

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

SEMESTER PROJECT OVERVIEW

In this semester project, you are asked to design a database system, create and populate this database by using MySQL, and write a web-based application (with associated GUIs) to access the database. The topic of the project is to design, develop, and test the information system for UConnJobSearch.com, modeled after monster.com, that is being set up with the objective of providing the best services to students in their job hunt. The project is in two parts: database design (Phase I); and, application design and development (Phase II).

IMPORTANT DATES

- **Thursday, March 4, Finalize Groups for the Project**
- **Project Phase I: Friday, March 13, 11:59pm (EER to Relational Design)**
- **Project Phase II: Thursday, April 30, 11:59p, with Demos scheduled as needed.**

OVERALL PROJECT GUIDELINES

1. This project is a team project. The group size will be 10 groups of 3 and 1 group of 4 members. Each group should do the project independently, though limited discussion among groups is encouraged. For example, asking help with using php, installing an IDE, installing Apache, configuring a piece of software, are all valid discussion. However, cooperative design and development among groups is prohibited. All material submitted that represents work copied from elsewhere **MUST** be explicitly acknowledged.
2. The project will be conducted in two phases:
 - *Phase I: Database Design:* The main task of this phase is to map the EER model to the relational data model, and to normalize the relational schemas into either third normal form or BCNF. You will be provided with a EER diagram and detailed explanation of its semantics in the Phase I assignment.
 - *Phase II: Application Design, Development, and Testing:* The main tasks in this phase is to design and implement a web-based application for UconnJobSearch.com. This will involve creating graphical user interfaces for both users (job seekers) and for posters (Companies, Universities, Organizations, Government Agencies, etc.) who are interested in posting positions on UconnJobSearch.com. As part of this process, you will create the relational schemas for the database, design the data sets that you use for the testing and demo, and populate the database with the data sets. In a sense, there are at least three parallel tasks for this phase: the graphical user interface screens, the server application, and the database. This supports a parallel design and development process among team members during this phase. In addition, Phase III will also require the coding of a series of reports.
3. The application design and development of a web-based user application must utilize the technologies (on either Linux, Mac, or Windows environment):
 - MySQL Workbench and its ability to deploy a local host.

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

- Usage of php IDE – either Eclipse PHP¹ or Aptana Studio 3² which is built on top of Eclipse. Either IDE provides a robust development environment for web-based applications.
- On the server side, you are encourage to download and install XAMPP³ which has Apache, PHP and MySQL bundled together which is the quickest and easiest way to get everything going.

Please note that any additional technologies you have experience with and see a use for can also be used; but do check with the teaching assistantship before deviating from the above.

Note that your personal PC will serve as the database, application, and web server for your project. The intent is for you to provide a code project from Eclipse/Aptana with you database (.sql file) so that the TA can compile, run, and test your application. If the TA has difficulty, we will contact your team for a demo.

4. The project description for UConnJobSearch has not been fully specified. One key objective in two two Phases of the project is to extend the project score. ***Thus, you are encouraged to expand the description with additional functionality and capabilities as warranted to keep the entire team busy for the second half of the semester in development.***
5. You are required to provide a code project from Eclipse/Aptana with you database (.sql file) so that the TA can compile, run, and test your application, and if necessary, demonstrate your programs to the instructor and/or teaching assistant. All team members are required to participate in the final demonstration.
6. You are required to submit a word processed project report (MS Word) for grading at the end of each phase to HuskyCT as well as a zip of your code and .sql database file.
7. There are two documents on the web page on individual contribution and final self-assessment that are required submissions with the final project. Both should be reviewed and considered at the earliest stages of the semester project. The individual contribution requires each student to keep a diary of his/her activities, so that I can track that each team members is contributing and making progress. ***This is a Phase II requirement only.***
8. Grading policy (subject to change) is as follows:
 - **Phase I design report: 20-30%**
 - **Phase III application programs: 70-80%**

¹ <https://eclipse.org/downloads/packages/eclipse-php-developers/lunasr2>

² <http://www.aptana.com/>

³ <https://www.apachefriends.org/index.html>

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

OVERVIEW OF CONCEPTUAL DESIGN REQUIREMENTS

Conceptual design is a combination of requirements analysis, software engineering, and database design, which can be utilized to arrive at a functional and data driven characterization for UConnJobSearch.com, a new job search website that is being set up with the objective of providing the best services to its customers by keeping their services at the leading edge of technology. This is clearly a norm for many of the various e-business web sites. You have been hired to set-up an information system and associated user interfaces to assist UConnJobSearch.com in achieving its goals. A preliminary requirements analysis has been conducted below that has identified a number of characteristics and features the operations (business processes) and goals of UConnJobSearch.com, including screen mockups that illustrate portions of the functionality. You, as the systems analyst/designer/engineer, are strongly encouraged to add, expand, and refine these requirements in order to achieve a richer design. Your deliverables in Phase I are: EER and UML use-case diagrams (with assumptions), mockups of sample screens for the Job Posting Functionality (to post positions), and any written documentation that is necessary to describe your solution (document your EER and UML diagrams) and explain the functionality of your screen mockups.

