Bilkent University

CS 353

Database Management Systems

Term Project Proposal

HI-FI

Online Professional Hiring System

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1. Introduction

This report is to proposal to the Online Professional Hiring System project. In this report: the aim of the project, functionalities, limitations and project's structure, design and database integration is explained.

The proposal report include the following sections :

- Project Description : explains the aim of the project well detailed and states the requirement of the database system for the project.
- Requirements : Functional, Non-Functional, Pseudo requirements are explained. This section explains functionalities, properties, used technologies of the system.
- Limitations : The boundaries of the system.
- Recommended System Requirements : Minimum needs explained that can run the system
- E/R Diagram : The foundation of the database system design is based on this E/R diagram therefore, we aim to design it in a way that the requirements and functionalities of the system must be handled.
- Webpage : Web site of the project is provided. Reports and the code is also published throughout this web site.

2. Project Description

Aim of this project is to create an web based hiring management system similar to armut.com which we will call PlaceHolder. The system that we propose will bring together customers(users) and professionals. The customers are looking to find a professionals to complete certain works. Also professionals need a job and have offer

about this certain task. The system will do this by storing data about users, professionals, and works to be done and user reviews.

Customers will be able to log in to the system and create a well-defined work. For example, customer can state cost range of the work and any needed limitations. Then, the system is going to channel this job to relevant professionals based on professionals' user reviews and their career background. Next, professionals who are interested in the job prepare an offer inside the system and this offer is sent to the customer who prepared the job by the system. The offer may include cost, quality, time cost, and resource allocation for this work. The customer compares these offerings and choose the most appropriate. After choosing the professional, customer can directly communicate with the professional through the system. After work is done, customer and professional will be able to rate each others' manners.

2.1 Role of Database in the project

This project requires provide a fast way of connection between customers and professionals. The large size of data about customers, offers, professionals, jobs and any other information with those mediums have to be stored and maintained, therefore a database system fills the project's needs well. Moreover, as the project utilizes user's input such as jobs, offerings and reviews, this data needs to be easily maintained and edited. With the help of a database system, storing and maintaining information will be handled quickly and easily, and the changes that need to be done to the system will be handled efficiently. Therefore, the usage of the database will not only be efficient, developer friendly and logical choice to handle the project's needs, but also it will provide regulation of various actions of the users.

3. Requirements

3.1 Functional Requirements

There are two main types of actors, or users, that will use the proposed system. PlaceHolder will allow the users to be only a customer or a professional. Each individual will be able to do the functionalities listed below.

3.1.1 Customers

Customers are able to :

- Register for an account in the system and log-in to the system with this account.
- Add or remove a job.
- Configure specifications about the job.
- Revise and update any job configurations created before.
- See and compare offerings which are sent from relevant professionals.
- Choose the best offer for themselves and the customer will be able to communicate with selected professional through the system.
- After work is done, customers will be able to make a review of the professional and the job is done and they can give feedback through the system.

3.1.2 Professionals

Professionals are able to:

- Register for an account in the system. Professionals are also be able to log into the system with this account.
- Update their professional background information about education, career etc.
- See relevant jobs which are created by customers.
- View the reviews about themselves and other professionals.
- Prepare offerings for jobs that they are interested in.
- After the work is done, professionals will be able to make a review of the customer and the job is done and they can give feedback through the system.

3.2 Non-Functional Requirements

3.2.1. User Friendly Interface

The proposed system should be user-friendly and easy to use. The customers should be able to create for a job easily, with as minimum buttons and complications as possible. The interface should be simplistic, without complexity and clear from any destruction because it is a business website.

3.2.2.Easy Maintenance and Reliability

The database systems that all the necessary information are to be kept in should be easy to maintain. The database should be scalable for the future improvements. Database system should reliable to avoid loss of data and data leakage.

