracy, precision, recall, F1-score, and support measures.

Higher Education (HE) plays a vital role in a nation's economic development by fostering a competent and qualified workforce. It serves as the cornerstone for various benefits, including talent nurturing, enhancing national human capital quality, and bolstering a nation's competitive edge. Consequently, educational institutions strive to improve their students' employability, recognizing it as a major concern for most students. Anticipating students' employability before job applications can enhance institutional placement rates and enable students to address identified weaknesses prior to interviews.

The trend towards employment-oriented education underscores the importance of predicting students' employability. Previous research has predominantly utilized data mining techniques such as Decision Trees, Naïve Bayes, and Support Vector Machine. Logistic Regression, K-Nearest Neighbor, Random Forest, SVM (LinearSVC), Quadratic Discriminant Analysis (QDA), and Multi-class AdaBoost have also been employed in predicting employability. This paper aims to develop a machine learning approach to predict student employability and analyze associated skillset indicators. It is important to note that this paper is still in the developmental stage of a machine learning-based model for predicting student employability. The researchers were motivated to undertake this study within the context of emerging areas such as institutional intelligence or academic analytics to enhance and promote identified skillsets that contribute to better employment prospects for engineering students at the Technological Institute of the Philippines.

Methodology: Decision Trees (DT), Random Forest (RF), and Support vector machine (SVM).

Advantages:

- **Utilization of Efficient Algorithms:** The adoption of efficient algorithms ensures streamlined processing and quicker results, enhancing the overall effectiveness of the system.
- **Rapid Output Generation:** The application of these algorithms leads to expedited result generation, providing timely insights for decision-making.
- **Relevance to the Educational Sector:** Tailored specifically for predicting employability, this system holds significant relevance for educational institutions seeking to enhance their students' career prospects.

Limitations:

- **Focus on Employability Prediction:** The system primarily focuses on predicting student employability, which may limit its applicability to broader aspects of career development and placement.
- **Lack of Candidate Joining Prediction:** Notably, the system does not extend its predictive capabilities to anticipate candidate joining, which could provide additional insights into workforce dynamics.
- **Limited to Machine Learning Model Development:** The scope of this work is confined to the development of a machine learning model, without real-time implementations or broader practical applications.
- **Absence of Real-Time Implementation:** While the model has been developed, real-time implementations have not been executed, potentially limiting its validation and practical utility in dynamic environments.

3. IEEE PAPER TITLE: "Application of Data Mining in Predicting College Graduates Employment"

Year of Publication: 2021

Authors: Shouwu H,Xiaoying Li,Jia Chen.

Description: With the popularization and expansion of higher education in China, college student employment has become a focal point of public attention. This study examines the employment prospects of 2016 graduates from Guilin University of Technology, utilizing data mining techniques to predict employment outcomes based on five influencing factors. The study applies the CART algorithm to calculate Gini indexes and construct a decision tree, and then employs the random forest algorithm to enhance prediction accuracy. After data collection, cleaning, and conversion, 496 employment records were obtained, with 70% used as training samples. The model, tested on the remaining samples, achieved an accuracy of 81%. The study identifies academic achievement and graduation qualification as significant factors influencing student employability. The combined use of decision tree and random forest algorithms offers a novel method for employment forecasting.

Since the expansion of college enrollment in 1999, China has seen a rapid rise in higher education enrollment ratios, culminating in 8.74 million graduates in 2020. This surge has shifted societal and academic focus toward graduate employment. Applying data mining technology to predict employment and uncover potential patterns can provide a solid foundation for employment guidance, thereby enhancing graduate employability. Numerous scholars have explored the use of data mining technology in college employment research. Studies have utilized various classification algorithms provided by WEKA, such as logistic regression, Naive Bayes, and decision trees, to forecast graduate employment, with logistic regression emerging as the best classifier based on experimental results. Several authors have used decision trees to analyze and predict university graduate employability. For instance, some integrated databases of basic information, scores, and employment information for college graduates, employing decision tree algorithms to identify key factors affecting employment units. Others used the C5.0 algorithm to create a classification decision tree, exploring factors such as academic performance, language proficiency scores, origin, major, failing subjects, and employment region and city. In another study, the employment information of graduates from traditional Chinese medicine programs was analyzed using the C4.5 algorithm and further improved with the random forest algorithm for better accuracy. Additionally, some research extracted attributes like major, academic performance, English competence, and computer skills to predict employment trends with high accuracy.

Overall, data mining methods have proven effective in studying employability issues. Based on accuracy, logistic regression, decision trees, and random forest algorithms are identified as the best techniques for employment studies. However, most research focuses on factors like academic performance, English competence, and computer skills, while neglecting elements such as family background and part-time jobs in college associations. These additional factors can significantly impact employment outcomes and prediction accuracy. This study aims to develop a data mining model to predict student employment and analyze the factors influencing graduates' job prospects. Employment-related information was collected, the CART decision tree algorithm was applied to five key factors, and prediction accuracy was further improved using the random forest algorithm.

Methodology: Decision Trees (DT), Random Forest (RF).

Advantages:

- **Utilization of Data Mining Techniques:** The system leverages advanced data mining techniques, ensuring robust analysis and insights.
- **Scalable for Large Datasets:** Designed to handle extensive data, making it suitable for large-scale applications.
- **High Accuracy:** Achieves approximately 90% accuracy, enhancing the reliability of employment predictions.

Limitations:

- **Focus on Employment Prediction:** The system is specifically designed for predicting student employment, which may limit its applicability to other aspects of career development.
- **Does Not Predict Candidate Joining:** The model does not extend to predicting whether candidates will accept job offers.
- **Limited Dataset Size:** The research is based on relatively small datasets, which may impact the generalizability of the results.
- **Data Mining Methods:** While effective, the reliance on data mining techniques may not fully capture real-time dynamics.
- **Lack of Real-Time Implementations:** The system has not been tested in real-time scenarios, potentially limiting its practical applicability.

4. IEEE PAPER TITLE: "Future Job Prediction in Trivandrum using Machine Learning Techniques"

Year of Publication: 2018

Authors: Akku George Saju

Description: This dissertation explores the impact of machine learning on job aspirants through an interactive web application. Job seeking is a challenging task in India, and determining a career path is even more difficult. There is a lack of planning in the lives of job aspirants, and they often do not receive updated information about job opportunities in various sectors. There is a need for a proper medium through which job aspirants can access information on job vacancies, intakes, salaries, etc., in each industry for future years. With such predictions, job aspirants can plan their career paths and attain the specific qualifications required for desired jobs in the upcoming years. Nowadays, websites serve as a powerful medium to reach job aspirants.

The primary aim of this dissertation is to create a medium for job aspirants to predict job prospect features such as job vacancies, intakes, and salaries in different sectors like management, administration, finance, and IT for future years. Additionally, users can understand what educational qualifications are required to achieve specific salary ranges. Machine Learning is the science of getting computers to learn and behave like humans, enhancing their learning autonomously over time by providing them with information through real-world interactions and observations (Faggella, 2017). The main objectives of this research are:

1. To analyze and predict job prospect features in Trivandrum, the capital city of Kerala, using machine learning techniques.
2. To develop a web application that displays future job features with visualization effects.

Individual drawbacks, such as a lack of communication and analytical skills, demand for highly skilled labor, unsatisfactory incomes, and inadequate technical skills for prospective job roles, often lead to unemployment. Many of these issues can be resolved by introducing a proper medium like web applications, which help recognize future job vacancies in a sector. By understanding future job opportunities, users can decide what qualifications are vital to achieving jobs and high salaries in the future. The primary research questions addressed in this work are:

1. How accurately can machine learning techniques analyze and predict job prospect features in Trivandrum, and how can these predictions be integrated into a web application?

2. How does the prediction accuracy vary across different sectors based on end-user demands?

Methodology: Decision tree, linear regression, decision forest and neural network regression.

Advantages:

- **Beneficial for Final Year Students:** This system proves invaluable for final year students, offering comprehensive assistance in their job search endeavors.
- **Comprehensive Information:** It provides all relevant information related to job opportunities, aiding users in making informed decisions.
- **High Accuracy:** Leveraging efficient algorithms ensures a high level of accuracy, with approximately 90% precision in job predictions.

Limitations:

- **Focus on Job Prediction:** The system is primarily designed for predicting job opportunities, potentially limiting its scope in addressing other aspects of career development.
- **Lack of Candidate Joining Prediction:** Notably, the system does not extend its predictive capabilities to anticipate whether candidates will accept job offers.
- **Limited to ML Model:** The absence of real-time implementations restricts the system to operate solely as a machine learning model without dynamic updates or feedback mechanisms.

5. IEEE PAPER TITLE: "Appropriate Job Selection Using Machine Learning Techniques"

Year of Publication: 2023

Authors: Md. Ashikur Rahman Khan,Anjan Rhudra Paul ,Fardowsi Rahman,Jony Akter ,Zakia Sultana,Masudur Rahman

Description: Job recruitment entails selecting a qualified candidate for a vacant position within an organization. Job selection, particularly for freshers, poses a significant challenge amidst the myriad of options available upon graduation. This research aims to construct a model to predict a job's suitability for a candidate based on their skills, experiences, and job preferences, leveraging Machine Learning approaches to address these complexities.

Data were gathered from 120 individuals currently employed across various fields. Various machine learning techniques were employed to predict their satisfaction with their current jobs. Additionally, other performance metrics were analyzed and compared with alternative algorithms to determine the best-performing model. Results indicate that the random forest technique emerges as the most effective method for forecasting appropriate job selection, achieving 92% accuracy with an 8% error rate. This research holds promise as a valuable tool for aiding job selection based on individuals' preferences and desires.

Selecting the right career path is a pivotal decision, given the multitude of job opportunities available. While some individuals possess the requisite skills, they may require assistance in determining the suitability of offered positions. It is imperative for students to choose careers that align with their strengths to maximize rewards and avert future challenges. Failure to do so may result in dissatisfaction or the need for further training in an unsuitable field.

The evolving employment landscape, driven by technological advancements such as automation and artificial intelligence, underscores the importance of making informed career decisions. Such decisions involve both cognitive and emotional considerations, with alignment between the two leading to greater satisfaction. Choosing a suitable career path is paramount for a prosperous and secure future, considering personal attributes, academic background, and industry demands.

Information technology (IT) roles are proliferating across various sectors, necessitating professionals adept at handling emerging technologies. A job recommendation system should align candidates' skills with companies' needs, promoting the best possible fit. Selection procedures vary based on job

characteristics, with emphasis placed on candidates' abilities, skills, and qualifications.

In conclusion, personal selection processes play a crucial role in identifying candidates best suited for specific roles. As technology continues to evolve, individuals must make informed career choices to thrive in their respective industries. By leveraging machine learning techniques and aligning skill sets with job requirements, individuals can make deliberate and intelligent career decisions conducive to success and fulfillment.

Methodology: Decision Tree, Gaussian Naïve Bayes, KNN, Random Forest, Multilayer perceptron, Support Vector Machine.

Advantages:

- **Beneficial for Final Year Students:** This system proves invaluable for final year students, aiding them in identifying suitable job opportunities based on their skill sets and preferences.
- **Assistance in Job Recruitment:** The utilization of efficient algorithms facilitates accurate job predictions, thereby assisting HR teams in streamlining the recruitment process.
- **Enhanced Accuracy with Efficient Algorithms:** Leveraging efficient algorithms results in a high level of accuracy, achieving approximately 92% accuracy in job prediction, thereby enhancing the reliability of the system.

Limitations:

- **Utilization of Small Datasets:** The reliance on small datasets may limit the system's ability to capture the full spectrum of job opportunities and candidate profiles, potentially impacting the accuracy of predictions.
- **Absence of Candidate Joining Prediction:** Notably, the system does not extend its predictive capabilities to anticipate candidate joining, which could provide additional insights into workforce dynamics and organizational planning.
- **Limited to Static Data:** The system operates solely on static data, limiting its adaptability to dynamic job market trends and evolving candidate profiles.
- **Absence of Real-Time Implementations:** While the model demonstrates promising results, real-time implementations have not been conducted, potentially hindering its practical utility in dynamic recruitment scenarios.

2.2 Survey Findings

After reviewing existing research on candidate prediction using machine learning (ML) algorithms, the following main findings were observed:

1. **Limited Implementation**: Many existing research works have proposed the idea of predicting candidate joining using ML algorithms but have not implemented these concepts.
2. **Dependency on Ready Libraries**: In several implemented works, algorithms were not programmed from scratch; instead, researchers relied on ready libraries and tools for algorithmic functionalities. In contrast, our proposed system involves programming the algorithms, enabling customization and thorough testing of results.
3. **Data Set Size**: Existing works often utilize smaller datasets for training, whereas our proposed system employs extensive datasets to enhance prediction accuracy.
4. **Lack of Real-time Implementations**: None of the existing models are implemented in real-time scenarios, which is a crucial requirement for effective recruitment processes. Our system addresses this gap by enabling real-time application using Microsoft technologies.
5. **Technology Stack**: While previous works predominantly utilize Python, R, or other data science tools, our system leverages Microsoft technologies, including Visual Studio for the front end, SQL Server for the backend, and C# as the programming language.
6. **Automation**: Existing works lack automation for candidate joining prediction, leading to manual processes that are time-consuming and resource-intensive. Our system introduces automation for this purpose, facilitating efficient recruitment processes.
7. **Limitations of Existing Work**: The limitations of existing research include a focus on theoretical concepts without real-time implementations, less reliance on large datasets, and consequently, lower prediction accuracy. These factors underscore the significance of our proposed system in addressing these shortcomings.

In summary, the survey findings reveal the necessity for a comprehensive and real-time candidate prediction system, which our proposed solution aims to fulfill by integrating ML algorithms with Microsoft technologies to automate and enhance the recruitment process.

CHAPTER – 3

SOFTWARE REQUIREMENT SPECIFICATIONS

3.1 Functional Requirements

User Access: The system must be accessible to administrators and the HR team.

Utilization of Data Science Techniques: The system should employ data science techniques for prediction purposes.

Utilization of Previous Data-sets: Previous data-sets must be utilized by the system for result prediction.

Supervised Learning Algorithm Integration: The system should integrate supervised learning algorithms to generate outputs.

Accuracy Based on Data-set Size: The accuracy of the system's results should be influenced by the size of the data-set used.

3.2 Non-Functional Requirements

- **Availability**: The system operates as a browser-based prediction software accessible 24/7 from various locations.
- **Reliability**: Our application prioritizes user satisfaction and is tailored to meet user requirements, ensuring a user-friendly experience and greater reliability compared to other applications.
- **Scalability**: Leveraging data science techniques for prediction, our system seamlessly adapts to dynamic data without requiring code modifications, ensuring scalability and flexibility in accommodating changing data sets.
- **Security**: Deployed as a browser-based application on server-side, our system restricts access to authorized users only. Data security is further ensured by storing information in SQL Server, enhancing authentication and overall system security.
- **Performance**: Combining data science techniques with advanced C# programming concepts, our system is optimized for efficiency, ensuring high performance in generating results.

- **Quality of Service**: Regular software updates facilitate easy maintenance, while the system's design allows for seamless future modifications and enhancements, ensuring sustained high-quality service.

3.3 System Requirements

Hardware Requirements

- **Processor**: The system requires a processor with at least octa-core capability, including models like **i3, i5, i7**, or higher.
- **Speed**: A minimum processor speed of **2 GHz** is necessary for optimal performance.
- **RAM**: The system should have a minimum of **4 GB RAM**, although higher RAM capacities are recommended for smoother operation.
- **Hard Disk**: A hard disk with a capacity of **500 GB** or more is recommended. Alternatively, a solid-state drive (SSD) with a capacity of **256 GB** or higher can also suffice.

Software Requirements

- **Operating System**: The system is compatible with **Windows 10 or 11**.
- **Integrated Development Environment (IDE)**: **Visual Studio** is required for software development.
- **Database Management System (DB)**: **SQL Server** is utilized for database management.
- **Programming Language**: The project is developed using the **C#** programming language.
- **Front End Technologies**: **HTML, CSS, JavaScript, jQuery**, **and Bootstrap** are employed for front-end development.
- **Supported Browsers**: The project is compatible with popular web browsers such as **Google Chrome, Firefox, Opera, and others.**

CHAPTER – 4

SYSTEM ANALYSIS AND DESIGN

4.1 System Analysis

The candidate job interview process in any organization requires significant time, human resources, and investments. The process typically involves multiple procedures and rounds of interviews. After the interviews, candidates are selected and notified. However, not all selected candidates end up joining the company due to various reasons. There is currently no process, procedure, tool, or automation to predict if a selected candidate will join the company. This gap motivates us to develop an automated system for predicting candidate joining using efficient machine learning algorithms.

System Objectives:

- **Primary Aim**: Predict whether a selected job candidate will join the company.
- **Real-Time Implementation**: Helps companies in the recruitment process with real-time data.
- **User Interface**: A GUI-based full-fledged software for predicting candidate joining.
- **Accessibility**: The system is accessible through real-time browsers such as Chrome, Opera, Edge, etc.
- **Data Parameters**: Utilizes candidate gender, age, previous experience, job type, designation, salary package, location, etc.
- **Algorithms**: Applies supervised learning algorithms, specifically KNN and Naïve Bayes, to process recruitment datasets and predict candidate joining. Results are compared to determine the better algorithm.
- **Development Tools**: Built using Visual Studio and SQL Server, the system is designed to work with real-time data and dynamic datasets.

Feasibility Study Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of the existing business or proposed venture, the opportunities and threats presented by the environment, the resources required, and the prospects for success.

Economic Feasibility The economic feasibility study found that the income generated for the administrator through the proposed system exceeds the development cost (investment), making the project economically feasible.

Operational Feasibility The system provides an attractive and easy-to-use graphical user interface. The primary users are the administrator and authorized users. The application is designed to be user-friendly and easily accessible, making the project operationally feasible.

Technical Feasibility Developing this system requires knowledge of the Visual Studio framework, ASP.NET 4.0, C#, and SQL Server. From the user perspective, it only requires a web browser and an efficient internet connection, making the project technically feasible.

4.2 High Level Design

Project Structure: The project structure outlines the flow of the project, including user roles and their respective functionalities. Below is an explanation of the various modules and their interactions.

Users:

1. **Administrator**:
    - Maintains the entire application with full authority.
    - Manages user accounts, datasets, and overall system settings.
2. **Authorized Users (Companies)**:
    - Service receivers who can post queries to the admin.
    - Utilize the system to predict candidate joining.
3. **Visitors**:
    - Can view basic information about the system.

Administrator Functionalities:

1. **Login Module**:
    - Admin logs into the application using an admin ID and password.
2. **Add Users**:
    - Admin adds all authorized users/companies from different cities.
3. **Set ID and Password**:
    - Admin sets unique IDs and passwords for individual users.
4. **Manage Dataset**:
    - Admin manages the training dataset used in the project.
5. **Import Data from Excel**:
    - Imports training datasets stored in Excel sheets into the system.

6. **Candidate Joining Prediction Module**:
    - Core module for predicting candidate joining using supervised learning algorithms (KNN or Naïve Bayes).
        - **Training the Datasets**: Prepares the dataset for model training.
        - **Building the Model (ML)**: Constructs the machine learning model.
        - **Model Evaluation (Confusion Matrix)**: Assesses model performance.
        - **Selecting the Best Model**: Chooses the most accurate model.
        - **Result Analysis**: Analyzes prediction results.
        - **Data Visualization**: Displays results using line graphs and pie charts.
7. **Candidate Joining Probability Prediction**:
    - Provides a probability score for candidate joining.
8. **Result Analysis of ML Models**:
    - Evaluates the accuracy and efficiency of the machine learning models.
9. **Data Visualization Module**:
    - Uses visual aids like pie charts and line graphs to represent data.
10. **Queries**:
    - Admin can view and respond to user queries.
11. **Update Profile**:
    - Admin can update their profile information.
12. **Sign-Out**:
    - Admin can log out of the system.

Authorized Users/Companies Functionalities:

1. **Login Module**:
    - Users log in using a specified user ID and password.
2. **Input Parameters**:
    - Users upload parameters necessary for prediction.
3. **Candidate Joining Prediction Module**:
    - Core module for predicting candidate joining using supervised learning algorithms (KNN or Naïve Bayes).
4. **Post Queries**:
    - Users can post queries to the admin for assistance.
5. **Update Profile**:

    - Users can update their profile information.
6. **Sign-Out**:
    - Users can log out of the system.

Visitors:

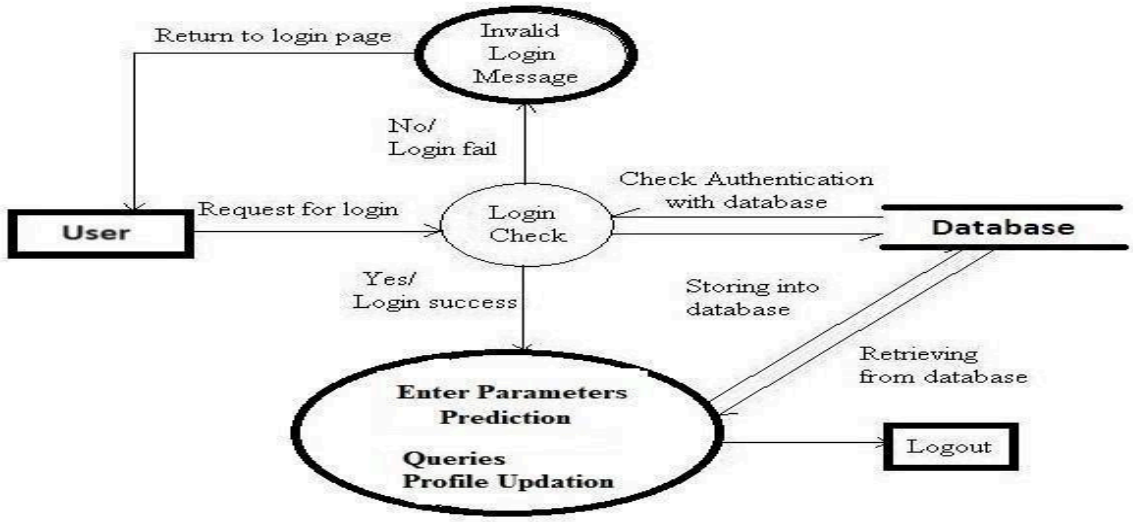
1. **Home Page**:
    - Provides an overview of the system.
2. **About Us Page**:
    - Contains information about the organization and the project.
3. **Contact Us Page**:
    - Provides contact information for further inquiries.
4. **Login Page**:
    - Allows visitors to navigate to the login interface.

Module Interactions:

- **Administrator**: The admin has access to all modules and functionalities, including user management, dataset management, and prediction modules. They can view and respond to queries, update profiles, and ensure the system operates smoothly.
- **Authorized Users**: Users interact primarily with the prediction modules, inputting data and parameters to receive predictions. They can also post queries and update their profiles.
- **Visitors**: Visitors interact with the informational pages and can navigate to the login page to access more features as authorized users.

These modules work together to create a cohesive system for predicting candidate joining, streamlining the recruitment process, and providing valuable insights to organizations.

Data Flow Diagrams:-



Data Flow Diagram (User)

1. Return to Login Page:

•When a user attempts to access the system and is not authenticated, they are redirected to the login page.

2. Invalid Login Message / Login Fail:

•If the user's login credentials are incorrect, an "Invalid Login Message" or "Login Fail" message is displayed. The user is prompted to re-enter their credentials.

3. Request for Login:

•The user submits their login credentials (username and password). This request is sent to the server for authentication.

4. Check Authentication with Database:

•The system checks the provided login credentials against the stored data in the database. This involves querying the database to verify if the user exists and if the credentials match.

5. User Login Check (Database):

•The database responds with whether the credentials are valid or not.

•No/Invalid: If the credentials are invalid, the system returns to the "Invalid Login Message / Login Fail" step.

•Yes/Valid: If the credentials are valid, the system proceeds to log the user in.

6. Login Success:

•Upon successful authentication, the user is logged into the system, and a session is created.

7. Storing into Database:

•Information related to the user session and login timestamp may be stored in the database for tracking purposes.

8. Retrieving from Database:

•Once logged in, the system retrieves necessary user data and settings from the database to personalize the user experience.

9. Enter Parameters:

•The user inputs parameters relevant to predicting candidate joining. These parameters could include candidate details, job specifications, historical data, etc.

10. Prediction:

• The system uses the entered parameters to run a machine learning algorithm to predict the likelihood of a candidate joining. This involves processing the input data through the trained ML model.