For this project, you will develop an information management system that supports some of the services involved in a job search database (e.g., monster.com). In the following pages, the functionality of UConnJobSearch is illustrated using figures and a discussion of the flow that exists to take a user from screen to screen. Remember, these screen shots contain the base-line functionality for UConnJobSearch and can be enhanced with additional capabilities as part of your requirements analyses and your solution choices. When a job seeker accesses the application, the first screen that they see is depicted Figure 1. If the job seeker is an existing job



Figure 1: Login Screen

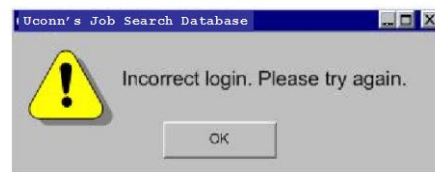


Figure 2: Password Error Message

seeker of the system they will enter their username and password then click “Submit” to access the system. If the job seeker enters an incorrect job username and password an error message pops up as shown in Figure 2.

New Job Seeker

If the job seeker clicks the new job seeker button, they will see the registration screen shown in Figure 3. The job seeker needs to provide the system the following information: the username and password they wish to use to access the system, their first and last name, and their address.

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

After completing the form the job seeker will click “Register.” It is important to note that before inserting the user, the system needs to verify that the username and e-mail does not already exist in the system (database). If the job seeker selects a job username or an email that is already in the system, an error message pops up as shown in Figure 4 and Figure 5 (don’t forget to also have a combination error message for duplicate user names and emails). The job seeker should then be given the opportunity to enter another username or e-mail on the registration screen. If the job seeker decides not to register and clicks “Cancel”, return to the login screen (Figure 1).

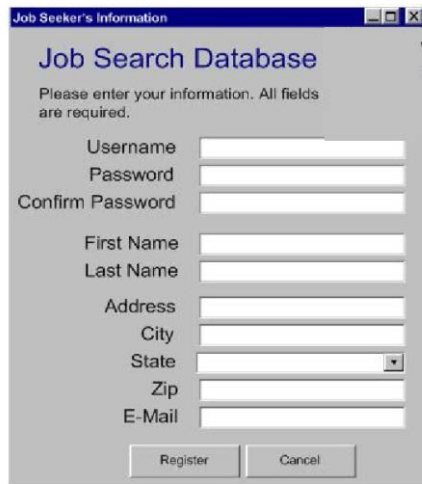


Figure 3: Registration Screen



Figure 4: Username Error Message



Figure 5: E-Mail Error Message

Main Screen

The main reason for registering with UConnJobSearch.com is to allow the system to provide a more personalized environment for the job seeker whenever they use the system. Although there are a number of possible ways to personalize, for this project we will use only a simple one: ***every time a returning job seeker logs in, the system will provide a list of unfilled jobs that match their resume.*** In addition, the system will not display the jobs for which the job seeker has already submitted an application. The main screen is shown in Figure 6. At this point, the job seeker has 9 options.

1. **Search:** Perform a search (Figure 7), which will bring back list of jobs that match the search criteria and display them in Figure 6.
2. **Manage Applications:** View the list of applications that have been submitted by the job seeker. See Figure 8.
3. **Update Resume:** Allow the job seeker to update their resume. See Figure 9.
4. **Update Profile:** Allow the job seeker to update their profile. See Figure 15.
5. **Apply to Selected:** Add the selected jobs to the list of jobs for which the job seeker have applied. In a real situation, at this point the system would send the job seeker’s resume to the company that has posted the job. However, in this project we will only update the database to reflect that the job seeker has applied for this job and remove the select jobs from the list in Figure 6.
6. **Select All:** Mark all check boxes.
7. **Clear All:** Clear all check boxes.

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

8. *Exit*: Exit the system, which will pop up the Initial Page (See Figure 1).
9. *View Job Detail*: The job seeker will be able to view the details of a job by clicking on the text of the Job Title. (See Figure 16)

