Introduction to Logical Reasoning

Workshop on Translating Natural Language and Creating Truth Tables

Part I: Each of the following problems presents a statement in English. Translate each of them into the language of symbolic logic, using the indicated capital letters to label each simple proposition involved. These should all be fairly straightforward.

1. The computer science students love logic.

2. Either the journalism or the business students love logic.

3. The business students do not hate logic, but they love it.

4. If the journalism students do not love logic, then the logic professor is sad.

5. The journalism or the business students love logic, and the logic professor is happy.

Part II: Each of the following problems presents a statement in English. Translate each of them into the language of symbolic logic, using the indicated capital letters to label each simple proposition involved. These may be initially more difficult, but many exhibit useful patterns.

1. Journalism and business students do not both love logic.

2. Journalism and business students both do not love logic.

3. It is not the case that either business students hate money or the computer science students hate numbers.

4. Either it is not the case that business students hate money or the computer science students hate numbers.

5. If the logic professor teaches well then the journalism students do not commit fallacies and the business students reason clearly.

6. If the logic professor teaches well then the journalism students do not commit fallacies, and the business students reason clearly.

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Part III: Each of the following problems presents a statement in logical form. Construct a truth table for each, and use that table to briefly explain whether it is a tautology, a contradiction, or a contingent statement.

1. $\sim(p \vee \sim q)$.

p	q	$\sim q$	$p \vee \sim q$	$\sim(p \vee \sim q)$
T	T			
T	F			
F	T			
F	F			

2. $(p \,\&\, q) \rightarrow (r \vee \sim r)$.

p	q	r	$\sim r$	$p \,\&\, q$	$r \vee \sim r$	$(p \,\&\, q) \rightarrow (r \vee \sim r)$
T	T	T				
T	T	F				
T	F	T				
T	F	F				
F	T	T				
F	T	F				
F	F	T				
F	F	F				

3. $(p \,\&\, \sim q) \rightarrow \sim p$.