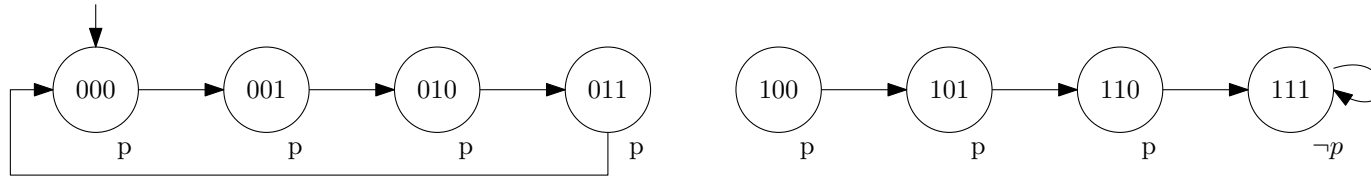


Model checking HW4 - Solution and common mistakes

Task 4a.



Initialize $F_0 = S_0$ and $F_1 = p$.

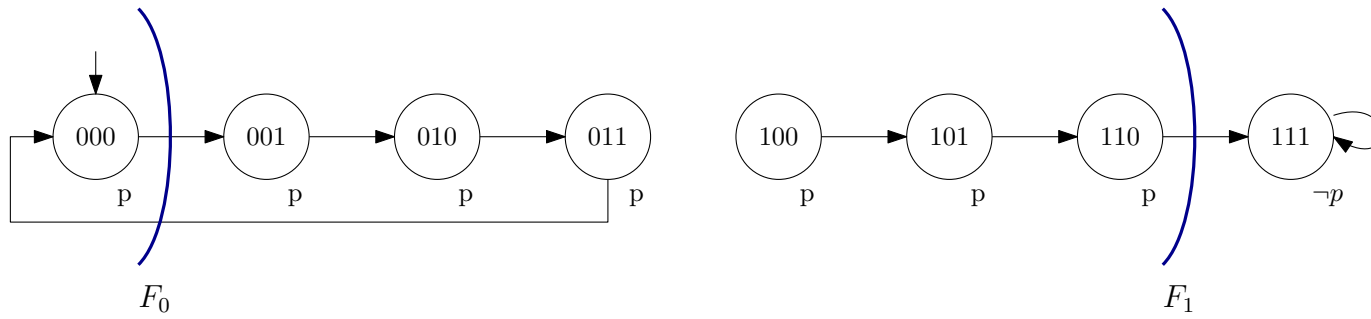
Model checking HW4 - Solution and common mistakes

Task 4a.

$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$



Initialize $F_0 = S_0$ and $F_1 = p$.

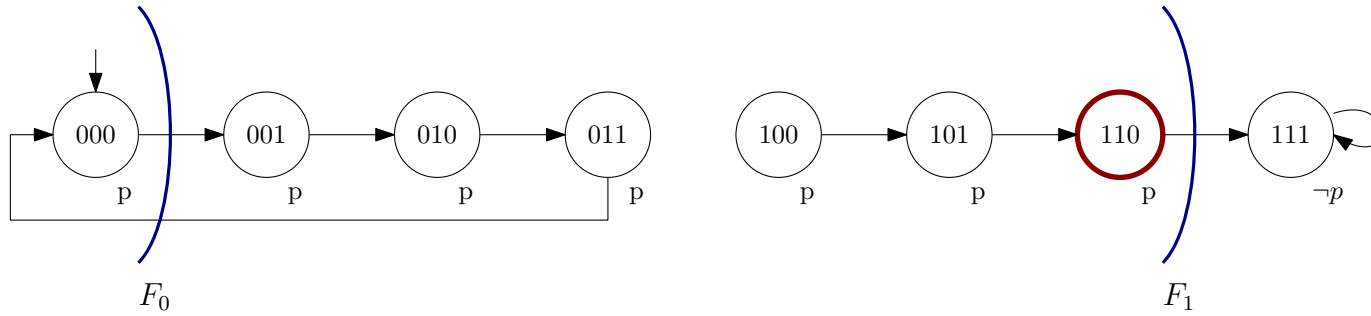
Model checking HW4 - Solution and common mistakes

Task 4a.

$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$



$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3 \longrightarrow \text{removeBad}(k, s)$$

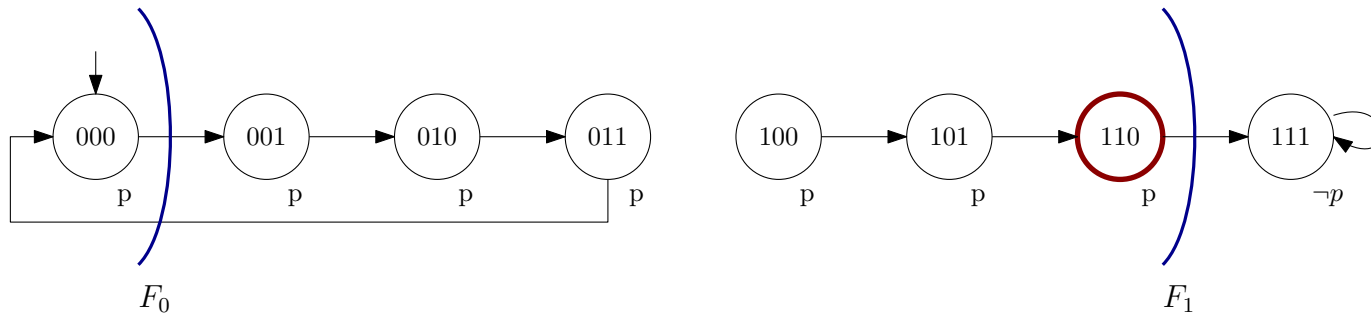
Model checking HW4 - Solution and common mistakes

Task 4a.

$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$



$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

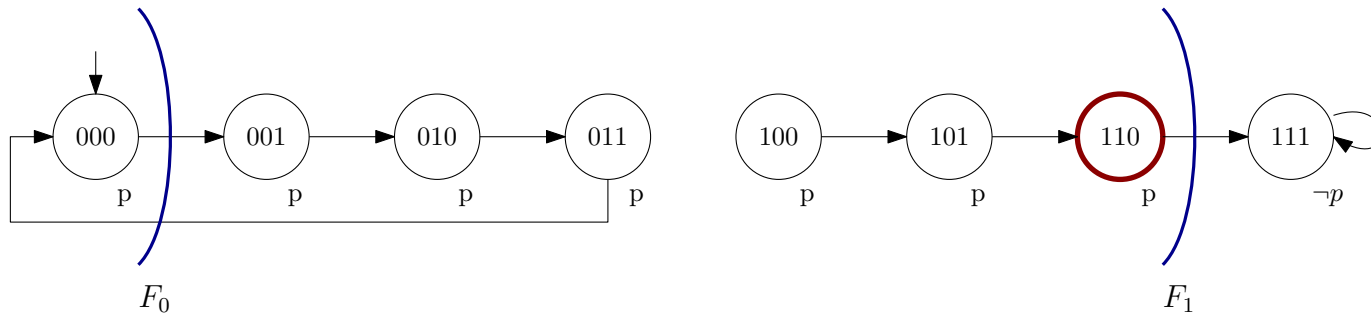
Model checking HW4 - Solution and common mistakes

Task 4a.

