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Database System Project

Project title: - **Job Portal System (Hire and find a job)**

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1. INTRODUCTION

Technology is constantly changing, society as we know depends on this fact. In the early year of twenty first century, it is the Internet that captured the public imagination. The statistic we found shows that 21.14 million Ethiopians use internet and this number was increased by 534 thousand which is by 2.6% between 2019 and 2020[1] so, implementing this portal system can have huge impact on minimizing the unemployment as whole.

Nowadays it is difficult to find a job easily and in the same way there is no way to find skilled individuals easily; to meet these requirements there should be a system that fills this gap between the job seekers and recruiters. In Ethiopian most jobseekers have to search for jobs in street Notice boards and on the same way the companies post their notices in Notice board (it has to be many since they need to post it in different places) and this is not efficient because there is limited space for board and if there is any recent notice the previous notice has to be covered so it won't last long. In terms of the effort jobseeker has to pay searching for job this way is not efficient since it requires a jobseeker to search for every boards in person to find what he wants.

When the jobseekers find the job that requires the skills, he/she had they want to apply for it and the application mostly is in person. The Applicant didn't know if they are going to accept him/her or not but he/she had to go through this step. Let say that they rejected him/her; He had

searched for jobs; we know this thing is hard, and finally he got it but he is rejected now. Here the jobseeker loses many things his time, money and moral.

To conclude the job portal system is very essential and efficient this days since it reduces the money and time jobseeker has to spent by going through the steps mentioned above. He/she only needs to have phone and internet connection; when he/she have this thing he/she can access for job vacancies posted and if the posted job requires the skill, he/she has he can apply directly and if he/she is accepted she/he will receive an acceptance notification so, it become this simple.

2. OBJECTIVE AND AIMS

The objective of designing the online job portal is to fill the gap between the jobseekers and companies i.e., to give the job seekers a platform for finding a right and a satisfactory job according to their qualification, preference and skill and in the same way to the companies for finding a right and a satisfactory applicant with a skill they want. This will change the manual way of operation of the job application to an automatic system and the system also provides flexibility to the job seekers.

3. Existing System and Their Problems

All processes in existing system are handled manually. All the work that is done in the existing system is done by the human intervention. As all the work is done manually, there were a lot of workload on placement officer and it also increases the maximum chances of errors. This is so slow and time consuming. Due to increase in number of user's the process become more difficult. In the system. This big problem is the searching; sorting and updating of data and no any notification method available for giving information to student except the notice board.

4. Proposed System

The proposed system is a application which allows applicants and employers to register their details. Applicants can browse through the vacancy details that are posted and can apply for the jobs. Employers can browse through applicants resumes and select suitable candidates. Filter, Search facility for job seekers according to their required vacancy. Daily updates via notifications and other communication media. Sending resume saves effort, time and cost of job seeker. Job seeker can save jobs according to their needs. Most recent jobs are displayed on the home page.

5. REQUIREMENT ANALYSIS

I. Job seeker side Requirements

- **User wants to have an account:**
 - To have an account there is a registration form needed to be filled to build their profile. The registration form requires "First Name, Last Name, Gender, email, contact number, user image (profile picture (optional)), password, Skill detail, Experience detail and Educational detail".
 - When a user is done filling the form they will have a resume built for them and finally he/she has an account.
- **User wants to search for a Job:**
 - After joining the system, a user wants to search for jobs that fits their skill, preference and interest.
- **User want to apply for Job:**

- Once a user finds a job that fits his/her interest, preference and skill, he/she wants to apply for a job.
- **User want a response form an Employer:**
 - When a user applies for a job he/she wants a response from a company or an employer.
 - The response could be either acceptance or rejection.

II. Employer side Requirements

- **Employer needs to have an account:**
 - To have an account an employer needs to fill the registration form that requires some information about the employer. It may require an employer name, the company name he/she is working on and the address of the company.
- **Employer wants to post a new Job:**
 - After having an account an employer may want to post a job so that he/she can find a skilled applicant that fits the requirement.
 -
- **Employer wants to see an Applicants:**
 - Once they post for vacancy, they want to review the applicant's profile.
 - They want to choose the best candidate from the applicants.
- **Employer wants to send reply for applicants:**
 - After reviewing the applicants profile the employer wants to send a reply message for an applicant which could be acceptance or rejection.

6. Conceptual Design

The purpose of the conceptual design phase is to build a conceptual model based upon the previously identified requirements, but closer to the final physical model. A commonly-used conceptual model is called an entity-relationship model.

- **Entity** is an object or component of data. It is basically people, places, or things you want to keep information about.
- **Attribute** is characteristics or properties of an entity.
- **Relationships**: Indicates a certain relationship between entities.

