

sci.math: Re: Can you find anything wrong with this solution to the Halting Problem?

## Re: Can you find anything wrong with this solution to the Halting Problem?

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Peter Olcott wrote:

- > <http://home.att.net/~olcott/halts.html>
- > *Maybe because you quit looking, and assumed that it*
- > *was fruitless. In any case since this does not address any*
- > *of the points that I made it is not any form of valid refutation.*

The Halting Problem restated in your terms:

Q: Is it possible to write a program A that reads another program B as input and goes into an infinite loop if B exits, but exits if B infinite loops?

A: No. Let program B be a copy of program A running with input a copy of program A running on a copy of program A running on a copy of program A, etc. Clearly, A and B have exactly the same input (an infinite sequence of program A running on program A). But, by definition, if one copy of program A exits, then the next copy of program A must infinite loop. But that means that you have two copies of program A that have exactly the same input, but do different things. That can't be possible if computer programs are deterministic, so either your programs behave randomly (which is bad, because you can never be sure you're getting the right result), or A cannot exist.

The basis of your proof is that it's possible to construct situations in which A is not allowed to tell if B will exit or not. This is 100% true but 0% useful. It's not necessary for the above proof that all programs A halt on input B where B is a program that infinite loops, etc., it's only necessary that it be possible to construct one program A under one set of circumstances for which the above is true. Then, under that circumstance, A cannot exist which means it is impossible to construct A for ALL circumstances. That's what the proof says: There may well be cases of A and B where A will halt if B loops and A will loop if B halts, but it is impossible to construct a program A

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where A will always halt if B loops and will always loop if B halts. Your counterproof does not refute this, and therefore your counterproof is not a counterproof of the halting problem.

I've now wasted far more time on this post than it was worth, thus proving that Kent was 100% right about invincible ignorance and timewasting morons, since the odds that you will accept the above as true are virtually 0%.