$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$



$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

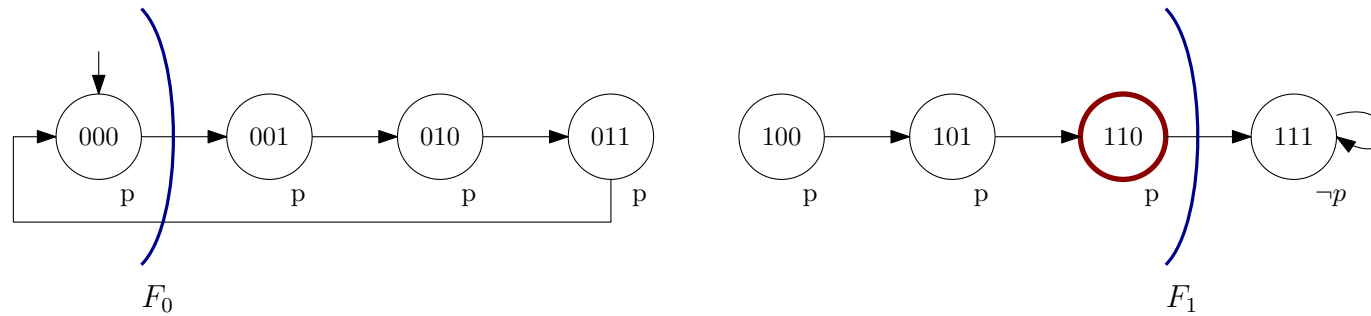
Model checking HW4 - Solution and common mistakes

Task 4a.

$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$



$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$c = [\top, l_1, l_2, l_1 \wedge l_2, l_3, l_1 \wedge l_3, l_2 \wedge l_3, l_1 \wedge l_2 \wedge l_3]$$

$$c \leftarrow s \quad ?$$

$$\text{UNSAT}(\neg c \wedge F_0 \wedge R \wedge c') \quad ?$$

$$\text{UNSAT}(S_0 \wedge c) \quad ?$$

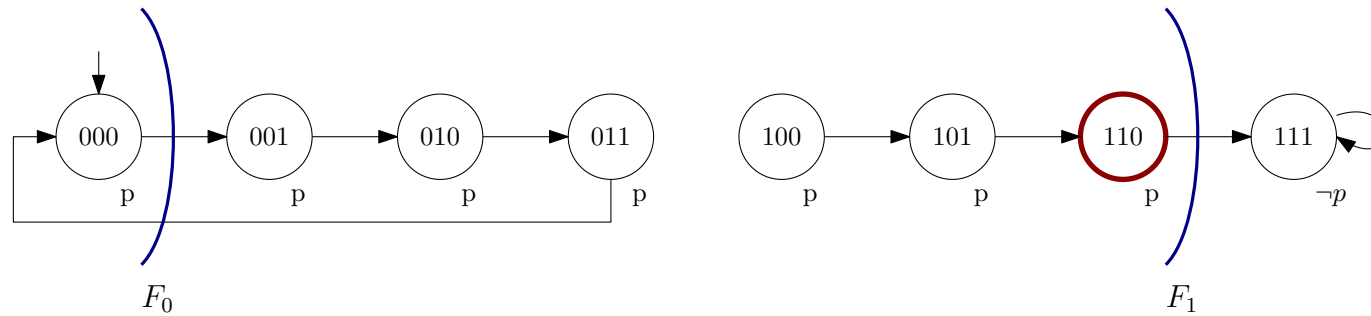
Model checking HW4 - Solution and common mistakes

Task 4a.

$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$



$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$c = \top \quad [\top, l_1, l_2, l_1 \wedge l_2, l_3, l_1 \wedge l_3, l_2 \wedge l_3, l_1 \wedge l_2 \wedge l_3]$$

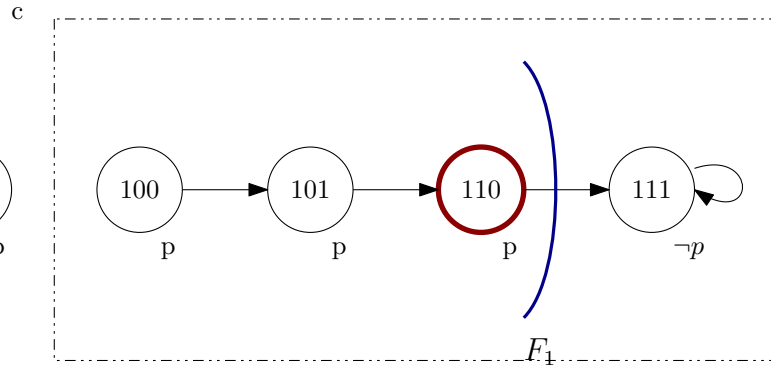
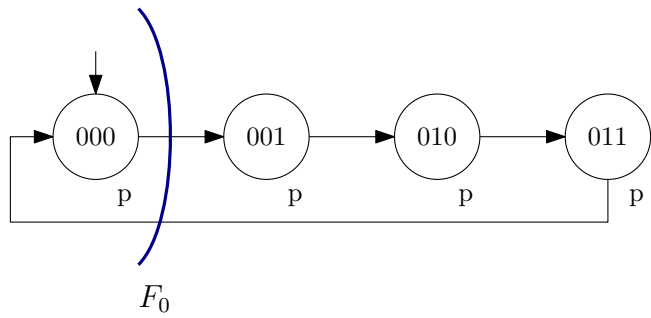
$$c \leftarrow s \quad ? \quad \checkmark$$

$$\text{UNSAT}(\neg c \wedge F_0 \wedge R \wedge c') \quad ? \quad \checkmark$$

$$\text{UNSAT}(S_0 \wedge c) \quad ? \quad \times$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$c = x_1 \quad [\top, l_1, l_2, l_1 \wedge l_2, l_3, l_1 \wedge l_3, l_2 \wedge l_3, l_1 \wedge l_2 \wedge l_3]$$