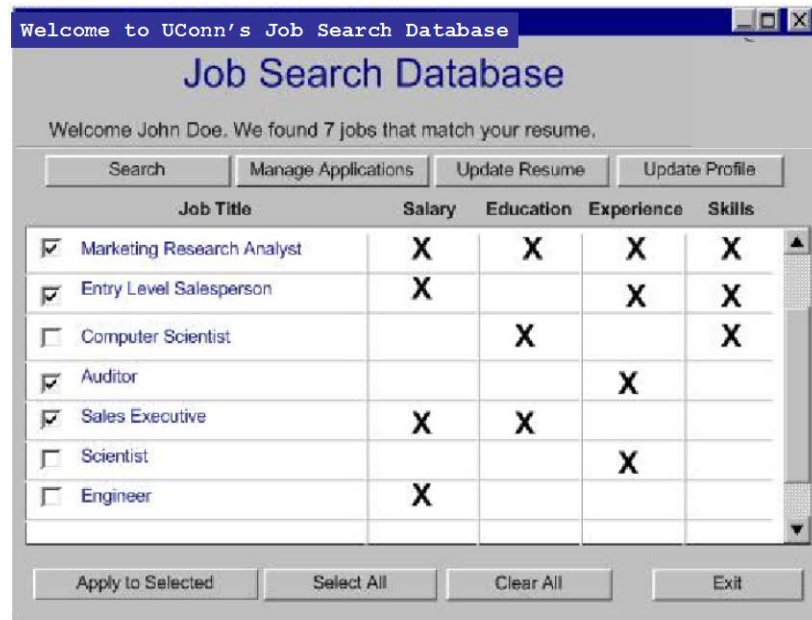


Figure 6: Main Screen

Search

Let's say that the job seeker wants to search the database for jobs that may not match their resume. They click "Search" and the screen in Figure 7 pops up. The job seeker then fills out the fields accordingly, and hits the "Submit" button. It is not necessary for the job seeker to enter data for all the fields. When the system finishes executing the search, the screen depicted in Figure 6 pops up with a list of unfilled jobs that match all the inputted search criteria. Once again, the system will not display the jobs for which the job seeker has already submitted an application. If the job seeker does not enter any data in any of the fields, and click on the "Submit" button, the system will bring back the entire list of unfilled jobs. As shown in Figure 7, a limited set of search criteria have been specified (one title, one company name, on salary, one location). For the project, at a minimum, you should expand this to include: multiple job titles (drop down or selection), salary range (minimum to maximum), and multiple locations (drop down or selection for all locations of that company). Do not search across multiple companies. These requirements impact on your database content – so carefully consider what you need. For example, the Job Titles represents a database entity that would contain all of the possible titles for all possible jobs – this is a rather static table (doesn't change very often), but it is very useful for automatically filling a drop down selection box with values from the database rather than having this hard coded in the software itself. These types of tables will be useful all over, for example, for the states, for the cities within a state, etc.

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview



Search Uconn's Job Search Database

Job Search Database

Please enter the search criteria.

Job Title

Company Name

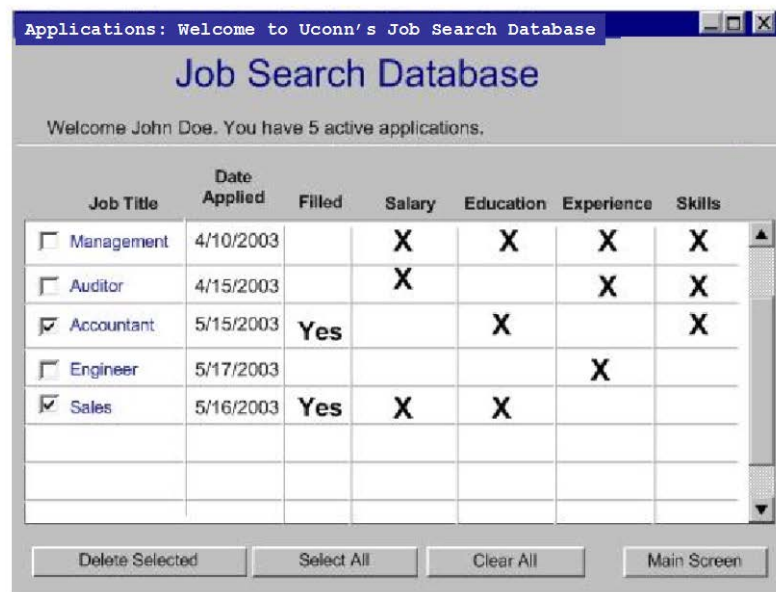
Salary

Location

Figure 7: Search Screen

Manage Applications

The option “Manage Applications” is in Figure 8. There are two new features on this page, “Delete Selected” and the “Filled” column. “Delete Selected” allows the job seeker to remove some or all of the applications they have submitted. “Filled” allows the displays the status of the application in the system. The job seeker is able to view the detail of a job by clicking on the text of the “Job Title”. If the job seeker clicks on “Main Screen”, Figure 6 will pop up. In addition to the information that has been listed in the table, you need to add a column for



Applications: Welcome to Uconn's Job Search Database

Job Search Database

Welcome John Doe. You have 5 active applications.

Job Title	Date Applied	Filled	Salary	Education	Experience	Skills
☐ Management	4/10/2003		X	X	X	X
☐ Auditor	4/15/2003		X		X	X
☒ Accountant	5/15/2003	Yes		X		X
☐ Engineer	5/17/2003				X	
☒ Sales	5/16/2003	Yes	X	X		

Figure 8: Application Screen

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

“Company” who has posted the position (job). This column should be after Job Title. The motivation for this column is that the same job (by title) can be listed by multiple companies (e.g., Programmer for Aetna and Programmer for Pratt & Whitney). In addition, you may want to consider an “internal” JobId that can be used to distinguish all of the jobs. Adding a JobId would allow you to distinguish between multiple jobs with in the same Job Title category at a single company. These considerations add flexibility to your overall database design. See the discussion under the Job Poster’s section near the end of this document for addition information.