11. Queries:

• The user can make queries regarding the prediction results, asking for more detailed information or analysis. These queries are processed by the system to provide the required insights.

12. Profile Updation:

• Users can update their profiles, which may include personal details, preferences, and other relevant information. These updates are stored back into the database.

13. Logout:

• When the user chooses to log out, the system terminates the session, and any session-specific data is cleared. The user is redirected to the login page or a confirmation page indicating successful logout.

Interaction Flow Summary:

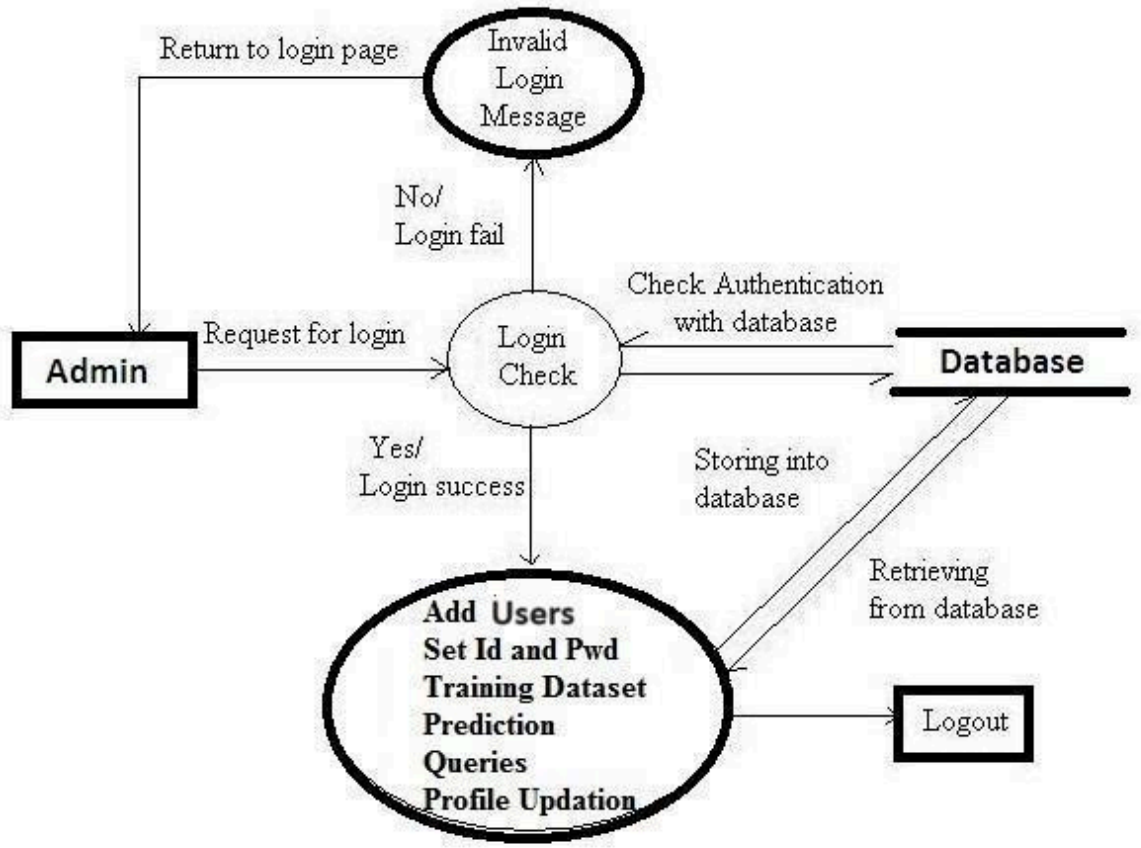
•User Input and Authentication: User attempts to log in, system checks credentials with the database.

•Session Management: On successful login, user session data is stored and retrieved as needed.

•Data Processing: Users enter parameters for prediction; the system processes these with the ML model.

•User Queries and Updates: Users can query results and update their profiles, with all changes reflected in the database.

•Logout: Users can end their session, ensuring secure logout and redirection.



Data Flow Diagram (Admin)

1.Return to Login Page:

When the admin attempts to access the system without being authenticated, they are redirected to the login page.

2.Invalid Login Message / Login Fail:

If the admin's login credentials are incorrect, an "Invalid Login Message" or "Login Fail" message is displayed. The admin is prompted to re-enter their credentials.

3.Request for Login:

The admin submits their login credentials (username and password). This request is sent to the server for authentication.

4.Check Authentication with Database:

The system checks the provided login credentials against the stored data in the database. This involves querying the database to verify if the admin exists and if the credentials match.

5.Admin Login Check (Database):

- The database responds with whether the credentials are valid or not.
- Nor/Invalid: If the credentials are invalid, the system returns to the "Invalid Login Message / Login Fail" step.
- Yea/Valid: If the credentials are valid, the system proceeds to log the admin in.

6.Login Success:

Upon successful authentication, the admin is logged into the system, and a session is created.

7.Storing into Database:

Information related to the admin session and login timestamp may be stored in the database for tracking purposes.

8.Retrieving from Database:

Once logged in, the system retrieves necessary admin data and settings from the database to personalize the admin experience.

9.Add Users:

The admin can add new users to the system. This involves entering user details and setting initial parameters for the new users.

10.Set ID and Password:

For each new user added, the admin sets a unique ID and password, which are stored in the database for future authentication.

11.Training Dataset:

The admin can input or update the training dataset used by the machine learning model. This data is essential for improving the prediction accuracy of the model.

12.Prediction:

The system uses the trained model to make predictions based on the input parameters. The predictions help in determining the likelihood of a candidate joining.

13.Queries:

The admin can query the system for detailed prediction results, data analysis, or other information. These queries are processed by the system to provide the required insights.

14.Profile Updation:

The admin can update user profiles, which may include modifying user details, resetting passwords, or changing user roles. These updates are stored back into the database.

15.Logout:

When the admin chooses to log out, the system terminates the session, and any session-specific data is cleared. The admin is redirected to the login page or a confirmation page indicating successful logout.

Interaction Flow Summary:

•Admin Input and Authentication: Admin attempts to log in, and the system checks credentials with the database.

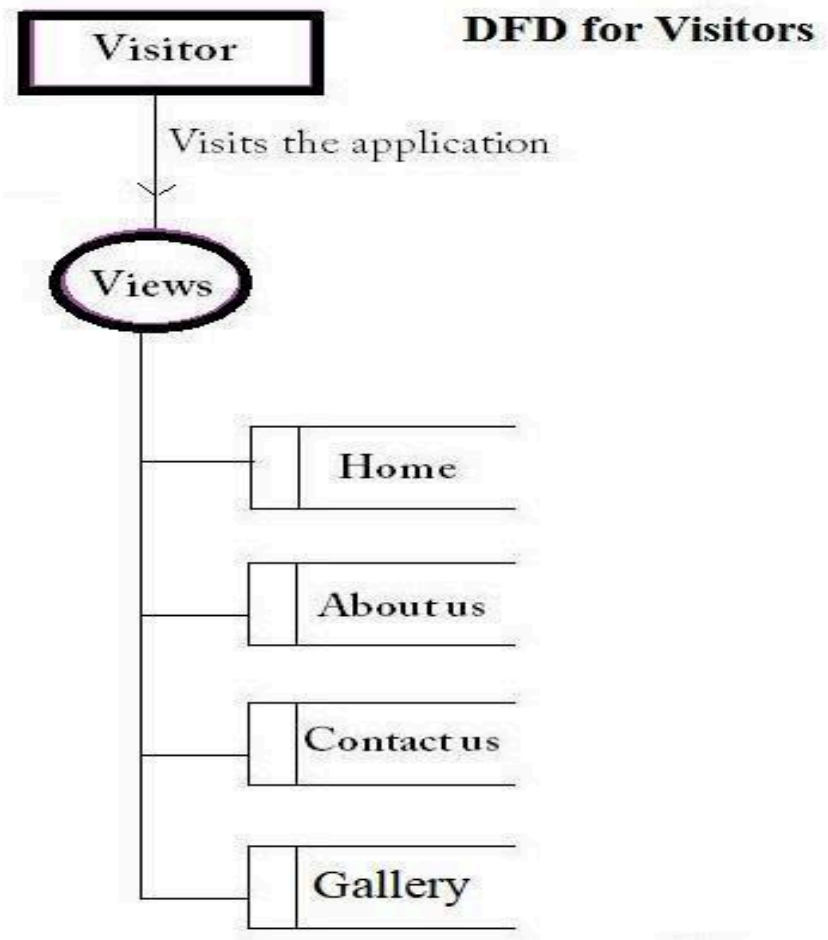
•Session Management: On successful login, admin session data is stored and retrieved as needed.

•User Management: Admins can add new users, set IDs and passwords, and update user profiles, all of which are stored in the database.

•Training and Prediction: Admins manage the training dataset and run predictions using the machine learning model.

•Queries and Data Retrieval: Admins can query the system for detailed insights and analysis based on the prediction results.

•Logout: Admins can end their session, ensuring secure logout and redirection.



1.Visitor Visits the Application:

When a visitor accesses the application, they are presented with the main interface.

2.Views Home:

The visitor can view the homepage, which typically provides an overview of the application, its features, and key information.

3.Views About Us:

The visitor can access the “About Us” section to learn more about the organization, its mission, vision, and background information.

4.Views Contact Us:

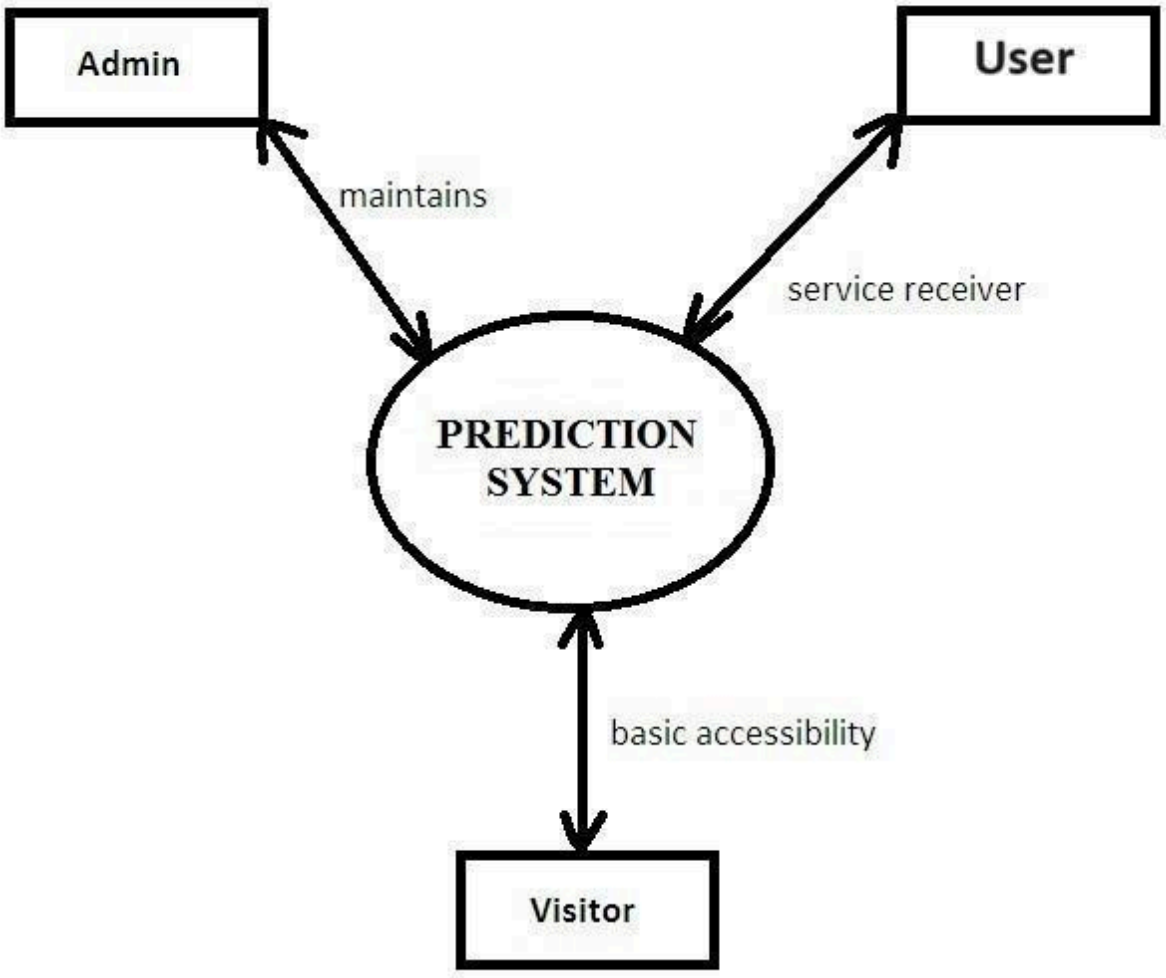
The visitor can view the “Contact Us” page to find contact details, including email addresses, phone numbers, and a contact form for inquiries.

5.Views Gallery:

The visitor can browse through the “Gallery” section, which might display images, videos, or other media related to the application and its activities.

Interaction Flow Summary:

•Visitor Browsing: Visitors access the application and navigate through various informational sections, such as Home, About Us, Contact Us, and Gallery, to learn more about the organization and its offerings.



Context Flow Diagram (Level 0)

Components and Interactions:

1.Prediction System:

•Central Entity: The core of the diagram representing the ML system responsible for predicting whether a candidate will join a company or not.

2.External Entities:

•Admin:

•Role: Manages and maintains the prediction system.

•Interaction: The arrow labeled "maintains" indicates that the Admin interacts with the Prediction System to perform tasks such as updating models, managing data, configuring system settings, and monitoring system performance. The Admin ensures the system runs smoothly and efficiently.

•User:

•Role: The primary service recipient who uses the prediction outcomes.

•Interaction: The arrow labeled "service receiver" signifies that the User interacts with the Prediction System to receive predictions. Users input candidate data into the system and receive predictions regarding the likelihood of candidates joining. Users could be HR professionals or recruiters who rely on these predictions to make informed decisions.

•Visitor:

•Role: Has basic access to the system but with limited interaction.

•Interaction: The arrow labeled "basic accessibility" indicates that the Visitor interacts with the Prediction System in a restricted manner. Visitors might be potential users or stakeholders who are only allowed to view basic information or demo features of the system without accessing the full functionalities.

Summary of Interactions

•Admin <-> Prediction System:

•Maintains: The Admin ensures the system is updated, configured, and monitored for performance and accuracy.

•User <-> Prediction System:

•Service Receiver: The User provides candidate data and receives predictions on their likelihood of joining, utilizing the system's core functionality.

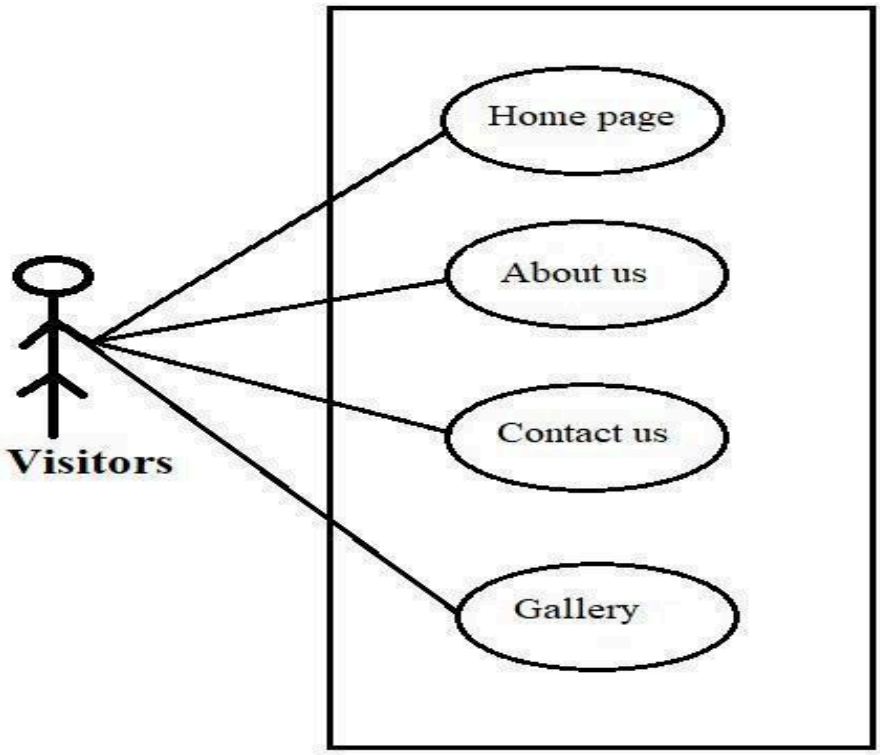
•Visitor <-> Prediction System:

•Basic Accessibility: The Visitor accesses the system in a limited capacity, possibly for viewing general information or a demonstration of the system's capabilities.

This Level 0 context flow diagram provides a high-level overview of how the Prediction System interacts with different external entities, highlighting their roles and the nature of their interactions. It sets the stage for more detailed Level 1 diagrams, which would break down the system into more granular components and processes.

4.3 Low Level Design

Use Case Diagrams:



Usecase Diagram

-

Use Case Diagram for Visitors:

1.Actors:

•Visitor: The external entity interacting with the system.

2.Use Cases:

•Home Page: Access the main landing page of the system, providing an overview of the system and its functionalities.

•About Us: View information about the organization, including its mission, team, and the purpose of the project.

•Contact Us: Access contact information and possibly a form to reach out to the organization.

•Gallery: View images, screenshots, or visual content related to the system, such as user interfaces, team photos, or events.

•Visitors: General interaction indicating the role of the Visitor accessing the basic functionalities.

Explanation of the Use Cases:

•Home Page:

•Description: The Home Page is the main entry point for Visitors, providing an overview of the system. It typically includes a brief introduction, key features, and navigation links to other parts of the site.

•Interaction: The Visitor can visit and read content on the Home Page to understand the system better.

•About Us:

•Description: This section provides detailed information about the organization, its history, mission, and the team behind the project. It may also include the objectives and significance of the Candidate Joining Prediction system.

•Interaction: The Visitor can read about the organization to gain insight into its background and purpose.

•Contact Us:

•Description: This use case allows Visitors to access contact details such as email addresses, phone numbers, and possibly a contact form to send messages directly through the website.

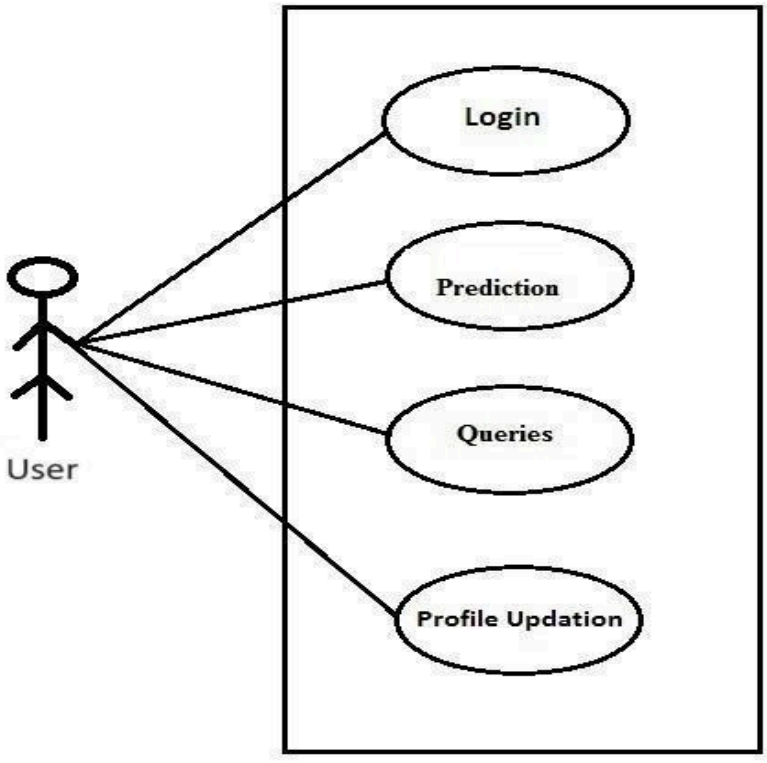
•Interaction: The Visitor can use this section to reach out to the organization with inquiries or feedback.

•Gallery:

•Description: The Gallery showcases visual content related to the system. It might include images of the user interface, diagrams explaining the prediction model, team photos, or events.

•Interaction: The Visitor can browse through images and visual content to get a visual understanding of the system and its development process.

This use case diagram shows the interactions Visitors have with the Candidate Joining Prediction system. It outlines the functionalities they can access, focusing on informational and navigational aspects. The diagram and its components ensure that Visitors can explore and understand the system without having full access to the core predictive functionalities.



Usecase Diagram (User)

Use Case Diagram for Users:

1.Actors:

•User: The external entity interacting with the system.

2.Use Cases:

•Login: Access the system by entering credentials.

•Prediction: Submit candidate data and receive predictions about their likelihood of joining.

•Queries: Submit queries or search for information within the system.

•Profile Updation: Update personal or account information within the system.

Explanation of the Use Cases:

•Login:

•Description: Users enter their credentials (username and password) to access the system.

•Interaction: The User provides their login details to gain access to the system's functionalities.

•Prediction:

•Description: Users input candidate data and receive predictions on whether the candidate will join.

•Interaction: The User submits data and receives a prediction output generated by the ML model.

•Queries:

•Description: Users can submit queries or search for specific information related to predictions, system use, or other relevant topics.

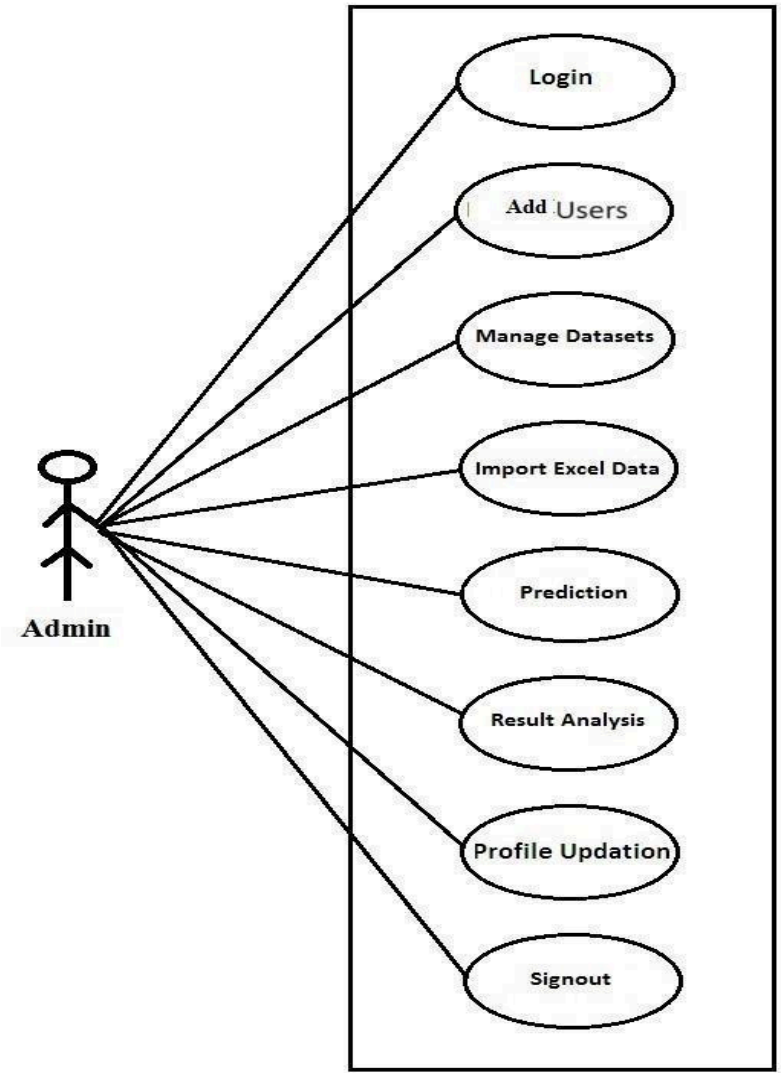
•Interaction: The User interacts with the query feature to seek answers or information.

•Profile Updation:

•Description: Users can update their personal information, such as name, email, password, and other relevant details.

•Interaction: The User modifies their profile details to keep their information current.

