Prateek Bhat and Sanjana Agarwal

Trace files:

Question 1:

/System/Library/Frameworks/Python.framework/Versions/2.7/bin/python2.7
/Users/sanjanaagarwal/PycharmProjects/prolog/prolog.py
? prof(adams).
? lives(adams,bloomington).
? student(S).
? advisor(adams,S).
? prof(P).
? publish(S,P) :- student(S),prof(P),advisor(P,S).
? advisor(P,S) :- prof(P),student(S),committee(P,S).
? student(micheal).
? publish(micheal,adams).
? paperscount(micheal,adams,6).
? student(brian).
? committee(adams,micheal).
? committee(adams,brian).
? trace=1.

? advisor(adams,micheal)?

search advisor(adams,micheal)
stack Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=0 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=0 env={}
stack Goal 2 rule=advisor(adams,S) inx=0 env={'S': 'micheal'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=0 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=0 env={'P': 'adams', 'S': 'micheal'}
stack Goal 4 rule=prof(adams) inx=0 env={}
stack Goal 5 rule=prof(P) inx=0 env={'P': 'adams'}
  pop Goal 5 rule=prof(P) inx=0 env={'P': 'adams'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'micheal'}
stack Goal 6 rule=student(S) inx=0 env={'S': 'micheal'}
stack Goal 7 rule=student(micheal) inx=0 env={}
  pop Goal 7 rule=student(micheal) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
stack Goal 9 rule=committee(adams,micheal) inx=0 env={}
  pop Goal 9 rule=committee(adams,micheal) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
stack Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
Yes
  pop Goal 6 rule=student(S) inx=0 env={'S': 'micheal'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
stack Goal 11 rule=committee(adams,micheal) inx=0 env={}

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  pop Goal 11 rule=committee(adams,micheal) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
stack Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
Yes
  pop Goal 4 rule=prof(adams) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'micheal'}
stack Goal 13 rule=student(S) inx=0 env={'S': 'micheal'}
stack Goal 14 rule=student(micheal) inx=0 env={}
  pop Goal 14 rule=student(micheal) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
stack Goal 16 rule=committee(adams,micheal) inx=0 env={}
  pop Goal 16 rule=committee(adams,micheal) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
stack Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
Yes
  pop Goal 13 rule=student(S) inx=0 env={'S': 'micheal'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'micheal'}
stack Goal 18 rule=committee(adams,micheal) inx=0 env={}
  pop Goal 18 rule=committee(adams,micheal) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'micheal'}
stack Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
Yes
  pop Goal 2 rule=advisor(adams,S) inx=0 env={'S': 'micheal'}
stack Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,micheal) inx=1 env={}
Yes
```

? advisor(adams,brian)?

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search advisor(adams,brian)
stack Goal 1 rule=got(goal) :- advisor(adams,brian) inx=0 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,brian) inx=0 env={}
stack Goal 2 rule=advisor(adams,S) inx=0 env={'S': 'brian'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=0 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=0 env={'P': 'adams', 'S': 'brian'}
stack Goal 4 rule=prof(adams) inx=0 env={}
stack Goal 5 rule=prof(P) inx=0 env={'P': 'adams'}
  pop Goal 5 rule=prof(P) inx=0 env={'P': 'adams'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'brian'}
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stack Goal 6 rule=student(S) inx=0 env={'S': 'brian'}
stack Goal 8 rule=student(brian) inx=0 env={}
  pop Goal 8 rule=student(brian) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
stack Goal 10 rule=committee(adams,brian) inx=0 env={}
  pop Goal 10 rule=committee(adams,brian) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
stack Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
Yes
  pop Goal 6 rule=student(S) inx=0 env={'S': 'brian'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
stack Goal 12 rule=committee(adams,brian) inx=0 env={}
  pop Goal 12 rule=committee(adams,brian) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
stack Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
Yes
  pop Goal 4 rule=prof(adams) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=1 env={'P': 'adams', 'S': 'brian'}
stack Goal 13 rule=student(S) inx=0 env={'S': 'brian'}
stack Goal 15 rule=student(brian) inx=0 env={}
  pop Goal 15 rule=student(brian) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
stack Goal 17 rule=committee(adams,brian) inx=0 env={}
  pop Goal 17 rule=committee(adams,brian) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
stack Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
Yes
  pop Goal 13 rule=student(S) inx=0 env={'S': 'brian'}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=2 env={'P': 'adams', 'S': 'brian'}
stack Goal 19 rule=committee(adams,brian) inx=0 env={}
  pop Goal 19 rule=committee(adams,brian) inx=0 env={}
stack Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
  pop Goal 3 rule=advisor(P,S) :- prof(P),student(S),committee(P,S) inx=3 env={'P': 'adams', 'S': 'brian'}
stack Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
  pop Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
Yes
  pop Goal 2 rule=advisor(adams,S) inx=0 env={'S': 'brian'}
stack Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
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pop Goal 1 rule=got(goal) :- advisor(adams,brian) inx=1 env={}
Yes
?

Question 2:

/System/Library/Frameworks/Python.framework/Versions/2.7/bin/python2.7
/Users/sanjanaagarwal/PycharmProjects/prolog/prolog.py
? ~murderer(B) :- murderer(A)
? ~murderer(C) :- murderer(A)
? friend(B,V) :- ~murderer(A)
? ~friend(C,V) :- ~murderer(A)
? outTown(B) :- ~murderer(B)
? ~friend(B,V) :- ~murderer(B)
? ~outTown(A) :- ~murderer(C)
? ~outTown(B) :- ~murderer(C)
? trace = 1
? murderer(B)?
search murderer(B)
stack Goal 1 rule=got(goal) :- murderer(B) inx=0 env={}
pop Goal 1 rule=got(goal) :- murderer(B) inx=0 env={}
? murderer(A)?
search murderer(A)
stack Goal 1 rule=got(goal) :- murderer(A) inx=0 env={}
pop Goal 1 rule=got(goal) :- murderer(A) inx=0 env={}
? murderer(C)?
search murderer(C)
stack Goal 1 rule=got(goal) :- murderer(C) inx=0 env={}
pop Goal 1 rule=got(goal) :- murderer(C) inx=0 env={}
?

Thus, cannot execute program 2 on prolog.