Deliverable-2

Team Innovators

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1. **The overall structure of the system. This should contain a diagram and brief descriptions about the system structure including individual components (subsystems).**

The overall project structure for the job Referral system includes a Frontend User Interface where people can login, log out and create accounts for the login system. Secondly, we have the business logics in between which handles all the business logic which we chose java to implement it. And lastly, we have the layer of the Database. So, we chose a three-tier architecture overall for the system as we are creating a website.

Let us know dig deep into each subsystem and explore the activities which are to be performed in each subsystem and main components of the system structure too.

1. User Interface:

As we are developing a website, we should ensure that the GUI is a must to make our users comfortable and make the work effective for the users. The value of the project could depend on the user interface too. An Interface which is easy to understand and helps the users in navigation in a meaningful way always is considered as the best system. The subsystems or modules in our interface are the User/Job seeker Module, Referrer Module and the Employer Module

a) Job Seeker Module:

This module mainly holds the frontend implementation of the management of the user profile, searching for the jobs, Applying for the jobs. All this in-depth functionality is handled at the corresponding business logic layer component. This module only holds the front-end to-dos.

b) Referrer Module:

This module concentrates on the activities of the referrer such as refereeing a person for a particular job.

c) Employer Module:

The employer module mainly concentrates on things such as the user interface for the employer activities like posting the jobs and updating the status for the jobs.

2. Business Logic Layer:

Our Business Layer has most of the subsystems packed in it. We have multiple APIS created for each logic. User Management Module, Referral Management Module, Job Management Module, Analysis and Reporting Module are the main subsystems in our business layer.

a) User Management:

This subsystem mainly deals with the implementation of the logic for the user account creation, validating the login and logouts and passwords of the users.

b) Referral Management:

This module is the core component of our entire system. This module is responsible for the creation of the referring the employees for the position, validating the referral and updating the status of the referrals. All of these core activities are implemented in this referral management module.

c) Job Management:

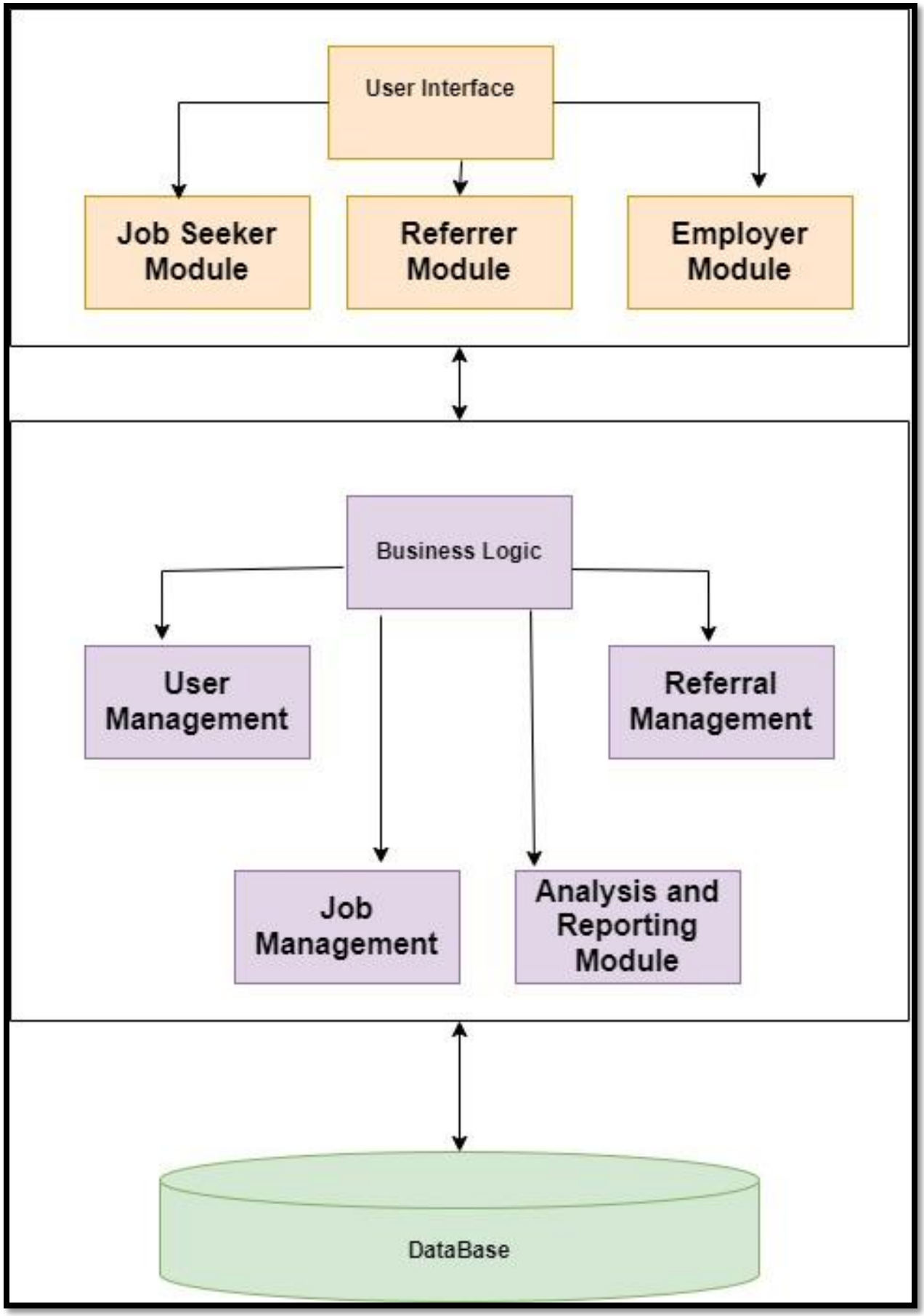
Job Management module is mainly created for implementing the logic for the creation of the jobs, posting the jobs created so far, to track the status of the referral of that particular job.

