Prolog Programming Assignment
Due: 5/5/15

Consider to following information set regarding (a) courses being taught, (b) what is the type of each course, and (c) who teaches each course.

Course Name	Time	Lecturer	Location	Course Type
Algorithms	MWF, 9:00 – 11:00 a.m.	Dr. Smith	McB 209	Theory
Models & Analysis	MWF, 9:00 – 11:00 a.m.	Dr. Jones	McB 211	Theory
Data Structures	MWF 3:00 – 5:00 p.m.	Dr. Ray	McB 305	Core
Operating Systems	TTH, 9:00 – 11:00 a.m.	Dr. Smith	McB 306	Core
Programming in C	MWF, 1:00 – 3:00 p.m.	Dr. Ray	McB 209	Prog.
Artificial Intelligence	TTH, 3:00 – 5:00 p.m.	Dr. Jones	McB 311	Elective
Computer Architecture	TTH, 1:00 – 3:00 p.m.	Dr. Gibson	NEB 2300	Core
Models of Computation	TTH, 11:00 – 1:00 p.m.	Dr. Smith	McB 204	Theory
Discrete Math	TTH, 3:00 – 5:00 p.m.	Dr. Smith	McB 204	Theory
Information Retrieval	MWF, 3:00 – 5:00 p.m.	Dr. Jones	McB 205	Elective
Software Engineering	MWF, 11:00 – 1:00 p.m.	Dr. Gibson	McB 213	Elective
Computer Vision	MWF, 1:00 – 3:00 p.m.	Dr. Jones	NEB 2182	Elective
OS Tools	TTH, 1:00 – 3:00 p.m.	Dr. Gibson	McB 217	Core
Programming Lang.	TTH, 9:00 – 11:00 a.m.	Dr. Ray	McB 311	Prog.
Programming in Java	TTH, 11:00 – 1:00 p.m.	Dr. Ray	McB 204	Prog.

Based on the above information, facts are to be entered into the Prolog database as
course (Course, Time, Location),
teaches (Lecturer, Course), and
type (Course, Course Type).

We also know the following additional facts:

Michael is **taking** the following courses: Algorithms, Software Engineering, and Programming Languages.

JoAnne is **taking** the following courses: Artificial Intelligence, Information Retrieval and Programming Languages.

Bill is **taking** the following courses: Algorithms, Artificial Intelligence and Computer Vision.

Other than the above, **no other facts can be entered into the database**.

First, you are to write a set of *generalized* rules (rules containing only variables) that allow one to answer the *ITALICIZED* queries:

1. *Does Dr. X teach course Y?* **teaches**
   Does Dr. Smith teach Computer Architecture?
   Who teaches Information Retrieval?
   What does Dr. Jones Teach?

2. *What is Dr. X's schedule?* (Course, Time, Place) **schedule**
   What is Dr. Gibson's schedule?
   Who is scheduled to teach what on TTH from 9:00 – 11:00am?

3. *When are Dr. X and Dr. Y teaching at the same time?* **sametime**
   When do Dr. Smith and Dr. Jones teach at the same time?
   Who teaches at the same time Dr. Ray teaches?

4. *What course(s) do students X and Y have in common?* **coursesincommon**
   What courses do Michael and Joanne have in common?
   What courses do Bill and Joanne have in common?

5. *Who is taking what type of courses?* **takingtype**
   Who is taking courses of type "core"?
   What type of courses is JoAnne taking?

6. *What scheduling conflicts exist?* **schedulingconflict**
   What courses are scheduled at the same time in the same room?
   Which faculty member is scheduled to teach two classes at the same time?

Secondly, you are to write <u>queries</u> to answer the specific questions asked under each of the 6 generalized questions.

Be sure to appropriately comment your programs. I suggest that you use the names shown in bold above in naming your relations.

You will need to use the following additional prolog "operators":

- The comparison operator: " \= ". The phrase " A \= B " allows you to assert in a rule that A and B are not (or cannot be true) for the total expression to be true.
- The " don't care " argument: " _ ". If you have defined a rule that requires 3 parameters, e.g. teaches(Person, Time, Place), but in *defining another rule* you want to use "teaches" but you really do not care about or want to use the Time component in the newly defined rule, then " teaches(X, _ , Y) " will achieve that effect. For example, "newdef(A,B) :- …. teaches (A, _ , Y)". *Note, this not the "teaches" used in out prolog assignment!*

Look these up in a prolog manual if you have questions about them.