CIS 4301 Fall 2006 Homework #1

For this homework, you will be asked to construct two different ER models. They both need to be constructed using a drawing or drafting program (such as MS Visio or PowerPoint). This homework is due on the same day that Quiz 1 is held in class.

Model 1
For this question, you need to model the following system. The members of a whitewater river running club want to design a database. The club has trips on rivers all around the country. Each river trip is taken by one or more club members. Each club member has a name (first and last), an address (number, street, city, state, zip), one or more boat types they use (such as kayak, decked canoe, open canoe, etc.), and the number of years in the club. Each trip occurs on a start date, and has an end date as well as a trip leader (who is also a club member). The leader and the start date identify the trip. Each trip involves the descent of one or more rivers. Every time that a river is descended on a trip, the date is recorded. Each river has a name, a location (state and nearest city), a length, and a difficulty rating as well as a quality rating. The name and state identify the river. Each river also has a set of rapids on it. Each rapid has a name (which distinguishes it from the other rapids on the river), a difficulty rating, a mile where the rapid occurs, as well as zero or more “bits of information” regarding the rapid. Each bit of information is submitted by a club member on a given date, and is identified using a unique “info ID”. The information can be a description (which has text associated with it), a picture (which has text, a picture file, and a type [such as jpeg, gif, etc.]), or a report of a run (which has text associated with it, the type of boat used, and it might also have the trip where the run was made).

Model 2
A company monitors its employee’s web and email usage. Every employee has a unique login name, an email address, a first name, and a last name. Every time that an employee signs onto a computer, he or she begins a “session”. The session has a start time and an end time. Each computer has a name, a location, and a type. During a session, every http request produced by the employee is recorded. The request is identified by a sequence number as well as the session where the request originated. An http request has a time, the actual request sent (which has an IP address as well as the request’s contents), and the number of bytes received. A http request may be to view a known website. Each known website has a name, a category (news, sports, travel, etc.). Each website also has a safety rating, on a scale of 1-10. A given employee may be blocked from viewing a website. This block has an initiation date as well as a duration.

When an employee sends or receives an email during a session, the subject, text, and sender/recipient are recorded, as well as the time that the email is sent or received. The sender/recipient info has a first name, a last name, as well as an email address.

The company also maintains a set of “red flag” words, that indicate that a given email or http request may be a security threat or be problematic in some other way. Each red flag word has a “security threat” rating, on a scale of 1-10. Whenever a red flag word is encountered as part of the response to a http request or in an email, this fact is recorded.