Update Resume

When a job seeker graduates, leaves a job, gets a promotion, or learns a new skill, the job seeker needs to update the database accordingly, which brings up the following sequence of screens. The narrative for all of these screens covers the mockups shown in Figures 9 through 14. To begin, in Figure 9, the job seeker is able to update their objective and desired salary. In addition, the seeker can attach a file (PDF, Word, PS, etc.) that contains a full-text version of their resume. The desired salary field is used in Figure 6 to determine if a jobs starting salary is greater than or equal to the job seekers desired salary. To navigate among the screens, there are next and previous buttons (next on only the first screen, previous on only the last screen). Once the user has updated the first screen (Figure 9), s/he can proceed to the next screen by clicking the “Next” button. In addition, the cancel button on any of the screens allows a user to return to the “Main Screen” (See Figure 6) without making any additional changes.

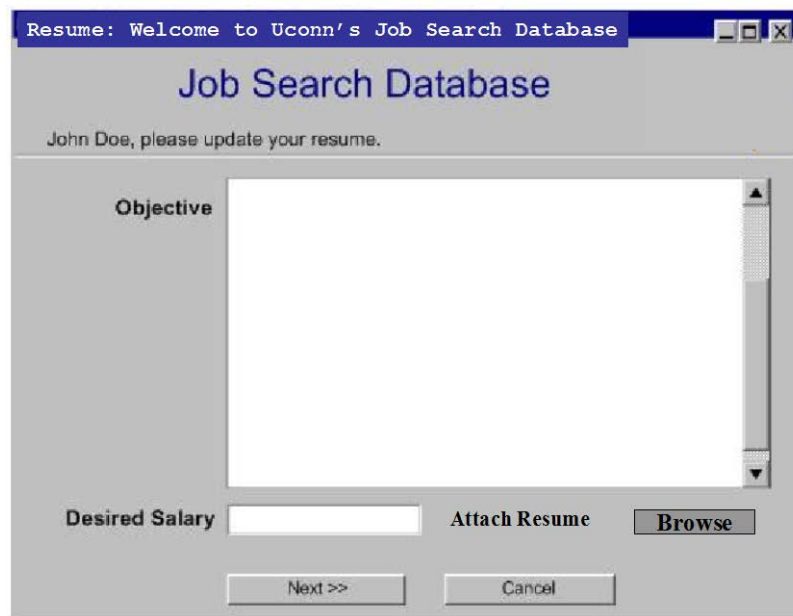


Figure 9: Resume Update

The screen in Figure 10 is used to update the job seekers education. The degrees are displayed in descending order by the graduation date. The job seeker is able to insert (Figure 11) and delete entries. The “Degree” field and the “Degree Area” field are both used to determine if a job seeker satisfies the educational requirements for the job. Once the information has been submitted, the user is returned to screen in figure 10. The new entry should be displayed on the

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

screen. Overall, these two screens allow the user to view and then change or update information that is associated with his/her education (High School, College, Graduate School, Technical Training Certificates, etc.). Note that School, Degree (BS, BA, MS, MFA, etc.), and Degree Area (Math, CS, Biology, English, etc.) are all set via dropdowns. These three fields in Figure 11 are all representative of information that can be put in tables in the database (model as separate entities) so that the database can be modified when there are any changes (rather than the application code). So, in Phase III, these should be filled by a database query.

Resume: Welcome to Uconn's Job Search Database

Job Search Database

John Doe, please update your resume.

Education

- ☐ University of Connecticut
 - Degree:** Bachelor of Science
 - Degree Area:** Computer Engineering
 - GPA:** 2.9
 - Start Date:** August 22, 1998
 - Graduation Date:** May 20, 2002
- ☐ Georgia Institute of Technology
 - Degree:** Master of Science
 - Degree Area:** Computer Science
 - GPA:** 3.3
 - Start Date:** August 17, 2002
 - Graduation Date:** June 25, 2004

New Entry << Previous Next >> Delete Selected Cancel

Figure 10: Resume Update - Education

Resume: Welcome to Uconn's Job Search Database

Job Search Database

John Doe, please enter the information related to your education.

New Entry - Education

School

Degree

Degree Area

GPA

Start Date

Graduation Date

Submit Cancel

Figure 11: Education Entry Screen

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

The next stage in updating the resume is updating the work experience (Figure 12). The screen in Figure 12 is used to update the job seekers work experience. The experiences are displayed in descending order by the start date. Notice that End date of null represents current employment. The job seeker is able to insert (Figure 13) and delete entries. The “Job Title” field is used to determine if a job seeker satisfies the experience requirements for the job. Once the information has been submitted, the user is returned to screen in Figure 12. The new experience should be displayed on the screen.

Resume: Welcome to Uconn's Job Search Database

Job Search Database

John Doe, please update your resume.

Experience

- ☐ Company Name 1
 - Location: Providence, RI
 - Job Title: Computer Engineer
 - Duties: Develop Hardware Interfaces to Chips
 - Start Date: August 22, 2001
 - End: May 20, 2002
- ☐ Company Name 2
 - Location: Hartford CT
 - Job Title: Application Developer
 - Duties: Develop application for database drive website
 - Start Date: May 21, 2002
 - End:

New Entry << Previous Next >> Delete Selected Cancel

Figure 12: Resume Update - Experience

Resume: Welcome to Uconn's Job Search Database

Job Search Database

John Doe, please enter the information related to your work experience.

