

**CSE2550 Introduction to Databases - Fall 2007 Semester Project
Phase II – Database Design and Table Creation**

The main task of Phase II 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

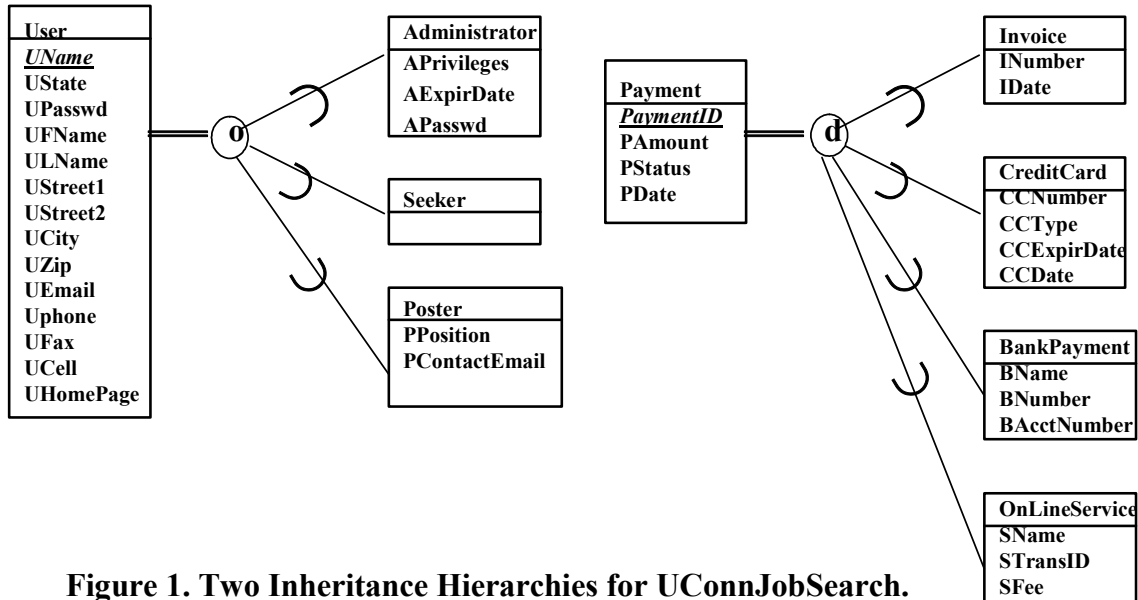


Figure 1. Two Inheritance Hierarchies for UConnJobSearch.

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.

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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.

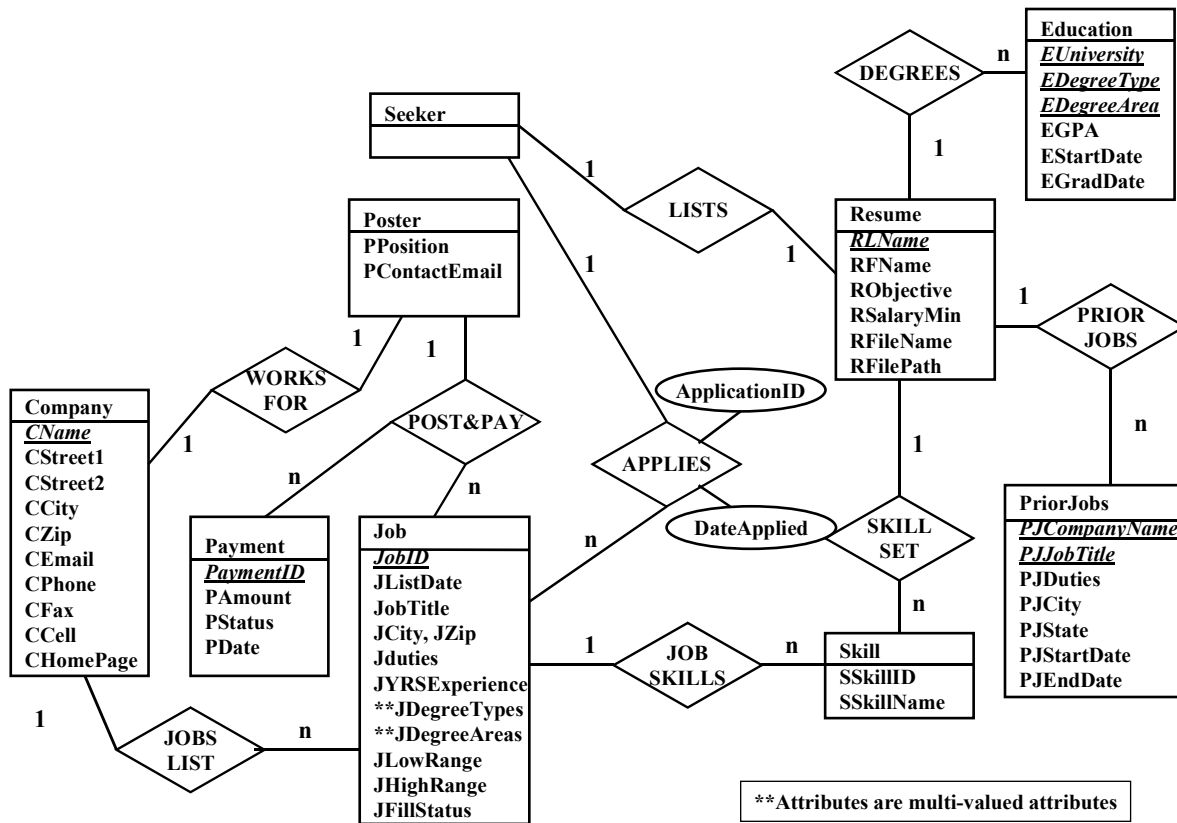


Figure 2. Remaining Entities and Relationships for UConnJobSearch.

The Phase II 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 II 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 of the BCNF or 3NF; and, (e) creation of a relational schema in MySQL based on (d) with the loading of sample tuples. In creating the schema and populating with tuples, please note that you may also need to consider and include additional database tables that are needed for your user interface drop downs, such as: states, jobs, degree types, job titles, schools, companies, degree areas, etc.