This use case diagram shows the interactions a User has with the "Candidate Joining Prediction using ML" system. It highlights key functionalities accessible to Users, such as logging in, making predictions, submitting queries, and updating their profiles. The diagram ensures a clear understanding of how Users engage with the system and the primary tasks they can perform.



Usecase Diagram (Admin)

Use Case Diagram for Admin:

1.Actors:

•Admin: The external entity interacting with the system.

2.Use Cases:

•Login: Access the system by entering credentials.

•Add Users: Add new users to the system.

•Manage Datasets: Oversee and manage the datasets used by the prediction system.

•Import Excel Data: Import data from Excel files into the system.

•Prediction: Use the system to make predictions.

•Result Analysis: Analyze the results of predictions.

•Profile Updation: Update personal or account information within the system.

•Signout: Log out of the system.

Explanation of the Use Cases:

•Login:

•Description: Admins enter their credentials (username and password) to access the system.

•Interaction: The Admin provides their login details to gain access to the system's functionalities.

•Add Users:

•Description: Admins can add new users to the system, providing them with access and appropriate roles.

•Interaction: The Admin inputs user details to create new user accounts.

•Manage Datasets:

•Description: Admins oversee the datasets used for making predictions, including adding, updating, and deleting datasets.

•Interaction: The Admin manages the data to ensure the system has accurate and current information.

•Import Excel Data:

•Description: Admins can import data from Excel files into the system, facilitating bulk data entry and updates.

•Interaction: The Admin uploads Excel files and ensures the data is correctly integrated into the system.

•Prediction:

•Description: Admins can input data and use the system to make predictions.

•Interaction: The Admin submits data and receives predictions generated by the ML model.

•Result Analysis:

•Description: Admins analyze the results of predictions to evaluate performance and accuracy.

•Interaction: The Admin reviews prediction outcomes and may generate reports or insights.

•Profile Updation:

•Description: Admins can update their personal information, such as name, email, password, and other relevant details.

•Interaction: The Admin modifies their profile details to keep their information current.

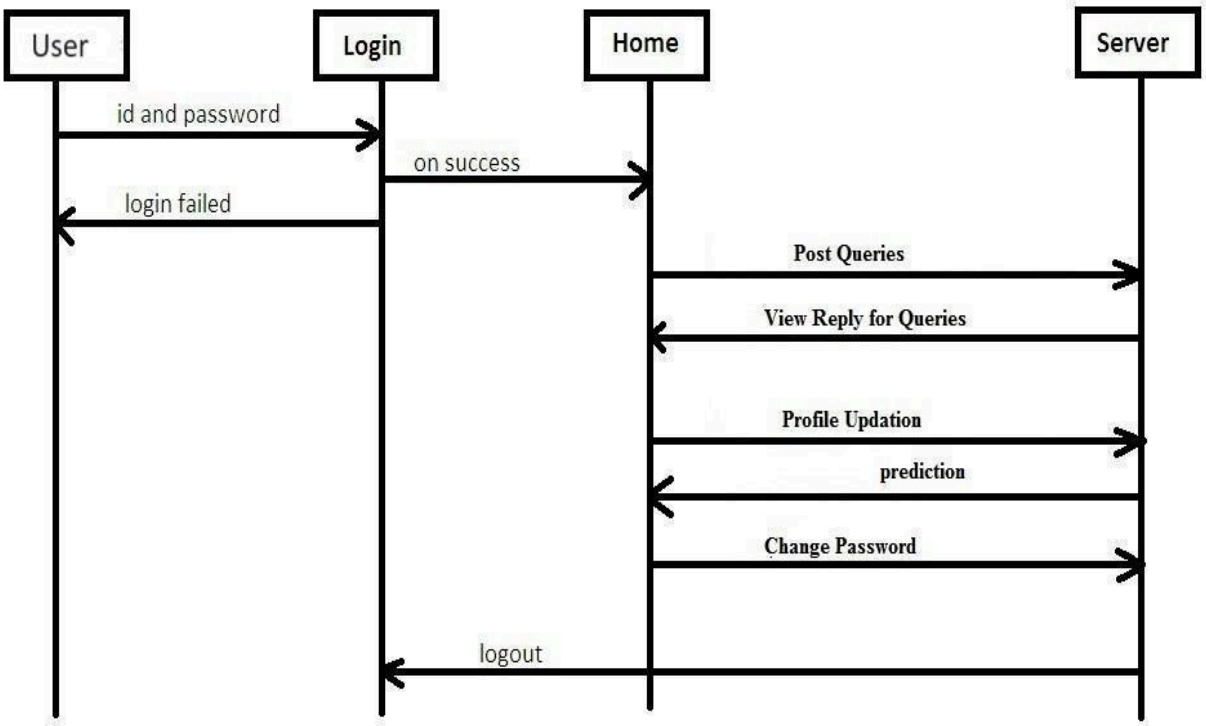
•Signout:

•Description: Admins can log out of the system securely.

•Interaction: The Admin ends their session, ensuring the system is secured from unauthorized access.

This use case diagram shows the interactions an Admin has with the "Candidate Joining Prediction using ML" system. It outlines the key functionalities accessible to Admins, including user management, dataset management, importing data, making predictions, analyzing results, updating profiles, and signing out. The diagram provides a clear overview of the Admin's comprehensive role and responsibilities within the system.

Sequence Diagrams:-



Sequence Diagram – User

1. User Interface (UI) Module:

•Login Page: Handles user authentication.

•Home Page: Central navigation hub for the user after login.

•Post Queries Page: Interface for users to post questions or queries.

•View Reply for Queries Page: Displays responses to the user's queries.

•Profile Updation Page: Allows users to update their profile information.

•Prediction Page: Displays predictions related to candidate joining.

•Change Password Page: Interface to change the user's password.

2.Server Module:

•Authentication Service: Manages user login and logout, verifies credentials.

•Query Management Service: Handles posting and responding to queries.

•Profile Management Service: Manages user profile updates.

•Prediction Service: Runs the ML model and provides joining predictions.

•Password Management Service: Handles password changes.

3.Database Module:

•Stores user credentials, profile data, queries, replies, and ML model data.

Sequence Diagram Interactions:

1.User Login:

•User enters ID and password.

•UI Module sends login credentials to Authentication Service in the Server Module.

•Authentication Service validates credentials against the Database.

•On success, Authentication Service sends a success message to UI Module, redirecting the user to the Home Page.

•On failure, Authentication Service sends a failure message to UI Module, prompting the user with an error message.

2.Post Queries:

•User navigates to the Post Queries Page.

•User submits a query via UI Module.

•UI Module sends the query to the Query Management Service.

•Query Management Service stores the query in the Database and sends an acknowledgment to the UI Module.

3.View Reply for Queries:

•User navigates to the View Reply for Queries Page.

•UI Module requests query replies from the Query Management Service.

•Query Management Service retrieves replies from the Database and sends them to the UI Module.

•UI Module displays the replies to the User.

4.Profile Updation:

•User navigates to the Profile Updation Page.

•User updates profile information via UI Module.

•UI Module sends updated information to the Profile Management Service.

•Profile Management Service updates the profile in the Database and sends confirmation to the UI Module.

5.Prediction:

•User navigates to the Prediction Page.

•UI Module sends a request for prediction to the Prediction Service.

•Prediction Service runs the ML model using stored data from the Database and generates a prediction.

•Prediction Service sends the prediction result to the UI Module.

•UI Module displays the prediction to the User.

6.Change Password:

•User navigates to the Change Password Page.

•User submits a new password via UI Module.

•UI Module sends the new password to the Password Management Service.

•Password Management Service updates the password in the Database and sends a confirmation to the UI Module.

7.Logout:

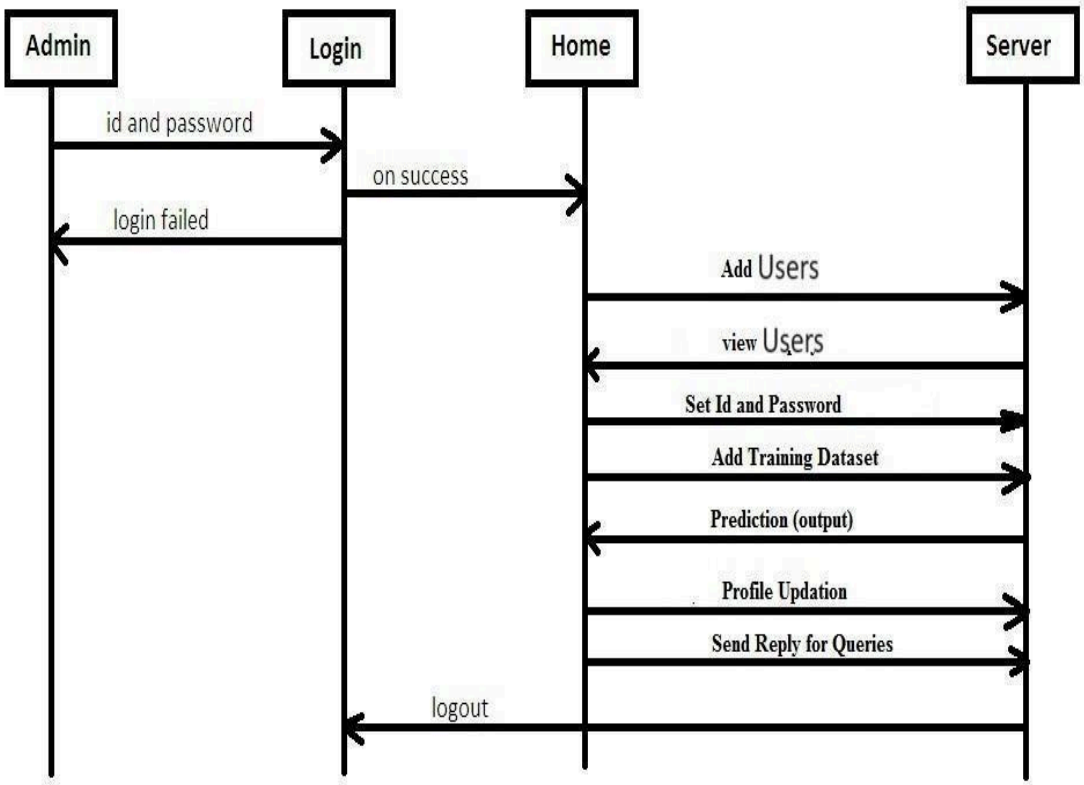
•User clicks on the logout option.

•UI Module sends a logout request to the Authentication Service.

•Authentication Service ends the user session and sends a logout confirmation to the UI Module.

•UI Module redirects the user to the Login Page.

This structure outlines how different modules interact to facilitate various functionalities in your project. Each module plays a specific role, with the UI acting as the intermediary between the user and the server, the server handling business logic, and the database storing necessary data. The interactions ensure a seamless user experience from login to accessing predictions and managing queries and profiles.



Sequence Diagram - Admin

1.User Interface (UI) Module:

•Includes Login, Home, Add Users, View Users, Set ID and Password, Add Training Dataset, Prediction (output), Profile Updation, Send Reply for Queries, and Logout functionalities.

2.Server Module:

•Contains Authentication Service, User Management Service, Dataset Management Service, Prediction Service, Profile Management Service, and Logout Service.

3.Database Module:

•Stores admin credentials, user data, training datasets, prediction results, and admin profile information.

Sequence Diagram Interactions:

1.Admin Login:

•Admin enters ID and password.

•UI Module sends login credentials to Authentication Service.

•Authentication Service verifies credentials against the Database.

•On success, Authentication Service sends a success message to UI Module, redirecting the admin to the Home Page.

•On failure, Authentication Service sends a failure message to UI Module, prompting the admin with an error message.

2.Add Users:

•Admin navigates to the Add Users page via UI Module.

•Admin enters user details and submits the form.

•UI Module sends user data to User Management Service.

•User Management Service adds the user to the Database and confirms the addition to UI Module.

3.View Users:

•Admin selects the View Users option from the Home Page.

•UI Module requests user data from User Management Service.

•User Management Service retrieves user data from the Database and sends it to UI Module.

•UI Module displays the list of users to the Admin.

4.Set ID and Password:

•Admin accesses the Set ID and Password functionality via UI Module.

•Admin selects a user and sets a new ID and password.

•UI Module sends the updated credentials to User Management Service.

•User Management Service updates the user's credentials in the Database and confirms the change to UI Module.

5.Add Training Dataset:

•Admin uploads a training dataset file via UI Module.

•UI Module sends the dataset file to Dataset Management Service.

•Dataset Management Service stores the dataset in the Database for model training.

6.Prediction (output):

•Admin navigates to the Prediction page via UI Module.

•UI Module sends a request for prediction to Prediction Service.

•Prediction Service runs the ML model using the training dataset and generates predictions.

•Prediction Service sends the prediction results to UI Module.

•UI Module displays the predictions to the Admin.

7.Profile Updation:

•Admin updates profile information via UI Module.

•UI Module sends the updated information to Profile Management Service.

•Profile Management Service updates the admin's profile in the Database and confirms the update to UI Module.

8.Send Reply for Queries:

•Admin accesses the Send Reply for Queries functionality via UI Module.

•Admin selects a query and sends a reply.

•UI Module sends the reply to Query Management Service.

•Query Management Service updates the query with the reply in the Database and confirms the action to UI Module.

9.Logout:

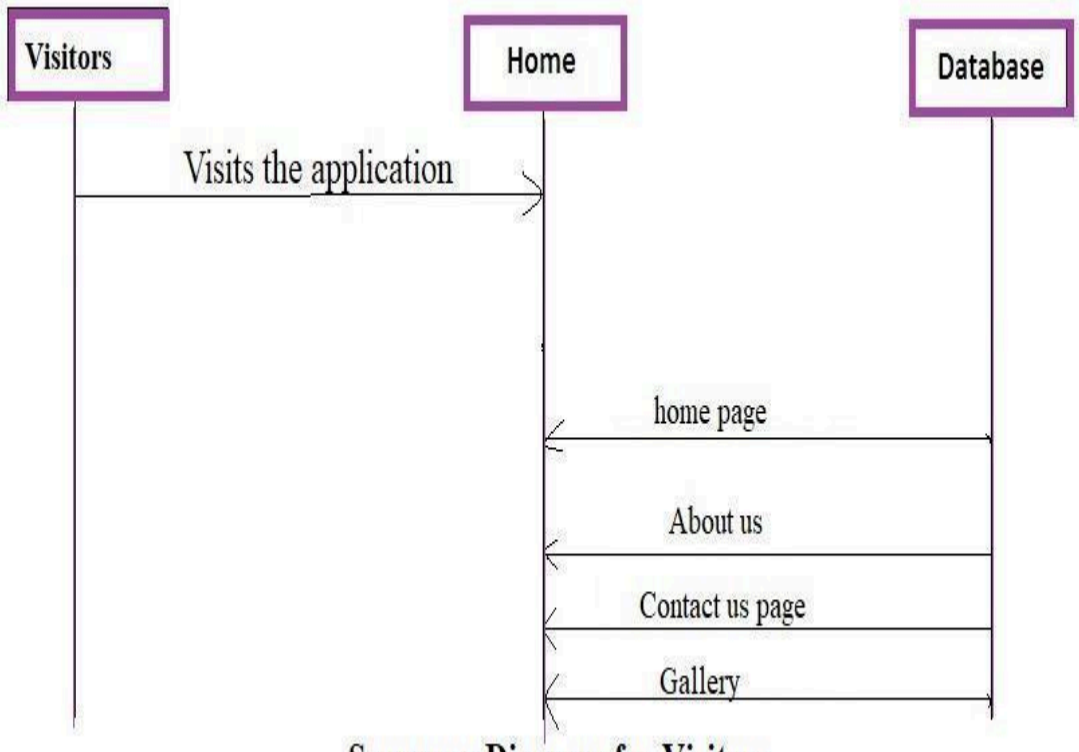
•Admin clicks on the logout option.

•UI Module sends a logout request to Logout Service.

•Logout Service ends the admin session and sends a logout confirmation to UI Module.

•UI Module redirects the admin to the Login Page.

This sequence diagram outlines the interactions and modules involved in the Admin role of your project. Each interaction contributes to the overall functionality of managing users, datasets, predictions, profiles, and system authentication.



Sequence Diagram for Visitors

1.Visitor Accesses the Application:

•Visitor accesses the application through a web browser.

•The application server serves the Home Page to the visitor's browser.

2.Home Page Interaction:

•Visitor interacts with the Home Page.

•The Home Page contains links to "About Us", "Contact Us", and "Gallery".

3.About Us Page:

•Visitor clicks on the "About Us" link.

•The application server serves the About Us Page to the visitor's browser.

4.Contact Us Page:

•Visitor clicks on the "Contact Us" link.

•The application server serves the Contact Us Page to the visitor's browser.

5.Gallery Page:

•Visitor clicks on the "Gallery" link.

•The application server serves the Gallery Page to the visitor's browser.

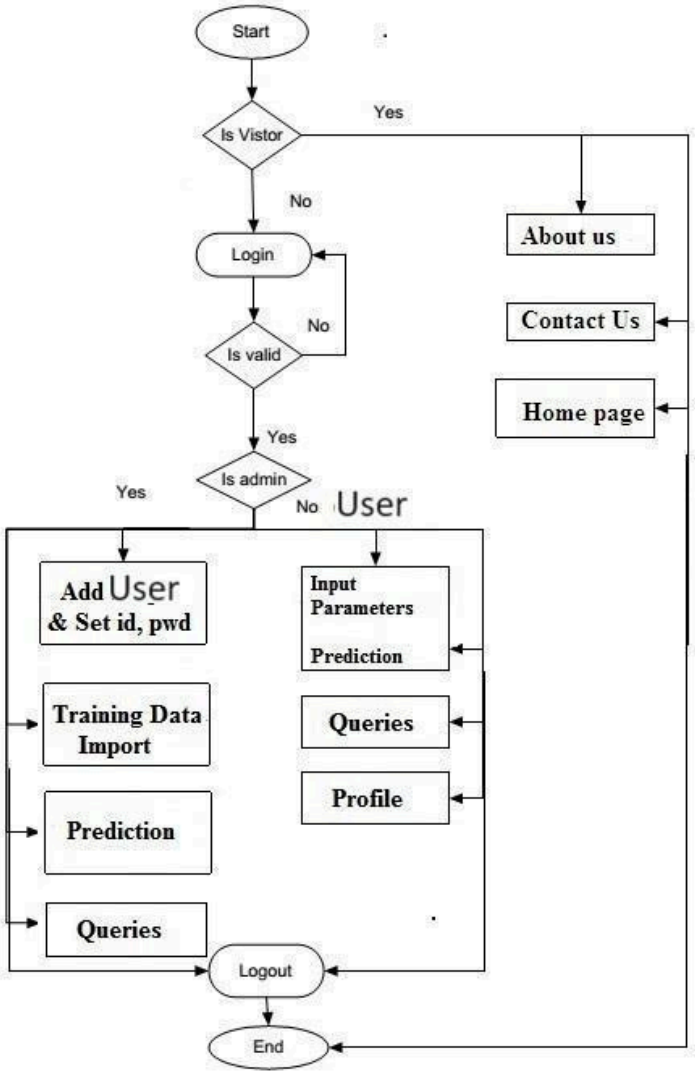
6.End Interaction:

•Visitor ends the session by closing the browser window or navigating away from the application.

CHAPTER – 5

IMPLEMENTATION DETAILS

5.1 Control Flow



1.Add User & Set ID, Password:

•This initial step involves adding a new user to the system and setting their ID and password. It's likely part of the admin's responsibilities to manage user accounts.

2.Training Data Import:

•In this step, the system imports training data necessary for training the machine learning model used for candidate joining prediction. This data could include historical hiring data, candidate attributes.

3.Prediction:

•After importing the training data, the system is ready to make predictions. Users input parameters related to candidates, and the system generates predictions about their likelihood of joining.

4.Queries:

•This step involves handling queries from users. Users might ask questions or seek clarification about the prediction process or results.

5.Start:

•Marks the starting point of the flowchart.

6.Is Visitor?:

•Checks if the current user is a visitor. If yes, the flow directs them to the “About Us” and “Contact Us” pages.

7.Is Valid?:

•Verifies if the login credentials provided by the user are valid.

8.Is Admin?:

•If the user is not a visitor and their login is valid, the flow checks if they have admin privileges.

9.Admin Flow:

•If the user is an admin, the flow includes actions such as managing users, inputting parameters for predictions, handling queries, accessing profiles, navigating the home page, and logging out.

10.User Flow:

•If the user is not an admin, the flow involves actions like inputting parameters for predictions, submitting queries, accessing profiles, navigating the home page, and logging out.

11.End:

•Marks the end of the flowchart.

5.2 Methodology

1. Overview

Objective: Build an HR software application in real-time using Microsoft technologies.

2. Tools and Technologies

Objective: Utilize Microsoft tools for development and front-end design.

- **Methods/Procedures**:
  - **Development Tools**:
    - **Visual Studio**: Used for writing and debugging the application code.
    - **SQL Server**: Used for database management and operations.
  - **Front-end Design**:
    - **Ready Controls for GUI Templates**: Pre-designed controls are used to create user interfaces.
    - **Emphasis on Attractive Front Ends and Impressive GUIs**: Focus on designing visually appealing and user-friendly interfaces.

3. Database Creation

Objective: Establish a centralized database to store and manage user data.

- **Methods/Procedures**:
  - **Centralized Database**:
    - **Microsoft SQL Server**: Selected for database creation and management.
    - **Data Storage**: User data and parameters are stored securely in SQL Server.
    - **DB Operations**: Utilize various database operations including transactional, non-transactional, and aggregate functions for efficient data management and retrieval.

4. Data Preprocessing

Objective: Prepare datasets by removing unwanted data to enhance the accuracy of machine learning models.

- **Methods/Procedures**:
  - **Purpose**: Clean and preprocess data to ensure it is suitable for ML models.
  - **Training Dataset Includes**:
    - **Attributes**: Name, mobile, address, email ID, gender, age, experience, packages, education, location, etc.
  - **Preprocessing Methods**:
    - **Chi-square Method**: Used to determine the significance of the data attributes.
    - **Binning Method**: Applied to smooth data and handle noisy data.

5. Machine Learning Model Development

Objective: Develop a machine learning model to predict candidate joining.

- **Methods/Procedures**:
  - **Algorithm**:
    - **Naïve Bayes Algorithm**: Chosen for its probabilistic approach to prediction.
  - **Process**:
    - **Input Preprocessed Data**: Feed the cleaned and prepared data into the ML model.
    - **Prediction**: The model calculates the probability of each parameter to predict candidate joining.

6. Model Evaluation

Objective: Evaluate the accuracy of the machine learning model.

- **Methods/Procedures**:
  - **Purpose**: Verify the prediction accuracy of the ML model.
  - **Method**:
    - **Confusion Matrix**: Used to evaluate the performance of the model by comparing predicted vs actual outcomes.
    - **Data Splitting**: Divide the dataset into training and testing sets in various ratios (e.g., 90:10, 80:20) to validate model performance.
    - **Accuracy Goal**: Aim to achieve an accuracy above 92%.

7. Detailed Data Preprocessing Technique

Objective: Employ binning method for effective data preprocessing.

- **Methods/Procedures**:
  - **Binning Method**:
    - **Purpose**: Smooth data and handle noise.
    - **Steps**:
      - **Sort Data**: Organize data values in ascending order.
      - **Distribute into Bins**: Allocate sorted values into different bins.
      - **Local Smoothing**: Apply smoothing by consulting the neighborhood values within each bin to reduce noise and enhance data quality.

5.3 Algorithm

Naïve Bayes algorithm

The Naïve Bayes algorithm is a probabilistic machine learning technique used for classification tasks. It's based on Bayes' theorem, which describes the probability of an event, given prior knowledge of conditions that might be related to the event.

In the context of classification, Naïve Bayes calculates the probability of each class given a set of features, and then assigns the class with the highest probability to the input data.

What makes Naïve Bayes "naïve" is its assumption of feature independence, meaning it assumes that the presence of a particular feature in a class is unrelated to the presence of any other feature. Despite this simplification, Naïve Bayes often performs well in practice, especially when working with large feature spaces or in situations where the independence assumption holds reasonably well.

Naïve Bayes is efficient, easy to implement, and requires a relatively small amount of training data to estimate the parameters necessary for classification. It's commonly used in text classification tasks like spam detection, sentiment analysis, and document categorization, but it's also applicable in other domains such as medical diagnosis and recommendation systems.

