Assignment IV

1. Write the following queries in Datalog. You should use only safe rules, but you may (if you want) use several IDB predicates corresponding to subexpressions of a complex relational-algebra expression.

   Assume the following database schema:

   ```
   Product(maker, model, type)
   PC(model, speed, ram, hd, rd, price)
   Laptop(model, speed, ram, hd, screen, price)
   Printer(model, color, type, price)
   ```

   Column type in Product has possible values pc, laptop, and printer. Column rd contains the type of removable disk.

   (a) What PC models have a speed of at least 1000?
   (b) Which manufacturers make laptops with a hard disk of at least one gigabyte? (Note the column hd contains hard disk sizes.)
   (c) Find the model number and price of all products (of any type) made by manufacturer IBM.
   (d) Find the model numbers of all color laser printers. (The column color has values true and false.)
   (e) Find those hard disk sizes that occur in two or more PCs.

2. Exercise 10.3.1 (b) from the readings on Datalog. You are to compute the value of the relation Reaches and the relation Connects only. You are not required to do the other relations.

3. Exercise 1 on page 180 of Brachman and Levesque.