# HireSphere – Job Portal Database Documentation

1. Project Overview

**HireSphere** is a job portal database designed to manage the hiring ecosystem efficiently. It connects **candidates**, **employers**, and **jobs** while tracking skills, applications, saved jobs, and reviews. The database helps:

* Match candidates to jobs based on skills.
* Track applications and hiring workflows.
* Generate insights like in-demand skills, top-rated employers, and high-paying roles.
* Support employers in posting jobs and managing their recruitment processes.

2. Objectives

1. Design a relational database for candidates, employers, and job postings.
2. Enable efficient job matching through skills and applications.
3. Support smooth hiring workflows with structured data.
4. Provide analytics for better decision-making.

3. Tables and Explanation

The database consists of **10 core tables**. Each table’s purpose and structure are explained below:

3.1 Users

* Stores basic information for all users (candidates, employers, admins).
* Columns:
  + user\_id – Unique identifier (Primary Key).
  + full\_name – Full name of the user.
  + email – Unique login email.
  + password\_hash – Encrypted password.
  + role – Type of user: candidate, employer, or admin.
  + phone – Optional contact number.
  + location – City or country of the user.
  + created\_at – Timestamp of account creation.

3.2 Candidate Profiles

* Stores detailed information about candidates.
* Columns:
  + candidate\_id – Same as user\_id (Primary Key, FK from Users).
  + resume\_url – Link to the candidate’s resume.
  + experience\_years – Total years of experience.
  + education – Education details.
  + portfolio\_url – GitHub/portfolio link.
  + headline – Short professional title.
  + about – Self-summary or bio.

3.3 Employer Profiles

* Stores detailed information about employers/companies.
* Columns:
  + employer\_id – Same as user\_id (Primary Key, FK from Users).
  + company\_name – Name of the company.
  + company\_website – Link to website.
  + company\_description – Description of the company.
  + industry – Industry type (IT, Finance, etc.).
  + company\_size – Number of employees.

3.4 Skills

* Stores unique skills used by candidates or required by jobs.
* Columns:
  + skill\_id – Unique ID (Primary Key).
  + skill\_name – Name of the skill.

3.5 Candidate Skills

* Links candidates to their skills with proficiency.
* Columns:
  + candidate\_id – FK to Candidate Profiles.
  + skill\_id – FK to Skills.
  + proficiency – Level: Beginner, Intermediate, Expert.
  + years\_experience – Experience with this skill.
* **Primary Key:** (candidate\_id, skill\_id)

3.6 Jobs

* Stores all job postings.
* Columns:
  + job\_id – Unique ID (Primary Key).
  + employer\_id – FK to Employer Profiles.
  + job\_title – Name of the role.
  + job\_description – Detailed description.
  + employment\_type – Full-time, Part-time, Internship, Contract, Remote.
  + location – Job location.
  + salary\_min, salary\_max – Offered salary range.
  + posted\_at – Timestamp when posted.
  + deadline – Last date to apply.
  + status – Open, Closed, On Hold.

3.7 Job Skills

* Links jobs to required skills.
* Columns:
  + job\_id – FK to Jobs.
  + skill\_id – FK to Skills.
  + importance – 1 (low) to 5 (very high).
* **Primary Key:** (job\_id, skill\_id)

**3.8 Applications**

* Tracks candidate applications to jobs.
* Columns:
  + application\_id – Unique ID (Primary Key).
  + job\_id – FK to Jobs.
  + candidate\_id – FK to Candidate Profiles.
  + cover\_letter – Optional cover letter.
  + resume\_url – Resume used for this application.
  + status – Applied, Shortlisted, Interview, Offered, Rejected.
  + applied\_at – Timestamp of application.

**3.9 Saved Jobs**

* Stores jobs saved by candidates for later.
* Columns:
  + candidate\_id – FK to Candidate Profiles.
  + job\_id – FK to Jobs.
  + saved\_at – Timestamp.
* **Primary Key:** (candidate\_id, job\_id)

**3.10 Job Reviews**

* Stores candidate reviews for jobs.
* Columns:
  + review\_id – Unique ID (Primary Key).
  + job\_id – FK to Jobs.
  + candidate\_id – FK to Candidate Profiles.
  + rating – 1–5 stars.
  + review\_text – Optional text review.
  + created\_at – Timestamp.

**4. Sample Data**

* Each table contains at least **10 records** for testing.
* Examples:
  + Users: candidates, employers, admins.
  + Candidate Skills: React, Node.js, Python, etc.
  + Jobs: Senior Full-Stack Engineer, Data Analyst, UI/UX Designer, etc.
  + Applications, Saved Jobs, and Reviews track activity for analytics.

**5. Key SQL Queries**

**5.1 Simple Queries**

* **View open jobs:**

SELECT j.job\_title, e.company\_name, j.salary\_min, j.salary\_max

FROM jobs j

JOIN employer\_profiles e ON j.employer\_id = e.employer\_id

WHERE j.status = 'Open';

* **View candidate applications:**

SELECT a.application\_id, j.job\_title, a.status

FROM applications a

JOIN jobs j ON a.job\_id = j.job\_id

WHERE a.candidate\_id = 2;

**5.2 CTE Queries**

* **Candidates with >3 years experience:**

WITH ExperiencedCandidates AS (

SELECT candidate\_id, experience\_years

FROM candidate\_profiles

WHERE experience\_years > 3

)

SELECT u.full\_name, u.location

FROM ExperiencedCandidates e

JOIN users u ON u.user\_id = e.candidate\_id;

* **Jobs with avg rating >4:**

WITH JobRatings AS (

SELECT job\_id, AVG(rating) AS avg\_rating

FROM job\_reviews

GROUP BY job\_id

)

SELECT j.job\_title, r.avg\_rating

FROM JobRatings r

JOIN jobs j ON j.job\_id = r.job\_id

WHERE r.avg\_rating > 4;

**5.3 Analytics Queries**

1. Most in-demand skills.
2. Average salary by job role.
3. Top candidates by skill count.
4. Applications trend by month.
5. Employers with most job postings.
6. Candidate application success rate.
7. Job distribution by employment type.
8. Average rating per employer.

**6. Insights**

* **Most in-demand skills:** Shows what skills candidates should learn.
* **High-paying roles:** Helps candidates target jobs.
* **Active employers:** Indicates hiring trends.
* **Multi-skilled candidates:** More likely to succeed.
* **Application trends:** Shows peak hiring months.
* **Top-rated employers:** Highlights transparency and good recruitment processes.
* **Employment type distribution:** Helps candidates choose preferred work types.

**7. Conclusion**

**“HireSphere simplifies hiring by connecting candidates and employers in one smart database. It tracks jobs, skills, applications, and reviews, providing insights that make recruitment faster, smarter, and more efficient.”**

**8. Project Features**

* Complete **user management** for candidates, employers, and admins.
* Detailed **profiles** for both candidates and companies.
* **Skill mapping** to match candidates with jobs.
* **Applications tracking** and saved jobs.
* **Job reviews** and analytics for insights.
* **CTE and analytics queries** for advanced reporting.