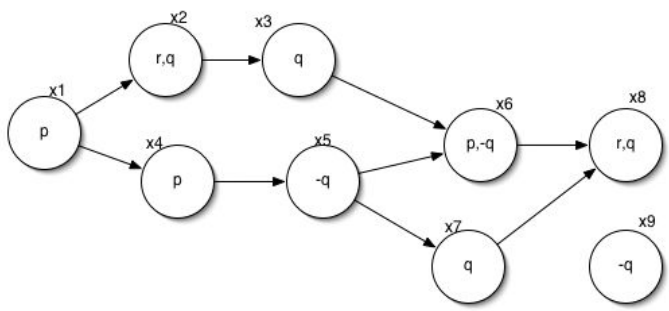
Problem Set 2, Part 2
Temporal Logic

Fall 2006, cs112

Handed Out: Tuesday, October 11, 2006
Due Date: Tuesday, October 17, 2006, IN CLASS

Exercise 1 Temporal Kripke Structure

Consider the following temporal model:



1. Evaluate the following for the specified world:
   (a) $x_4 \Vdash F\neg q \rightarrow G(p \vee q)$
   (b) $x_7 \Vdash H(p \rightarrow Fq)$
   (c) $x_6 \Vdash Hq \wedge Gq$
2. Decide whether the following formulas are valid in this model:
   (a) $r \rightarrow H(\neg q \vee p)$
   (b) $\neg q \rightarrow FGq$
   (c) $G(P\neg q \rightarrow p)$
3. Recall the temporal logic necessity axioms mentioned in class. Do they hold for this model? Specifically:
   (a) $G\phi \rightarrow \phi$
   (b) $H\phi \rightarrow \phi$
4. Decide whether the following intuitively sound principles hold for this model.
   (a) $P\phi \rightarrow H(F\phi \vee \phi \vee P\phi)$
   (b) $F\phi \rightarrow G(P\phi \vee \phi \vee F\phi)$