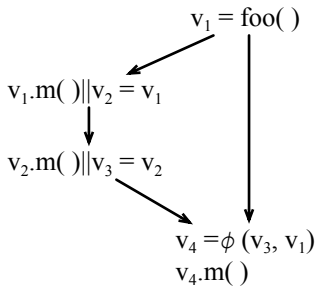


(a)



(b)

$[v_1] = \text{Possibly Null}$

$[v_2] = \text{Not Null}$

$[v_3] = \text{Not Null}$

$[v_4] = [v_3] \wedge [v_1]$

(c)