Naïve Bayes Algorithm Steps

Step 1: Scan the Dataset

- Retrieve the required data for mining from storage servers such as databases, cloud storage, Excel sheets, etc.

Step 2: Calculate the Probability of Each Attribute Value

- For each attribute, calculate the probability of occurrence using the given formula. This is done for each class (e.g., disease).

Step 3: Apply the Formula

- Use the following formula to calculate probabilities:
- P(attributevalue(ai)/subjectvaluevj)=(n_c + mp)/(n+m)

  Where:

  - n = the number of training examples for which v = vj
  - nc = number of examples for which v = vj and a = ai
  - p = a priori estimate for P(aijvj)
  - m = the equivalent sample size

Step 4: Multiply the Probabilities by ppp

- For each class, multiply the results of each attribute probability by ppp. The final results are used for classification.

Step 5: Compare the Values and Classify

- Compare the calculated probability values and classify the attribute values into one of the predefined classes.

5.4 Source Code

5.4.1 Candidate Joining

```
<%@ Page Title="" Language="C#" MasterPageFile="~/EmpMP.Master" AutoEventWireup="true" CodeBehind="_CandidateJoining.aspx.cs" Inherits="finalyearProject._CandidateJoining" %>
<asp:Content ID="Content1" ContentPlaceHolderID="head" runat="server">
</asp:Content>
<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1" runat="server">
<asp:Panel ID="Panel1" runat="server">
  <!-- Start contact Area -->
  <div id="about" class="about-area area-padding">
 <div class="container">
   <div class="row">
    <div class="col-md-12 col-sm-12 col-xs-12">
     <div class="section-headline text-center">
      <h2>Candidate Joining Prediction - Enter Parameters</h2>
     </div>
    </div>
   </div>
   <div class="row">
    <!-- single-well start-->
    <!-- single-well end-->
    <div class="col-md-6 col-sm-6 col-xs-12">
     <div class="well-middle">
      <div class="single-well">
       <a href="#">
        <h4 class="sec-head">Enter Parameters</h4>
       </a>
                <div class="form-group">
       <p>Enter DOJ Extended</p>
      <asp:TextBox ID="txtDOJExtended" runat="server" Width="400px" Height="30px"></asp:TextBox>
                    <br />
          <asp:RequiredFieldValidator ID="RequiredFieldValidator1" runat="server"
            ControlToValidate="txtDOJExtended" ErrorMessage="Enter DOJ Extended"
            ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
       <h6>DOJ Extended:Yes/No</h6>
       </div>
       <div class="form-group">
       <p>Enter Duration to accept offer</p>
      <asp:TextBox ID="txtAcceptOffer" runat="server" Width="400px" Height="30px"></asp:TextBox>
                    <br />
          <asp:RequiredFieldValidator ID="RequiredFieldValidator13" runat="server"
            ControlToValidate="txtAcceptOffer" ErrorMessage="Enter Duration to accept offer"
            ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
       <h6>Duration to accept offer: numerical</h6>
```

```
</div>
<div class="form-group">
 <p>Enter Notice period</p>
<asp:TextBox ID="txtNoticeperiod" runat="server" Width="400px"
      Height="30px"></asp:TextBox>
 <br /> <asp:RequiredFieldValidator ID="RequiredFieldValidator2" runat="server"
      ControlToValidate="txtNoticeperiod" ErrorMessage="Enter Notice period"
      ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
 <h6>Notice period: numerical</h6>
</div>
 <div class="form-group">
  <p>Enter Offered band</p>
  <asp:TextBox ID="txtOfferedband" runat="server" Width="400px" Height="30px"></asp:TextBox>
<br /> <asp:RequiredFieldValidator ID="RequiredFieldValidator3" runat="server"
      ControlToValidate="txtOfferedband" ErrorMessage="Enter Offered band"
      ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
       <h6>Offered band: E1, E2, E3, E0</h6>
</div>
 <div class="form-group">
  <p>Enter Percent hike expected in CTC</p>
  <asp:TextBox ID="txtPercenthike" runat="server" Width="400px" Height="30px"></asp:TextBox>
<br />
   <asp:RequiredFieldValidator ID="RequiredFieldValidator4" runat="server"
      ControlToValidate="txtPercenthike" ErrorMessage="Enter Percent hike expected in CTC"
      ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
       <h6>Percent hike expected in CTC: numerical</h6>
</div>
 <div class="form-group">
  <p>Enter Percent hike offered in CTC</p>
  <asp:TextBox ID="txtPercenthikeOffered" runat="server" Width="400px" Height="30px"></asp:TextBox>
<br />
   <asp:RequiredFieldValidator ID="RequiredFieldValidator5" runat="server"
      ControlToValidate="txtPercenthikeOffered" ErrorMessage="Enter Percent hike offered in CTC"
      ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
      <h6>Percent hike offered in CTC: numerical.</h6>
</div>
 <div class="form-group">
  <p>Enter Percent difference CTC          </p>
  <asp:TextBox ID="txtPercentdiff" runat="server" Width="400px" Height="30px"></asp:TextBox>
<br />
   <asp:RequiredFieldValidator ID="RequiredFieldValidator6" runat="server"
      ControlToValidate="txtPercentdiff" ErrorMessage="Enter Percent difference CTC  "
      ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
      <h6>Percent difference CTC  : numerical</h6>
</div>
```

```
<div class="form-group">
 <p>Enter Joining Bonus</p>
 <asp:TextBox ID="txtJoiningBonus" runat="server" Width="400px" Height="30px"></asp:TextBox>
<br />
  <asp:RequiredFieldValidator ID="RequiredFieldValidator7" runat="server"
     ControlToValidate="txtJoiningBonus" ErrorMessage="Enter Joining Bonus"
     ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
     <h6>Joining Bonus: No / Yes</h6>
</div>
<div class="form-group">
 <p>Enter Candidate relocate actual</p>
<asp:TextBox ID="txtCandidaterelocateactual" runat="server" Width="400px" Height="30px"></asp:TextBox>
 <br />
  <asp:RequiredFieldValidator ID="RequiredFieldValidator8" runat="server"
     ControlToValidate="txtCandidaterelocateactual" ErrorMessage="Enter Candidate relocate actual"
     ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
     <h6>Candidate relocate actual: No / Yes</h6>
</div>
<div class="form-group">
 <p>Enter Gender</p>
 <asp:TextBox ID="txtGender" runat="server" Width="400px" Height="30px"></asp:TextBox>
 <br />
  <asp:RequiredFieldValidator ID="RequiredFieldValidator10" runat="server"
     ControlToValidate="txtGender" ErrorMessage="Enter Gender"
     ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
     <h6>Gender:Male/Female</h6>
</div>
<div class="form-group">
 <p>Enter Candidate Source</p>
 <asp:TextBox ID="txtCandidateSource" runat="server" Width="400px" Height="30px"></asp:TextBox>
 <br />
  <asp:RequiredFieldValidator ID="RequiredFieldValidator11" runat="server"
     ControlToValidate="txtCandidateSource" ErrorMessage="Enter Candidate Source"
     ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
      <h6>Candidate Source: Direct/Employee Referral</h6>
</div>
<div class="form-group">
 <p>Enter Rex in Yrs</p>
 <asp:TextBox ID="txtRexinYrs" runat="server" Width="400px" Height="30px"></asp:TextBox>
 <br />
  <asp:RequiredFieldValidator ID="RequiredFieldValidator12" runat="server"
     ControlToValidate="txtRexinYrs" ErrorMessage="Enter Rex in Yrs"
     ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
      <h6>Rex in Yrs: numerical</h6>
</div>
```

```
            <div class="form-group">
             <p>Enter LOB</p>
             <asp:TextBox ID="txtLOB" runat="server" Width="400px" Height="30px"></asp:TextBox>
            <br />
              <asp:RequiredFieldValidator ID="RequiredFieldValidator9" runat="server"
                 ControlToValidate="txtLOB" ErrorMessage="Enter LOB"
                 ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
                   <h6>LOB: ERS,INFRA,ETS,CSMP</h6>
            </div>
            <div class="form-group">
             <p>Enter Location</p>
             <asp:TextBox ID="txtLoc" runat="server" Width="400px" Height="30px"></asp:TextBox>
            <br />
              <asp:RequiredFieldValidator ID="RequiredFieldValidator14" runat="server"
                 ControlToValidate="txtLoc" ErrorMessage="Enter Location"
                 ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
                   <h6>Location: Chennai, Bangalore, Noida etc..</h6>
            </div>
            <div class="form-group">
             <p>Enter Age</p>
             <asp:TextBox ID="txtAge" runat="server" Width="400px" Height="30px"></asp:TextBox>
            <br />
              <asp:RequiredFieldValidator ID="RequiredFieldValidator15" runat="server"
                 ControlToValidate="txtAge" ErrorMessage="Enter Age"
                 ValidationGroup="a" CssClass="error"></asp:RequiredFieldValidator>
                   <h6>Age: numerical</h6>
            </div>
    <div>
   <asp:Button ID="btnSubmit" runat="server" Text="Predict Candidate Joining"
          ValidationGroup="a" onclick="btnSubmit_Click" Height="50px" />
            <br />
       <br />
       <br />
       <asp:Label ID="lblResult" runat="server"></asp:Label>
           </div>
         </div>
        </div>
       </div>
       <!-- End col-->
     </div>
   </div>
   </div>
  <!-- End Contact Area -->
    </asp:Panel>
</asp:Content>
```

5.4.2 Home Page

```
<%@ Page Language="C#" AutoEventWireup="true" CodeBehind="Default.aspx.cs" Inherits="finalyearProject.Default" %>

<!doctype html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>candidate joining</title>
  <meta content="width=device-width, initial-scale=1.0" name="viewport">
  <meta content="" name="keywords">
  <meta content="" name="description">
  <!-- Favicons -->
  <link href="img/favicon.png" rel="icon">
  <link href="img/apple-touch-icon.png" rel="apple-touch-icon">
  <!-- Google Fonts -->
                                                                                                    <link href="https://fonts.googleapis.com/css?family=Open+Sans:300,400,400i,600,700|Raleway:300,400,400i,500,500i,700,800,900" rel="stylesheet">
  <!-- Bootstrap CSS File -->
  <link href="lib/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <!-- Libraries CSS Files -->
  <link href="lib/nivo-slider/css/nivo-slider.css" rel="stylesheet">
  <link href="lib/owlcarousel/owl.carousel.css" rel="stylesheet">
  <link href="lib/owlcarousel/owl.transitions.css" rel="stylesheet">
  <link href="lib/font-awesome/css/font-awesome.min.css" rel="stylesheet">
  <link href="lib/animate/animate.min.css" rel="stylesheet">
  <link href="lib/venobox/venobox.css" rel="stylesheet">
  <!-- Nivo Slider Theme -->
  <link href="css/nivo-slider-theme.css" rel="stylesheet">
  <!-- Main Stylesheet File -->
  <link href="css/style.css" rel="stylesheet">
  <!-- Responsive Stylesheet File -->
  <link href="css/responsive.css" rel="stylesheet">
  <!-- =======================================================
    Theme Name: eBusiness
    Theme URL: https://bootstrapmade.com/ebusiness-bootstrap-corporate-template/
    Author: BootstrapMade.com
    License: https://bootstrapmade.com/license/
  ======================================================= -->
</head>
<body data-spy="scroll" data-target="#navbar-example">
  <div id="preloader"></div>
```

```
<header>
  <!-- header-area start -->
  <div id="sticker" class="header-area">
    <div class="container">
      <div class="row">
        <div class="col-md-12 col-sm-12">
          <!-- Navigation -->
          <nav class="navbar navbar-default">
            <!-- Brand and toggle get grouped for better mobile display -->
            <div class="navbar-header">
                                        <button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target=".bs-example-navbar-collapse-1" aria-expanded="false">
<span class="sr-only">Toggle navigation</span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
</button>
              <!-- Brand -->
              <a class="navbar-brand page-scroll sticky-logo" href="Default.aspx">
                <h1><span>HR </span>Management</h1>
                <!-- Uncomment below if you prefer to use an image logo -->
                <!-- <img src="img/logo.png" alt="" title=""> -->
                                                                        </a>
            </div>
            <!-- Collect the nav links, forms, and other content for toggling -->
            <div class="collapse navbar-collapse main-menu bs-example-navbar-collapse-1" id="navbar-example">
              <ul class="nav navbar-nav navbar-right">
                <li class="active">
                  <a class="page-scroll" href="#home">Home</a>
                </li>
                <li>
                  <a class="page-scroll" href="#about">About</a>
                </li>

                <li>
                  <a class="page-scroll" href="#team">Team</a>
                </li>
                <%-- <li>
                  <a class="page-scroll" href="#portfolio">Portfolio</a>
                </li>--%>
                        <%-- <li class="dropdown"><a href="#" class="dropdown-toggle" data-toggle="dropdown">Drop Down<span class="caret"></span></a>
                  <ul class="dropdown-menu" role="menu">
                    <li><a href=# >Drop Down 1</a></li>
```

```
                <li><a href=# >Drop Down 2</a></li>
               </ul>
              </li>--%>
              <li>
               <a class="page-scroll" href="#contact">Contact</a>
              </li>
               <%--<li>
               <a class="page-scroll" href="UserLogin.aspx">UserLogin</a>
              </li>--%>
             </ul>
            </div>
            <!-- navbar-collapse -->
           </nav>
           <!-- END: Navigation -->
          </div>
         </div>
        </div>
       </div>
       <!-- header-area end -->
      </header>
      <!-- header end -->
      <!-- Start Slider Area -->
      <div id="home" class="slider-area">
       <div class="bend niceties preview-2">
        <div id="ensign-nivoslider" class="slides">
         <img src="img/slide-1.jpg" alt="" title="#slider-direction-1" />
         <img src="img/slide-2.jpg" alt="" title="#slider-direction-2" />
         <img src="img/slide-3.jpg" alt="" title="#slider-direction-3" />
        </div>
        <!-- direction 1 -->
        <div id="slider-direction-1" class="slider-direction slider-one">
         <div class="container">
          <div class="row">
           <div class="col-md-12 col-sm-12 col-xs-12">
            <div class="slider-content">
             <!-- layer 1 -->
             <div class="layer-1-1 hidden-xs wow slideInDown" data-wow-duration="2s" data-wow-delay=".2s">
              <h2 class="title1">Candidate Joining Prediction </h2>
             </div>
             <!-- layer 2 -->
             <div class="layer-1-2 wow slideInUp" data-wow-duration="2s" data-wow-delay=".1s">
              <h1 class="title2">Analyzing HR Data using Data Science</h1>
             </div>
             <!-- layer 3 -->
             <div class="layer-1-3 hidden-xs wow slideInUp" data-wow-duration="2s" data-wow-delay=".2s">
```

```
            <a class="ready-btn right-btn page-scroll" href="UserLogin.aspx">Admin Login</a>
            <a class="ready-btn page-scroll" href="UserLogin.aspx">HR Login</a>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
<!-- direction 2 -->
<div id="slider-direction-2" class="slider-direction slider-two">
  <div class="container">
    <div class="row">
      <div class="col-md-12 col-sm-12 col-xs-12">
        <div class="slider-content text-center">
          <!-- layer 1 -->
          <div class="layer-1-1 hidden-xs wow slideInUp" data-wow-duration="2s" data-wow-delay=".2s">
            <h2 class="title1">Business Sector</h2>
          </div>
          <!-- layer 2 -->
          <div class="layer-1-2 wow slideInUp" data-wow-duration="2s" data-wow-delay=".1s">
            <h1 class="title2">Finding solutions for Employee Management</h1>
          </div>
          <!-- layer 3 -->
          <div class="layer-1-3 hidden-xs wow slideInUp" data-wow-duration="2s" data-wow-delay=".2s">
            <a class="ready-btn right-btn page-scroll" href="UserLogin.aspx">Admin Login</a>
            <a class="ready-btn page-scroll" href="UserLogin.aspx">HR Login</a>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
<!-- direction 3 -->
<div id="slider-direction-3" class="slider-direction slider-two">
  <div class="container">
    <div class="row">
      <div class="col-md-12 col-sm-12 col-xs-12">
        <div class="slider-content">
          <!-- layer 1 -->
          <div class="layer-1-1 hidden-xs wow slideInUp" data-wow-duration="2s" data-wow-delay=".2s">
            <h2 class="title1">Data Science Techniques </h2>
          </div>
          <!-- layer 2 -->
          <div class="layer-1-2 wow slideInUp" data-wow-duration="2s" data-wow-delay=".1s">
            <h1 class="title2">HR Department</h1>
```

```
            </div>
            <!-- layer 3 -->
            <div class="layer-1-3 hidden-xs wow slideInUp" data-wow-duration="2s" data-wow-delay=".2s">
              <a class="ready-btn right-btn page-scroll" href="UserLogin.aspx">Admin Login</a>
              <a class="ready-btn page-scroll" href="UserLogin.aspx">HR Login</a>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
 </div>
 <!-- End Slider Area -->
 <!-- Start About area -->
 <div id="about" class="about-area area-padding">
  <div class="container">
   <div class="row">
    <div class="col-md-12 col-sm-12 col-xs-12">
     <div class="section-headline text-center">
      <h2>About Business Sector</h2>
     </div>
    </div>
   </div>
   <div class="row">
    <!-- single-well start-->
    <div class="col-md-6 col-sm-6 col-xs-12">
     <div class="well-left">
      <div class="single-well">
       <a href="#">
<img src="img/slide-3.jpg" alt="">
       </a>
      </div>
     </div>
    </div>
    <!-- single-well end-->
    <div class="col-md-6 col-sm-6 col-xs-12">
     <div class="well-middle">
      <div class="single-well">
       <a href="#">
        <h4 class="sec-head">Human Resource management in Recruiting Process</h4>
       </a>
       <p>
```

In the era of advanced technology and digitalization, the use of machine learning makes it possible to increase the efficiency of the recruitment process. This project work aims to identify various variables that directly play a role in recruitment. The work also addresses the HR sphere problems and proposes a solution related to the use of machine

learning. The proposed methodology includes an analysis of the characteristics which are dominated by past candidates. The data obtained suggests that machine learning can bring significant benefits to the recruitment process, such as reducing the cost and time for selection, reducing emotional factors, and increasing accuracy. Overall, this proposed work provides valuable insight into the potential of machine learning in recruitment and highlights how it can be used to facilitate the recruitment process. Employee recruitment process is one the complex tasks in the current generation.

```
            </p>
            <ul>
              <li>
                <i class="fa fa-check"></i> Data science Techniques
              </li>
              <li>
                <i class="fa fa-check"></i>Efficient Machine Learning Algorithms
              </li>
              <li>
                <i class="fa fa-check"></i> NB Algorithm
              </li>
            </ul>
          </div>
        </div>
      </div>
      <!-- End col-->
    </div>
  </div>
</div>
<!-- End About area -->
<!-- Start team Area -->
<div id="team" class="our-team-area area-padding">
  <div class="container">
    <div class="row">
      <div class="col-md-12 col-sm-12 col-xs-12">
        <div class="section-headline text-center">
          <h2>Our Team</h2>
        </div>
      </div>
    </div>
    <div class="row">
      <div class="team-top">
        <div class="col-md-3 col-sm-3 col-xs-12">
          <div class="single-team-member">
            <div class="team-img">
              <a href="#">
            <img class= "kushaja-image" src="./img/team/a.jpeg" alt=""/></a>
              <div class="team-social-icon text-center">
                <ul>
                  <li>
                    <a href="#">
            <i class="fa fa-facebook"></i></a>
```

```
                </li>
                <li>
                  <a href="#">
            <i class="fa fa-twitter"></i></a>
                </li>
                <li>
                  <a href="#">
            <i class="fa fa-instagram"></i></a>
                </li>
              </ul>
            </div>
          </div>
          <div class="team-content text-center">
            <h4>Kushaja V U</h4>
            <p>Ceo</p>
          </div>
        </div>
      </div>
      <!-- End column -->
      <div class="col-md-3 col-sm-3 col-xs-12">
        <div class="single-team-member">
          <div class="team-img">
            <a href="#">
            <img src="./img/team/2.jpeg" alt=""/></a>
            <div class="team-social-icon text-center">
              <ul>
                <li>
                  <a href="#">
            <i class="fa fa-facebook"></i></a>
                </li>
                <li>
                  <a href="#">
<i class="fa fa-twitter"></i></a>
                </li>
                <li>
                  <a href="#">
<i class="fa fa-instagram"></i></a>
                </li>
              </ul>
            </div>
          </div>
          <div class="team-content text-center">
            <h4>Anvitha Shre S</h4>
            <p>Cloud Architect</p>
          </div>
```

```
  </div>
</div>
<!-- End column -->
<div class="col-md-3 col-sm-3 col-xs-12">
  <div class="single-team-member">
    <div class="team-img">
      <a href="#"><img src="./img/team/d.jpg" alt=""/></a>
      <div class="team-social-icon text-center">
        <ul>
          <li>
            <a href="#"><i class="fa fa-facebook"></i></a>
          </li>
          <li>
            <a href="#"><i class="fa fa-twitter"></i></a>
          </li>
          <li>
            <a href="#"><i class="fa fa-instagram"></i></a>
          </li>
        </ul>
      </div>
    </div>
    <div class="team-content text-center">
      <h4>K Puneeth Kumar</h4>
      <p>Network Engineer</p>
    </div>
  </div>
</div>
<!-- End column -->
<div class="col-md-3 col-sm-3 col-xs-12">
  <div class="single-team-member">
    <div class="team-img">
      <a href="#"><img src="./img/team/5eebb615-db34-4914-b674-ca593409b2c9.jpg" alt=""></a>
      <div class="team-social-icon text-center">
        <ul>
          <li>
            <a href="#"><i class="fa fa-facebook"></i></a>
          </li>
          <li>
            <a href="#"><i class="fa fa-twitter"></i></a>
          </li>
          <li>
            <a href="#"><i class="fa fa-instagram"></i></a>
          </li>
        </ul>
      </div>
```

```
            </div>
            <div class="team-content text-center">
              <h4>Dhyan Medappa</h4>
              <p>Product Manager</p>
            </div>
           </div>
         </div>
         <!-- End column -->
       </div>
     </div>
   </div>
 </div>
 <!-- End Team Area -->
 <div id="contact" class="contact-area">
   <div class="contact-inner area-padding">
     <div class="contact-overly"></div>
     <div class="container ">
       <div class="row">
         <div class="col-md-12 col-sm-12 col-xs-12">
           <div class="section-headline text-center">
             <h2>Contact us</h2>
           </div>
         </div>
       </div>
      <table style="width:100%;"><tr><td><p>
<h3>MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE</h3>
<p>Belawadi S.R Patna Taluk </p>
<p>Mandya </p>
<p>District 571 477  </p>
<p>Ph.No.08274 – 257622  </p>
<p>Mob:   9740725327  </p>
<p>mitm@gmail.com  </p>
</p></td><td>
<asp:Image ID="Image4" runat="server" ImageUrl="~/img/contact-us.png"></asp:Image>
</td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>
     </div>
   </div>
 </div>
 <!-- End Contact Area -->
 <!-- Start Footer bottom Area -->
 <footer>
   <div class="footer-area">
     <div class="container">
       <div class="row">
         <div class="col-md-4 col-sm-4 col-xs-12">
```

```
 <div class="footer-content">
  <div class="footer-head">
   <div class="footer-logo">
    <h2><span>e</span>Business</h2>
   </div>
   <p>Finding Stress Problems faced by Working Employees.</p>
   <div class="footer-icons">
    <ul>
     <li>
      <a href="#"><i class="fa fa-facebook"></i></a>
     </li>
     <li>
      <a href="#"><i class="fa fa-twitter"></i></a>
     </li>
     <li>
      <a href="#"><i class="fa fa-google"></i></a>
     </li>
     <li>
      <a href="#"><i class="fa fa-pinterest"></i></a>
     </li>
    </ul>
   </div>
  </div>
 </div>
</div>
<!-- end single footer -->
<div class="col-md-4 col-sm-4 col-xs-12">
 <div class="footer-content">
  <div class="footer-head">
   <h4>Business Sector</h4>
   <p>
    Finding Working Employees Stress Problems using Data Science Techniques.
   </p>
   <div class="footer-contacts">
    <p><span>Tel:</span> +123 456 789</p>
    <p><span>Email:</span> contact@example.com</p>
    <p><span>Working Hours:</span> 9am-5pm</p>
   </div>
  </div>
 </div>
</div>
<!-- end single footer -->
<div class="col-md-4 col-sm-4 col-xs-12">
 <div class="footer-content">
  <div class="footer-head">
```

```
            <h4>Instagram</h4>
            <div class="flicker-img">
              <a href="#"><img src="img/portfolio/1.jpg" alt=""></a>
              <a href="#"><img src="img/portfolio/2.jpg" alt=""></a>
              <a href="#"><img src="img/portfolio/3.jpg" alt=""></a>
              <a href="#"><img src="img/portfolio/4.jpg" alt=""></a>
              <a href="#"><img src="img/portfolio/5.jpg" alt=""></a>
              <a href="#"><img src="img/portfolio/6.jpg" alt=""></a>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
  <%--<div class="footer-area-bottom">
    <div class="container">
      <div class="row">
        <div class="col-md-12 col-sm-12 col-xs-12">
          <div class="copyright text-center">
            <p>
              &copy; Copyright <strong>Business Sector</strong>. All Rights Reserved
            </p>
          </div>
          <div class="credits">
            <!--
              All the links in the footer should remain intact.
              You can delete the links only if you purchased the pro version.
              Licensing information: https://bootstrapmade.com/license/
Purchase the pro version with working PHP/AJAX contact form: https://bootstrapmade.com/buy/?theme=eBusiness   -->
            Designed by <a href="https://bootstrapmade.com/">Data Science</a>
          </div>
        </div>
      </div>
    </div>
  </div>--%>
 </footer>
 <a href="#" class="back-to-top"><i class="fa fa-chevron-up"></i></a>
 <!-- JavaScript Libraries -->
 <script src="lib/jquery/jquery.min.js"></script>
 <script src="lib/bootstrap/js/bootstrap.min.js"></script>
 <script src="lib/owlcarousel/owl.carousel.min.js"></script>
 <script src="lib/venobox/venobox.min.js"></script>
 <script src="lib/knob/jquery.knob.js"></script>
 <script src="lib/wow/wow.min.js"></script>
```

```
  <script src="lib/parallax/parallax.js"></script>
  <script src="lib/easing/easing.min.js"></script>
  <script src="lib/nivo-slider/js/jquery.nivo.slider.js" type="text/javascript"></script>
  <script src="lib/appear/jquery.appear.js"></script>
  <script src="lib/isotope/isotope.pkgd.min.js"></script>
  <!-- Contact Form JavaScript File -->
  <script src="contactform/contactform.js"></script>
  <script src="js/main.js"></script>
</body>
</html>
```