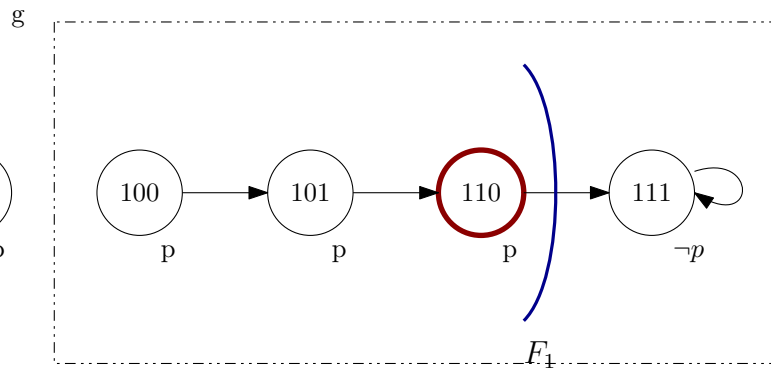
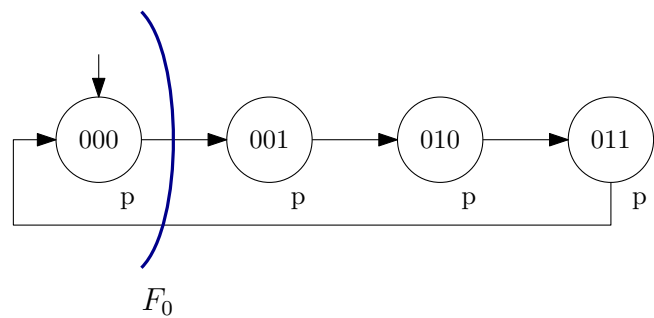
$$c \leftarrow s \quad ? \quad \checkmark$$

$$\text{UNSAT}(\neg c \wedge F_0 \wedge R \wedge c') \quad ? \quad \checkmark$$

$$\text{UNSAT}(S_0 \wedge c) \quad ? \quad \checkmark$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

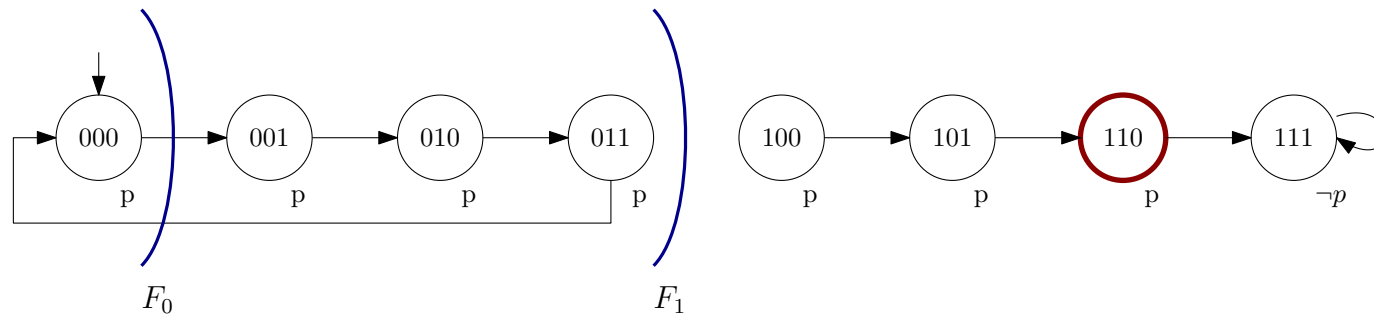
$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 1$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = p \wedge \neg x_1 = \neg x_1$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

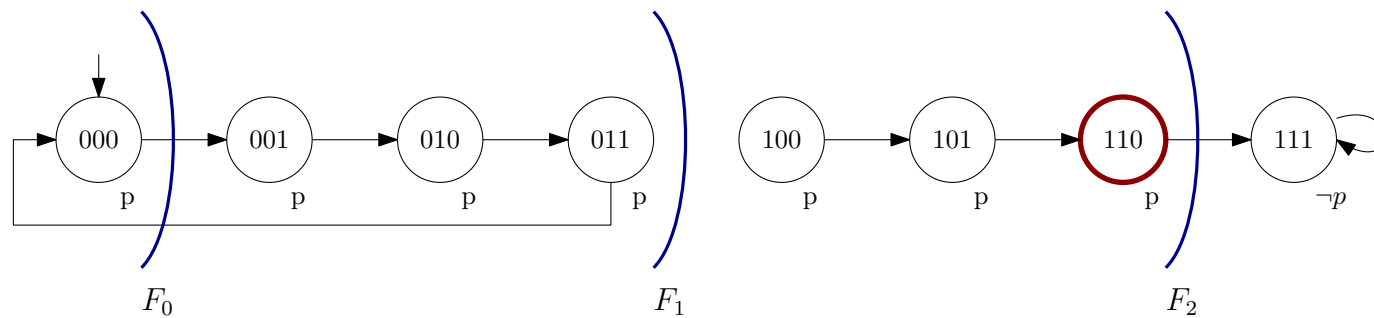
$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

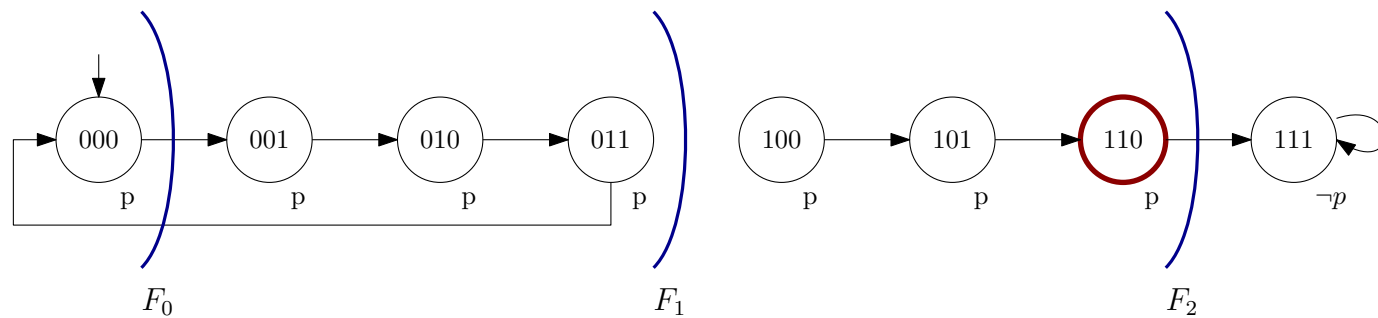
$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

propagateClauses($k = 2$)

