

## Re: predicate in a predicate

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*Source:* <http://sci.tech-archive.net/Archive/sci.logic/2007-12/msg00286.html>

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- *From:* Jan Burse <[janburse@xxxxxxxxxxx](mailto:janburse@xxxxxxxxxxx)>
  - *Date:* Fri, 07 Dec 2007 15:29:43 +0100
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Keenlearner schrieb:

On Dec 7, 3:24 pm, herbzet <[herb...@xxxxxxxxxxx](mailto:herb...@xxxxxxxxxxx)> wrote:

Keenlearner wrote:

On Dec 6, 7:46 pm, William Elliot  
<[ma...@xxxxxxxxxxxxxxxxxxxxxxx](mailto:ma...@xxxxxxxxxxxxxxxxxxxxxxx)> wrote:

On Thu, 6 Dec 2007, Keenlearner wrote:

I was wondering how  
should I represent these two  
sentences in First  
Order Logic Form  
John lives in Bali  
John lives with Marry  
live\_in( John , Bali )  
live\_with( John, Marry )  
or Can I have a predicate in  
the predicate,  
live( John, in(Bali) )  
live( John, with(Marry) )

No.

As you can see that the  
second arguments of "live"  
predicate can either  
refer to the person or place.  
But can we use the same  
predicate "live"  
with the second argument  
refer to person and place ?  
Thank you.

It refers to a proposition. Thus you have  
hybrid

Re: predicate in a predicate

propositional constant,  $\text{live}(x,P)$  which isn't FOL.

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So I need to use the  $\text{live\_in}(\text{John, Bali})$  and  $\text{live\_with}(\text{John, Marry})$  in order to be compliance with FOL ? or what do you think ? I am doing natural language processing research, where a English sentence will be converted into FOPC and then Prolog clauses to be proved. Thank you for the reply.

You've received a number of good replies, but I just want to state the point in terms of arguments and output.

A predicate takes terms as arguments and returns a sentence.  
A function takes terms as arguments and returns a term.

In natural language there are also functors that take sentences as arguments and return a term. A not very good example is the single quote marks: "It is hot' is a short sentence".

Also there are operators that take sentences as arguments and return a sentence, e.g. the logical operator "and": "John went to the store and Mary didn't." Or modal operators, such as "It was believed by the ancients that ...".

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hz

Yeah, I feel so lucky too to get so many nice replies. Thanks.  
I have few things that I am still doubt.

I don't get this from Hezbert.  
A predicate takes terms as arguments and returns a sentence.  
A function takes terms as arguments and returns a term.

What is the difference between predicate and function ? can give me examples that can differentiate between them ?

A predicate gives a boolean result. True or false.  
A function gives a result belonging to the universe of discourse if you use single sorted logic. Or a function gives a result belonging to the universe of the sort of the return value if you use multi sorted logic.

Re: predicate in a predicate

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Terms are functions applied to other terms or they can also be variables. In single sorted logic there is only one set of variables and functions have an arity. In multi sorted logic variables have also a sort, and functions have a sort signature.

Bye

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