

CSE311: Quiz Section, 9/29/2011: Answers

October 2, 2011

1. Introductions

‘What was your favorite or most interesting class so far that was NOT a CSE class or a prereq for admission to the CSE major. Why?’

The correct answer was ”Underwater Welding” and you all got it wrong.

2. Knights and Knaves

You are on an island of knights and knaves. Knights always tell the truth and knaves always lie. You encounter two people, A and B . Determine, if possible, what the two people are:

- (a) A says “At least one of us is a knave” and B says nothing.
A is a knight and B is a knave.
- (b) A says “The two of us are both knights” and B says “ A is a knave”
A is a knave and B is a knight.
- (c) A says “I am a knave or B is a knight” and B says nothing.
Both are knights.
- (d) Both A and B say “I am a knight”
Either one could be either thing.
- (e) A says “We are both knaves” and B says nothing
A is a knave and B is a knight.

3. Truth Tables

Fill in the truth table for $(p \wedge q) \oplus (\neg q \vee r)$:

p	q	r	$\neg q$	$(p \wedge q)$	$(\neg q \vee r)$	$(p \wedge q) \oplus (\neg q \vee r)$
T	T	T	F	T	T	F
T	T	F	F	T	F	T
T	F	T	T	F	T	T
T	F	F	T	F	T	T
F	T	T	F	F	T	T
F	T	F	F	F	F	F
F	F	T	T	F	T	T
F	F	F	T	F	T	T

4. Implication operator: $p \rightarrow q$

Truth Table:

p	q	$p \rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

5. Homework practice, problem 2

Write each of these statements in the form "if p , then q " in English

- (a) It snows whenever the wind blows from the northeast.
If the wind blows from the northeast, then it snows.
- (b) The apple trees will bloom if it stays warm for a week.
If it stays warm for a week, then the apple trees will bloom.
- (c) That the Pistons win the championship implies that they beat the Lakers.
If the Pistons win the championship, then they beat the Lakers.
- (d) It is necessary to walk 8 miles to get to the top of Long's Peak.
If you get to the top of Long's Peak, then you must have walked 8 miles.
- (e) To get tenure as a professor, it is sufficient to be world-famous.
If you are world-famous, then you will get tenure as a professor.
- (f) If you drive more than 400 miles, you will need to buy gasoline.
If you drive more than 400 miles, then you will need to buy gasoline.
- (g) Your guarantee is good only if you bought your CD player less than 90 days ago.
If your guarantee is good, then you must have bought your CD player less than 90 days ago.
- (h) Jan will go swimming unless the water is too cold.
If the water is not too cold, then Jan will go swimming.

Note from Kris: Rather than using truth tables for these (as I mistakenly suggested in the 2:30 section), the correct approach is to use the list of implication-related terminology in section 1.1. Also, remember that if $p \rightarrow q$, then you can't have the case where p is True and q is False, so choose your p and q based on this constraint. For example, in (a), if we choose "snows" as p and "wind" as q , ($snows \rightarrow wind$), this can't be right because there is nothing in the sentence to rule out $p = T$ (it snows) and $q = F$ (no NE wind). However, based on the sentence, we can never have $wind = T$ and $snow = F$, so $wind \rightarrow snow$ is correct.