Introduction to Logical Reasoning

Workshop on Translating Natural Language and Creating Truth Tables

Part I: Translate each of the following statements into the language of symbolic logic, using capital letters to label each simple positive statement 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: Translate each of the following statements into the language of symbolic logic, using capital letters to label each simple positive statement 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: Part I: For each statement, (1) construct a truth table (or complete the one provided), and (2) use that truth table to show whether the proposition 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. $(p \,\&\, \sim q) \rightarrow \sim p$.