6.1 List of Entities

Based on the above requirements we can have the following entities:

- COMPANY
- JOB SEEKER
- JOB
- NOTIFICATION
- APPLICANTS
- APPLIED JOBS
- SKILL
- RESUME

For each of the above entities there are attributes which are also derived from the requirements.

- **Company**: which is an Entity needed to store the detailed information of a company. This entity has an attribute that can describe all information needed about the company. The attributes included on this entity are Company Id, Company name, Company description

and address {contact numbers, emails, location & website}. Company id is the primary key.

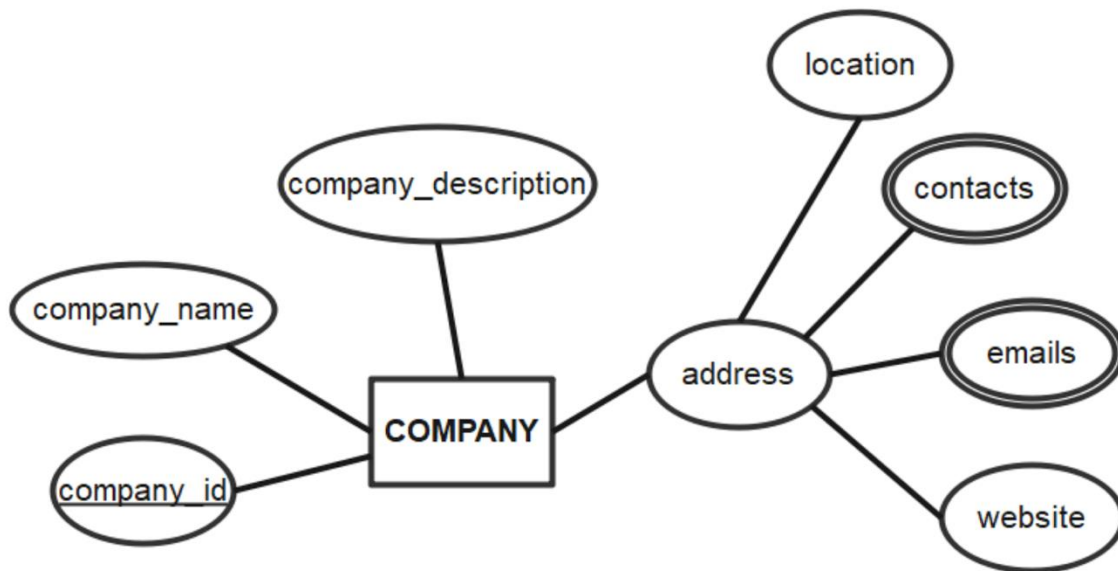


Fig.6.1 Company entity with its attributes.

- **Job seeker** is an entity that is needed to store an information about a job seeker. The attributes that are supposed to tell as about the jobseeker information's are his/her name, job seeker id, password, contact number, resume id(which is foreign key from Resume entity and it is needed to here to help as fetch users resume which have Education detail, Experience detail) , Skill id (which is also helps us to fetch skill type and skill level of a job seeker). Job seeker Id is the primary key.

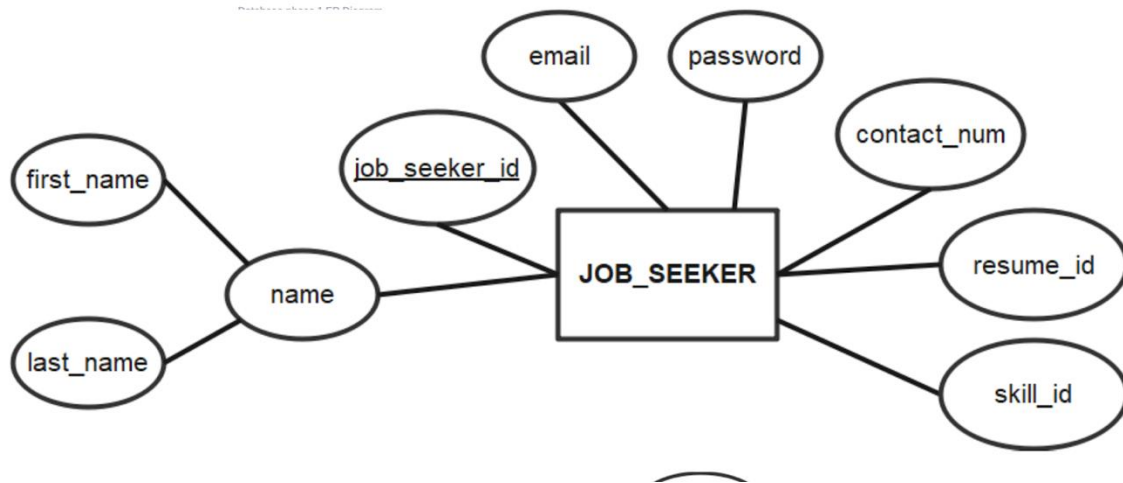


Fig.6.2 Job seeker entity with its attributes.

