

Re: Request for Reference/Link to example of defining a theory/logic.

## Re: Request for Reference/Link to example of defining a theory/logic.

---

*Source:* <http://sci.tech-archive.net/Archive/sci.logic/2006-11/msg00243.html>

---

- *From:* "Charlie-Boo" <[shymathguy@xxxxxxxxxx](mailto:shymathguy@xxxxxxxxxx)>
  - *Date:* 9 Nov 2006 17:08:21 -0800
- 

Scott wrote:

Hi:

I am requesting help in locating a link or reference showing an example of defining a theory and/or logic. I am constructing a formal system that will emulate first-order logic and set theory.

Why?

Many people would say "Which set theory?" (but not I – I know there is only one true set theory.)

I am unsure what is the minimum theorem/proofs necessary to demonstrate that the formal system does indeed include first-order logic and set theory.

With the above approach, choose a set theory and just make sure you can prove its axioms.

Or even better, show a much simpler representation of the axioms than using klunky Predicate Calculus. Let  $M \# P(x)$  for any expression  $P()$  mean that set  $M$  contains exactly the elements of  $P$ . Let  $P(x)$  mean there is such an  $M$ , and  $\neg P(x)$  mean there is not. And  $SE(a,b)$  means  $(b \in a)$ . Then e.g. the axiom of the empty set is  $\sim TRUE(x)$ . The axiom of regularity (what it's trying to do) is  $\sim \sim SE(x,x)$ . The rest of the ZF et. al. axioms are easily represented in a much simpler, clearer notation than usual.

Or even better yet, instead of reinventing the wheel, invent a new wheel: axiomatize some branch of Computer Science, e.g. Theory of Computation (Turing), Recursion Theory (Kleene), Program Synthesis (Boo), Incompleteness in Logic (Godel) etc. Or a branch of Mathematics e.g. Number Theory (Peano Arithmetic is terrible for this – just as bad as ZF.)

Re: Request for Reference/Link to example of defining a theory/logic.

Re: Request for Reference/Link to example of defining a theory/logic.

C-B

Does  
anyone know of a web reference or book that dwelves into this topic?  
Thanks.

Regards,  
Scott