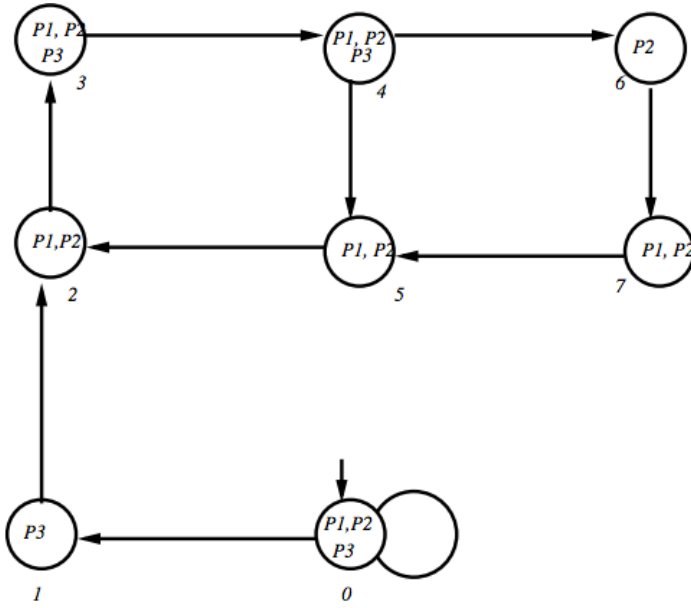


## Question 1

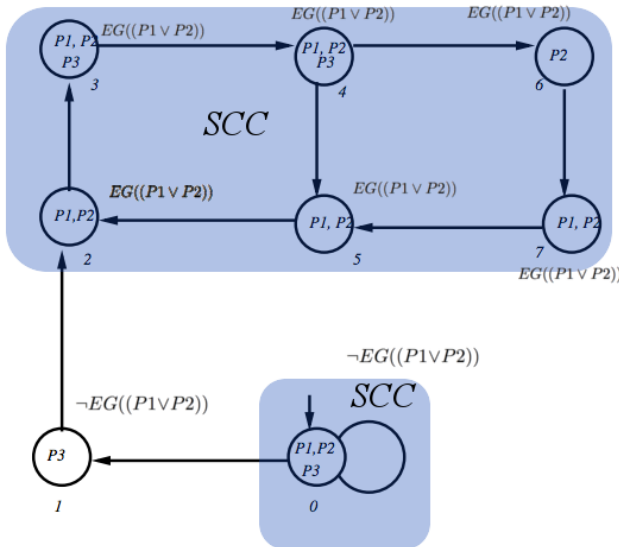


To verify the property  $AF(\neg P1 \wedge \neg P2)$  we first need to transform it into the form of  $EGf1$ :

$$\neg EG(\neg(\neg P1 \wedge \neg P2)) \equiv \neg EG((P1 \vee P2)).$$

We then apply the  $\text{checkEG}()$  algorithm: We identify states that satisfy  $(P1 \vee P2)$ :  $S' = \{0, 2, 3, 4, 5, 6, 7\}$ . We form SCCs from these states =  $\{\{0\}, \{2, 3, 4, 5, 6, 7\}\}$ . We pick an SCC and label all its states with  $EG((P1 \vee P2))$ . We then perform backwards reachability and find that we can't find any other states in  $S'$  that haven't been labeled and are reachable. We label all other states with  $\neg EG((P1 \vee P2))$  and we finish.

The final state of the model after performing  $\text{checkEG}()$  is:



We can determine then that the model does not satisfy the property  $AF(\neg P1 \wedge \neg P2)$

**Question 2**

**Question 3**

**Question 4**