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

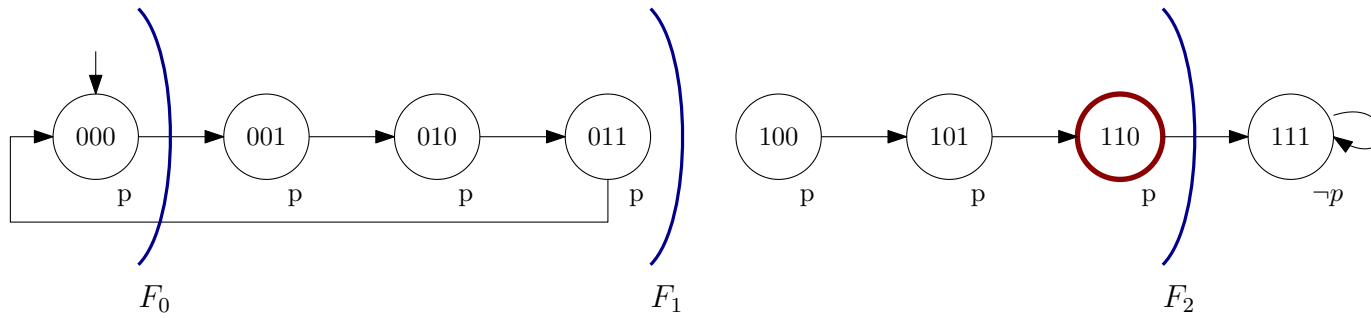
$k++$ and $F_2 = p$

propagateClauses($k = 2$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

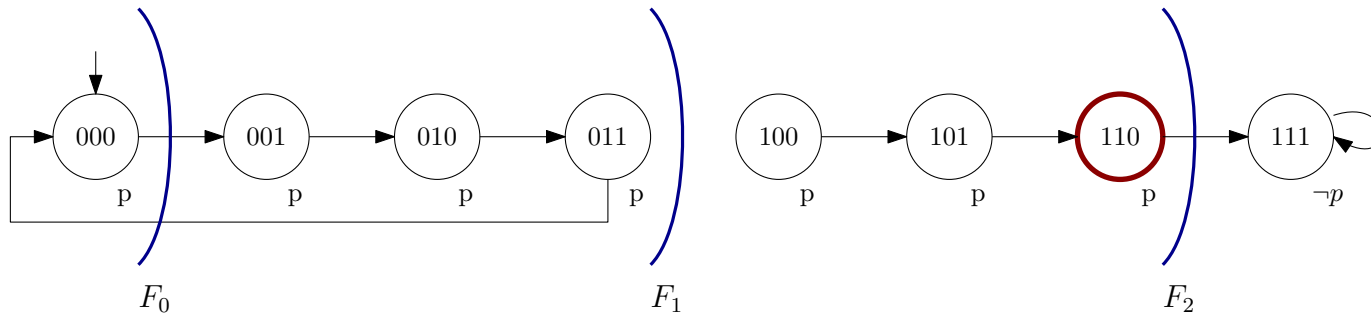
propagateClauses($k = 2$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x'_1)) \quad ? \quad \checkmark \rightarrow F_1 := F_1 \wedge \neg x_1 \text{ (doesn't change anything)}$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

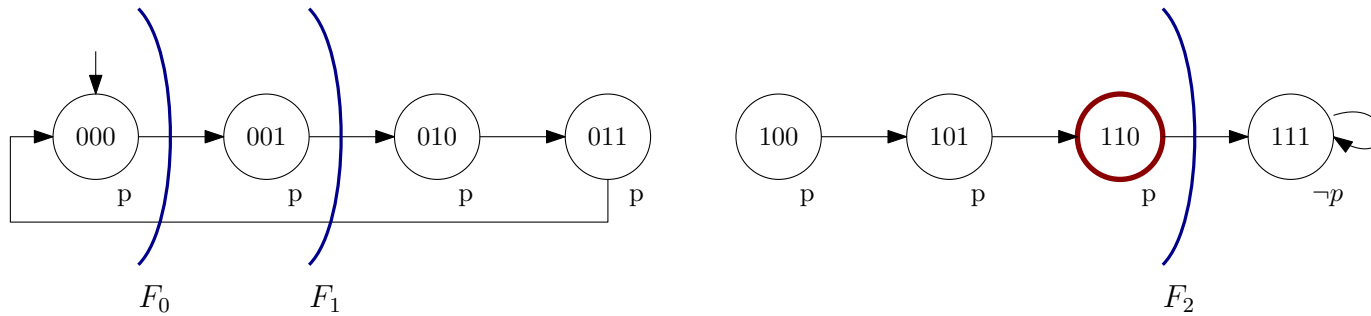
propagateClauses($k = 2$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x_2')) \quad ? \quad \checkmark \quad \rightarrow F_1 := F_1 \wedge \neg x_2$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

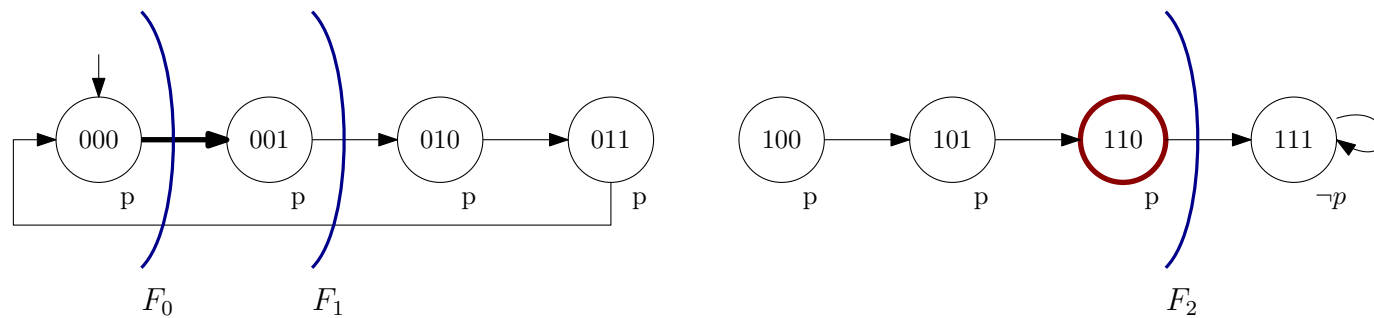
propagateClauses($k = 2$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x_2')) \quad ? \quad \checkmark \quad \rightarrow F_1 := F_1 \wedge \neg x_2$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