- **Resume:** the detailed information of the job seekers which are educational detail & experience detail are stored in the Resume. resume id is the primary key for this entity.

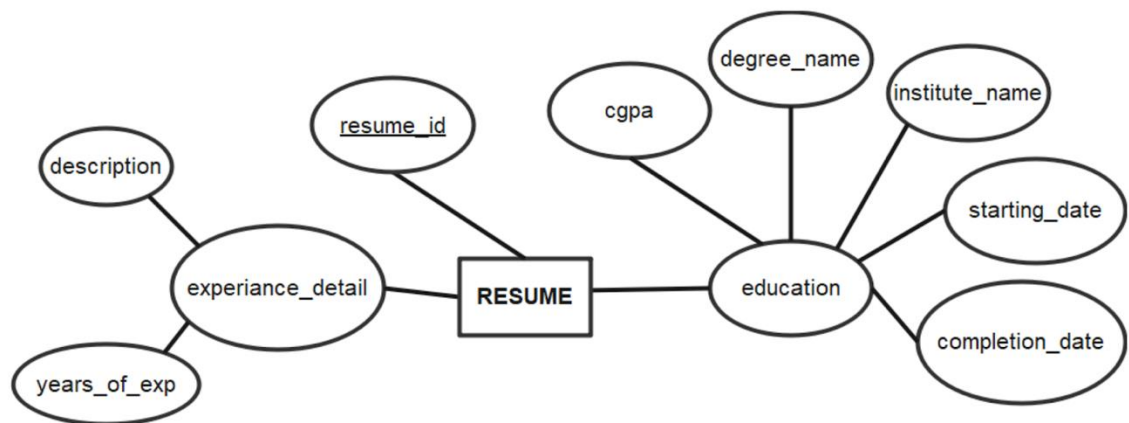


Fig.6.3 Resume entity with its attributes.

- **Job** entity is an entity to store the job detail when a company posts a new job. These job details are Job Id, Job title, Job description, Job category, keyword (which helps the users when they want to search for job using keyword like tag), skill needed (from skill id), salary, posted date & deadline, company posted it (from company id). The primary key here is **Job Id**. The figure below shows this relation.

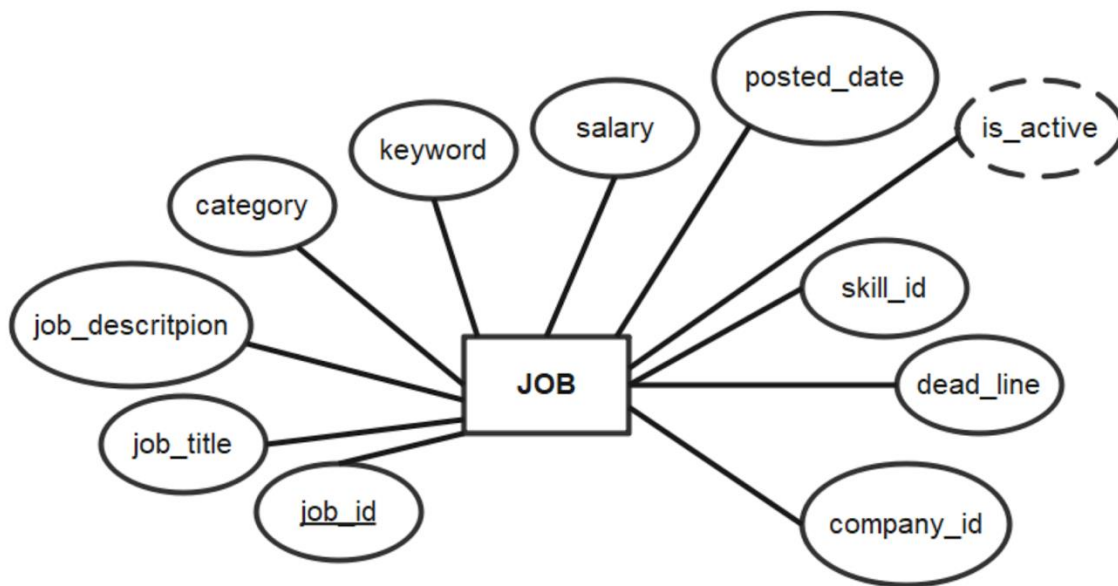


Fig.6.4 Job entity with its attributes.

