
CS 421 --- Prolog Cut Activity

Manager	Keeps team on track	
Recorder	Records decisions	
Reporter	Reports to class	
Reflector	Assesses team performance	

Here is a list of friends. We'll use them in the next few problems. To avoid circularity problems, assume friendship is one directional.

```
1 friends(a,b).
2 friends(a,d).
3 friends(b,c).
4 friends(b,d).
5 friends(c,x).
6 friends(c,y).
7 friends(d,x).
8 friends(d,y).
```

Problem 1)

What will the query `friends(A,x)` produce? In what order?

Problem 2)

What do you think would happen if we added the rule

```
1 friends(A,B) :- friends(B,A).
```

Problem 3)

Write a function `foaf(A,B)` that is true when A is a friend of a friend of B.

```
1 ?- foaf(a,c).
2 foaf(a,c).
3 true ;
```

Problem 4)

What order will friends be listed if I submit this query? Check with a neighbor to see if you agree.

```
1 ?- foaf(a,X).
```

Problem 5)

There is an interesting predicate called `var(X)` which is true when X is a variable (i.e., has not been unified yet).

```
1 ?- var(X).
2 true.
3
4 ?- var(c).
5 false.
6
7 ?- X = a , var(X).
8 false.
```

Write a function `bff(A,B)` that is true when `friend(A,B)` is true, but only the very first match. You'll need both `var` and `cut` to make this work.

```
1 ?- bff(a,b).
2 true.
3
4 ?- bff(a,d).
5 false.
6
7 ?- bff(a,X).
8 X = b.
```

Problem 6)

Here is some prolog code to flatten a list. It runs okay, but successive answers unflatten the list. As a group come to a conclusion about why this happens.

```
1 myflatten([H|T],X) :- is_list(H), append(H,T,R), myflatten(R,X).
2 myflatten([H|T],[H|X]) :- myflatten(T,X).
3 myflatten([],[]).
4
5 ?- myflatten([[2,3],[3,4],[5,6],4],3,X).
6 X = [2, 3, 3, 4, 5, 6, 4, 3] ;
7 X = [2, 3, 3, 4, [5, 6], 4, 3] ;
8 X = [2, 3, [3, 4, [5, 6], 4], 3] ;
9 X = [[2, 3], 3, 4, 5, 6, 4, 3] ;
10 X = [[2, 3], 3, 4, [5, 6], 4, 3] ;
11 X = [[2, 3], [3, 4, [5, 6], 4], 3] ;
12 No
```

Problem 7) Can you use a cut operator to fix this?

Prolog Cut Activity --- Team's Assessment (SII)

Manager or Reflector: Consider the objectives of this activity and your team's experience with it, and then answer the following questions after consulting with your team.

1. What was a **strength** of this activity? List one aspect that helped it achieve its purpose.

2. What is one things we could do to **improve** this activity to make it more effective?

3. What **insights** did you have about the activity, either the content or at the meta level?

Prolog Cut Activity--- Reflector's Report

Manager	Keeps team on track	
Recorder	Records decisions	
Reporter	Reports to Class	
Reflector	Assesses team performance	

1. What was a strength of your team's performance for this activity?

2. What could you do next time to increase your team's performance?

3. What insights did you have about the activity or your team's interaction today?