

Problem Set 2, Part 1 - Modal Logic

cs112

Posted: Tue, September 26, 2006

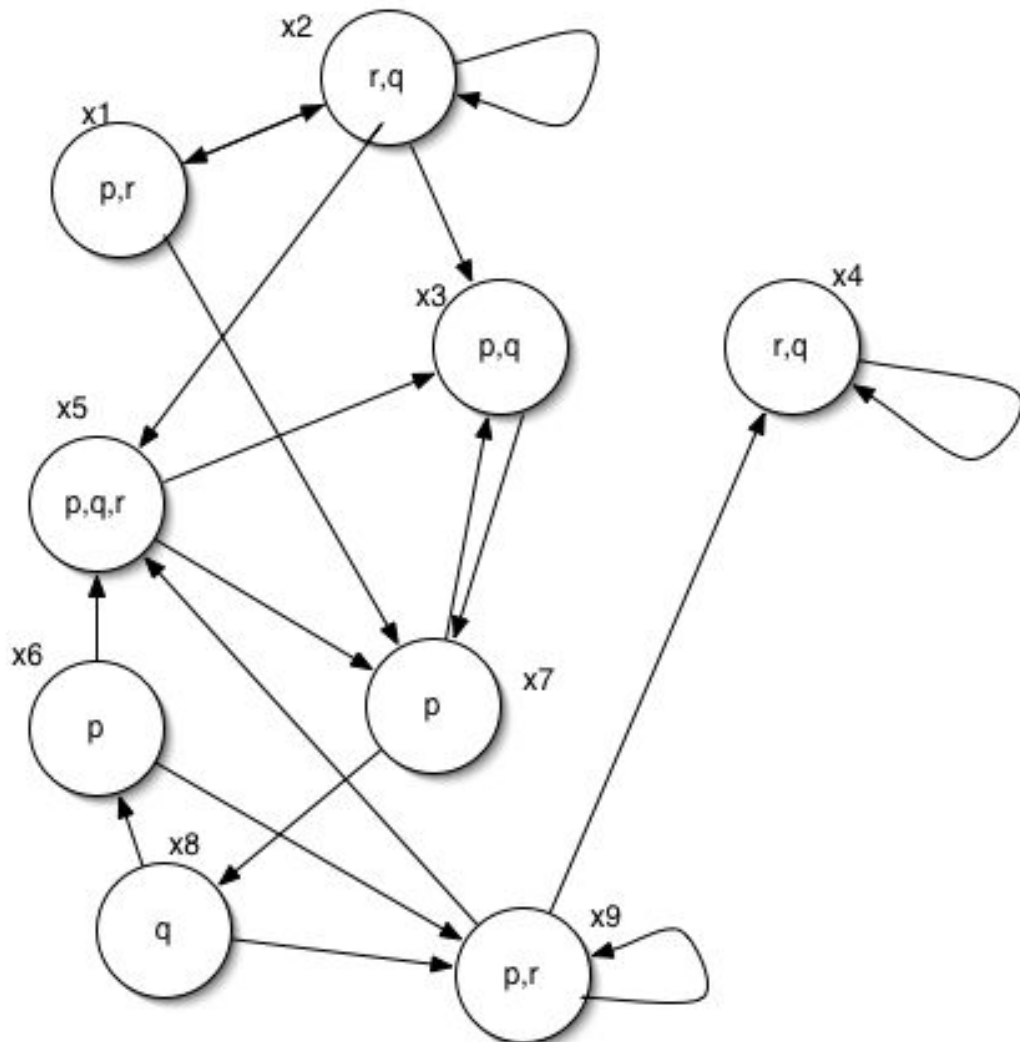
Due Date: Tue, October 3, 2006

Note: October 3 is a Brandeis Monday. There will be an envelope in the CS office for you to leave your homework.

Exercise 1 Kripke Models

Part 1.1

Consider this model:



1. Find all worlds satisfying:

(a) $x \models \Diamond(p \wedge q)$;

(b) $x \models \Box(p \vee r)$;

2. Does $x_1 \models \Diamond\Box q$? Show why or why not.

3. Does $x_7 \models \Box\Box\Diamond p$? Show why or why not.

4. Does $x_9 \models \Diamond(r \vee \Diamond p)$? Show why or why not.

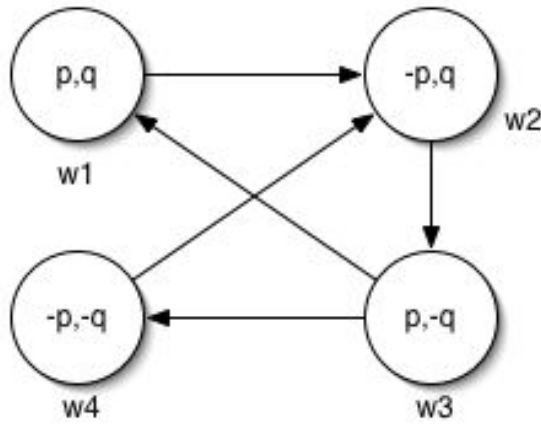
5. Decide whether the following formulas are valid in the model:

(a) $\Diamond p \vee \Diamond q$

(b) $\Box(r \wedge \Diamond p)$

Part 1.2

Consider the simple model below:



Decide whether the following formulas are valid in the model:

a. $\Diamond\Box p \vee \Diamond\Box p$

b. $\Box p \rightarrow \neg p$

c. $\Diamond(p \vee \neg p) \rightarrow \Box(p \vee \neg p)$