- **Notification** is an entity that contains the details about the message that has to go either to the company or to the job seeker. When a job seeker applies to the job the application detail message will go to the company and when the company responds to the job seeker application the response message will be sent to the job seeker. This Communication between job seeker and company is handled by Notification. The message to be sent should have the sender

information(could be either company or job seeker), the receiver information(could also be company or job seeker) and the detailed information about the job he/she is interested in(which is fetched from job id), the description of notification (tells as about what type of message is being sent) , Notification type (Which is used to determine the sender and receiver). Company id, Job seeker id and Job id makes a composite key.

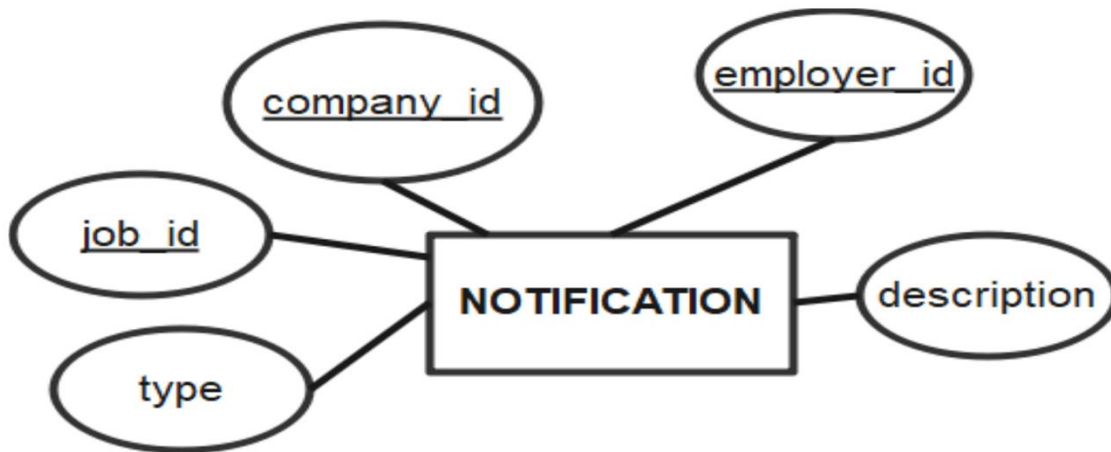


Fig.6.5 Notification entity with its attributes.

- **Applicants** is an entity that contains the detailed information of the applicants who are applied for the job. The application detail includes the job seeker Id and Job Id. Both job seeker id and job id make composite key or primary key composed of two attributes.

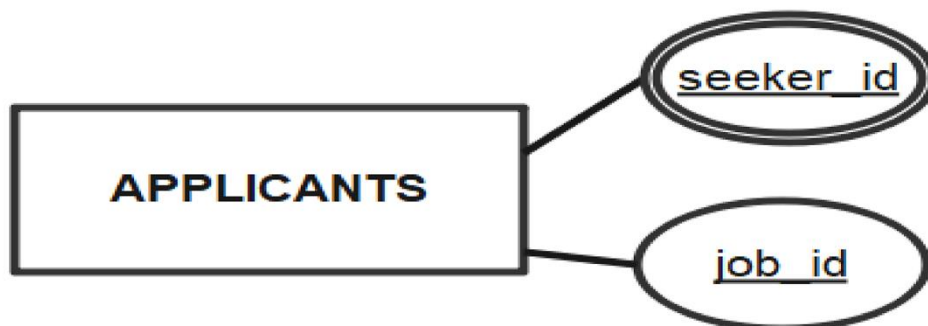


Fig.6.6 Applicants entity with its attributes.

- **Applied Jobs** on the job seekers side there should be a list of information that contains the recent actions of the job seeker. Applied Jobs entity is needed to store the application history of the job seeker i.e., the list of companies or the list of jobs he has applied for.

