

When it comes to translations of quantified statements, LogiCola has some overly restrictive rules. In other words, it treats certain answers as mistaken even though they are logically equivalent to the “correct” answer the program is looking for. I have noticed this in two separate kinds of cases. First, consider:

Some bankers who are honest are tall.

LogiCola accepts as correct

$$(\exists x)((Bx \cdot Hx) \cdot Tx)$$

but scores as incorrect

$$(\exists x)(Bx \cdot (Hx \cdot Tx))$$

Both of these statements say exactly the same thing: They are logically equivalent—just like “((B • H) • T)” is logically equivalent to “(B • (H • T)).” When we have three conjuncts in a series (likewise, three disjuncts in a series), it is arbitrary whether we group the first two together within separate parentheses, or the last two. On the tests, I will accept either answer. (I will always accept any logically equivalent answer.) But the software for LogiCola isn’t able to deal with the infinite variety of logically equivalent ways of translating any statement given. That means there will always be correct translations that it won’t be able to recognize. So just learn to do things “LogiCola’s way” and save yourself the hassle.

The second case where LogiCola’s scoring seems arbitrary has to do with quantified statements. When a statement starts with “everything,” LogiCola expects you to use a universal quantifier—“(x)”. Likewise, if the statement begins with “something,” LogiCola expects you to use an existential quantifier—“(∃x)”. This seems perfectly natural. But as we see in section 8.2, every universally quantified statement is logically equivalent to some existentially quantified statement, and vice versa. After all, “Everything is A” says exactly the same thing (i.e., is true or false in exactly the same circumstances) as “There isn’t anything that isn’t A.” Similarly, “Something is A” says exactly the same thing as “Not everything isn’t A.” In general,

<b>(x)Ax</b>	<i>is logically equivalent to</i>	<b>~(∃x)~Ax,</b>	and
<b>(∃x)Ax</b>	<i>is logically equivalent to</i>	<b>~(x)~Ax.</b>	Likewise,
<b>~(x)Ax</b>	<i>is logically equivalent to</i>	<b>(∃x)~Ax,</b>	and
<b>~(∃x)Ax</b>	<i>is logically equivalent to</i>	<b>(x)~Ax.</b>	

So, for every quantified statement, there are ways of translating it with “(x)” and different but logically equivalent ways of translating it with “(∃x).” LogiCola expects you to translate them one way, but I will accept either (logically equivalent) translation.

Here is an example from LogiCola:

Not all are backpackers.

LogiCola accepts as the correct answer:

$$\sim(x)Bx \quad (\text{Read: Not everything is a backpacker.})$$

but scores as incorrect:

$$(\exists x)\sim Bx \quad (\text{Read: There is something that isn't a backpacker.})$$

Yet these answers are logically equivalent. Once again, I will accept either answer. But when you're doing LogiCola problems, you'll save yourself some headaches by doing these translations the way it expects you to.