New Entry - Experience

Company

Job Title

Location

Duties

Start Date

End Date

Submit Cancel

Figure 13: Experience Entry Screen

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

The screen for updating the job seeker's skills is shown in Figure 14. For the purposes of the project, we will have a single skill set which includes both technical and business oriented skills. For example, a secretary would be able to check of Microsoft Word and Access. The selected skills are used to determine if a job seeker satisfies the skill requirements for the job. Once the information has been submitted by clicking "Finished", the user is returned to screen in Figure 6. A new query should then be executed to reflect all the changes made to the resume. Again, these skills should be loaded from a database table as necessary. So in Phase III, you may have to get somewhat tricky in your software to allow the skills to be displayed dynamically based on the number that are in the database.

Skills		
☒ C	☒ XML	☒ Microsoft Word
☒ C++	☐ Java Server Pages	☐ Microsoft Access
☐ C#	☒ Active Server Pages	☒ Microsoft Project
☒ .Net	☒ Java Servlets	☒ Linux
☒ HTML	☐ XSLT	☐ Pascal
☐ Java	☒ SyBase	☒ Cobol
☒ JavaScript	☒ Oracle	☐ Assembly
☐ Visual Basic	☐ MySQL	☒ DBase
☐ VB Script	☒ Python	☐ FoxPro
☐ Unix	☐ Fortran	☐ Informix

<< Previous Finished Cancel

Figure 14: Update Skill

Update Profile

Lastly, if the job seeker needs to update some of their information (e.g., provide a different address), they can do it by clicking on the "Update Profile" button, which will bring the screen shown in Figure 15. The only information that the job seeker cannot update from their profile is the username. When opening this screen, the system must display all the information that is available on file for this job seeker. The update will take place only if the job seeker clicks the "Update" button. If the customer clicks on "Cancel", no update is made to the profile. Once the job seeker is done with the update, the system will return to the Main Screen (Figure 6).

View Job Detail

If the job seeker desires to view the detail of a job, they simply click the text of the "Job Title" displayed in Figure 6 and Figure 8. This will bring the screen shown in Figure 16. A job can be associated with multiple "Degree Types", "Degree Areas", and "Skills". The system should also inform the user if the job is currently filled and the number of applications currently submitted for that job.

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

The screenshot shows a window titled "Update Profile" with a blue header bar. Below the header, the text "Job Search Database" is displayed in a large blue font. A message states: "Please update your information. All fields except the password fields, are required." The form contains the following fields and values:

- Username: doe001
- New Password: [masked with asterisks]
- Confirm Password: [masked with asterisks]
- First Name: John
- Last Name: Doe
- Address: 123 Anywhere Street
- City: Atlanta
- State: Georgia (GA) (dropdown menu)
- Zip: 33302
- E-Mail: doe001@prism.gatech.edu

At the bottom of the form are two buttons: "Update" and "Cancel".

Figure 15: Update Profile Screen

The screenshot shows a window titled "Job Detail: Uconn's Job Search Database" with a blue header bar. Below the header, the text "Job Search Database" is displayed in a large blue font. A message states: "John Doe, the details for the job are displayed below." The job details are listed as follows:

- Company Name : Company 1
- Phone : (555) 555-5555
- Fax : (555) 555-0055
- Website : www.company1.com
- Job Title: Application Developer
- Location: Atlanta, GA
- Date Entered: May 15, 2003
- Duties: Develop database driven applications
- Degree Types: Bachelor of Science, Master Of Science
- Degree Areas: Computer Science, Electrical Engineering
- Skills: HTML, Java, Oracle, JavaScript, VBScript
- Low Salary Range: \$40,000
- High Salary Range: \$60,000
- Number of Applicants: 15
- Filled: No

At the bottom of the window is an "OK" button.

Figure 16: Job Detail Screen

Summary of possible screen sequences in the system

Here is a summary of possible screen sequences for each of the two types of job seekers. This definition of flow should be very useful when you are designing your State Chart and Activity Diagrams in UML:

CSE4701 Introduction to Databases - Fall 2015 Semester Project Overview

- **New Job Seeker:** Start by clicking “New User” on the Initial Screen (Figure 1) → Registration Screen (Figure 3) → Main Screen (Figure 6) → Update Resume (Figures 9 through 14) → Main Screen (Figure 6) → Search Screen (Figure 7) → Application Screen (Figure 8) → Main Screen (Figure 6) → Login Screen (Figure 1)
- **Returning Job Seeker:** Start by entering “Username” and “Password” on the Initial Screen (Figure 1) → Main Screen (Figure 6) → Update Profile (Figure 15) → Main Screen (Figure 6) → Application Screen (Figure 8) → Main Screen (Figure 6) → Update Resume (Figures 9 through 14) → Main Screen (Figure 6) → Search Screen (Figure 7) → Main Screen (Figure 6) → Login Screen (Figure 1)

Job Seeker’s Profile

For each registered job seeker, the system will maintain a profile with the following information: name, address, email, and resume (both data entered form with all of the values and a file version). The reason both are stored is to allow database queries that match positions to resume to occur against the stored data, while the entire resume can be “shipped” electronically to Companies if there is a match. Whenever a registered Job Seeker logs on, the system will list a number of unfilled jobs that fully match or partially match the job Seeker’s resume. The resume contains the information about the job seeker’s education, experiences, and skills. See Figure 6. To keep the application simple, each job seeker will only have one resume in the system at any given time, but of course, may be applying for multiple positions.

