**EE 4785** **Homework 1** **Due: 9 February 1994**

Problem 1: An expert system is to select a game for people to play. The situation the people are in can vary, for example, a New Year's Eve party, college orientation, or at a resort. The expert system will choose from a wide variety of possible games, for example, Monopoly, baseball, hide and go seek, and chess.

Write a Prolog fact for each game and each situation. As was done for food in class, each fact should have general information (number of players, for example) and information specific to the game or situation (for example, adult supervision [only applies to children]). Use the games and situations mentioned above, also add two games and two situations of your own. It is important that your facts have both general information (which applies to all games or situations) and specific information (some of which must apply to more than one—but not all—games or situations.

Write a predicate, `match(Game,Situation)`, which matches an appropriate game to a situation. The predicate should use at least three different criteria in the match.

Problem 2: Write a Prolog program which computes the sum

$$s = \sum_{i=l}^{u} f(i),$$

where integers $l \leq u$ are the summation bounds and $f$ is a user supplied function. The program should provide a predicate `sum(Lower,Upper,Sum)` such that `Lower` is the lower bound, `Upper` is the upper bound and `Sum` is the sum. The user supplies a function in the form `userFun(X,FX)`, where `FX` is a function of `X`. The Prolog session transcript below illustrates the use of the program with the function $f(x) = \frac{1}{x^2}$.

```
| ?- [user].
| userFun(X,1.0/(X^2)).
| user consulted 60 bytes 1.03315e-07 sec.
yes
| ?- sum(1,1,S).
S = 1
yes
| ?- sum(2,2,S).
S = 0.25
yes
| ?- sum(1,1000,S).
S = 1.64393
yes
```