CAIS 307 Homework Assignment 2

Due date: Friday November 4th

1 –

You are running a computerized dating service and maintain a database consisting of the following facts that use the predicate **person** (*name, gender, height, age, education (hs,college,masters,phd)):*

*person(lisa, female, 180, 30, phd).*

*person(jenny, female, 167, 25, hs).*

*person(bob, male, 180, 40, phd).*

*person(charles, male, 190, 30, masters).*

*person(arnold, male, 177, 29, hs).*

You know from experience that a woman will only date a man if

a. He is at least as tall as she is,

b. His educational level is at least as high as hers,

c. He is not younger, and no more than 10 years older than her.

Write a recursive rule edu\_le(A,B) in Prolog that succeeds if the educational level A is

less than or equal to B. For example, the following queries should work in this way:

?- edu\_le(hs,hs).

yes

?- edu\_le(hs,college).

yes

?- edu\_le(hs,phd).

yes

?- edu\_le(phd,masters).

no

Then, write a Prolog predicate dateable(Female,Male) which encodes the dating rules above:

(Include a printout that shows your query and the program’s responses (you may simply

copy this from SWI-Prolog’s main window).

?- dateable(lisa,charles).

no

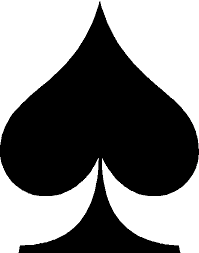
?- dateable(lisa, bob).

yes

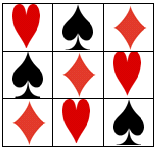
?- dateable(jenny,arnold).

yes

2 – Write a Prolog program that finds all possible arrangements for placing these 3 symbols:

,& in a 3 x 3 grid, so that each symbol appears only once in each row and once in each column.

For example this would be a possible valid arrangement:



3 – Write a program that finds if a given number is prime or not. Write the program using either a structured or object oriented approach and then rewrite it using a logic programming paradigm. For the structured or object oriented approach feel free to use Java or C++. For the logic paradigm version you must use Prolog.

4 –

There is a group of 4 people Miss Scarlet, Colonel Mustard, Mrs. Peacock and Professor Plum and a criminal amongst them, you are a detective and must solve the murder.

Miss Scarlet says: "It's not me"  
Colonel Mustard says: "It's Professor Plum"  
Mrs. Peacock says: "It's Colonel Mustard"  
Professor Plum says: "It's not me"

And we know that only one of them tells the truth. Write a prolog program to solve this mystery.