PROLOG Homework

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CS 361

1. Let us consider the following set of facts that describe the mother predicate.

mother(linda, paul).

mother(cathy, andrew).

mother(cathy, laura).

- Define a predicate female(X) which holds iff X is a female

  female(linda).
  female(cathy).
  female(laura).

  This is a fact. We can't define female in terms of both mother and sister because it wouldn't take only children daughters into account.

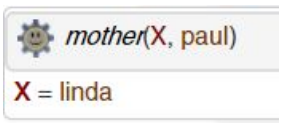
- Define a predicate sister(X,Y) which holds iff X and Y are sisters

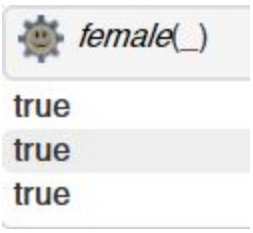
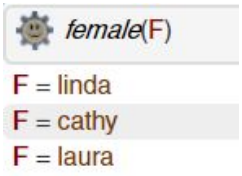
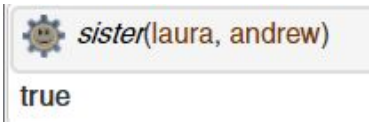
  sister(laura, andrew).
  sister(X,Y) :- female(X), mother(Z,X), mother(Z,Y), (Y \= X).

  This above definition handles any sister sibling (i.e. a sister can be a sister of a brother or another sister). If we were looking for only sets of sisters (i.e. female sibling pairs only), we would define that X is female (female(x)) and Y is also female (female(Y)).

- Implement female and sister in PROLOG & Provide screenshots

Our code looks like this:	`mother(linda, paul).`
	`mother(cathy, andrew).`
	`mother(cathy, laura).`
	
	`female(linda).`
	`female(cathy).`
	`female(laura).`
	
	`sister(laura, andrew).`
	`sister(X,Y) :- female(X), mother(Z,X), mother(Z,Y), (Y \= X).`

`?- mother(X, paul)`	
`?- mother(cathy, X)`	

`?- mother(cathy, _)`	
`?- mother(M, cathy)`	
`?- female(andrew)`	
`?- female(laura)`	
`?- female(_)`	
`?- female(F)`	
`?- sister(andrew, _)`	
`?- sister(cathy, Y)`	
`?- sister(laura, andrew)`	

`?- sister(andrew, laura)`	*sister*(andrew, laura) false
`?- sister(laura, _)`	*sister*(laura, _) true
`?- sister(laura, Y)`	*sister*(laura, Y) Y = andrew

2. Implement the function g such that g(x) = x+5.

   g(X, Y) :- Y is X+5.

Tests:

`?- g(2,Y)`	Y = 7
`?- g(5,Y)`	Y = 10
`?- g(-9,Y)`	Y = -4
`?- g(5.3,Y)`	Y = 10.3