d) Analysis and Reporting:

Analysis and Reporting module mainly holds the implementation part of the requirements "Dashboard". In this module we handle all the logic related to the creation of the dashboards for the users.

Database Module:

This is the module which is at the end of the system diagram but is the heart of the project as all the data regarding the project, i.e. information about the job, referral, status of everything would be stored. When an operation is performed in the system then first the front end interacts with the business logic and then the business logic pulls out the required information from the database and then sends back the data to the front end i.e. our user interface.


User Interface
Job Seeker Module
Referrer Module
Employer Module
Business Logic
User Management
Referral Management
Job Management
Analysis and Reporting Module
DataBase

The above picture depicts our entire system and as mentioned as we have a three-tier architecture, we have split the entire system diagram into 3 parts where each part depicts each layer. We have again included all the subsystems of the systems at each corresponding layer.

2. **Written requirements specifications (more information and a template will be given and discussed in class):**
    a. **All functional requirements**
    b. **All non-functional requirements that are important to your system**
    c. **Interfaces (user, hardware, software, and/or communication)**

    The requirements should be detailed enough to build the project.

<u>Overall Structure of the System:</u>

Requirement Specifications:

Specifying all the requirements that are functional and non-functional requirements. Even the goals, features, and outline of the project is also discussed in the requirement specifications.

a) **Functional requirements:**

- **Login Page:**

  The login page is set up for the users who can refer the candidates and HR who can post the job openings. Here, we are implementing E-mail as the login credentials. There should be a secure authorization to use the portal.

- **Job Posting:**

  The HR is going to post about the jobs in the portal based on the location, skills, and other aspects. These postings are managed by HR and the team where they upload the job openings and employees can see them and refer any candidate. The HR or the team can add, delete, modify, and update the jobs based on requirements like skills, experience, and qualifications.

- **Referral System:**

  Employers can refer a candidate for a job opening based on their skills, experience, and location. The candidate can be accepted or rejected based on the skills by HR.