5.4.3 Cascading Style Sheet

```
/*----------------------------------------*/
/*  1.  Theme default CSS
/*----------------------------------------*/

html, body {
  height: 100%;
}
.floatleft {
  float: left;
}
.floatright {
  float: right;
}
.alignleft {
  float: left;
  margin-right: 15px;
  margin-bottom: 15px;
}
.alignright {
  float: right;
  margin-left: 15px;
  margin-bottom: 15px;
}
.aligncenter {
  display: block;
  margin: 0 auto 15px;
}
a:focus {
  outline: 0px solid;
}
img {
  max-width: 100%;
```

```
  height: auto;
}
.fix {
  overflow: hidden;
}
p {
  margin: 0 0 15px;
  color: #444;
}
h1, h2, h3, h4, h5, h6 {
  font-family: 'Raleway', sans-serif;
  margin: 0 0 15px;
  color: #444;
  font-weight: 500;
}
h1 {
  font-size: 48px;
  line-height: 50px;
}
h2 {
  font-size: 38px;
  line-height: 40px;
}
h3 {
  font-size: 30px;
  line-height: 32px;
}
h4 {
  font-size: 24px;
  line-height: 26px;
}
h5 {
  font-size: 20px;
  line-height: 22px;
}
h6 {
  font-size: 16px;
  line-height: 20px;
}
a {
  transition: all 0.3s ease 0s;
  text-decoration: none;
}
a:hover {
  color: #3EC1D5;
```

```
  text-decoration: none;
}
a:active, a:hover {
  outline: 0 none;

body {
  background: #fff none repeat scroll 0 0;
  color: #444;
  font-family: 'Open Sans', sans-serif;
  font-size: 14px;
  text-align: left;
  overflow-x: hidden;
  line-height: 22px;
}
/* Back to top button */
.back-to-top {
  position: fixed;
  display: none;
  background: #3EC1D5;
  color: #fff;
  padding: 6px 12px 9px 12px;
  font-size: 16px;
  border-radius: 2px;
  right: 15px;
  bottom: 15px;
  transition: background 0.5s;
}
@media (max-width: 768px) {
  .back-to-top {
    bottom: 15px;
  }
}
.back-to-top:focus {
  background: #3EC1D5;
  color: #fff;
  outline: none;
}
.back-to-top:hover {
  background: #3cd6ed;
  color: #fff;
}
.clear {
  clear: both;
}
ul {
```

```
  list-style: outside none none;
  margin: 0;
  padding: 0;
}
input, select, textarea, input[type="text"], input[type="date"], input[type="url"], input[type="email"], input[type="password"], input[type="tel"], button, button[type="submit"] {
  -moz-appearance: none;
  box-shadow: none !important;
}
div#preloader {
  position: fixed;
  left: 0;
  top: 0;
  z-index: 99999;
  width: 100%;
  height: 100%;
  overflow: visible;
  background: #fff url('../img/preloader.gif') no-repeat center center;
}
::-moz-selection {
  background: #3EC1D5;
  text-shadow: none;
}
::selection {
  background: #3EC1D5;
  text-shadow: none;
}
.area-padding {
  padding: 70px 0px 80px;
}
.area-padding-2 {
  padding: 70px 0px 50px;
}
.padding-2 {
  padding-bottom: 90px;
}
.section-headline h2 {
  display: inline-block;
  font-size: 40px;
  font-weight: 600;
  margin-bottom: 70px;
  position: relative;
  text-transform: capitalize;
}
.section-headline h2::after {
```

```
  border: 1px solid #333;
  bottom: -20px;
  content: "";
  left: 0;
  margin: 0 auto;
  position: absolute;
  right: 0;
  width: 40%;
}
.sec-head {
  display: inline-block;
  font-size: 17px;
  font-weight: 600;
  margin-bottom: 0;
  padding: 0 0 10px;
  text-transform: uppercase;
  transition: all 0.4s ease 0s;
}
/*---------------------------------*/

/*  2. Header top Area
/*---------------------------------*/
.header-area {
  position: absolute;
  top: 0;
  left: 0;
  width: 100%;
  height: auto;
  background: rgba(0, 0, 0, 0.40);
  z-index: 9;
}
.navbar-header a.navbar-brand {
  display: inline-block;
  height: 70px;
  padding: 15px 0;
}
.main-menu ul.navbar-nav li {
  display: inline-block;
  padding: 0px 13px;
}
.main-menu ul.navbar-nav li a {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  color: #fff;
  font-size: 15px;
  font-weight: 500;
```

```
 padding: 24px 0px;
 text-transform: capitalize;
 letter-spacing: 1px;
}
.main-menu ul.navbar-nav li.active > a::after {
 border: 1px solid #fff;
 bottom: 0px;
 content: "";
 left: 0;
 position: absolute;
 width: 100%;
}
.main-menu ul.navbar-nav li.active a:hover {
 background: none;
 color: #fff;
}
.main-menu ul.navbar-nav li.active a:focus {
 color: #fff;
}
.main-menu ul.navbar-nav li.active a {
 background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
 color: #fff;
 position: relative;
}
.main-menu ul.navbar-nav li a:hover {
 color: #3EC1D5;
}
.navbar {
 border: medium none;
 margin-bottom: 0;
}
.navbar-default {
 background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
}
.main-menu ul.navbar-default .navbar-nav>.active>a, .navbar-default .navbar-nav>.active>a:hover, .navbar-default .navbar-nav>.active>a:focus {
 background: none;
 color: #333;
}
.navbar-default .navbar-toggle {
 background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
 border: medium none;
 border-radius: 0;
 padding: 25px 0px;
}
```

```
.navbar-default .navbar-nav>li>a:hover, .navbar-default .navbar-nav>li>a:focus {
  background-color: transparent;
  color: #fff;
}
.navbar-default .navbar-toggle:hover, .navbar-default .navbar-toggle:focus {
  background: none;
}
.navbar-default .navbar-toggle .icon-bar {
  background-color: #fff;
  width: 30px;
  height: 2px;
}
.top-right.text-right {
  float: right;
  position: relative;
  top: 24px;
  margin-left: 20px;
}
.top-right.text-right>li {
  float: right;
  margin: 0px 8px;
}
.top-right.text-right li a {
  color: #fff;
}
.main-menu .dropdown ul {
  background: #000;
}
.main-menu .dropdown ul li {
  display: block;
}
/*---------------------------------*/

/* 2.1. Stick menu
/*---------------------------------*/
.header-area.stick {
  background-color: rgba(0, 0, 0, 1);
  height: 70px;
  position: fixed;
  top: 0;
  width: 100%;
  z-index: 1000;
}
.stick .navbar-header a.navbar-brand {
  display: inline-block;
```

```
  height: 90px;
}
.stick .navbar-brand>img {
  display: none;
}
.stick .navbar-brand.sticky-logo>img {
  display: block;
}
.sticky-logo h1 {
  color: #fff;
  padding: 0;
  margin: 0;
  font-size: 36px;
  font-weight: bold;
  line-height: 1;
}
.sticky-logo h1 span {
  color: #3ec1d5;
}
.stick .main-menu ul.navbar-nav li.active > a::after {
  border: 1px solid #fff;
  bottom: 0px;
  content: "";
  left: 0;
  position: absolute;
  width: 100%;
}
.stick .main-menu ul.nav>li>a:hover {
  color: #fff;
}
.stick .main-menu ul.navbar-nav li.active a {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  color: #fff;
  position: relative;
}
.stick .mainmenu ul#nav>li:hover>a, .stick .mainmenu ul#nav li .mega-menu, .stick .mainmenu ul#nav li ul.sub-menu {
  background-color: #f5f5f5;
  color: #fff;
  outline: medium none;
}
.stick .mainmenu ul#nav li:hover ul.sub-menu li a:hover, .mainmenu ul#nav li .mega-menu span>a:hover, .stick .mainmenu ul#nav li .mega-menu-shop a.mega-menu-title:hover {
  color: #fff;
}
.stick .logo {
```

```
  height: 20px;
}
.stick .logo a {
  margin-top: 0px;
}
.stick .main-menu ul.nav>li>a {
  color: #fff;
  line-height: 22px;
  padding: 24px 0px;
  text-transform: capitalize;
  letter-spacing: 1px;
}
.stick .navbar-default .navbar-toggle .icon-bar {
  background-color: #fff;
  width: 30px;
  height: 2px;
}

.stick .navbar-default .navbar-toggle {
  padding: 10px 0px;
}
/*------------------------------
  3. About Area
--------------------------------*/
.about-area {
  background-color: #f9f9f9;
}
.single-well>a {
  display: block;
}
.single-well ul li {
  color: #444;
  display: block;
  padding: 5px 0;
}
.single-well ul li i {
  color: #3EC1D5;
  padding-right: 10px;
  font-size: 12px;
}
.single-well p {
  color: #444;
}
/*--------------------------------*/
```

```
/* 4.Services Area
/*--------------------------------*/
.services-icon {
  color: #444;
  display: inline-block;
  font-size: 36px;
  line-height: 36px;
  margin-bottom: 20px;
}
.section-headline.services-head>h2 {
  margin-bottom: 25px;
}
.services-details {
  padding-top: 40px;
  transition: all 0.5s ease 0s;
}
.services-details:hover h4, .services-details:hover .services-icon {
  color: #3EC1D5;
}

.row.second-row {
  margin-top: 40px;
}
.section-head>h2 {
  color: #333;
}
.single-services>h4 {
  color: #444;
  font-size: 24px;
  font-weight: 500;
}
.single-services>p {
  color: #333;
  font-size: 14px;
}
/*----------------------------------------
  5.Skill Area
----------------------------------------*/
.our-skill-area {
  position: relative;
}
.our-skill-area {
  background: rgba(248, 248, 248, 0.8) url("../img/background/bg1.jpg") no-repeat fixed center top / cover;
}
.test-overly {
```

```
  background: rgba(0, 0, 0, 0.80);
  position: absolute;
  width: 100%;
  height: 100%;
}
.progress-h4 {
  color: #fff;
  font-weight: 500;
}
/*----------------------------------------
  6.Faq Area
----------------------------------------*/
.faq-details .panel-heading {
  padding: 0;
}
.panel-default>.panel-heading {
  background-color: transparent;
  border: medium none;
  color: #333;
}

.faq-details h4.check-title a {
  color: #333;
  display: block;
  font-weight: 700;
  letter-spacing: 2px;
  margin-left: 40px;
  padding: 6px 10px;
  text-decoration: none;
}
.panel-body {
  padding: 15px 15px 0px 50px;
}
.faq-details h4.check-title {
  color: #444;
  font-size: 18px;
  font-weight: 500;
  margin-bottom: 0;
}
.faq-details a span.acc-icons {
  position: relative;
}
.faq-details a span.acc-icons::before {
  color: #333;
  content: "";
```

```
  font-family: fontawesome;
  font-size: 24px;
  height: 40px;
  left: -51px;
  line-height: 39px;
  position: absolute;
  text-align: center;
  top: -10px;
  width: 42px;
}
.faq-details h4.check-title a.active, .faq-details a.active span.acc-icons::before {
  color: #3EC1D5;
}
.faq-details a.active span.acc-icons::before {
  content: "";
  font-family: fontawesome;
  font-size: 24px;
  height: 40px;
  left: -51px;
  line-height: 39px;
  position: absolute;
  text-align: center;
  top: -10px;
  width: 42px;
}
.second-row {
  margin-top: 30px;
}
.event-content.head-team h4 {
  background: transparent none repeat scroll 0 0;
  color: #333;
  padding: 30px 0 10px;
  font-weight: 500;
  text-transform: capitalize;
}
.tab-menu .nav-tabs>li>a:hover {
  border-color: #eee #eee #ddd;
}
.tab-menu {
  display: block;
  text-align: center;
}
.tab-menu ul.nav {
  margin: 0;
  padding: 0;
```

```
}
.tab-menu ul.nav li {
  border: medium none;
  display: inline-block;
}
.tab-content {
  border: 1px solid #ccc;
  padding: 0 15px 15px;
}
.tab-menu ul.nav li a {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border-radius: 0;
  color: #444;
  display: block;
  font-weight: 500;
  margin-right: 5px;
  padding: 10px 20px;
  font-family: raleway;
  font-size: 18px;
}
.tab-menu ul li.active a, .tab-menu ul li.hover a, .tab-menu ul li.focus a {
  border-bottom: 1px solid #fff;
  color: #3EC1D5 !important;
}
.tab-menu .nav-tabs {
  border-bottom: none;
}
.tab-main-img a {
  position: relative;
  display: block;
}
.tab-main-img a:hover span.events-offer {
  height: 20%;
}
.tab-main-img a span.events-offer {
  background: rgba(0, 0, 0, 0.8) none repeat scroll 0 0;
  bottom: 0;
  color: #fff;
  content: "";
  font-size: 20px;
  font-weight: 700;
  height: 0%;
  left: 0;
  line-height: 70px;
  padding: 0;
```

```
  position: absolute;
  text-align: left;
  transition: all 0.5s ease 0s;
  width: 100%;
  padding: 0px 10px;
}
/*----------------------------------------
 7.Wellcome Area Css
----------------------------------------*/
.wellcome-area {
  background: rgba(248, 248, 248, 0.8) url("../img/background/bg1.jpg");
  background-size: cover;
  background-position: center top;
  background-repeat: no-repeat;
  background-attachment: fixed;
}
.well-bg {
  position: relative;
}
.wellcome-text {
  margin: 70px 0;
  padding: 30px 40px;
}

.well-text>h2 {
  color: #fff;
  font-size: 44px;
  font-weight: 500;
  line-height: 50px;
}
.well-text p {
  font-size: 18px;
  font-style: italic;
  color: #fff;
}
.wellcome-text .section-headline p {
  margin-bottom: 0;
}
.subs-feilds {
  border: 1px solid #fff;
  display: inline-block;
  height: 52px;
  margin-top: 30px;
  width: 60%;
  border-radius: 30px;
```

```
  overflow: hidden;
}
.suscribe-input input {
  background: transparent none repeat scroll 0 0;
  border: medium none;
  color: #fff;
  float: left;
  font-size: 15px;
  line-height: 24px;
  padding: 11px 15px;
  width: 70%;
  height: 50px;
}
.suscribe-input button {
  background: #3ec1d5 none repeat scroll 0 0;
  border: medium none;
  border-radius: 0 20px 20px 0;
  color: #fff;
  float: left;
  font-size: 20px;
  font-weight: 700;
  padding: 14px 20px;
  width: 30%;
}

.suscribe-input button:hover {
  background: #fff none repeat scroll 0 0;
  color: #3ec1d5;
}
/*----------------------------------------
 8.Team Area Css
----------------------------------------*/
.team-member {
  background: rgba(0, 0, 0, 0.65) none repeat scroll 0 0;
  display: block;
  margin-right: -15px;
  padding: 10px;
  position: relative;
  overflow: hidden;
}
.team-member::before {
  background: rgba(0, 0, 0, 0) url("../img/team/team01.jpg") repeat scroll 0 0;
  content: "";
  display: block;
  height: 100%;
```

```
  left: 0;
  margin-right: -15px;
  padding: 10px;
  position: absolute;
  top: 0;
  width: 100%;
  z-index: -1;
  background-repeat: no-repeat;
  background-size: cover;
  background-position: top center;
  transition: 5s;
  transform: scale(1);
}
.team-member:hover.team-member::before {
  transform: scale(1.2);
}
.single-team-member {
  border: 1px solid #ddd;
}
.team-left-text h4 {
  color: #fff;
  font-size: 30px;
  font-weight: 700;
  text-transform: uppercase;
}

.team-left-text p {
  color: #fff;
  font-size: 17px;
  line-height: 26px;
}
.email-news {
  display: block;
  margin: 30px 0;
  overflow: hidden;
  text-align: center;
  width: 100%;
}
.email-news .email_button input {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border: 1px solid #fff;
  color: #fff;
  float: left;
  font-size: 13px;
  padding: 8px;
```

```
  width: 81%;
}
.email-news .email_button>button {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border: 1px solid #fff;
  color: #fff;
  float: left;
  font-size: 16px;
  padding: 8px 12px;
  text-align: center;
}
.email-news .email_button>button:hover {
  background: #3EC1D5;
  border: 1px solid #fff;
  color: #fff;
}
.team-left-icon ul li {
  display: inline-block;
}
.team-left-icon ul li a:hover {
  color: #3EC1D5;
  background: #fff;
  border: 2px solid #fff;
}
.team-left-icon ul li a {
  border: 2px solid #fff;
  color: #fff;
  display: block;
  font-size: 16px;
  height: 40px;
  line-height: 37px;
  margin: 0 3px;
  width: 40px;
}
.team-member-carousel .single-team-member {
  overflow: hidden;
  width: 100%;
}
.single-team-member:hover .team-img a:after {
  opacity: 1;
}
.single-team-member:hover .team-social-icon {
  top: 45%;
  opacity: 1;
}
```

```
.team-img {
  position: relative;
}
.kushaja-image
{
    width : 200%;
    height : 200%;
}
.team-img>a {
  display: block;
}
.team-img>a::after {
  background: rgba(0, 0, 0, 0.70);
  bottom: 0;
  content: "";
  height: 100%;
  left: 0;
  position: absolute;
  transition: all 0.5s ease 0s;
  width: 100%;
  opacity: 0;
}
.team-social-icon {
  left: 50%;
  margin-left: -61px;
  opacity: 0;
  position: absolute;
  top: 30%;
  transition: 1.3s;
}
.team-social-icon ul li {
  display: inline-block;
}
.team-social-icon ul li a {
  border: 1px solid #fff;
  border-radius: 50%;
  color: #fff;
  display: block;
  font-size: 14px;
  height: 34px;
  line-height: 35px;
  margin: 0 3px;
  width: 34px;
}
.team-social-icon ul li a:hover {
```

```
  color: #fff;
  border: 1px solid #3EC1D5;
  background: #3EC1D5;
}
.team-content {
  padding: 10px 0px;
}
.team-content>h4, .team-content>p {
  color: #444;
  margin-bottom: 5px;
}
.team-content.head-team p {
  margin-bottom: 0;
}
.team-left-icon.text-center {
  margin-bottom: 20px;
}
.head-team h4 {
  display: inline-block;
  font-size: 25px;
  font-weight: 600;
  padding-bottom: 10px;
  text-transform: uppercase;
}
/*---------------------------------*/
/*  9.review Area
/*---------------------------------*/

.reviews-area {
  background: url(../img/background/bg1.jpg);
  overflow: hidden;
  background-repeat: no-repeat;
  background-size: cover;
  background-position: top center;
  background-attachment: fixed;
  width: 100%;
  height: auto;
  position: relative;
}
.work-left-text {
  background: #3EC1D5 none repeat scroll 0 0;
}
.work-left-text {
  width: 50%;
}
```

```
.work-right-text {
  background: rgba(0, 0, 0, 0.8) none repeat scroll 0 0;
  float: right;
  height: 100%;
  overflow: hidden;
  padding: 71px 0;
  width: 50%;
  position: absolute;
  right: 0;
  top: 0;
}
.work-right-text h2 {
  color: #fff;
  text-transform: uppercase;
  font-size: 24px;
}
.work-right-text h5 {
  color: #fff;
  font-size: 18px;
  font-weight: 700;
  line-height: 34px;
  text-transform: uppercase;
}

.work-right-text .sus-btn {
  margin-left: 0;
  margin-top: 20px;
}

.single-awesome-4 {
  display: block;
  float: left;
  overflow: hidden;
  width: 33.33%;
}
.single-awesome-4 .add-actions {
  padding: 10px 20px;
}
/*----------------------------------------
 10.Portfolio Area Css
----------------------------------------*/
.pst-content {
  padding-left: 10px;
}
.project-menu {
```

```
  margin-bottom: 40px;
  text-align: center;
}
.project-menu li {
  display: inline-block;
}
.project-menu li a {
  background: #fff none repeat scroll 0 0;
  border: 1px solid #444;
  border-radius: 20px;
  color: #444;
  cursor: pointer;
  display: inline-block;
  font-size: 14px;
  font-weight: 500;
  margin: 0 4px;
  padding: 6px 15px;
  text-transform: capitalize;
  transition: all 0.3s ease 0s;
}
.project-menu li a.active, .project-menu li a:hover {
  border-color: #3EC1D5;
  background: #3EC1D5;
  color: #fff;
  text-decoration: none;
}
.single-awesome-portfolio {
  float: left;
  overflow: hidden;
  padding: 15px;
  width: 25%;
  position: relative;
}
.single-awesome-project {
  overflow: hidden;
  margin-bottom: 30px;
}
.first-item {
  margin-bottom: 30px;
}
.awesome-img {
  display: block;
  width: 100%;
  height: 100%;
  position: relative;
```

```
}
.awesome-img>a {
  display: block;
  position: relative;
}
.single-awesome-project:hover .awesome-img>a::after {
  opacity: 1;
}
.single-awesome-project:hover .add-actions {
  opacity: 1;
  bottom: 0;
}
.awesome-img>a::after {
  background: rgba(0, 0, 0, 0.7) none repeat scroll 0 0;
  content: "";
  height: 100%;
  left: 0;
  position: absolute;
  top: 0;
  width: 100%;
  opacity: 0;
  transition: 0.4s;
}
.add-actions {
  background: rgba(0, 0, 0, 0.6) none repeat scroll 0 0;
  bottom: 30px;
  display: block;
  height: 100%;
  left: 0;
  opacity: 0;
  overflow: hidden;
  padding: 10px 15px;
  position: absolute;
  transition: all 0.4s ease 0s;
  width: 100%;
}
.project-dec {
  display: block;
  height: 100%;
  width: 100%;
}
.project-dec a {
  display: block;
  height: 100%;
  width: 100%;
```

```
}
.project-dec h4 {
  margin-bottom: 5px;
}
.project-dec h4:hover {
  color: #fff;
}
.project-dec h4 {
  color: #ddd;
  font-size: 24px;
  margin-top: -45px;
  padding-top: 50%;
  text-decoration: none;
  text-transform: uppercase;
  font-weight: 800;
}
.project-dec span {
  color: #ddd;
  font-size: 13px;
}
.project-action-btn {
  display: block;
  height: 100%;
  text-align: center;
  transition: all 1s ease 0s;
  width: 100%;
}
.project-action-btn li {
  display: block;
  height: 100%;
  width: 100%;
}

.project-action-btn li a {
  display: block;
  height: 100%;
  width: 100%;
}
/*----------------------------------------*/
/* 11. Pricing Area
/*----------------------------------------*/

.pricing-area {
  background: rgba(0, 0, 0, 0.02) none repeat scroll 0 0;
}
```

```
.pri_table_list {
  border: 1px solid #ccc;
  text-align: center;
  transition: all 0.4s ease 0s;
  background: #fff;
}
.pri_table_list h3 span {
  font-size: 16px;
}
.pri_table_list ol li {
  border-bottom: 1px solid #ccc;
  color: #666;
  padding: 12px 15px;
  position: relative;
  text-align: left;
}
.pri_table_list li.check.cross::after {
  content: "\f00d";
  font-family: fontawesome;
  font-size: 14px;
  position: absolute;
  right: 50px;
  top: 12px;
  color: indianred;
}
.pri_table_list li.check::after {
  content: "\f00c";
  font-family: fontawesome;
  font-size: 14px;
  position: absolute;
  right: 50px;
  top: 12px;
  color: #3EC1D5;
}
.pri_table_list button {
  background: #444 none repeat scroll 0 0;
  border: 1px solid #444;
  color: #fff;
  margin-bottom: 25px;
  padding: 10px 35px;
  text-transform: uppercase;
  transition: all 0.4s ease 0s;
  border-radius: 30px;
}
.pri_table_list>h3 {
```

```
  color: #333;
  font-size: 24px;
  font-weight: 700;
  line-height: 25px;
  padding: 30px 0 20px;
  text-transform: uppercase;
  transition: all 0.4s ease 0s;
}
.pri_table_list ol {
  list-style: outside none none;
  margin: 0;
  padding: 0 0 25px;
}
.pri_table_list.active {
  transition: all 0.4s ease 0s;
  position: relative;
  overflow: hidden;
}
.saleon {
  background: #3EC1D5 none repeat scroll 0 0;
  color: #fff;
  font-size: 13px;
  font-weight: 700;
  left: -26px;
  padding: 2px 25px;
  position: absolute;
  text-transform: uppercase;
  top: 16px;
  transform: rotate(-45deg);
  -webkit-transform: rotate(-45deg);
  -ms-transform: rotate(-45deg);
  -o-transform: rotate(-45deg);
  -moz-transform: rotate(-45deg);
}

.pri_table_list>button:hover {
  background-color: #fff;
  border: 1px solid #333;
  color: #333;
}
.active>h3 {
  background: #f5f5f5 none repeat scroll 0 0;
  color: #333;
  transition: all 0.4s ease 0s;
}
```

```
.active>button {
  background: #3EC1D5 none repeat scroll 0 0;
  border: 1px solid #3EC1D5;
  color: #fff;
  transition: 0.4s;
}
.active>button:hover {
  background: #333 none repeat scroll 0 0;
  border: 1px solid #333;
  color: #fff;
  transition: 0.4s;
}
/*----------------------------------------
 12.Testimonial Area Css
----------------------------------------*/
.testimonials-area {
  background: rgba(0, 0, 0, 0) url("../img/background/slider1.jpg") no-repeat fixed center top / cover;
  height: auto;
  width: 100%;
}
.testi-inner {
  position: relative;
  width: 100%;
  height: auto;
  z-index: 1;
}
.testi-overly {
  background: rgba(0, 0, 0, 0.7) none repeat scroll 0 0;
  height: 100%;
  left: 0;
  position: absolute;
  top: 0;
  width: 100%;
  z-index: -1;
}

.quate {
  border: 1px dotted #fff;
  border-radius: 50%;
  color: #fff;
  display: inline-block;
  font-size: 24px;
  height: 70px;
  line-height: 70px;
  width: 70px;
```

```
}
.quate:hover {
  color: #fff;
}
.testi-img img {
  border: 1px dotted rgba(0, 0, 0, 0.05);
  border-radius: 2px;
  height: 80px;
  margin: 0 auto;
  padding: 5px;
  transition: background 0.6s ease-out 0s;
  width: 80px !important;
}
.testi-text p {
  color: #fff;
  font-size: 16px;
  line-height: 1.5em;
  margin: 20px 0;
  letter-spacing: 1px;
}
.testi-text h6 {
  color: #fff;
  font-size: 20px;
}
.testimonial-carousel.owl-carousel.owl-theme .owl-controls .owl-dots div.owl-dot>span {
  background: #fff none repeat scroll 0 0;
  display: inline-block;
  height: 8px;
  width: 8px;
  -moz-transition: 0.4s;
  -webkit-transition: 0.4s;
  -o-transition: 0.4s;
  -ms-transition: 0.4s;
  transition: 0.4s;
  border-radius: 50%;
}

.testimonial-carousel.owl-carousel.owl-theme .owl-controls .owl-dots {
  bottom: -30px;
  display: block;
  left: 50%;
  margin-left: -20px;
  position: absolute;
}
.testimonial-content {
```

```
  margin-bottom: 15px;
}
.testimonial-carousel.owl-carousel.owl-theme .owl-controls .owl-dots div.owl-dot {
  display: inline-block;
  margin: 0 3px;
}
.testimonial-carousel.owl-carousel.owl-theme .owl-controls .owl-dots div.owl-dot.active span {
  background: #3EC1D5;
}
.testi-text.text-center>h6 {
  color: #fff;
  font-size: 20px;
  font-weight: 700;
  text-transform: uppercase;
}
.guest-rev {
  color: #ddd;
  font-size: 16px;
}
.guest-rev>a {
  color: #3EC1D5;
  font-size: 14px;
}
/*---------------------------------*/
/*  13.Blog Area
/*---------------------------------*/
.blog-area {
  height: auto;
  width: 100%;
}
.blog-text h4 a {
  color: #444;
  text-decoration: none;
}
.blog-text h4 {
  color: #444;
  margin-bottom: 15px;
}
.blog-btn {
  border-bottom: 1px dotted #444;
  color: #444;
  text-decoration: none;
}
.blog-btn {
  border-bottom: 1px dotted #444;
```

```
 color: #444;
 display: inline-block;
 padding: 0 1px 5px 0;
 position: relative;
 text-decoration: none;
}
.blog-btn {
 position: relative;
}
.blog-btn::after {
 content: "\f178";
 font-family: fontawesome;
 position: absolute;
 right: -20px;
 top: 1px;
 transition: all 0.3s ease 0s;
}
.blog-btn:hover::after {
 right: -30px;
}
.blog-btn:hover {
 color: #333;
 text-decoration: none;
}
.blog_meta span.date_type i {
 margin-left: 5px;
}
.blog-meta span.comments-type {
 margin-left: 5px;
}
.blog-meta span i {
 padding-right: 10px;
}
.blog-content .blog-meta {
 border-bottom: 1px dotted #333;
}
.blog-meta {
 border-bottom: 1px dotted #fff;
 padding: 10px 0;
}
.comments-type>a, .date-type, .blog-meta span.comments-type {
 color: #333;
 letter-spacing: 1px;
 margin-right: 5px;
}
```

```
.blog-meta .comments-type i {
  padding-right: 0 !important;
}
.blog-content-right .comments-type>a, .blog-content-right .date-type, .blog-content-right .blog-meta span.comments-type, .blog-content-right .blog-text p {
  color: #fff;
  letter-spacing: 1px;
}
.single-blog .ready-btn {
  border: 1px solid #444;
  border-radius: 30px;
  color: #444;
  cursor: pointer;
  display: inline-block;
  font-size: 15px;
  font-weight: 500;
  margin-top: 10px;
  padding: 10px 20px;
  text-align: center;
  text-transform: uppercase;
  transition: all 0.4s ease 0s;
}
.single-blog .ready-btn:hover {
  border: 1px solid #3EC1D5;
  color: #fff;
}
/*----------------------------
  13. Quote area
----------------------------------*/
.suscribe-area {
  background: #3EC1D5 none repeat scroll 0 0;
  padding: 30px 0;
}
.suscribe-text {
  display: block;
  padding: 10px 0;
}

.suscribe-text h3 {
  color: #fff;
  display: inline-block;
  font-size: 20px;
  font-weight: 600;
  margin: 0;
```

```
  text-transform: uppercase;
  letter-spacing: 2px;
}
.sus-btn {
  background: #fff none repeat scroll 0 0;
  border: 2px solid #fff;
  color: #3EC1D5;
  display: inline-block;
  font-size: 16px;
  font-weight: 700;
  margin-left: 100px;
  padding: 10px 20px;
  text-decoration: none;
  text-transform: uppercase;
  border-radius: 30px;
}
.sus-btn:hover {
  background: #3EC1D5 none repeat scroll 0 0;
  border: 2px solid #fff;
  color: #fff;
}
/*---------------------------------*/
/*  14.Contact Area
/*---------------------------------*/
.contact-area {
  height: auto;
  width: 100%;
}
.contact-content {
  padding: 100px;
  background: #000 none repeat scroll 0 0;
}
.contact-content-right {
  padding: 100px;
}
.contact-form input[type="text"], .contact-form input[type="email"] {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border: 1px solid #ccc;
  border-radius: 0;
  color: #444;
  height: 40px;
  margin-bottom: 16px;
  padding-left: 20px;
  width: 100%;
}
```

```
.contact-form textarea  {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border: 1px solid #ccc;
  border-radius: 0;
  color: #444;
  height: 140px;
  padding: 20px;
  width: 100%;
}
.contact-form button[type="submit"] {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border: 1px solid #ccc;
  color: #444;
  font-size: 16px;
  font-weight: 700;
  margin-top: 8px;
  padding: 12px 30px;
  text-transform: uppercase;
  transition: all 0.3s ease 0s;
  border-radius: 30px;
}
.contact-form button[type=submit]:hover {
  color: #fff;
  border: 1px solid #3EC1D5;
  background: #3EC1D5;
}
.contact-form  #sendmessage {
  color: #3EC1D5;
  border: 1px solid #3EC1D5;
  display: none;
  text-align: center;
  padding: 15px;
  font-weight: 600;
  margin-bottom: 15px;
}
.contact-form #errormessage {
  color: red;
  display: none;
  border: 1px solid red;
  text-align: center;
  padding: 15px;
  font-weight: 600;
  margin-bottom: 15px;
}
.contact-form #sendmessage.show, .contact-form #errormessage.show, .contact-form .show {
```

```
  display: block;
}
#contact .form .validation {
  color: red;
  display: none;
  margin: 0 0 20px;
  font-weight: 400;
  font-size: 13px;
}
.single-icon i {
  font-size: 24px;
  width: 50px;
  height: 50px;
  border: 1px solid #444;
  line-height: 46px;
  border-radius: 50%;
  margin-bottom: 20px;
}
.single-icon p {
  font-size: 16px;
  line-height: 30px;
}
.contact-icon {
  margin-bottom: 40px;
}
#google-map {
  height: 370px;
  margin-bottom: 20px;
}
/*----------------------------------------*/
/*  15. Footer Area
/*----------------------------------------*/
.footer-area {
  padding: 40px 0;
  background: #f9f9f9;
}
.footer-head p {
  color: #444;
}
.footer-head h4 {
  color: #444;
  font-size: 16px;
  letter-spacing: 2px;
  padding-bottom: 10px;
  text-transform: uppercase;
```

```
}
.footer-logo {
  padding-bottom: 20px;
}
.footer-logo h2 {
  color: #222;
  padding: 0;
  margin: 0;
  font-size: 36px;
  font-weight: bold;
  line-height: 1;
}
.footer-logo h2 span {
  color: #3ec1d5;
}
.footer-icons ul li {
  display: inline-block;
}
.footer-icons ul li a {
  border: 1px solid #444;
  color: #444;
  display: block;
  font-size: 16px;
  height: 40px;
  line-height: 38px;
  margin-right: 5px;
  text-align: center;
  width: 40px;
  border-radius: 50%;
}
.flicker-img>a {
  float: left;
  padding: 1px;
  width: 33.33%;
}
.footer-icons {
  margin-top: 30px;
}
.footer-contacts p span {
  color: #3EC1D5;
  font-weight: 700;
}
.popular-tag ul li {
  display: inline-block;
}
```

```
.footer-content {
  display: block;
  overflow: hidden;
}
.popular-tag ul li a:hover, .footer-icons ul li a:hover {
  background: #3EC1D5;
  border: 1px solid #3EC1D5;
  color: #fff;
}
.popular-tag ul li a {
  border: 1px solid #444;
  border-radius: 30px;
  color: #444;
  display: block;
  font-size: 13px;
  font-weight: 600;
  margin: 5px 3px;
  padding: 5px 10px;
  position: relative;
  text-decoration: none;
  text-transform: capitalize;
  transition: all 0.4s ease 0s;
  width: 70px;
  text-align: center;
}
.footer-area-bottom {
  background: #f1f1f1 none repeat scroll 0 0;
  padding: 15px 0;
}
.copyright-text a:hover {
  text-decoration: underline;
  color: #3EC1D5;
}
.copyright-text a {
  color: #444;
}
.copyright>p {
  margin-bottom: 0;
  color: #444;
}
.copyright a, .credits a {
  color: #3EC1D5;
}
.credits {
  padding-top: 5px;
```

```
  text-align: center;
}
/*-----------------------------------------*/
/*  16.Home Page 2  CSS
/*-----------------------------------------*/
.header-bg {
  background: url(../img/slider/slider1.jpg);
  background-repeat: no-repeat;
  background-size: cover;
  background-position: top center;
  background-attachment: fixed;
}
.header-bg.home-2 {
  width: 100%;
  height: 100%;
  position: relative;
}
.home-overly {
  background: rgba(0, 0, 0, 0.50);
  height: 100%;
  position: absolute;
  width: 100%;
}
.home-2 .layer-1-3, .home-3 .layer-1-3 {
  margin: 10px 0 0;
}
/*-----------------------------------------*/
/*  17.Home Page 3  CSS
/*-----------------------------------------*/
.home-video {
  height: 100%;
  left: 0;
  position: absolute;
  top: 0;
  width: 100%;
  z-index: -1;
}
.header-image.home-3 {
  width: 100%;
  height: 100%;
  position: relative;
}
.table {
  width: 100%;
  height: 100%;
```

```
  display: table;
}
.table-cell {
  width: 100%;
  height: 100%;
  display: table-cell;
  vertical-align: middle;
}
/*----------------------------------------
  18. Blog page
----------------------------------------*/
.page-area {
  position: relative;
}
.blog-page .banner-box {
  margin-bottom: 40px;
}
.search-option input {
  border: medium none;
  padding: 6px 15px;
  width: 80%;
}
.search-option {
  border: 1px solid #ccc;
  height: 42px;
  margin-bottom: 30px;
}
.search-option button {
  background: transparent none repeat scroll 0 0;
  border: medium none;
  font-size: 20px;
  padding: 8px 23px;
}
.search-option button:hover {
  color: #3ec1d5;
}
.left-blog h4 {
  border-bottom: 1px solid #ddd;
  color: #444;
  font-size: 17px;
  font-weight: 500;
  margin-bottom: 0;
  padding: 15px 10px;
  text-transform: uppercase;
}
```

```
.left-blog {
  background: #f9f9f9 none repeat scroll 0 0;
  margin-bottom: 30px;
  overflow: hidden;
  padding-bottom: 20px;
}
.left-blog li {
  border-bottom: 1px solid #ddd;
  display: block;
}
.left-blog ul li a:hover {}
.left-blog ul li a {
  color: #444;
  display: block;
  font-size: 14px;
  padding: 10px;
  text-transform: capitalize;
}
.recent-single-post {
  border-bottom: 1px solid #ddd;
  display: block;
  overflow: hidden;
  padding: 15px 10px;
}
.ready-btn {
  border: 1px solid #fff;
  border-radius: 30px;
  color: #fff;
  cursor: pointer;
  display: inline-block;
  font-size: 17px;
  font-weight: 600;
  margin-top: 30px;
  padding: 12px 40px;
  text-align: center;
  text-transform: uppercase;
  transition: all 0.4s ease 0s;
  z-index: 222;
}
.ready-btn:hover {
  color: #fff;
  background: #3EC1D5;
  border: 1px solid #3EC1D5;
  text-decoration: none;
}
```

```
.post-img {
  display: inline-block;
  float: left;
  padding: 0 5px;
  width: 35%;
}
.pst-content {
  display: inline-block;
  float: left;
  width: 65%;
}
.pst-content p a:hover, .left-blog ul li a:hover {
  color: #3EC1D5;
}
.blog-page .single-blog {
  margin-bottom: 40px;
}
.pst-content p a {
  color: #444;
  font-size: 15px;
}
.header-bottom h1, .header-bottom h2 {
  color: #fff;
}
.blog-tags {
  padding: 1px 0;
}
.left-blog li:last-child {
  border-bottom: 0;
}
.popular-tag.left-blog ul li a:hover {
  color: #fff;
}
.popular-tag.left-side-tags.left-blog ul {
  padding: 0 10px;
}
.blog-1 .banner-box {
  margin-bottom: 30px;
}
.left-tags .left-side-tags ul li {
  border-bottom: 0;
}
.left-tags .left-side-tags ul li a {
  padding: 3px 10px;
  width: auto;
```

```
}
.left-side-tags h4 {
  margin-bottom: 15px;
}
/*----------------------------------------*/
/*  19.    Blog Details css
/*----------------------------------------*/
.post-information h2 {
  color: #363636;
  font-size: 22px;
  text-transform: uppercase;
}
.post-information {
  padding: 20px 0;
}
.post-information .entry-meta span a {
  color: #444;
  display: inline-block;
  padding: 10px 0;
}
.entry-meta span a:hover {
  color: #3EC1D5;
}
.post-information .entry-meta {
  border-bottom: 1px solid #ccc;
  margin: 20px 0;
}
.post-information .entry-meta span i {
  padding: 0 10px;
}
.entry-content>p {
  color: #444;
}
.entry-meta>span {
  color: #444;
}
.entry-content blockquote {
  background: #fff none repeat scroll 0 0;
  border-left: 5px solid #3EC1D5;
  font-size: 17.5px;
  font-style: italic;
  margin: 0 0 20px 40px;
  padding: 22px 20px;
}
```

```
.pagination>.active>a, .pagination>.active>span, .pagination>.active>a:hover, .pagination>.active>span:hover, .pagination>.active>a:focus, .pagination>.active>span:focus {
  background-color: #3EC1D5;
  border-color: #3EC1D5;
  color: #fff;
  cursor: default;
  z-index: 3;
}
.social-sharing {
  background: #fff none repeat scroll 0 0;
  border: 1px solid #ccc;
  display: block;
  margin: 30px 0;
}
.social-sharing>h3 {
  display: inline-block;
  font-size: 18px;
  margin: 0;
  padding: 20px 10px;
}
.sharing-icon {
  display: inline-block;
  float: right;
  padding: 13px 10px;
}
.sharing-icon a {
  border: 1px solid #444;
  color: #444;
  display: block;
  float: left;
  font-size: 18px;
  height: 34px;
  line-height: 30px;
  margin-left: 10px;
  text-align: center;
  width: 34px;
}
.sharing-icon a:hover {
  color: #3EC1D5;
  border: 1px solid #3EC1D5;
}
.single-blog .author-avatar {
  float: left;
  margin-right: 10px;
}
```

```
.single-blog .author-description h2 {
  font-size: 18px;
  margin: 0;
  padding: 0 0 5px;
}
.author-info {
  background: #fff none repeat scroll 0 0;
  float: left;
  margin: 30px 0;
  padding: 15px;
  width: 100%;
}
.single-post-comments {
  margin-bottom: 60px;
  max-width: 650px;
}
.comments-heading h3, h3.comment-reply-title {
  border-bottom: 1px solid #e8e8e9;
  color: #444;
  font-size: 18px;
  margin: 0 0 20px;
  padding: 0 0 5px;
  text-transform: uppercase;
}
.comments-list ul li {
  margin-bottom: 25px;
}
.comments-list-img {
  float: left;
  margin-right: 15px;
}
.comments-content-wrap {
  color: #42414f;
  font-size: 12px;
  line-height: 1;
  margin: 0 0 15px 80px;
  padding: 10px;
  position: relative;
}
.author-avatar {
  display: inline-block;
  float: left;
  width: 10%;
}
.author-description h2 {
```

```
 color: #777;
 font-size: 20px;
 text-transform: uppercase;
}
.author-description h2 a {
 color: #000;
}
.comments-content-wrap span b {
 margin-right: 5px
}
.comments-content-wrap span a:hover {}
span.post-time {
 margin-right: 5px
}
.comments-content-wrap p {
 color: #909295;
 line-height: 18px;
 margin-bottom: 5px;
 margin-top: 15px;
}
li.threaded-comments {
 margin-left: 50px
}
.comment-respond {
 margin-top: 60px;
}
h3.comment-reply-title {}
span.email-notes {
 color: #42414f;
 display: block;
 font-size: 12px;
 margin-bottom: 10px;
}
.comment-respond p {
 color: #444;
 margin-bottom: 5px;
}
.comment-respond input[type=text], .comment-respond input[type=email] {
 border: 1px solid #e5e5e5;
 border-radius: 0;
 height: 32px;
 margin-bottom: 15px;
 padding: 0 0 0 10px;
 width: 100%;
}
```

```
.comment-respond textarea#message-box {
  border: 1px solid #e5e5e5;
  border-radius: 0;
  max-width: 100%;
  padding: 10px;
  height: 130px;
  width: 100%;
}
.comment-respond input[type="submit"] {
  background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
  border: 1px solid #3ec1d5;
  border-radius: 20px;
  box-shadow: none;
  color: #444;
  display: inline-block;
  font-size: 12px;
  font-weight: 700;
  height: 40px;
  line-height: 14px;
  margin-top: 20px;
  padding: 10px 15px;
  text-shadow: none;
  text-transform: uppercase;
  transition: all 0.3s ease 0s;
  white-space: nowrap;
}
.comments-content-wrap span a {
  color: #000;
}
.comments-content-wrap span a:hover {
  color: #3EC1D5;
}
.comment-respond input[type=submit]:hover {
  border: 1px solid #3EC1D5;
  color: #fff;
  background: #3EC1D5;
}
.single-blog .blog-pagination {
  border-top: 1px solid #e5e5e5;
  margin: 0;
  padding-top: 30px;
}
.error
{
   color:Red;
```

```
  font-size:12px;
}
/*----------------------------------------
 .End CSS
----------------------------------------*/
```