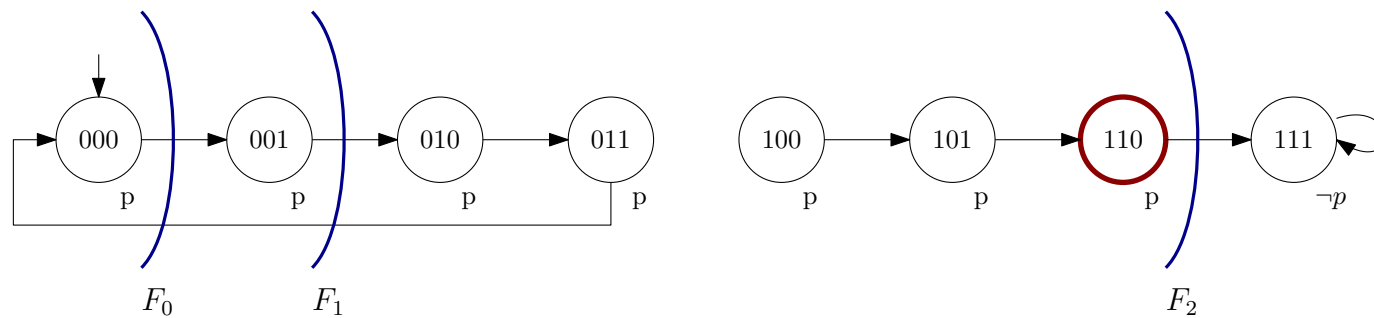
propagateClauses($k = 2$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x_3')) \quad ? \quad \times$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

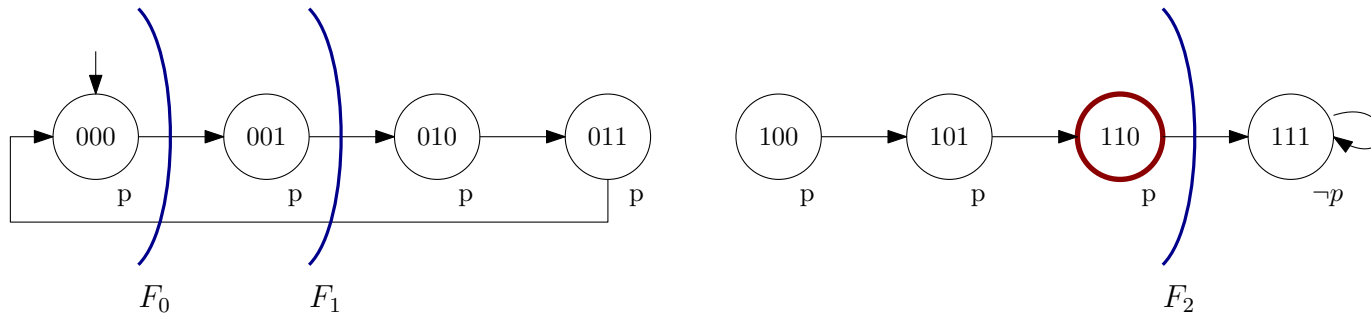
$k++$ and $F_2 = p$

propagateClauses($k = 2$)

$$i = 1, \quad F_1 = \neg x_1 \wedge \neg x_2$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = p$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

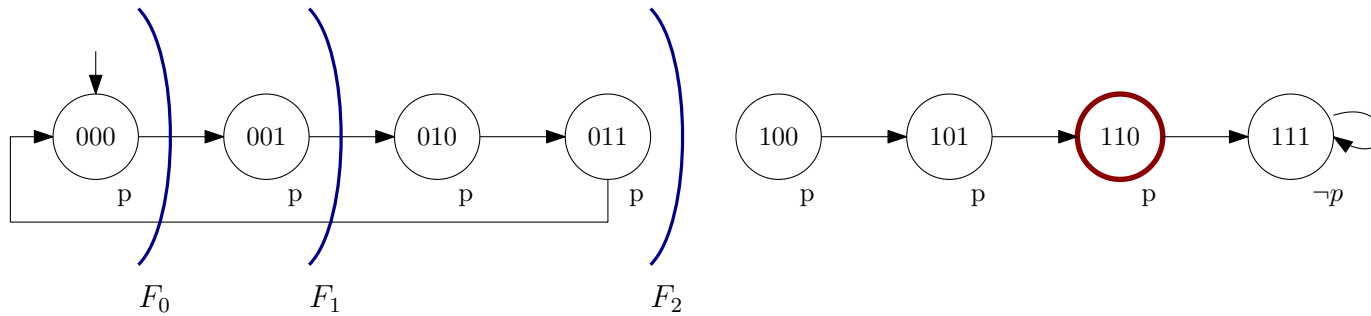
propagateClauses($k = 2$)

$$i = 1, \quad F_1 = \neg x_1 \wedge \neg x_2$$

$$\text{UNSAT}(F_1 \wedge R \wedge \neg(\neg x_1')) \quad ? \quad \checkmark \quad \rightarrow F_2 := F_2 \wedge \neg x_1$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = p \wedge \neg x_1 = \neg x_1$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

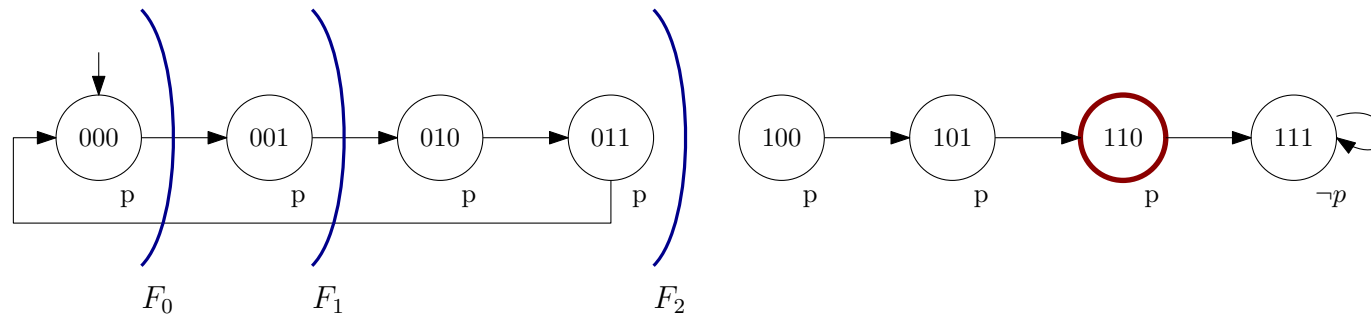
propagateClauses($k = 2$)

$$i = 1, F_1 = \neg x_1 \wedge \neg x_2$$

$$\text{UNSAT}(F_1 \wedge R \wedge \neg(\neg x_1')) \quad ? \quad \checkmark \rightarrow F_2 := F_2 \wedge \neg x_1$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$s := \text{SAT}(F_1 \wedge R \wedge \neg p') = x_1 \wedge x_2 \wedge \neg x_3$$

removeBad($k = 1, s = \{110\}$)

$$S_0 \wedge s \text{ UNSAT} \rightarrow \checkmark$$

$$F_0 \wedge R \wedge s' \text{ UNSAT}$$

generalize($i = 1, s = \{110\}$)