- **Search and Filter:**

We are implementing a search and filter option to make the portal more efficient and easy. The user can use the search option to find a job that is suitable to the candidate whom is he referring to and the filter option is used by the HR to filter the candidates based on their qualifications or skills.

- **Job Application Management:**
  The user has the ability to track the status of the referrals and the applications. The user can check how many referrals have been made and how many got accepted for the positions.
- **Employee Dashboard:**
  Employees have a leaderboard to see how many referrals they have given, and candidates referred by them have been selected to provide incentives.
- **HR panel:**
  HRs can post new jobs, edit them, or remove job openings within the company, in turn allowing employees to look at the job listings. HR Staff can view employee referrals and can either accept or reject candidates, also update the status of candidate such as sending them to a second technical round or HR round etc.

b) Non-Functional Requirements:

- **Performance**:
  There can be two or more employees using the portal at the same time, the system should respond less than 4 seconds for the employees. The portal need to handle X number of users with less time. The performance need to be highly maintained.
- **Scalability:**
  Even if the organization is expanding or growing big, the performance of the system needs to perform well. This system needs to be scalable to store increasing data (increasing number of users, employees, jobs, referrals).
- **Security:**
  All the data about the candidate getting referred like their resume, personal details, contact information needs to be protected and should be secured from attackers. Ensuring safe and secure data transmission and storage like encrypting sensitive data by putting passwords. Implementation of role-based access control. Admin can only access the referred candidate

information and the user can only add candidates details and cannot access other user's information.

- **Usability:**

  The users can easily and efficiently interact with the product with usability. The portal should be built in such a way that the portal need to have an interface with easy navigation and usage. They need to be simple and clear so that an employee can quickly access and refer a candidate. The details about the job openings need to be clearly visible and specified.

- **Reliability and Availability**:

  Readability means it reduces the system failures and also reduces the downtime. Availability makes the project with most operational time. For continuous availability, the system need to have 99.9% uptime.

- **Interoperability:**

  It means that the devices or applications can communicate with other applications in a standard manner without any effort. The portal should integrate easily with external job boards or corporate HR systems if required.

- **Data Privacy:**

  The details about the candidates like resume, contact information, personal details are stored in the database. They need to be stored securely. We use protection standards like GDPR (General Data Protection Regulation) for data privacy and security.

- **Maintainability:**

  In this project, there is an extensive use of updating and maintenance. The job postings can be updated, changed. The bulk job openings will be posted and users will refer candidates. This total process should be maintained. This system is designed in a modular manner so it becomes easy to update and maintain.

c) **Interfaces:**

Interface means that the tools and kits that the developers use for communication between hardware and software components.

User Interfaces:

Here we have 2 primary user groups employees and HR.

Employee:

The employee can refer a candidate based on the job openings posted on the portal. They can refer based on the skills required and other requirements. The employee can login to this portal by using their Email credentials. The employee need an interface to view the referrals they made, application status.

HR:

HRs can post new jobs, edit them, or remove job openings within the company, in turn allowing employees to look at the job listings. HR Staff can view employee referrals and can either accept or reject candidates, also update the status of candidates such as sending them to a second technical round or HR round.

Hardware:

- A web server and a database server to handle the backend processes and data storage.
- Users can access the system via desktops, laptops, tablets, or smartphones with a standard web browser.

Development Languages Used:

Java, HTML, CSS

Frameworks:

Spring Boot, AngularJS

Database:

Oracle

Development Environment:

Maven

Communication:

Email

3. **The plan for implementing the project through three development phases. For each development phase, the corresponding requirements should be identified (need to prioritize functionalities based on their criticality).**

Three Phases:

Phase	HR Functionalities	Employee Functionalities	Others
1.	-Job Listing Management -Reviewing and updating referrals	-Refer Prospects -View Available Positions	-Basic UI Design, Implementing Authentication, Database Setup
2.	Uploading job postings in bulk.	Check Referral Status	-Improvements in UI
3.	Reporting Tools	Leaderboard	-Performance improvements -Security Upgrade -Final UI Enhancement

Phase 1: Basic Functionality Implementation

The First Phase Focuses on Implementing the Fundamental yet necessary functionalities to get the system up and running. The aim is to create a working model for both employees and HR.

