## CMSC 508 Homework 1

## Due: February 4

- 1. Please answer in your own words.
  - a. What is integrity? Describe two ways to enforce integrity in a database.
  - b. What is an entity set?
  - c. What is an entity?
  - d. What is a relation?
  - e. What is a relationship?
  - f. What is the difference between a table and a relvar?
  - g. Can a relationship be represented by a relation?
- 2. Draw an entity-relationship diagram for each of the following data sets. Remember to identify keys and to label relationships with their functionality. If you have to make any assumptions in order to decide what to draw then state those assumptions. Think carefully about what is an entity, what is a relationship and what is an attribute. Sometimes things sound like one but are better represented in another way.
  - a. Your database is to be used in a veterinary practice. The practice has several doctors who treat small animals. The primary purpose of the database is to keep track of the treatment history of the animals. Data is to be stored about animals. This data includes the animals name, date of birth, type of animal (e.g. dog), breed (e.g Pit Bull), owners, and the animal's treatment history. Data to be stored about owners includes name, address, and phone number. Data stored about a treatment is: which animal was treated, date of treatment, which doctor performed the treatment, and the cost of the treatment. Data stored about a doctor is their name, their specialty, and which treatments they performed on which animals and when they did so.
  - b. Your database is to hold information about a collection of locations. Each location has a unique name and a description. These locations are connected by magical "tunnels". If you are standing in a location then you have a choice of tunnels to exit from in various directions. These directions include (but are not limited to) up, down, east, south, and towards the light. Some locations have more tunnels than others. When you enter a tunnel you will be transported to another specific location but there is not necessarily a tunnel "back to where you came from". Draw an E/R diagram for the database to hold the information about the locations and the tunnels.

3. For the following E/R diagram, give me the relvars that you would create for the associated database.