Job Poster’s Profile

As part of Phase I, you are being asked to propose a set of user interface mock-ups for the **Job Posting System**, which will be used by companies to post jobs. This is a very critical interface, since it can be used to identify our database requirements in support of the posting, i.e., your database must be designed to handle its information. When putting together a mockup, you are to act as a business analyst and a database analyst in order to identify all of the pieces of information that need to be store. Like for job seekers, there should be a logon and registration screen for companies, agencies, etc., who are posting jobs. There should be screens to allow the posters to define the parameters of the job (company, location, salary, duration, etc.). There should also be a screen to allow a text description of the job to be posted, as well as screens to take “payment”. Note that I am personally being somewhat vague for this part of the project – ***Your responsibility is to propose a solution here that would be reasonable and consistent with the job seeker screens.*** I am expecting both screen mockups and associated descriptions (similar to the job seeker mockups and description); these will influence your EER/UML designs.

The **Job Posting System** will be a completely separate application built on top of your database. For each registered job poster, the database will maintain a profile with the following information: username, password, name, address, email, company, and posted jobs. For security, a job poster can not be a job seeker. In addition, each job poster is associated with only one company. However, the job poster can post multiple jobs for that company. Job posters also notify the system when a job has been filled.

Data

The “Job Poster” and “Jobs” data files will be provided later. Each job will have the information displayed in Figure 16. Job seeker’s data and other data should be created by each team.

CSE4701 Introduction to Databases - Fall 2015 Semester Project

Phase I – Database Design and Table Creation

The main task of Phase I is to map the common EER model supplied in this document into a normalized, relational schema, and once this has been accomplished, to create and populate a relational database using MySQL. To share as a basis for this project, consider the schema given in Figures 1 and 2. In Figure 1, there are two inheritance hierarchies: an overlapping one for the

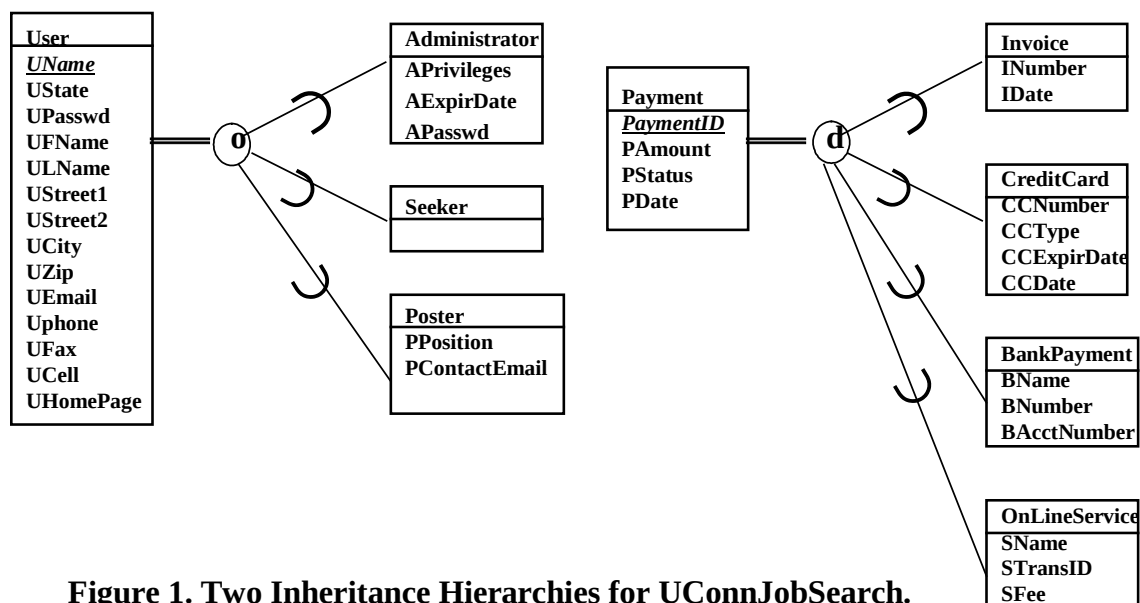


Figure 1. Two Inheritance Hierarchies for UConnJobSearch.