5.4.4 Java Script

```
(function($) {
  "use strict";
  /*--------------------------
  preloader
  -------------------------- */
  $(window).on('load', function() {
    var pre_loader = $('#preloader');
    pre_loader.fadeOut('slow', function() {
      $(this).remove();
    });
  });
  /*--------------------
   TOP Menu Stick
  -------------------- */
  var s = $("#sticker");
  var pos = s.position();
  $(window).on('scroll', function() {
    var windowpos = $(window).scrollTop() > 300;
    if (windowpos > pos.top) {
      s.addClass("stick");
    } else {
      s.removeClass("stick");
    }
  });
  /*----------------------------
   Navbar nav
  ---------------------------- */
  var main_menu = $(".main-menu ul.navbar-nav li ");
  main_menu.on('click', function() {
    main_menu.removeClass("active");
    $(this).addClass("active");
  });
  /*----------------------------
   wow js active
  ---------------------------- */
```

```
new WOW().init();
$(".navbar-collapse a:not(.dropdown-toggle)").on('click', function() {
  $(".navbar-collapse.collapse").removeClass('in');
});
//----------------------------------------------
//Nivo slider
//----------------------------------------------
$('#ensign-nivoslider').nivoSlider({
  effect: 'random',
  slices: 15,
  boxCols: 12,
  boxRows: 8,
  animSpeed: 500,
  pauseTime: 5000,
  startSlide: 0,
  directionNav: true,
  controlNavThumbs: false,
  pauseOnHover: true,
  manualAdvance: false,
});
/*-----------------------------
 Scrollspy js
------------------------------- */
var Body = $('body');
Body.scrollspy({
  target: '.navbar-collapse',
  offset: 80
});
/*---------------------
  Venobox
--------------------- */
var veno_box = $('.venobox');
veno_box.venobox();
/*-----------------------------
Page Scroll
------------------------------- */
var page_scroll = $('a.page-scroll');
page_scroll.on('click', function(event) {
  var $anchor = $(this);
  $('html, body').stop().animate({
    scrollTop: $($anchor.attr('href')).offset().top - 55
  }, 1500, 'easeInOutExpo');
  event.preventDefault();
});
/*--------------------------
```

```
  Back to top button
---------------------------- */
$(window).scroll(function() {
  if ($(this).scrollTop() > 100) {
    $('.back-to-top').fadeIn('slow');
  } else {
    $('.back-to-top').fadeOut('slow');
  }
});
$('.back-to-top').click(function(){
  $('html, body').animate({scrollTop : 0},1500, 'easeInOutExpo');
  return false;
});
/*----------------------------
 Parallax
------------------------------ */
var well_lax = $('.wellcome-area');
well_lax.parallax("50%", 0.4);
var well_text = $('.wellcome-text');
well_text.parallax("50%", 0.6);
/*---------------------------
 collapse
---------------------------- */
var panel_test = $('.panel-heading a');
panel_test.on('click', function() {
  panel_test.removeClass('active');
  $(this).addClass('active');
});
/*---------------------
 Testimonial carousel
---------------------*/
var test_carousel = $('.testimonial-carousel');
test_carousel.owlCarousel({
  loop: true,
  nav: false,
  dots: true,
  autoplay: true,
  responsive: {
    0: {
      items: 1
    },
    768: {
      items: 1

});
```

```
 /*----------------------------
  isotope active
 ------------------------------ */
 // portfolio start
 $(window).on("load", function() {
   var $container = $('.awesome-project-content');
   $container.isotope({
     filter: '*',
     animationOptions: {
       duration: 750,
       easing: 'linear',
       queue: false
     }
   });
   var pro_menu = $('.project-menu li a');
   pro_menu.on("click", function() {
     var pro_menu_active = $('.project-menu li a.active');
     pro_menu_active.removeClass('active');
     $(this).addClass('active');
     var selector = $(this).attr('data-filter');
     $container.isotope({
       filter: selector,
       animationOptions: {
         duration: 750,
         easing: 'linear',
         queue: false
       }
     });
     return false;
   });
 });
 //portfolio end
 /*---------------------
  Circular Bars - Knob
---------------------- */
 if (typeof($.fn.knob) != 'undefined') {
   var knob_tex = $('.knob');
   knob_tex.each(function() {
     var $this = $(this),
       knobVal = $this.attr('data-rel');
     $this.knob({
```

CHAPTER – 6

TESTING DETAILS

6.1 Unit Testing

Unit testing focuses on verifying the smallest unit of software design, which is the software component or module. By utilizing the component-level design description as a guide, important control paths are tested to uncover errors within the boundary of the module. Unit testing is oriented towards white-box testing.

