Bilkent University

Department of Computer Engineering

Software Developer Recruitment System

Project Proposal

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Proposal Report

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1.0 Introduction

This report explains the functionalities and extensions of our project: Software Developer Recruiting System. The database centered system will be developed based on the requirements stated in this report. The aim of the project, the users' roles, what are the limitations are and how the project is going to be designed and implemented are explained in order to indicate the expectations for the Software Developer Recruiting System. An E/R diagram is also provided to form the basis of the design part of our database system.

2.0 Project Description

Software Developer Recruiting System is an online application similar to HackerRank. The system will bring the recruiting developers who are in a seek for a job and companies which have open positions together by storing the information about developers, companies, challenges opened by companies, tracks, questions and user comments. With the help of this system, recruiting developers will find jobs based on their interests and/or their strong qualifications and the companies will fill the open positions that they have with the most suitable employee.

There will be two kinds of users: developers and company users. Both will be able to search for information about companies, questions, challenges, tracks and software developers and can make comments about questions and challenges to discuss. Any user can be followed by other users. Users will have skills related to computer science which can be endorsed by other users. Company users will be able to open challenges for recruiting for a particular position and developers will try complete those challenges to get the position. Each developer will have a rank, which increases as they complete and be successful in different challenges or tracks. A developer whose rank is above a certain rank will be able to give out notice for possible job offers. Software developers will have a profile in which they can show their scores on each track, question or challenge. Challenges will be about a specific topic and have a deadline. They can also include multiple questions. Each question can be asked to be implemented in different programming languages. Developers will be assessed with a score, after each submission for a question. Tracks will include multiple topics related to computer science.

2.1 Why Use a Database System?

In accordance with the project's purpose, the system has to store a large amount of data. Therefore, a database system is the most suitable choice. A database system will allow us to process and maintain the stored data easily and rapidly. Also, the design of the database will be created in a way that will allow us to perform users' actions and form relations much easier.

3.0 Requirements

3.1 Functional Requirements

Software Developer Recruiting System has different functionalities for two end users: software developers and company users.

3.1.1 Software Developers

- Software developers should be able to search and view information about companies, questions, challenges, tracks and other developers.
- Software developers should be able to do certain challenges set by companies and other developers for doing projects and applying jobs.
- Software developers should be able to comment on challenges, questions and tracks.
- Software developers should be able to check on their previous attempts on a challenge.
- Software developers should be able to learn about different topics by doing tracks.
- Software developers should be able to create and edit a profile page that includes information about themselves, their skills, their resume and their achievements/ranks on the site (scores on challenges and tracks).
- Software developers should be able to see posts of the companies they follow.
- Software developers should be able to endorse other software engineers on their skills.
- Software developers should be able to gain ranks by doing challenges and completing tracks about a specific topic.
- Software developers should be able to post a notice about looking for a job with specifying the criteria after reaching a certain rank.
- Software developers should be able to create challenges to search for project partners after reaching a certain rank.

3.1.2 Company Users

- Company users should be able to search and view information about companies, questions, challenges, tracks and software developers.
- Company users should be able to create challenges or questions for software developers in order to recruit them for a particular position.
- Company users should be able to create and edit company profile page that includes information about the company, company's followers and their posts.
- Company users should be able to track who participated on a particular challenge to look for who succeeded in the challenge.
- Company users should be able to view other challenges set by other companies and the system.

- Company users should be able to post company or job related news on company's profile.

3.1.3 System Requirements

- System should be able to increment software developers' ranks according to their scores on challenges and tracks.
- System should be able to create challenges, questions and tracks for software developers.
- System should be able to move the challenges to archive for software developers to solve or redo them after their deadline passes.
- System should be able to save previous attempts (successful and unsuccessful) made by the software developer.

3.2 Non Functional Requirements

3.2.1 Reliability

The system should be reliable. People are going to use this application to find jobs or find employees so there should not be any data loss or data mistakes in the database. A developer not seeing his/her scores even though they have done the challenge, or a company losing the entry list for their challenges would create huge problems for all the users. We can achieve this by making regular backups of the database.

3.2.2 Authentication

There must be an authentication system that prevents people from seeing or doing something they do not have the permissions for. In addition to this, authentication system should also be a deterrent to cheating or lying.

3.2.3 User Friendly Interface

The system should be intuitive. People need to find what they are looking for easily and quickly. There shouldn't be any unnecessary cluttering on the screen. Everything they need should be just a few clicks away. Designing the interface in this way ensures that users don't get confused and frustrated in turn leave the site.

3.2.4 Quickness and Responsiveness

There will be a lot of searches done on this system; both the companies and the developers will be searching through announcements, challenges, and people's profiles and so on. These searches through the database need to be quick in order to make the application feel more responsive and better to use. We can achieve this by clever use of indexing.

3.2.5 Scalability

Scalability will be a very important factor in our system. A lot of people will be using it at the same time because of the nature of the system. We cannot make our other non-functional requirement if system can't handle the load of users.

