SENG2200/6220 –Programming Languages & Paradigms
Self-Quiz for Week 12, Semester 1, 2020

True/False Questions.

1. Prolog is a pure logic programming language.
   False.

2. Prolog is a "true/fail" system which always output (at the end) "fail" to a query.
   True.

3. All the queries below output true.

   4 + 5 = 5 + 4

   not(not(a)) = a

   False. The above queries will output false.
   - The "=" operator tries to unify the left and right sides without doing the evaluation.
   - "not" is to check whether the expression is true or false. At the returning of not(a), "a" will be uninstantiated. Therefore, not(not(a)) does not equal to a.

4. Given $\mathbf{A\ D \subset B \cap P,\ P \subset C,}$ they infers $\mathbf{A \subset B \cap C.}$
   True.

5. The following code output is "peter".

   professor(peter).

   payedMore(X, _) :- professor(X).

   ?- payedMore(X, peter).

   True. (This is a limitation of Prolog that we should make additional effort to avoid "peter is paid more than peter")

Short-Answer Questions

6. In Prolog, what is the meaning of Matching, Unification and Instantiation, respectively?
   - *Matching: Finding a fact or the consequent of a rule which could satisfy the goal proposition*
   - Unification: *Finding values for all variables in a rule such that it satisfies the goal proposition*
   - Instantiation: *Assigning temporary values to the variables of one atomic proposition within the (sub)goal*

7. In Prolog, why do we need to use the clausal form to express propositions?
   It is a standard form that can facilitate language implementation. Any predicate calculus proposition can be converted into clausal form.