Initially, the module interface is tested to ensure that information properly flows into and out of the program under test. Subsequently, the local data structure is tested to ensure that the temporarily stored data maintains its integrity throughout the execution. Boundary conditions are then tested to ensure that the module operates properly within the established boundaries that limit or restrict processing. All independent paths through the control structure are exercised to guarantee that all statements in a module have been executed at least once. Lastly, error handling paths are tested to ensure robustness.

In this project, testing is conducted according to the bottom-up approach. It commences with the smallest and lowest-level modules, processing them one at a time. For each module, a driver and corresponding stubs are written. If any errors are found, they are promptly corrected, and the unit is retested.

6.2 Integration Testing

Integration testing is a logical extension of unit testing. In its simplest form, it involves combining two units that have already been tested into a component and testing the interface between them. Here, a component refers to an integrated aggregate of more than one unit. The aim is to test combinations of pieces and gradually expand the process to test modules with those from other groups. Eventually, all the modules comprising a process are tested together. Any errors discovered during the combination of units are likely related to the interface between units. This method simplifies the analysis by reducing the number of possibilities to a more manageable level.

In this software, the bottom-up integration testing approach has been employed, starting with the smallest and lowest-level modules and proceeding one at a time. For each module, tests were conducted, and the results were noted down.

Test Cases

TC#	Description	Expected Result	Actual Result	Status of Execution Pass/Fail
TC01	Execute/run the application	Application should run without any interrupts.	Application is executing properly	Pass
TC02	Verification of Admin Login Input User Name and Password then click on Login button.	Admin User Name & Password should be check/verify with database.	Admin User Name & Password successfully checked with database.	Pass
TC03	Verification of Input User Name & Password of Admin.	If Admin User Name & Password is valid then it should navigate to respective Admin home page.	Admin User Name & Password is valid then successfully navigating respective home page.	Pass
TC04	Verification of Input User Name & Password of Admin. (Invalid Case)	If Admin User Name & Password is invalid then show message that Input Username & Password is	If User Name & Password is not valid or wrong input then message box shown that User	Pass

		wrong.	Name & Password wrong.	

6.3 User Testing

User testing involves testing the software by actual users using live data, which contributes to the creation of a truly robust system. By incorporating real-world usage scenarios and feedback from users, user testing helps in identifying potential issues and improving the overall quality of the system. In this system, user testing has been conducted extensively to ensure accurate results and enhance user satisfaction. The feedback gathered from users during testing has been invaluable in refining the system and addressing any concerns or shortcomings. This iterative process of user testing plays a vital role in delivering a high-quality and user-friendly software solution.

CHAPTER – 7

RESULTS DISCUSSION

7.1 Snapshots

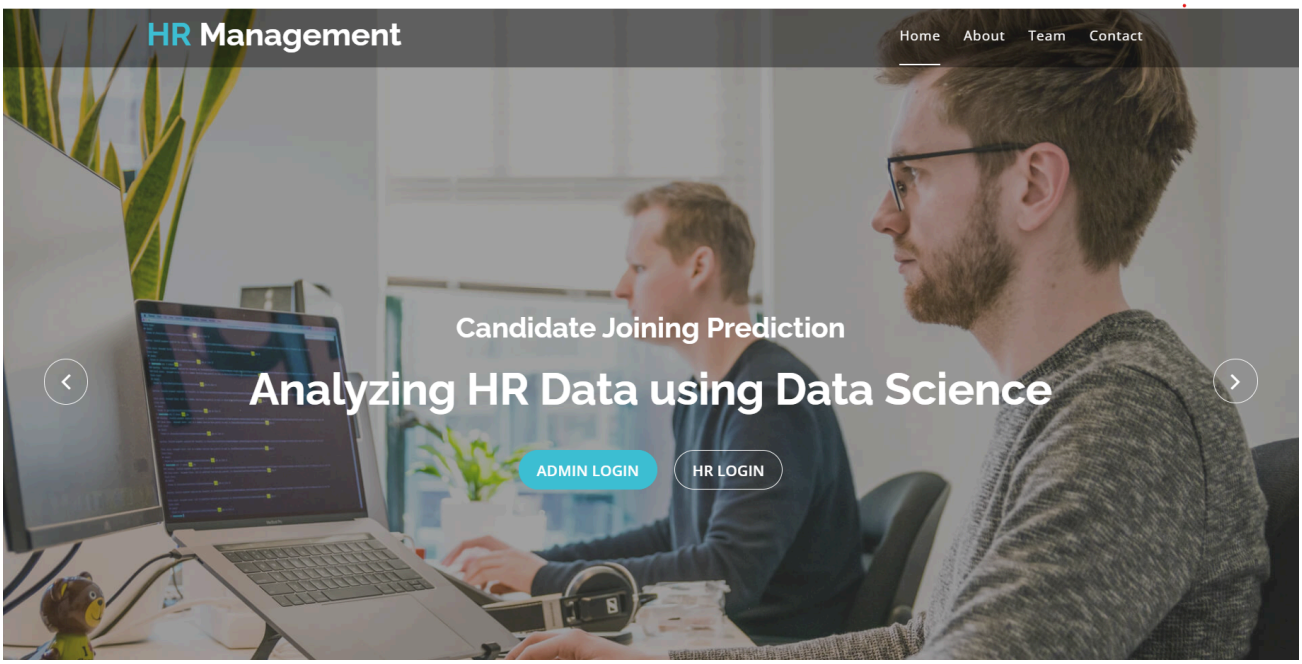


Fig 7.1.1 Home Page

The homepage includes About, contact information, team details, Admin and HR login options.

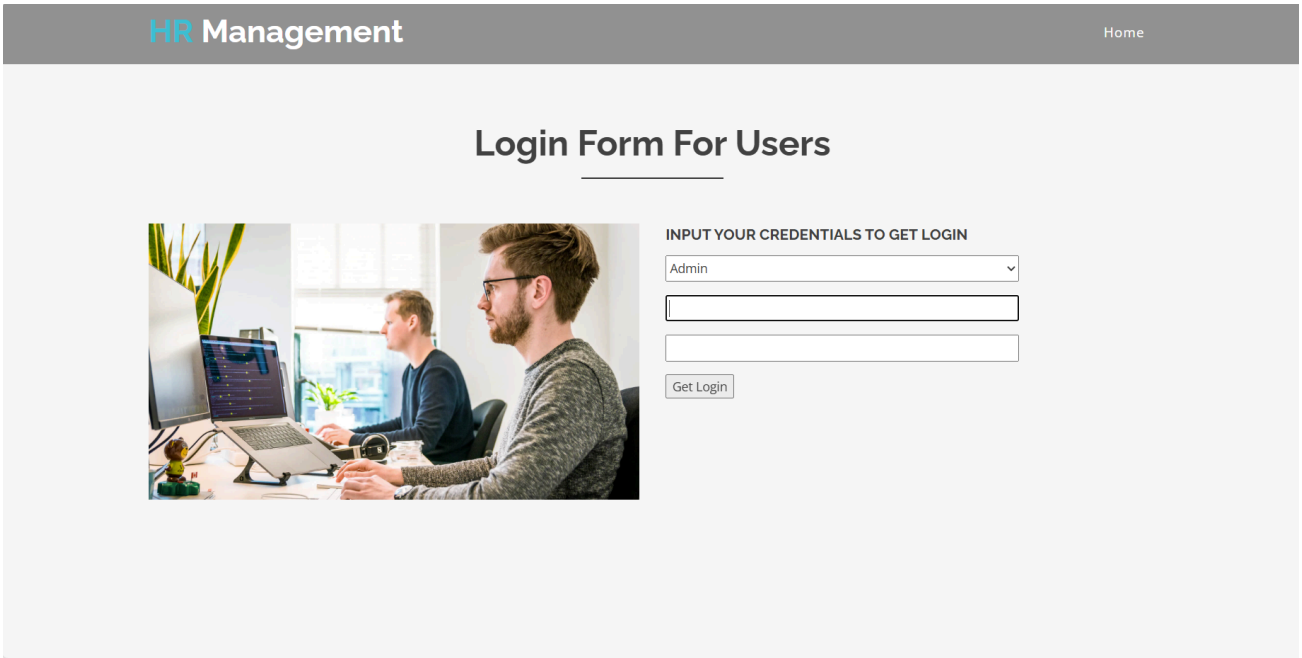


Fig 7.1.2 Login Form

This login form allows users to access either the admin or HR page.

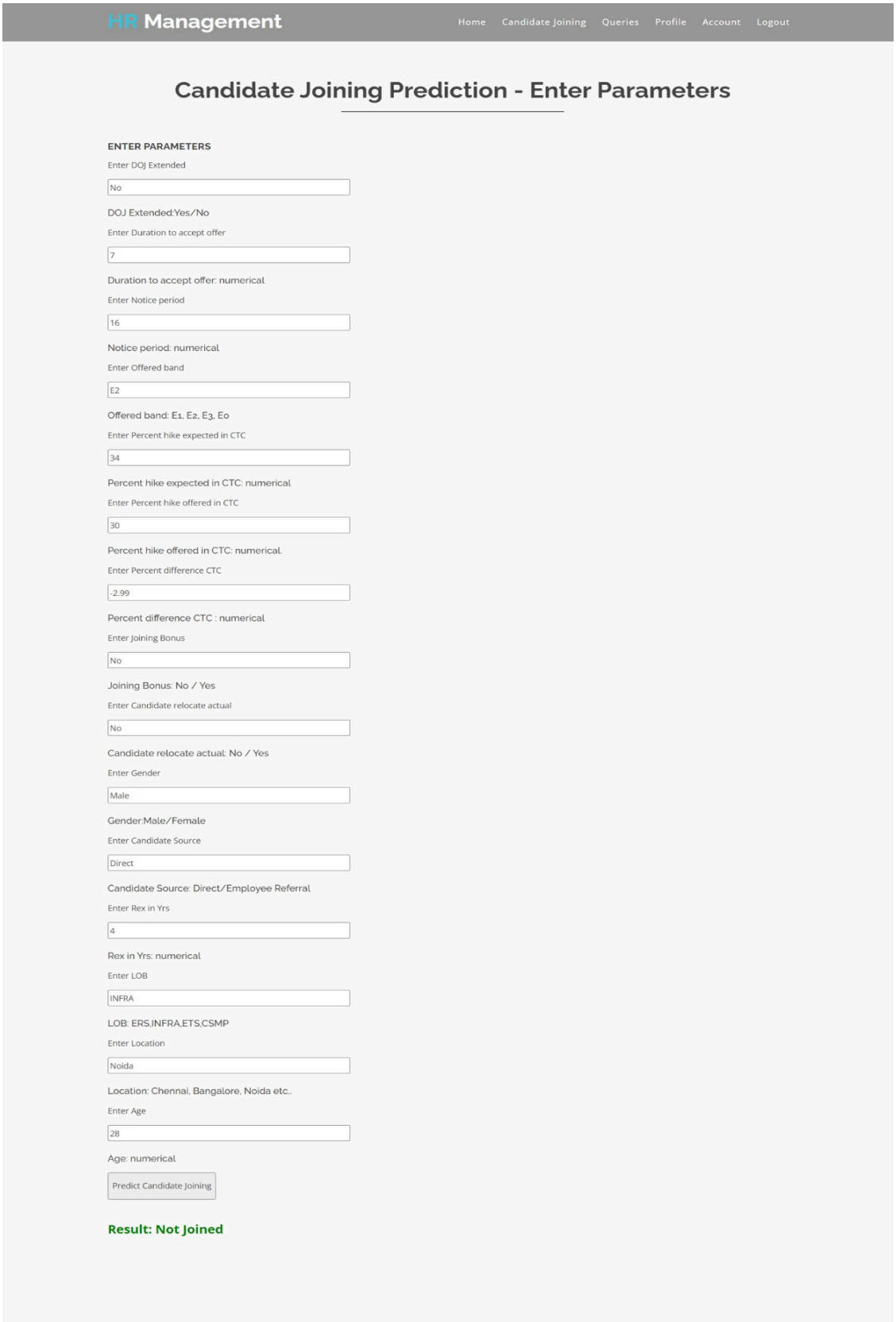


Fig 7.1.3 Candidate Joining Prediction

This page allows entry of various parameters to determine if the candidate will join or not join the company.

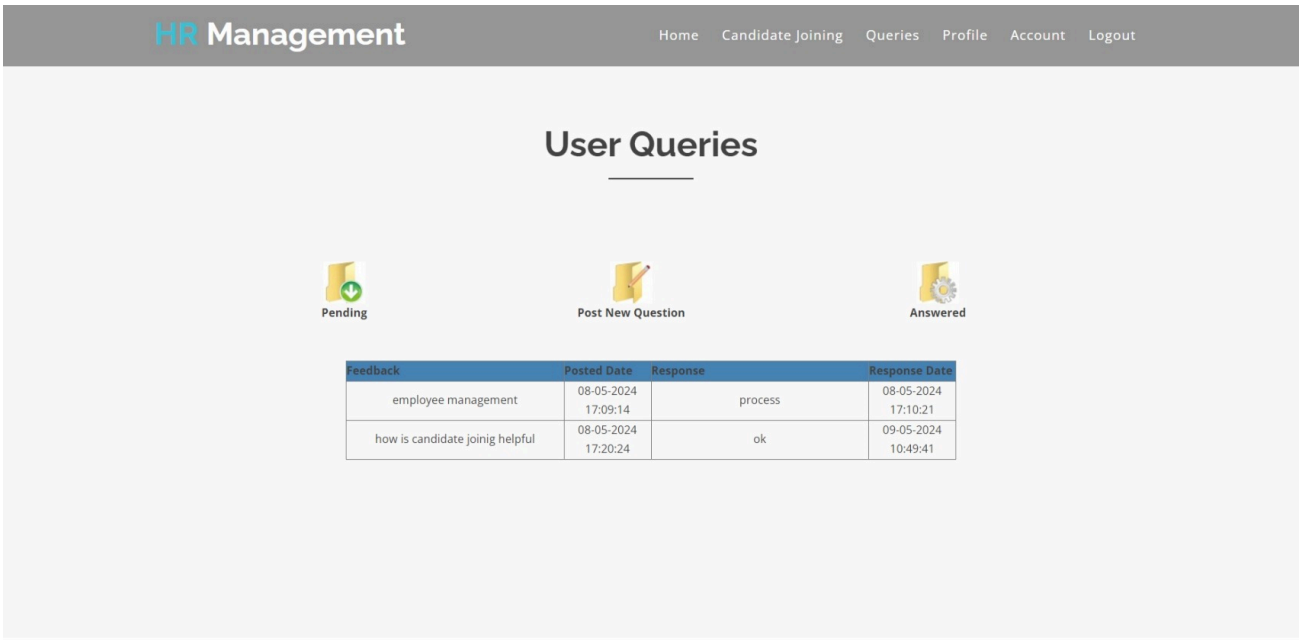


Fig 7.1.4 User Queries

On this page, HR can post queries, view their sent queries, check unanswered queries, and review replies from the admin.

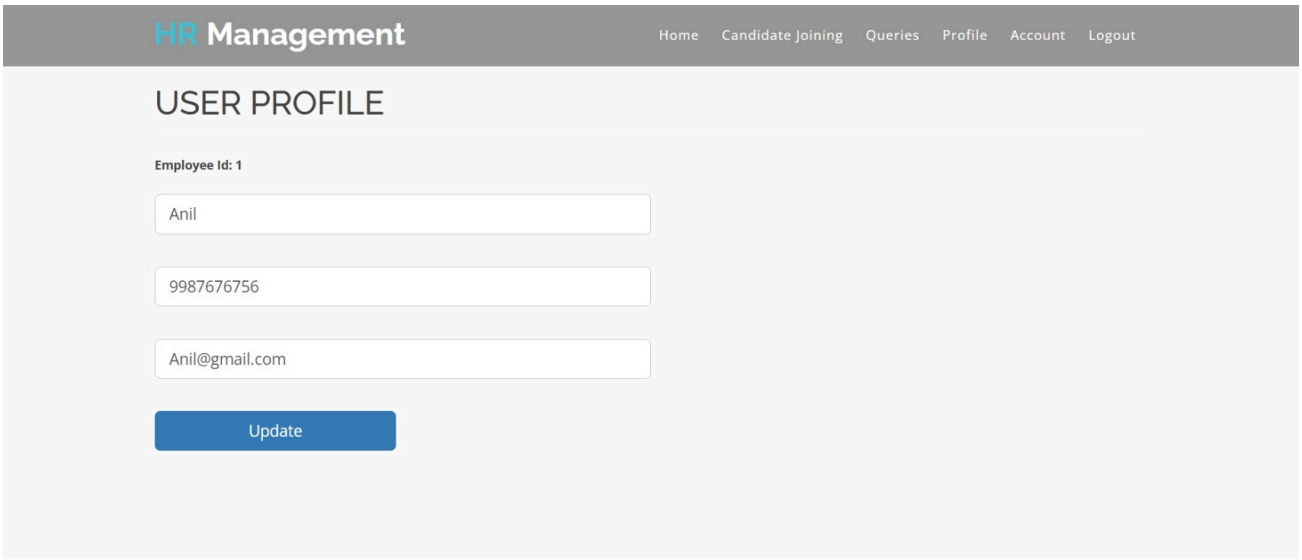


Fig 7.1.5 User Profile

Users can view and update their details on this page.

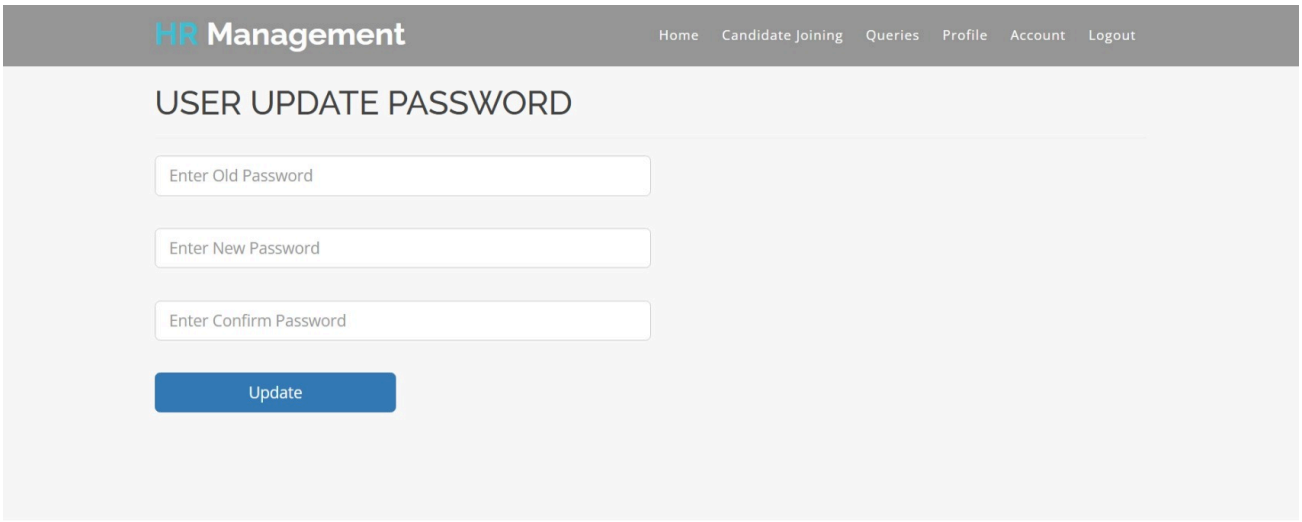


Fig 7.1.6 User Update Password

Users can update their password on this page.

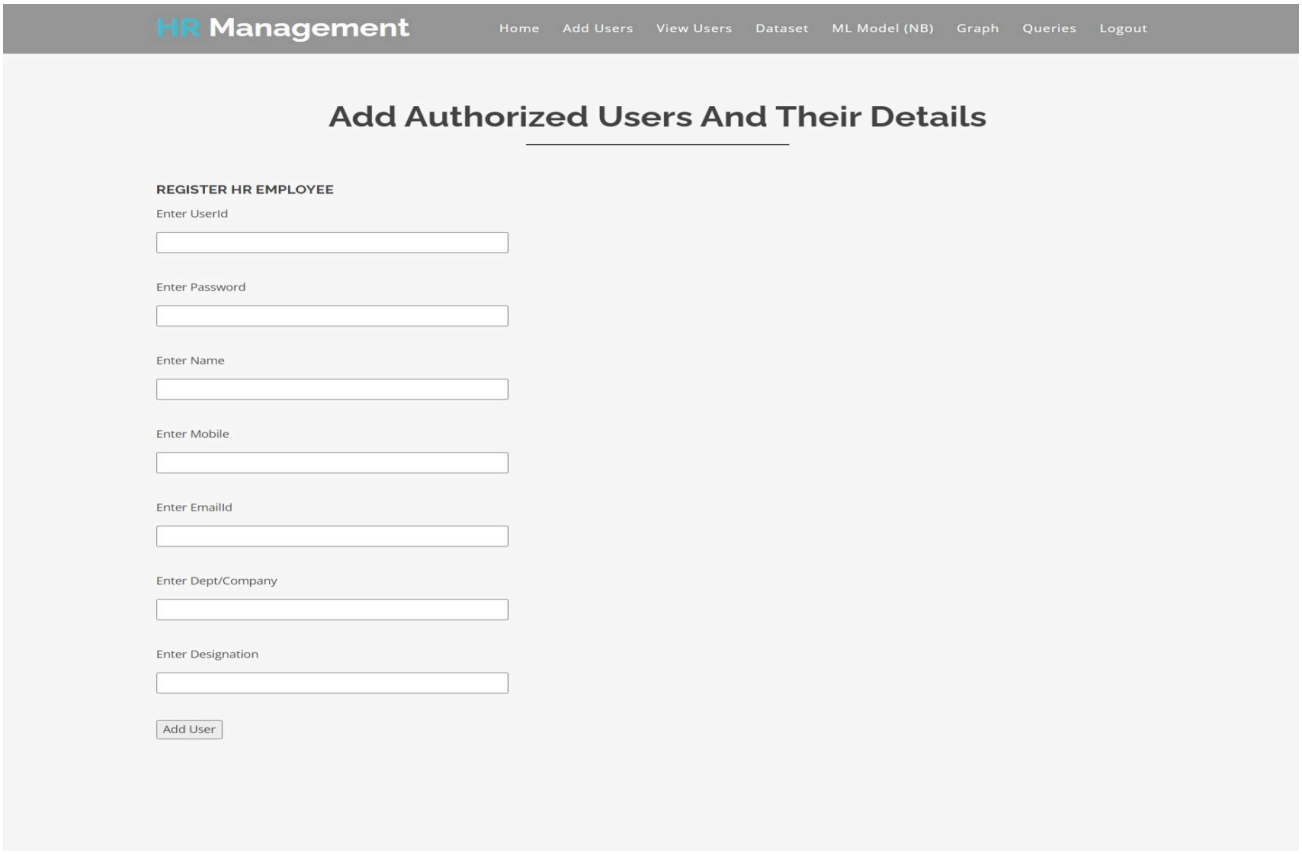


Fig 7.1.7 Adding Authorized Users

Admin can add a new HR along with their details on this page.