Basic Requirements:

1. HR Functionalities:

- **Job listing Management:**
  The Assigned HR should be able to perform the operations in the job postings like create, Edit and Delete.

- **Reviewing and updating Referrals:**
  The HR can review employee referrals (accept or reject candidates) and update referral status.

2. Employee Functionalities:

- **Refer Prospects:**
  Employees must be able to recommend candidates for job openings.
- **View available positions:**
  Employees must be able to access job postings along with job descriptions.

3. Others:

- **Basic UI Design and implementation:**
  Create an easy-to-use interface for both employees and HR to interact with the system.

- **Implementing Authentication:**
  Creating a separate login for employees and HR.

- **Database Setup:**
  Create a database to store information about referrals, Status of the referred candidates, job postings, user Information.

Phase 2: Implementing advanced features and enhancing the functionalities

Phase 2 mainly focuses on improving user experience and streamline the entire process for both HR and employees and additional functions and enhancements will be included throughout the phase.

1. HR Functionalities:

- **Uploading job postings in bulk:**
  HR must be able to upload all the available job postings in the organization.

2. Employee Functionalities:

- **Check referral status:**
  Employees must be able to check the referred candidate's status.

3. Others:

- **Improvements in UI:**
  Develop the user interface for better efficiency based on phase 1 testing outputs.

Phase 3: Implementation of reporting tools and performance optimization

Phase 3 mainly focuses on implementing reporting tools, security attributes and the better performance of the system.

- **Reporting tools:**
  HR can view the basic reporting tools like the number of candidates moved to the next stage the interview stage.

- **Leaderboard:**
  The number of referrals made by each employee.

- **Performance optimization:**
  In the job referral portal, we are optimizing the system to handle the large data as the number of recommendations/referrals will increase and job listings and users will increase so the speed of the system should be efficient especially during job listings.

- **Security:**
  Enhance an advanced security attributes system with strong password and other measures and the HR and employee portal are secured based on the security policies.

- **Final UI Enhancement:**
  The final improvements are made to the system by feedback from testing.

4. Member contribution table:

Member Name	Contribution Description	Overall Contribution (%)	Note (If Applicable)
Rishika Reddy	1. Planned team meetings on Deliverable-2 task, project progress. 2. Involved in written documentation about functional requirements, non-functional requirements and interfaces. 3. written an API about search operation.	12	
Aravind Chitiprolu	1. Planned and divided tasks on Deliverable-2 task, project progress. 2. Involved in written documentation about functional requirements, non-functional requirements and interfaces. 3. Working on unit testing APIs. 4. Involved in gathering requirements and completed tasks for Deliverable-2 and submissions.	12	
Shiva Sai Kondapuram	1. Planned team meetings on Deliverable-2 task, project progress. 2. Involved in written documentation of three development phases. 3. Worked on user authentication. 4. Finished refer a candidate API	12	
Ravali Kudaravalli	1. Finished writing APIs for job listings 2. Created development phase plan for the project	12	
Ramya Madhavareddy	1. Created and Added Minutes of Meeting and committed to GitHub. 2. Involved in written documentation for System Diagram and subsystems.	12	

	3. Involved in designing the overall structure.		
Sreshta Chityala	1. Involved in written documentation of three development phases. 2. Reviewed the documentation of Deliverable-2. 3. Submitted the Note-Deliverable-2 file in GitHub.	12	
Vigna Penmetsa	1. Involved in written documentation of three development phases.	8	
Trisha Reddy Nidjintha	1. Involved in written documentation for System Diagram and subsystems. 2. Involved in designing the overall structure.	12	
Rajini Vijetha Rudrarapu	1. Involved in written documentation subsystems and non-functional requirements.	8	