different types of users – Uname unique (Administrator, Seeker, and Poster) since an administrator may be a seeker and a poster, etc.; and a second hierarchy for the different types of payments – PaymentID unique (Invoice, CreditCard, BankPayment, OnLineService), which are disjoint, since a position that is posted can only be paid in one way (but different positions by the same company posted at different times can use different payments). Note that there is no need to have the key be in the sub-entity – it is included automatically via inheritance. As shown, User is the parent entity with the shared information for all users; most of these attributes are self-explanatory. Note that UName is a key attribute and must be unique (this is separate from ULName) and that UState tracks the state of the user, which can be interpreted as either the log on state or perhaps the state of the user in terms of the account (active, inactive). For the remainder of the users: there are no extra attributes for Seeker; in Administrator, there are the privileges of the administrator, the expiration date (when the privileges expire) and an extra password; in Poster, there is the position of the poster (personnel director, VP, etc.) and the contact email which may be different from the Poster's email as a user of UConnJobSearch. Payments have identifiers, amounts, the status (paid, pending, etc.) and the date of payment; Invoice adds a separate invoice number and date of the invoice, CreditCard adds attributes associated with a credit card payment, BankPayment tracks the name of the bank, its number, and the account number for the electronic debit, and OnLineService tracks the service name (e.g., Paypal), the transaction identifier, and any fee associated with using the service. Please note that when translating the EER inheritance hierarchies as given in Figure 1 to relational format, it may be necessary (depending on the conversion strategy that you choose) to introduce compound (multiple attribute) keys in the resulting relational tables.

CSE4701 Introduction to Databases - Fall 2015 Semester Project

Phase I – Database Design and Table Creation

Figure 2 contains the remaining entities (Company, Jobs, Resume, Skill, Education, Prior Jobs) and associated relationships. Note that: the content of each entity has been influenced by the screen shots from the project specification; Seeker and Poster are as defined in Figure 1; JDegreeTypes and JDegreeAreas for the Jobs entity are multi-valued attributes; Skills contain the different skills identified by SSkillID; each Seeker LISTS one Resume composed of many DEGREES, many PRIOR JOBS, and many SKILLS (for entire resume); each Seeker APPLIES for multiple Jobs, with an ApplicationID and DateApplied associated with the relationship; each Poster WORKS for a COMPANY, and POSTS&PAYS multiple jobs (a Poster is associated with one Payment for each Job and may have multiple POST&PAYS – that is why there are two “n’s”); each Job requires multiple skills; and finally, for each company, there is a JOBS LIST of Jobs.

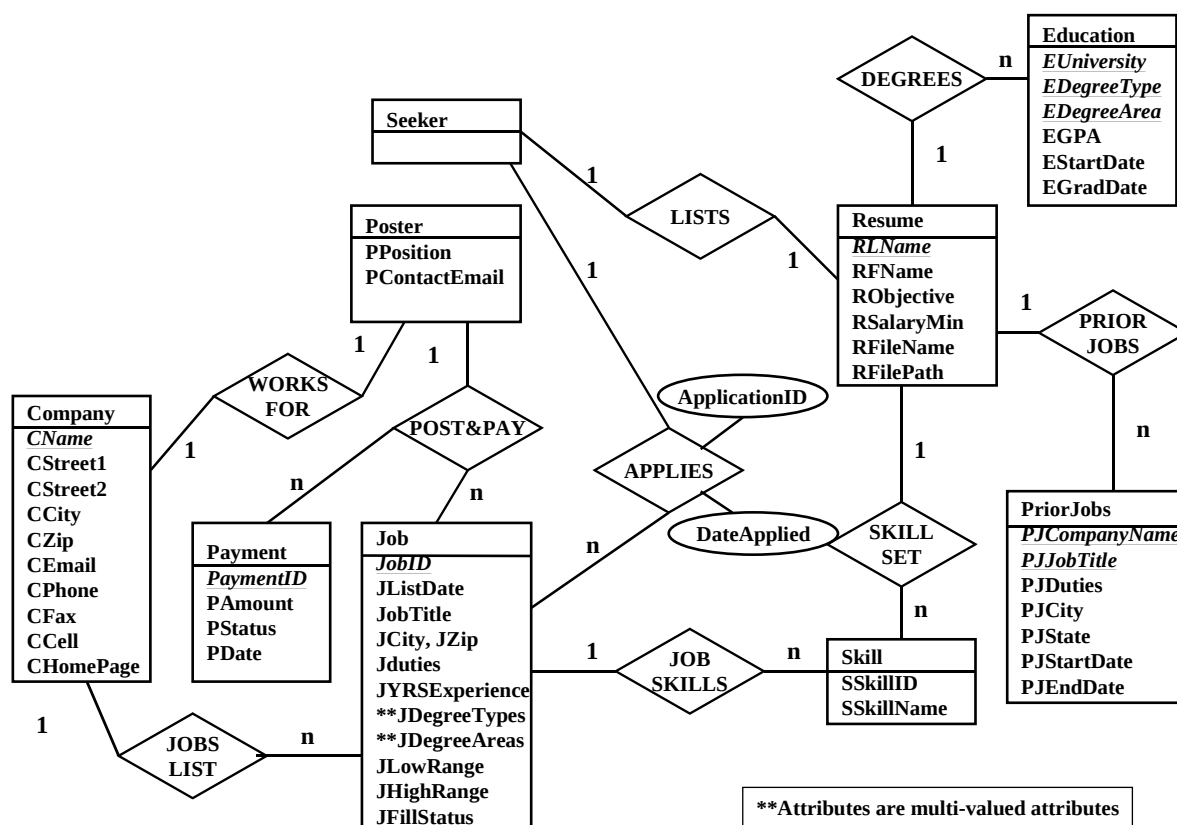


Figure 2. Remaining Entities and Relationships for UConnJobSearch.