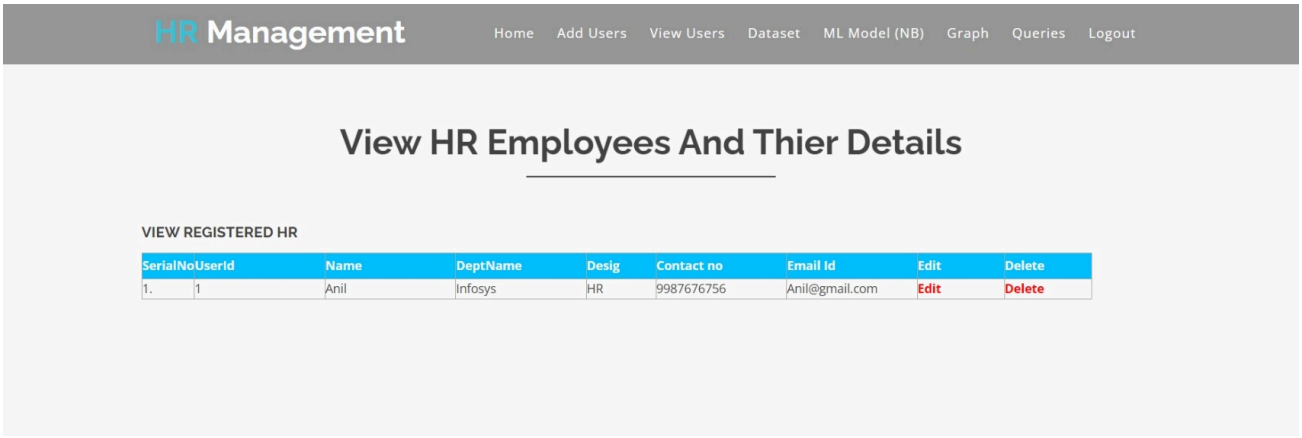
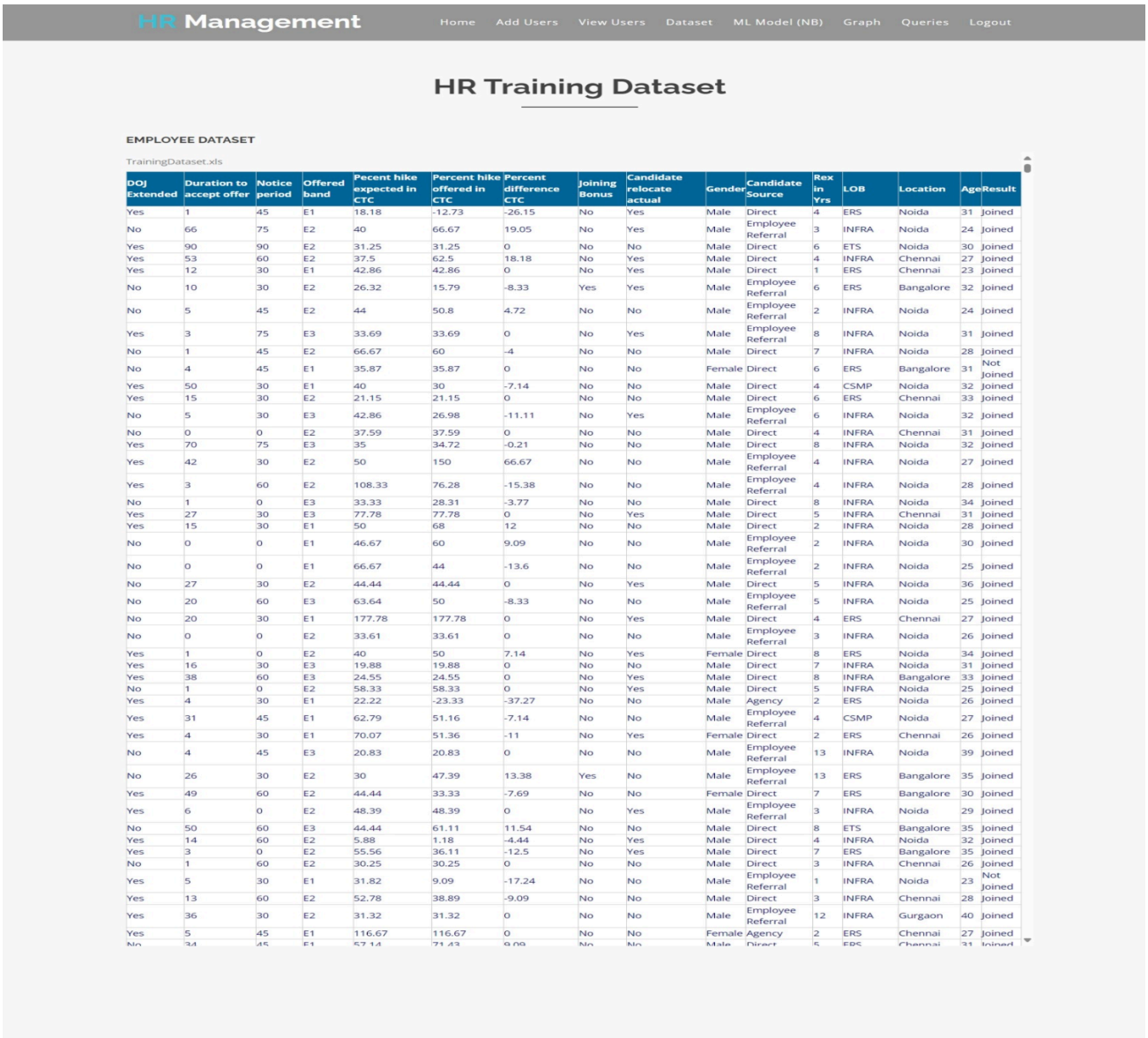


Fig 7.1.7 Viewing HR Employee and their details

On this page, the admin can view all HR employees and their details.



DOJ Extended	Duration to accept offer	Notice period	Offered band	Pecent hike expected in CTC	Percent hike offered in CTC	Percent difference CTC	Joining Bonus	Candidate relocate actual	Gender	Candidate Source	Rex in Yrs	LOB	Location	Age	Result
Yes	1	45	E1	18.18	-12.73	-26.15	No	Yes	Male	Direct	4	ERS	Noida	31	Joined
No	66	75	E2	40	66.67	19.05	No	Yes	Male	Employee Referral	3	INFRA	Noida	24	Joined
Yes	90	90	E2	31.25	31.25	0	No	No	Male	Direct	6	ETS	Noida	30	Joined
Yes	53	60	E2	37.5	62.5	18.18	No	Yes	Male	Direct	4	INFRA	Chennai	27	Joined
Yes	12	30	E1	42.86	42.86	0	No	Yes	Male	Direct	1	ERS	Chennai	23	Joined
No	10	30	E2	26.32	15.79	-8.33	Yes	Yes	Male	Employee Referral	6	ERS	Bangalore	32	Joined
No	5	45	E2	44	50.8	4.72	No	No	Male	Employee Referral	2	INFRA	Noida	24	Joined
Yes	3	75	E3	33.69	33.69	0	No	Yes	Male	Employee Referral	8	INFRA	Noida	31	Joined
No	1	45	E2	66.67	60	-4	No	No	Male	Direct	7	INFRA	Noida	28	Joined
No	4	45	E1	35.87	35.87	0	No	No	Female	Direct	6	ERS	Bangalore	31	Not Joined
Yes	50	30	E1	40	30	-7.14	No	No	Male	Direct	4	CSMP	Noida	32	Joined
Yes	15	30	E2	21.15	21.15	0	No	No	Male	Direct	6	ERS	Chennai	33	Joined
No	5	30	E3	42.86	26.98	-11.11	No	Yes	Male	Employee Referral	6	INFRA	Noida	32	Joined
No	0	0	E2	37.59	37.59	0	No	No	Male	Direct	4	INFRA	Chennai	31	Joined
Yes	70	75	E3	35	34.72	-0.21	No	No	Male	Direct	8	INFRA	Noida	32	Joined
Yes	42	30	E2	50	150	66.67	No	No	Male	Employee Referral	4	INFRA	Noida	27	Joined
Yes	3	60	E2	108.33	76.28	-15.38	No	No	Male	Employee Referral	4	INFRA	Noida	28	Joined
No	1	0	E3	33.33	28.31	-3.77	No	No	Male	Direct	8	INFRA	Noida	34	Joined
Yes	27	30	E3	77.78	77.78	0	No	Yes	Male	Direct	5	INFRA	Chennai	31	Joined
Yes	15	30	E1	50	68	12	No	No	Male	Direct	2	INFRA	Noida	28	Joined
No	0	0	E1	46.67	60	9.09	No	No	Male	Employee Referral	2	INFRA	Noida	30	Joined
No	0	0	E1	66.67	44	-13.6	No	No	Male	Employee Referral	2	INFRA	Noida	25	Joined
No	27	30	E2	44.44	44.44	0	No	Yes	Male	Direct	5	INFRA	Noida	36	Joined
No	20	60	E3	63.64	50	-8.33	No	No	Male	Employee Referral	5	INFRA	Noida	25	Joined
No	20	30	E1	177.78	177.78	0	No	Yes	Male	Direct	4	ERS	Chennai	27	Joined
No	0	0	E2	33.61	33.61	0	No	No	Male	Employee Referral	3	INFRA	Noida	26	Joined
Yes	1	0	E2	40	50	7.14	No	Yes	Female	Direct	8	ERS	Noida	34	Joined
Yes	16	30	E3	19.88	19.88	0	No	No	Male	Direct	7	INFRA	Noida	31	Joined
Yes	38	60	E3	24.55	24.55	0	No	Yes	Male	Direct	8	INFRA	Bangalore	33	Joined
No	1	0	E2	58.33	58.33	0	No	Yes	Male	Direct	5	INFRA	Noida	25	Joined
Yes	4	30	E1	22.22	-23.33	-37.27	No	No	Male	Agency	2	ERS	Noida	26	Joined
Yes	31	45	E1	62.79	51.16	-7.14	No	No	Male	Employee Referral	4	CSMP	Noida	27	Joined
Yes	4	30	E1	70.07	51.36	-11	No	Yes	Female	Direct	2	ERS	Chennai	26	Joined
No	4	45	E3	20.83	20.83	0	No	No	Male	Employee Referral	13	INFRA	Noida	39	Joined
No	26	30	E2	30	47.39	13.38	Yes	No	Male	Employee Referral	13	ERS	Bangalore	35	Joined
Yes	49	60	E2	44.44	33.33	-7.69	No	No	Female	Direct	7	ERS	Bangalore	30	Joined
Yes	6	0	E2	48.39	48.39	0	No	Yes	Male	Employee Referral	3	INFRA	Noida	29	Joined
No	50	60	E3	44.44	61.11	11.54	No	No	Male	Direct	8	ETS	Bangalore	35	Joined
Yes	14	60	E2	5.88	1.18	-4.44	No	Yes	Male	Direct	4	INFRA	Noida	32	Joined
Yes	3	0	E2	55.56	36.11	-12.5	No	Yes	Male	Direct	7	ERS	Bangalore	35	Joined
No	1	60	E2	30.25	30.25	0	No	No	Male	Direct	3	INFRA	Chennai	26	Joined
Yes	5	30	E1	31.82	9.09	-17.24	No	No	Male	Employee Referral	1	INFRA	Noida	23	Not Joined
Yes	13	60	E2	52.78	38.89	-9.09	No	No	Male	Direct	3	INFRA	Chennai	28	Joined
Yes	36	30	E2	31.32	31.32	0	No	No	Male	Employee Referral	12	INFRA	Gurgaon	40	Joined
Yes	5	45	E1	116.67	116.67	0	No	No	Female	Agency	2	ERS	Chennai	27	Joined
No	34	45	E1	57.14	71.43	9.09	No	No	Male	Direct	5	ERS	Chennai	31	Joined

Fig 7.1.8 HR Training Dataset

This page displays all the training datasets we have utilized.

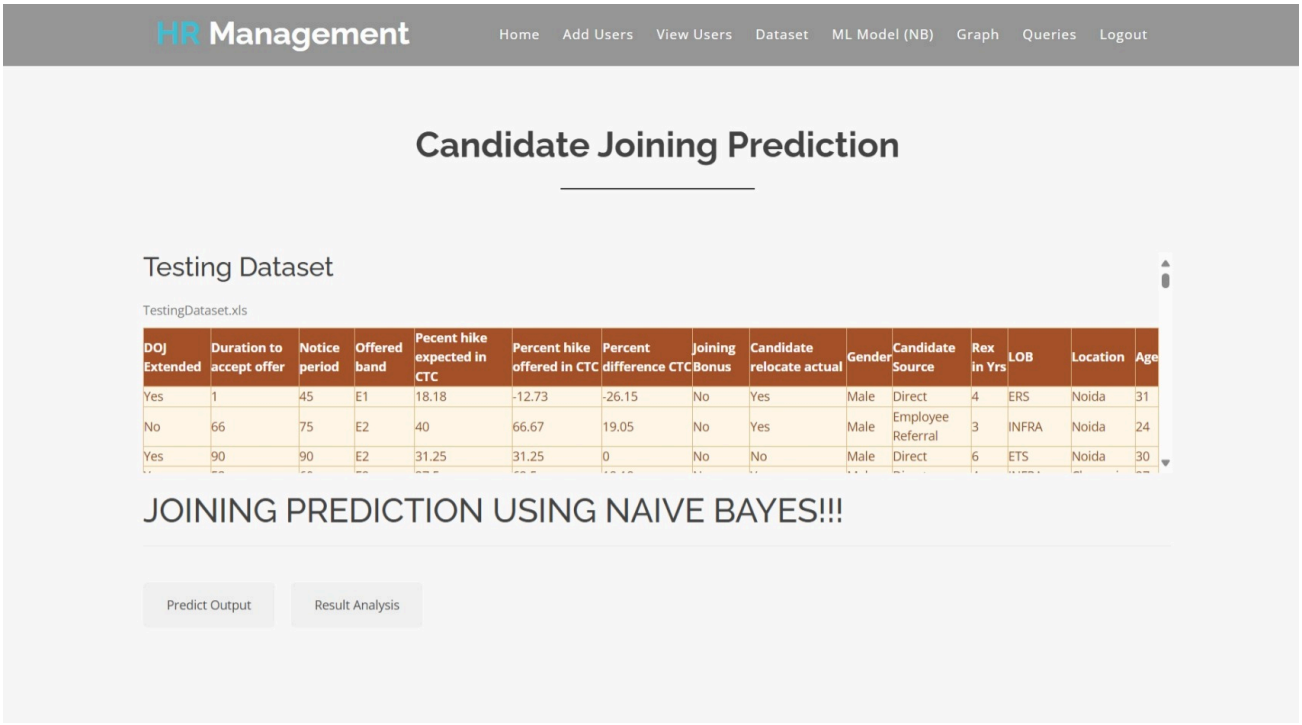


Fig 7.1.9 Testing Dataset

This page allows testing of datasets to determine accuracy.

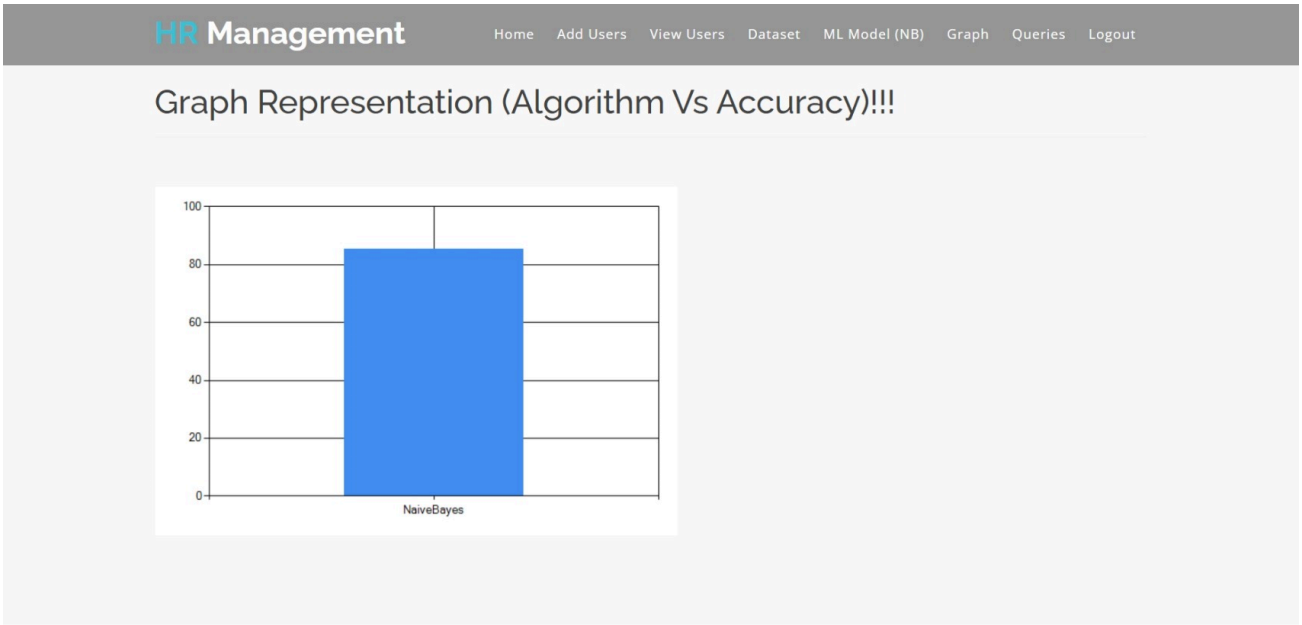


Fig 7.1.10 Graph

Graphical representation comparing the Naive Bayes algorithm to accuracy

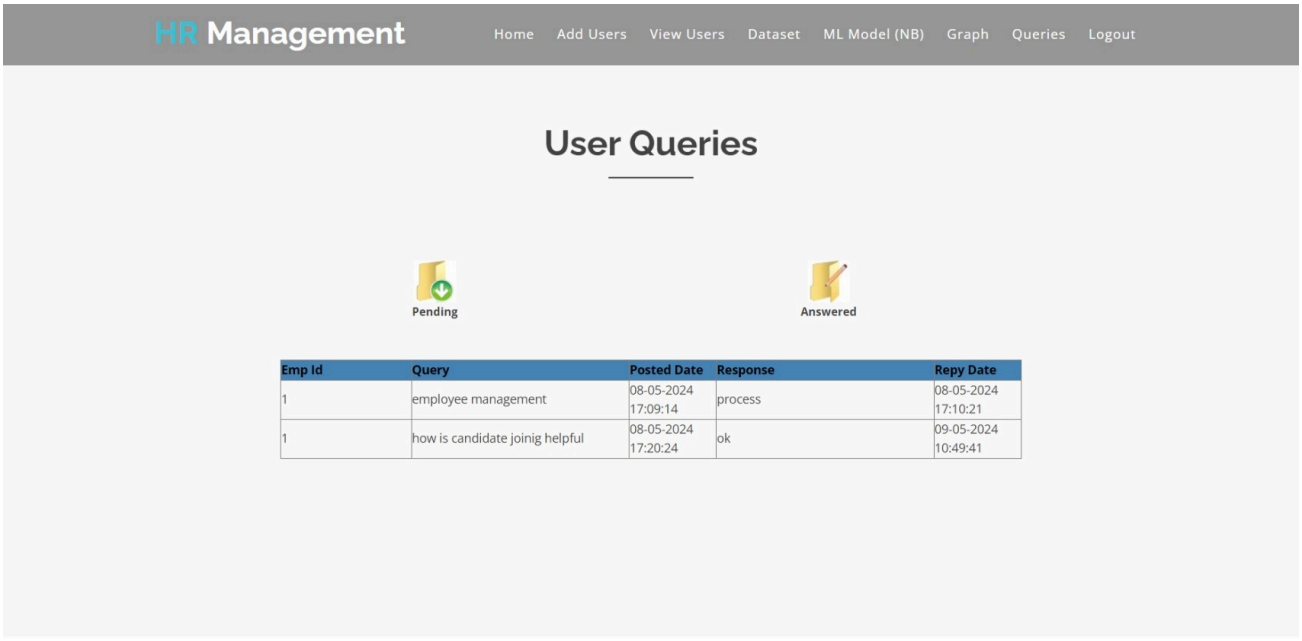


Fig 7.1.11 User Queries

This page allows Admin to view queries posted by HR and can answer them.

7.2 Result Discussion

The project successfully addresses the challenges inherent in traditional manual recruitment processes by leveraging machine learning techniques to predict candidate joining. Key findings and discussions include:

1. Efficiency Improvement:
    - Machine learning algorithms, specifically KNN and Naïve Bayes, offer reliable predictions based on candidate attributes such as gender, age, experience, and job preferences.
2. Real-time Application:
    - Unlike static dataset approaches in previous research, the project employs real-time data processing, ensuring predictions remain relevant and actionable.
    - The system's browser-based interface enhances accessibility, allowing HR professionals to access predictions conveniently from various devices.
3. Algorithm Performance:
    - The project compares the performance of KNN and Naïve Bayes algorithms, providing insights into which algorithm yields better predictions for candidate joining.
    - While previous research achieved 80-90% accuracy, real-time data processing and dynamic datasets in this project suggest potential for higher accuracy rates.

CONCLUSION

In conclusion, ‘Candidate Joining Prediction Using ML’ revolutionizes the candidate joining process by leveraging efficient machine learning algorithms. Our solution addresses the lack of a structured process for predicting candidate joining post-interview, offering numerous benefits to organizations and HR departments.

By analyzing historical data and candidate attributes, our system predicts the likelihood of candidates joining the company. This predictive capability empowers HR teams to make informed decisions, optimize recruitment strategies, and reduce turnover rates.

The benefits of our solution extend beyond time and resource savings; it enhances recruitment efficiency and improves overall organizational performance. With ‘Candidate Joining Prediction Using ML,’ organizations can confidently navigate the candidate selection process, ensuring the successful onboarding of qualified candidates. Ultimately, our solution contributes to building a stronger, more efficient workforce, driving organizational success in the competitive job market.

FUTURE ENHANCEMENT

Predictive Analytics Refinement:

- Explore advanced machine learning algorithms and ensemble methods to further improve prediction accuracy.
- Incorporate natural language processing (NLP) techniques to analyze candidate resumes and cover letters for deeper insights.

Personalization and Customization:

- Develop user profiles within the system to tailor predictions and recommendations based on individual HR professionals' preferences and historical feedback.
- Allow users to customize prediction models based on specific job roles, industries, or organizational requirements.

Integration with HR Systems:

- Establish seamless integration with existing HR management systems (HRMS) to streamline data exchange and enhance workflow automation.
- Sync candidate joining predictions with HRMS to facilitate resource planning, onboarding, and talent management processes.

Ethical Considerations:

- Implement fairness-aware machine learning techniques to mitigate biases and ensure equitable treatment of candidates across demographics.
- Provide transparency into the algorithm's decision-making process, enabling users to understand and trust the predictions generated.

Scalability and Performance Optimization:

- Optimize the system architecture for scalability to handle large volumes of data and accommodate growing user demand.
- Leverage cloud computing resources to enhance system performance, reliability, and availability.

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