$$g = x_1 \longrightarrow \text{Update } F_1 := F_1 \wedge \neg g$$

$k++$ and $F_2 = p$

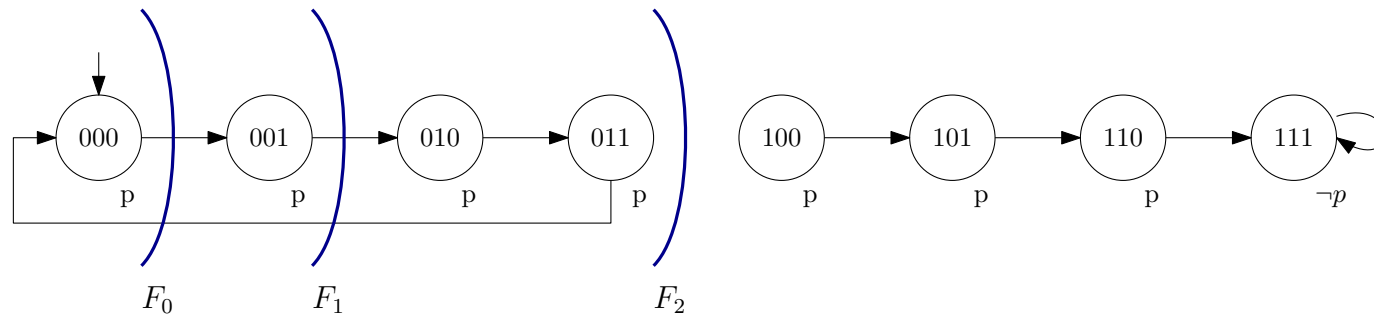
propagateClauses($k = 2$)

$$i = 1, \quad F_1 = \neg x_1 \wedge \neg x_2$$

$$\text{UNSAT}(F_1 \wedge R \wedge \neg(\neg x_2')) \quad ? \quad \times$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 2$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

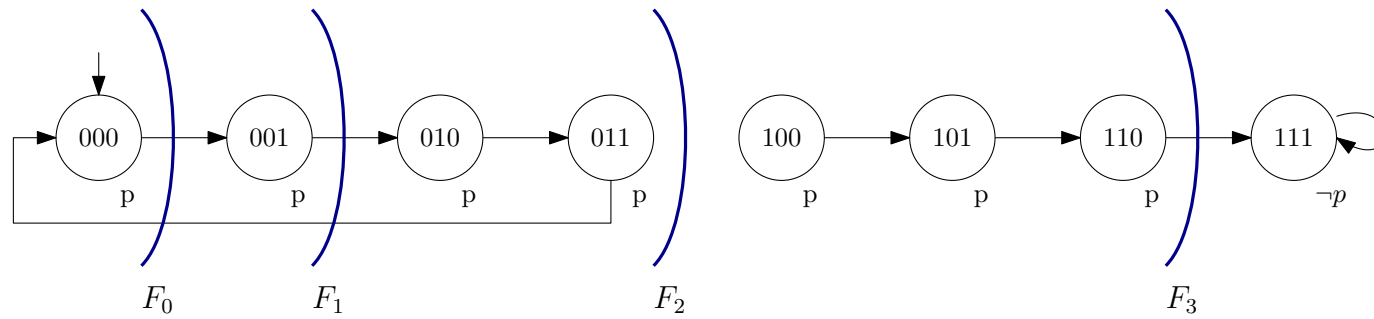
$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

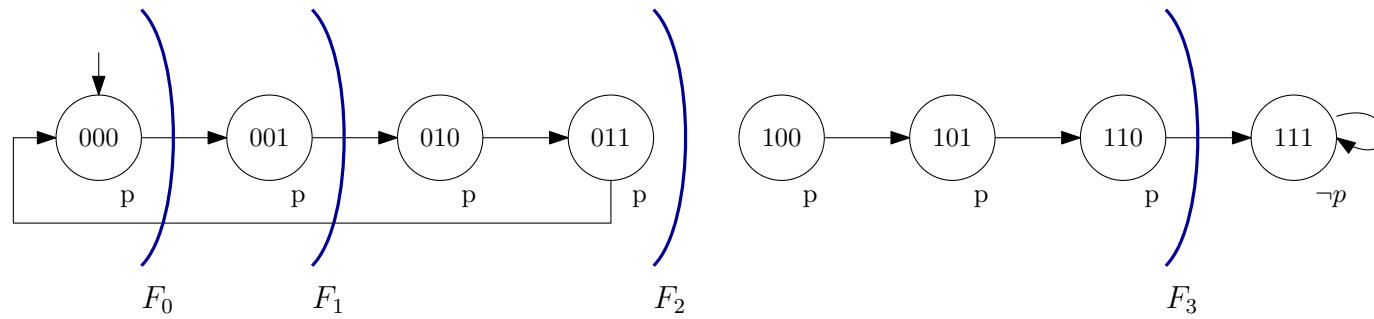
$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$$k++ \text{ and } F_3 = p$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

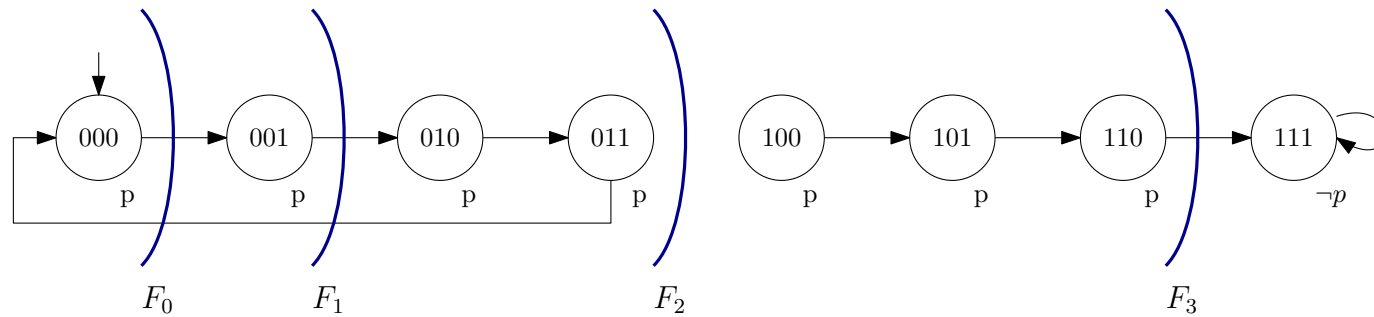
$$k++ \text{ and } F_3 = p$$

propagateClauses($k = 3$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$k++$ and $F_3 = p$