3.2.3. Response Time

Since the proposed system operates on the interactions of the users, there will be a lot of changes in short time periods, and the databases should update accordingly so as not to interfere with the processes of the other users. Furthermore, since there will be a big amount of data that is utilized in the webpage, the waiting times should be kept to a minimum, to prevent long response time between processes.

3.3 Pseudo Requirements (Constraints of the System)

- MySQL is going to used for database of the system
- PHP is going to be used for the back-end development of the system
- HTML, CSS, JQuery and Javascript, Bootstrap, Design Paradigms (Material Design etc..) and AJAX is going to be used for the front-end of the system

3.4 Application Requirements

- System should have a compatible web browser.

- System should have minimum 256 MB of RAM and Intel core 2 duo 1.6 GHz CPU or higher.

4.   Limitations

4.1 System Limitations

- Customers and professionals cannot rank and review each other until work is done.

- A job can be added only after configuring specifications about the relevant job.

- Editing a job is only active for a certain period of time. If a job hasn't received any offers during this time period, it will be canceled automatically by the system.

- A professional can get at most tree jobs at the same time

- Customer and professional must have at least 3.5 / 5 rating point to be able to create job or offer for a job

4.2 Technical Limitations

4.2.1 Variety of Data

The type of the database we use for our design constraints us to be careful about the structure of the data we use. The data stored must be structured.

4.2.2 Data Transaction Speed

The speed of the data we process is also constrained to the functionality of the database. In order to overcome this limitation we will need to provide extra functionality using efficient Information Retrieval techniques.

4.2.3 Data Size

This technical limitation also refers to the scalability potential of the system. Our ability to support a large amount of data is limited to the constraints of MySql database.

4.2.4 Security

Each user must login to the system with a valid account therefore, each action of the different user type must be well defined and the limitations at the user level related to the user type must be done after the login.

4.2.5 Reliability and Stability

System must not fail and lose the transactions between professionals and customers. The system must be able to continue to run as it is stated under any condition.

If errors occurred during the run time of the system, the elapsed time of fixing operation must be minimized and handled at most speed and profession.

4.2.6 Limitations of Relational Languages

Maximum size of each relational database is 10GB, so as mySQLs. If we considered the system would have many many users, and therefore phenomenally huge data, the probability of an error/mismatch issue increases with relational databases. It's a limitation to consider if we assumed the PlaceHolder system would be very popular, i.e. used by many.

4.2.6.1 Server Limitations

- Maximum number of SQL servers is 16 on a single computer.

- Maximum sizes/numbers SQL Server (64-bit): 900 bytes per foreign key, 900 bytes per primary key.

4.2.7 Maintainability

The system should be maintainable long-term without causing impedance mismatch issues, since the database for PlaceHolder online hiring system would be managed for years in a real-life scenario.

5. Recommended System Requirements

- System should have:
    - Windows XP or higher version.
    - Linux distro version 12.0 or higher.
    - MacOS 10.8 or higher.
    - Android 4.4.2 or higher.
    - iOS 8 or higher.
- System should have a compatible web browser.
- System should have minimum 256 MB of RAM and Intel core 2 duo 1.6 GHz CPU or higher.

- 64 bit operating system to get the maximum storage out of the relational database.

