

12 Temporal Logic and Model Checking (MJCG)

If p and q are atomic properties of states and R is a transition relation, then the property q is an immediate successor to p holds if and only if for every state s such that p is true, there is at least one state s' such that $R s s'$ and q is true.

- (a) Is it possible to express the property that q is an immediate successor to property p in LTL? If so, write down the LTL formula that expresses it, if not give an argument why it cannot be expressed. [10 marks]
- (b) Is it possible to express the property that q is an immediate successor to property p in CTL? If so, write down the CTL formula that expresses it, if not give an argument why it cannot be expressed. [10 marks]

[Hint: Recall the discussion of the property “can always reach a state satisfying P” in the lectures.]