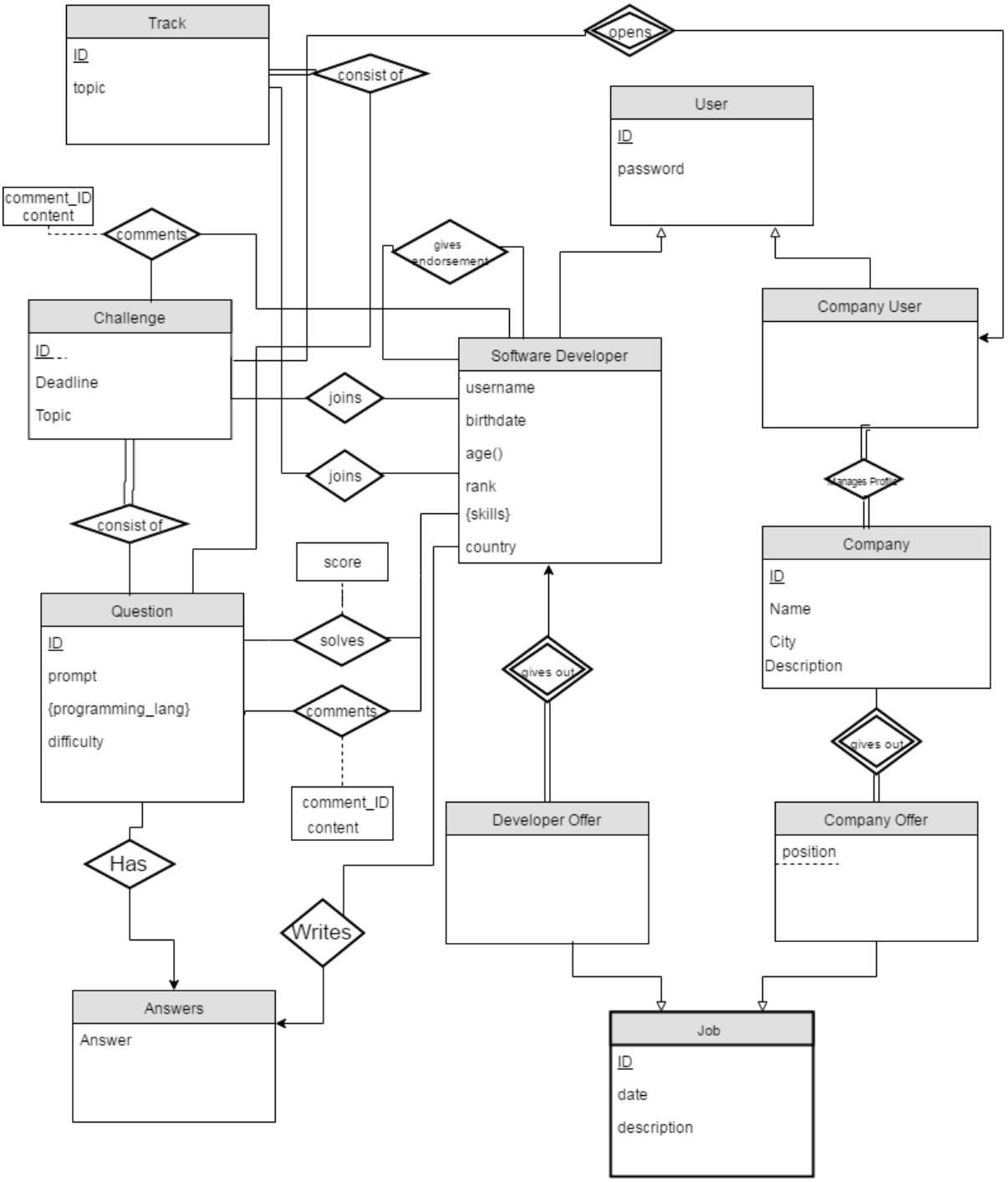
3.3 Pseudo Requirements

- Java will be used for backend.
- MySQL will be used for the database.
- We will use HTML 5, CSS, JavaScript, PHP and Bootstrap technologies.

4.0 Limitations

- A software developer cannot join a challenge after the deadline.
- A submission of a software developer cannot be assessed with a score unless she completes the question fully.
- A company user cannot join a challenge.
- A developer can join a challenge or solve a question only after authentication.
- A company cannot open a challenge if it is not registered.
- A developer user cannot start a challenge.
- A company user cannot modify software developer profiles.
- Each user can give only one endorsement on a specific skill of another user.
- A software developer cannot give out a notice for possible job offers if her rank is not above a certain rank.
- A company user can work for only 1 company but a company may have many employees.
- After an open position is filled by a developer, the position and its challenge will no longer be shown.
- A developer cannot give out a notice for a job when she already did & still available.
- A developer can answer a question in one or more than one programming languages if it is not specifically stated by the company.

5.0 Entity Relationship Diagram



6.0 Conclusion

The Software Developer Recruitment System is a web-based application for companies to interact with software developers to apply them on a particular job. Having different services to different users, the system keeps the necessary information about both the company and developers to provide different functionalities.

In this report, we described our project and explained the necessity of using database management system as a part of the project. Then we listed our functional requirements for to describe which end user and system can do. In the nonfunctional requirements, we explained what should be the properties of the system and then we give information about the pseudo-requirements. The limitations to the system are established. E/R Diagram is present as the basis of our database design. We included link to where we will use to publish our reports.

7.0 Webpage

The link to our CS353 Database Systems Project website:

https://github.com/TopalSinek/CS-353-Project