procedure *CraigReachability*(model M, $p \in AP$)

if $S_0 \wedge \neg p$ is SAT **return** "$M \not\models \mathbf{AG}\, p$";
$k := 1$;
$Q := S_0$;
while *true* **do**
$A := Q(s_0) \wedge R(s_0, s_1)$;
$B := \bigwedge_{i=1}^{k-1} R(s_i, s_{i+1}) \wedge \bigvee_{i=1}^{k} \neg p(s_i)$;
if $A \wedge B$ is SAT **then**
if $Q = S_0$ **then return** "$M \not\models \mathbf{AG}\, p$";
Increase k
$Q := S_0$
else
compute interpolant I for A and B
if $I \subseteq Q$ **then return** "$M \models \mathbf{AG}\, p$";
$Q := Q \cup I$
end if
end while

end procedure