VIS : Technology Transfer Course

University of California, Berkeley

Lab # 6 : Model Checking

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5/15/96

Solutions to Selected Problems

Problem #2 We wish to specify "No two processes can access the bus at one time". This property is called *Mutual Exclusion.* Write down this property in **CTL**.

$AG(!(ackA = 1*ackB = 1+ackB = 1*ackC = 1+ackC = 1*ackA = 1));$

Problem #5 Specify the property "If client A is requesting for the bus, it will not drop the request until it gets an acknowledgment" in **CTL**. This is called *Persistence of Request.* Check this property using **VIS**. First, write down the **CTL** formula below:

$AG(((reqA = 1) * (ackA = 0)) -> AX(reqA = 1));$

Problem #6 Specify the property "if A is holding the bus and B is requesting, then it is not possible for A to release control of the bus and get it back, before B gets control of the bus " in **CTL**. This is called *Equal Opportunity.* Do you think that the model satisfies this property? First, write down the **CTL** formula below. WARNING: The **CTL** specification of this property is non-trivial.

$AG(((controllerA.state = BUSY) * (reqB = 1)) ->$
$AX((controllerA.state = BUSY) +$
$A(!(controllerA.state = BUSY)U(controllerB.state = BUSY))));$