The Phase I report must contain a description of the purpose of this project and must describe the problems encountered in this phase, and justify the solution. Your report for Phase I must contain all of the documentation produced in this phase, including: (a) the set of assumptions for your EER diagram in terms of database content and dependencies; (b) a relational schema from the entity relationship model for Figures 1 and 2; (c) the set of functional dependencies (on a table-by-table basis) used to evaluate if the resulting schema is a BCNF or a 3NF; (d) the normalization process (if necessary) that transforms the relational schema to a relational schema into BCNF or 3NF.

CSE4701 Introduction to Databases - Fall 2015 Semester Project

Phase II – Report Generation and Final Requirements

While Phase I have focused on the job seeker and job poster, Phase II enhancements focus on the important capabilities that can be supplied by Administrators of UConnJobSearch.com. Specifically, Administrators would seek to run reports on a periodic basis to track the activity and usage of the job seeking/posting services offered by UConnJobSearch.com. For each report listed below, the input to drive the report is also stated:

1. Display a summary of the name, address, and email of all job seekers, alphabetically by the state they reside.
2. When a last name of a seeker is entered, display all of the jobs that the seeker has applied for, listing the last name, first name, company name, job id, job list date, and job title. Note that there may be multiple results since the last name is not unique.
3. When a company name is entered, display all of the jobs (id, list date, and title) for that company, including the fill status, alphabetically by job title.
4. When a date range (start and end date) is entered, display all of the jobs newly listed, including the company name, job id, job list date, and job title.
5. When given a salary value and a job title, display all of the jobs including: company name, job id, job list date, and salary.
6. When given a job id, display all of the seekers (name, address, email).
7. When given a university/college name, display all of the seekers (name, address, email) who attended that university and obtained a bachelors degree.
8. Generate a payment report for UConnJobSearch that is initiated by a date range (start and end date) and includes the payment ID, Payment amount, Payment status, payment type (invoice, credit card or bank), and payment date, for all jobs listed between that date range.
9. When given a list of one or more skills (see Figure 14), display all of the jobs (job id, job list date, and job title) that have at least one of the skills on the list.
10. When given a list of one or more skills (see Figure 14), display all of the seekers (name, address, email) that have all of the skills on the list.

For all teams, to realize these reports, your should design and develop a menu from which a user can select a summary report to execute. Each report that is selected may use a pop-up menu for a user to further select the service s/he wants through the input of constraints (e.g., data values, data ranges, etc.). Please use a web-based interface to organize these 10 reports and solicit input. Display results in a tabular format. [For four person teams, you are asked to generate a single GUI input screen that allows a user to not only request one of the 10 reports, but also allows the user to combine different reports \(e.g., combine 2 and 3, combine 2 and 4, etc.\). These should be meaningful combinations only. For results, in addition to tabular screen output, provide the option for the user to generate a csv file allowing the output to be opened in a spreadsheet.](#) For privacy reason, the activity summarization program can only be used by restricted set of users, such as the UConnJobSearch.com employees who are authorized to use the program.

CSE4701 Introduction to Databases - Fall 2015 Semester Project
Phase II – Report Generation and Final Requirements

FINAL REPORT REQUIREMENTS

The final report, due at end of the third phase, should be an integrated report. For the list of relational instances you use to populate your database, you should take data from a realistic situation, and make sure that your data shows some variety. The report for Phase II must include the following six components:

1. A description of the purpose of this phase of the project and the list of tasks, a summary of the system requirements and any additions or any revisions made to the specification and the design in the previous two phases,
2. The description of the list of problems encountered and your solutions.
3. The system architecture, and the design and description of all functions, including the list of required ones and the list of functions that your group add into the UConnJobSearch.com system.
4. A User Manual that illustrates the way that each main component of your solution works. Include screen shots as figures to illustrate the various activities by seekers, posters, and administrators.
5. The conclusion that evaluates the system you have implemented, the current limitations and the potential for improvements.
6. Each team member will provide an updated description on your contributions to the group project and what you learned from this project and the team work. This is the individual contributions on the web page. In addition, each of you must confidentially submit the final self-assessment by email to steve@engr.uconn.edu without consulting any of your team members. This information is advisory only!
7. The collection of all of the submittals for the project, including: Phase I report and Phase II report which includes (1) the relational schema in SQL DDL, (2) the source code of the application, and (3) the relational instances you use to populate the database, (4) a sample output of the UConnJobSearch.com query and update programs, including the summarization outputs, and an attachment of a user manual for the system.

A hard copy of all the above components is expected – due date to be announced. Together with the hard copy of your final project report, you need to turn in the report and the source code in electronic form using a winziped file. A more precise rundown of the final requirement will be given two weeks before the project is due.

Remember, it is critical that you put together a professional, well-organized document of your project. Sample final (Phase II) reports will be distributed in the coming weeks.