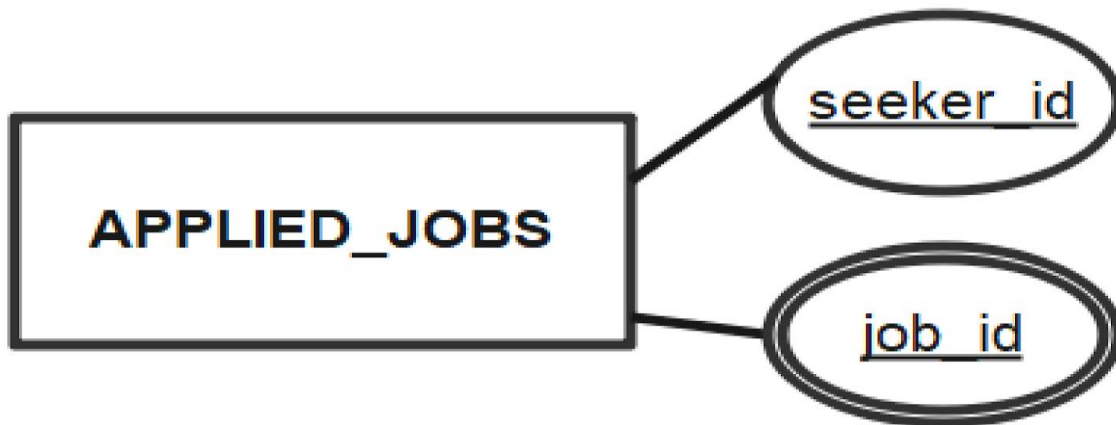


Fig.6.7 Applied Jobs entity with its attributes.

- **Skill:** the detailed information of the skill of the job seeker is stored in the skill entity. Skill name & skill level are included as an attribute for this entity.

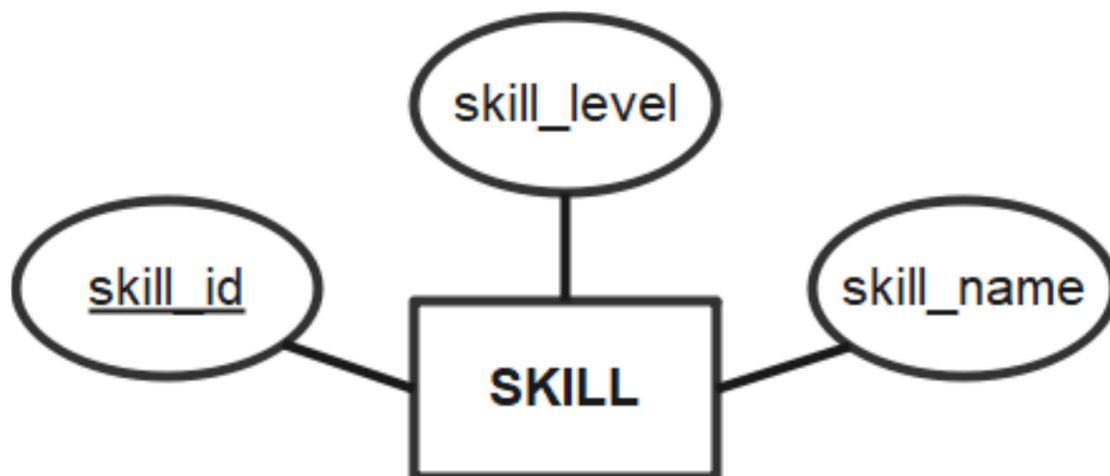


Fig.6.8 Skill entity with its attributes.

6.2 **Relationship between entities**

- The relation of Company and Job:
 - The Company posts a new Job vacancy.
 - A single company can post many new job vacancies so their relation is 1 to many.
The relation between company and job can be expressed as:
 - POSTS (between COMPANY, JOBS)
- The relationship of Job seeker and job:
 - The Job seeker applies for a job.
 - One user can apply for many jobs so their relation is one to many.
 - APPLYS FOR (between JOB_SEEKER, JOBS)
- The relationship of Job seeker and Resume:
 - The Job seeker has Resume.
 - One user can only has one resume so relation is one to one.
 - HAS (between JOB_SEEKER, RESUME)
- The relationship of Company and Notification:
 - The Company can send and receive a Notifications.
 - A single company can receive and send many Notifications so we have one to many relations here.
 - SENDS & RECEIVE (between COMPANY, NOTIFICATIONS)
- The relationship of Job seeker and Notification:

- The Job seeker receives Notifications. One user can receive many notifications from different companies.
- One to many relations.
 - RECIEVES (between JOB_SEEKER, NOTIFICATIONS)
- The relationship of Job seeker and skill:
 - The Job seeker has skills.
 - One job seeker can have many skills.
 - HAS (between JOB_SEEKER, SKILL)
- The relationship of Job and skill:
 - The Job requires skill.
 - A single Job requires a single skill.
 - REQUIRES (between SKILL, JOB)
- The relationship of Job seeker and Applied Jobs:
 - The Job seeker has applied to jobs.
 - A single user can have many jobs he/she had applied.

6.3 The complete ER Diagram is shown in the next Page.