6.   Entity Relationship Diagram
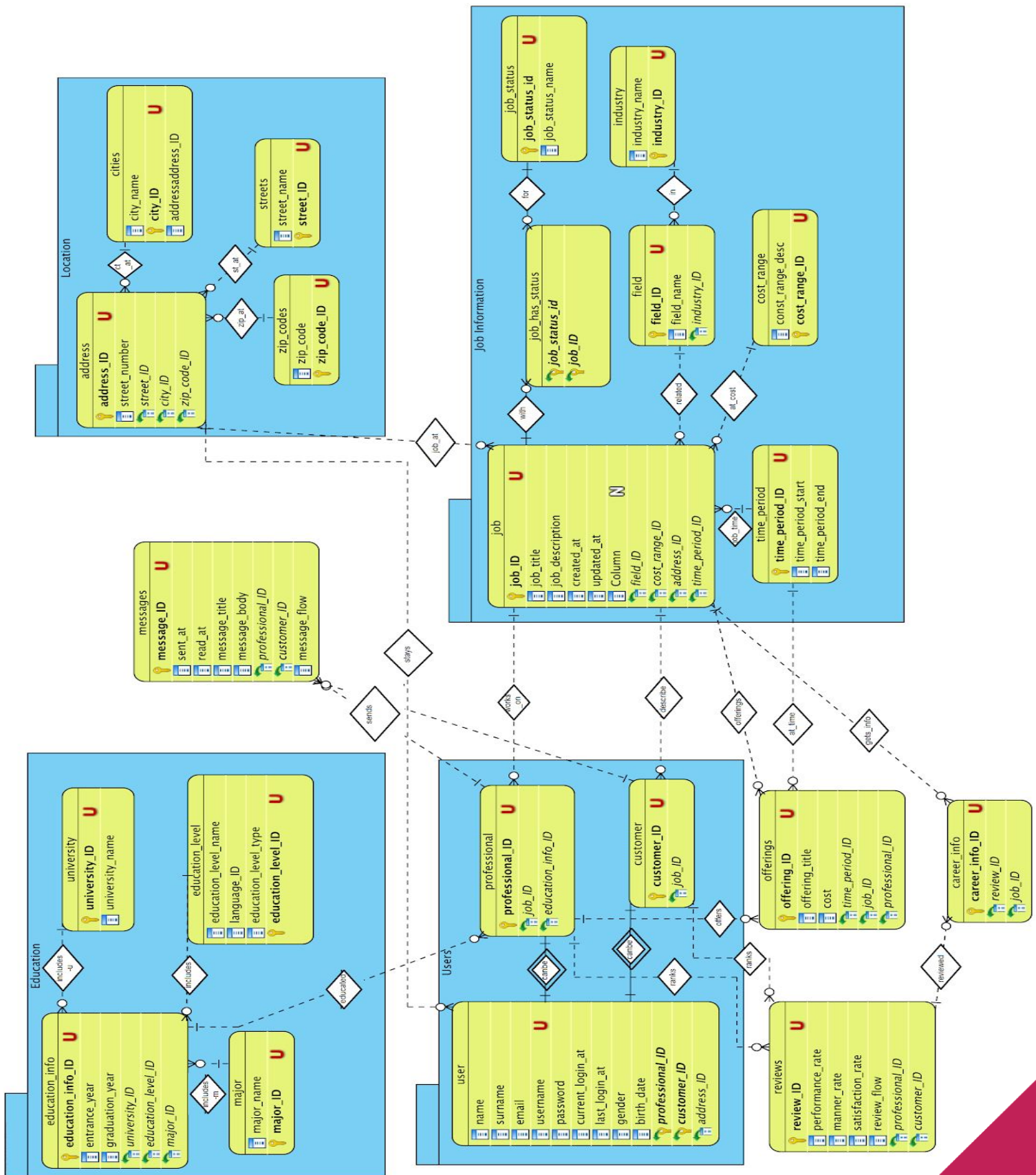
7.   Webpage

Website for the project:

https://serhataras.github.io/OnlineHiringSystem/

8.   Conclusion

Online Professional Hiring System is a Web-based application for handling and managing the actions of the customers that need jobs to complete and professionals who are willing to complete jobs by the offers that they made.

In this proposal, we stated the purpose of the project, the usage of the database and management systems within the Online Professional Hiring System. Furthermore, requirements are discussed with detail including subcategories; Functional, Non-functional and Pseudo. These requirements stated the needs of the system and front-end users namely; professional and customer. In, addition, the limitation of the system was consider and provided. E/R diagram of the database system is also provided to clarify the system design.