

**CSCE 330 Fall 2015**  
**QUIZ 3**  
Assigned Tuesday, 15-09-08

Recall the (informal) definition of logical entailment:

A collection of sentences  $S_1, S_2, \dots, S_n$  logically entails another sentence  $S$  if the truth of  $S$  is implicit in the truth of the  $S_i$  sentences. (Therefore, the meaning of the terms in the  $S_i$  sentences do not matter in determining whether  $S$  is logically entailed by  $S_1, S_2, \dots, S_n$ .)

Consider the following knowledge base (KB), written as a Prolog program.

```
dog(X) :- poodle(X).  
dog(X) :- collie(X).  
poodle(X) :- poodle(X).  
collie(fido).
```

Recall that Prolog uses back-chaining in answering queries.

1. The KB above logically entails `dog(fido)`. True or false? **Answer:** True.
2. The query `dog(fido)` will not succeed. True or false? **Answer:** True.
3. Back-chaining is complete on Prolog KBs. True or false? **Answer:** False.