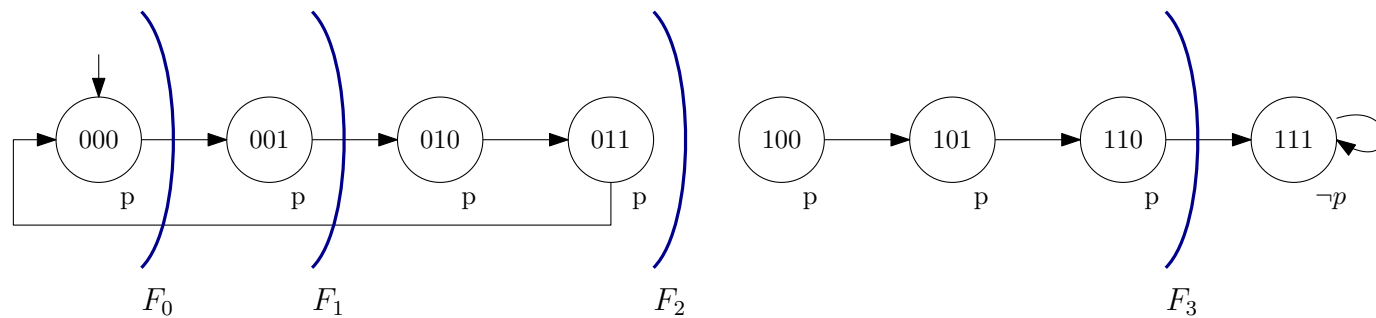
propagateClauses($k = 3$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x'_1)) \quad ? \quad \checkmark \quad \rightarrow F_1 := F_0 \wedge \neg x_1 \text{ (doesn't change anything)}$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$k++$ and $F_3 = p$

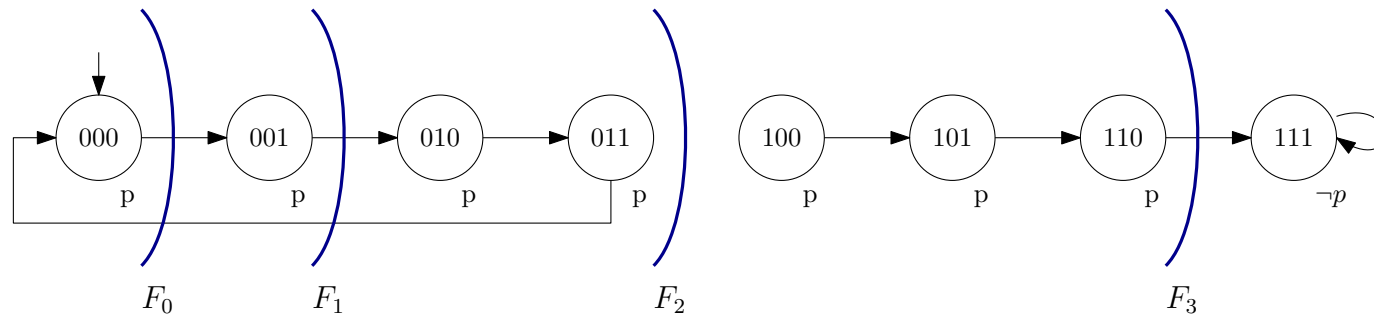
propagateClauses($k = 3$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x'_2)) \quad ? \quad \checkmark \quad \rightarrow F_1 := F_0 \wedge \neg x_2 \text{ (doesn't change anything)}$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$$k++ \text{ and } F_3 = p$$

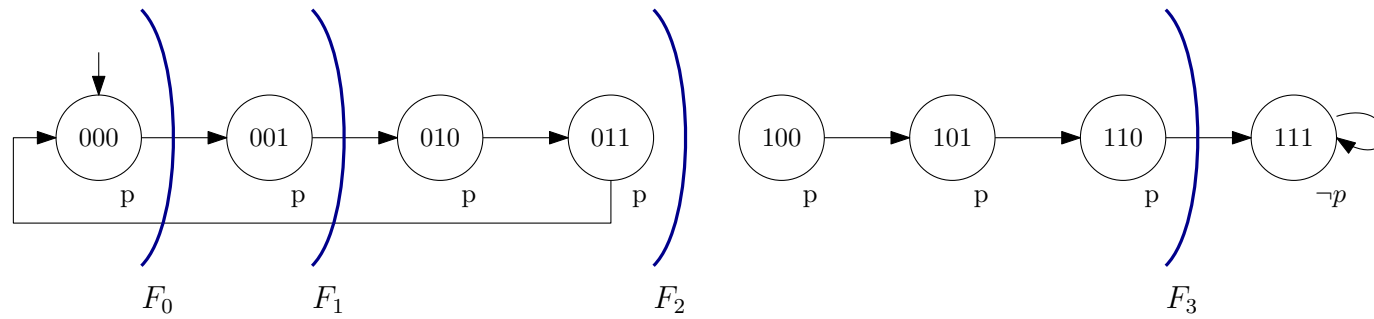
propagateClauses($k = 3$)

$$i = 0, \quad F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$\text{UNSAT}(F_0 \wedge R \wedge \neg(\neg x'_3)) \quad ? \quad \times$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

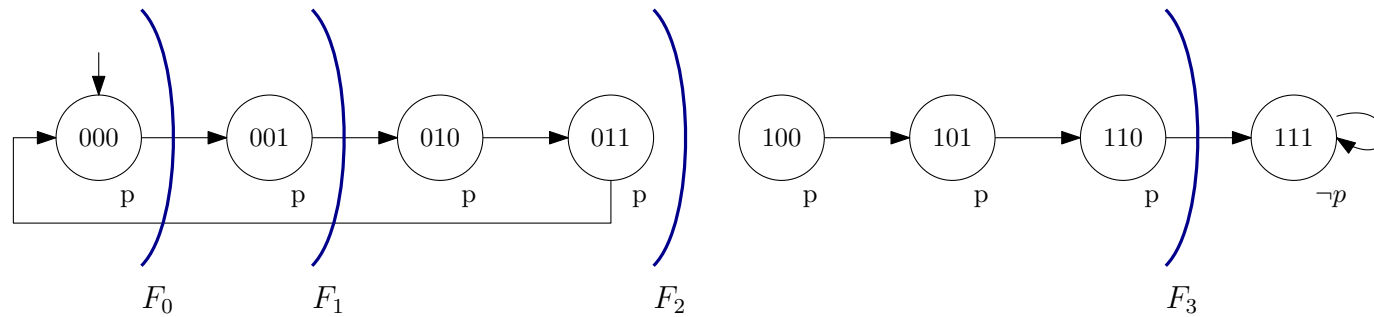
$$k++ \text{ and } F_3 = p$$

propagateClauses($k = 3$)

$$i = 1, \quad F_1 = \neg x_1 \wedge \neg x_2$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$k++$ and $F_3 = p$

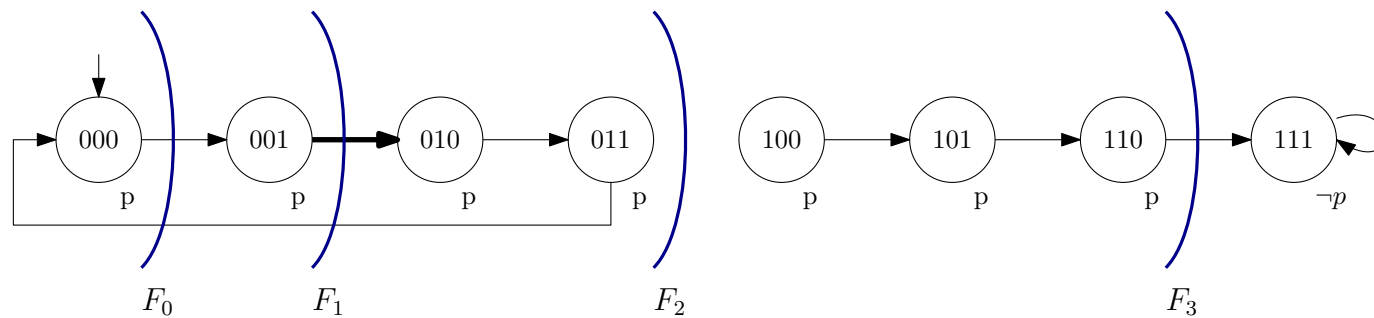
propagateClauses($k = 3$)

$$i = 1, \quad F_1 = \neg x_1 \wedge \neg x_2 \wedge$$

$$\text{UNSAT}(F_1 \wedge R \wedge \neg(\neg x'_1)) \quad ? \quad \checkmark \quad \rightarrow F_2 := F_2 \wedge \neg x_1 \text{ (doesn't change anything)}$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$k++$ and $F_3 = p$

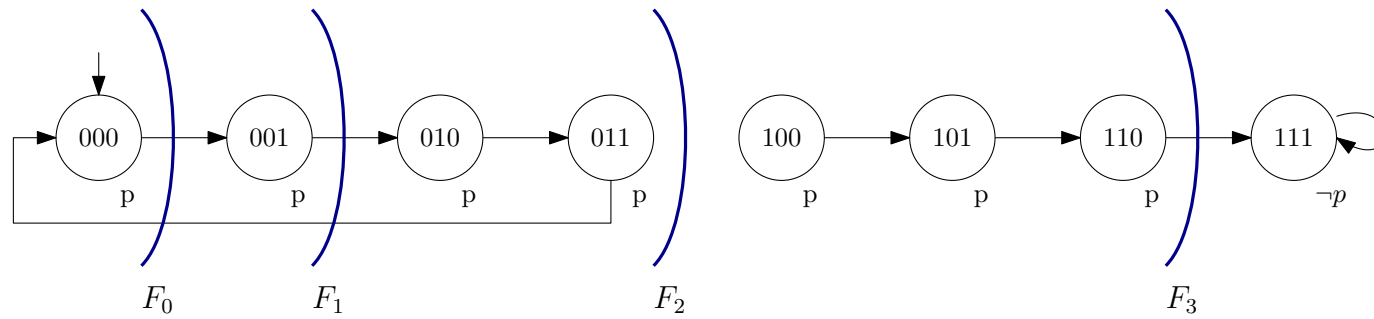
propagateClauses($k = 3$)

$$i = 1, \quad F_1 = \neg x_1 \wedge \neg x_2 \wedge$$

$$\text{UNSAT}(F_1 \wedge R \wedge \neg(\neg x'_2)) \quad ? \quad \times$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

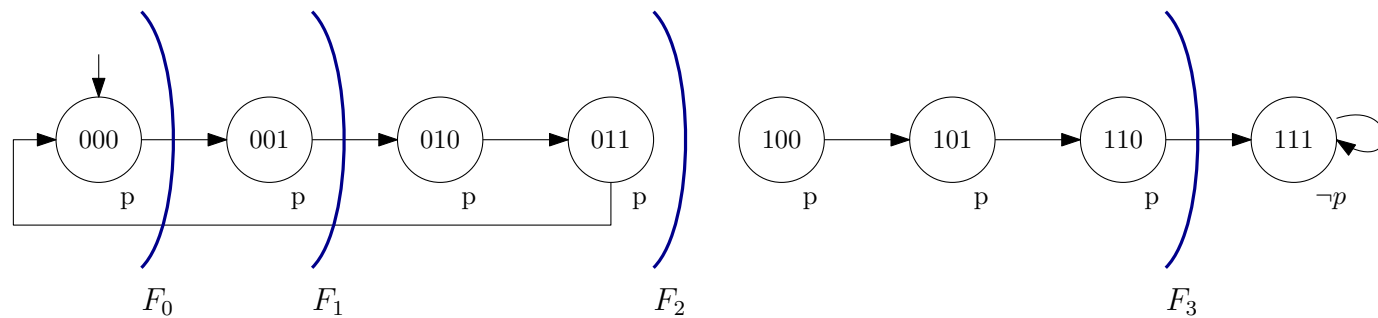
$$k++ \text{ and } F_3 = p$$

propagateClauses($k = 3$)

$$i = 2, \quad F_2 = \neg x_1$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$k++$ and $F_3 = p$

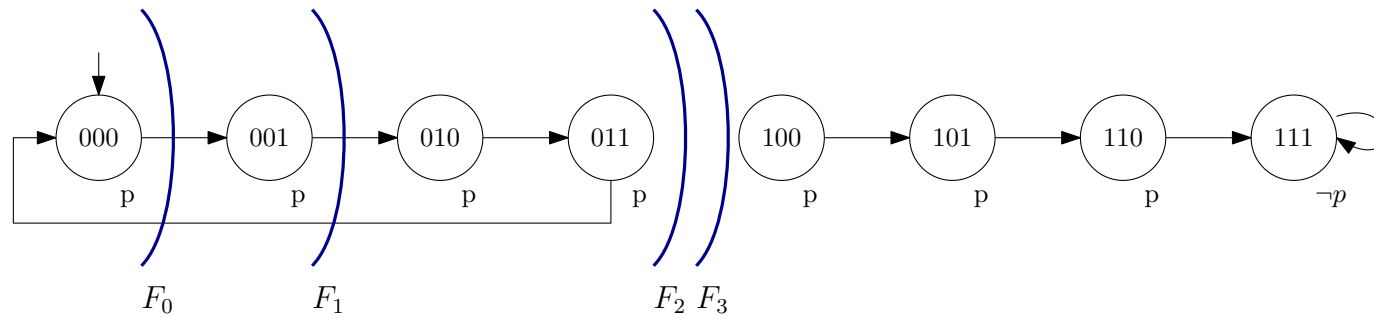
propagateClauses($k = 3$)

$$i = 2, \quad F_2 = \neg x_1$$

$$\text{UNSAT}(F_2 \wedge R \wedge \neg(\neg x'_1)) \quad ? \quad \checkmark \quad \rightarrow F_3 := F_3 \wedge \neg x_1$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = p \wedge \neg x_1$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$k++$ and $F_3 = p$

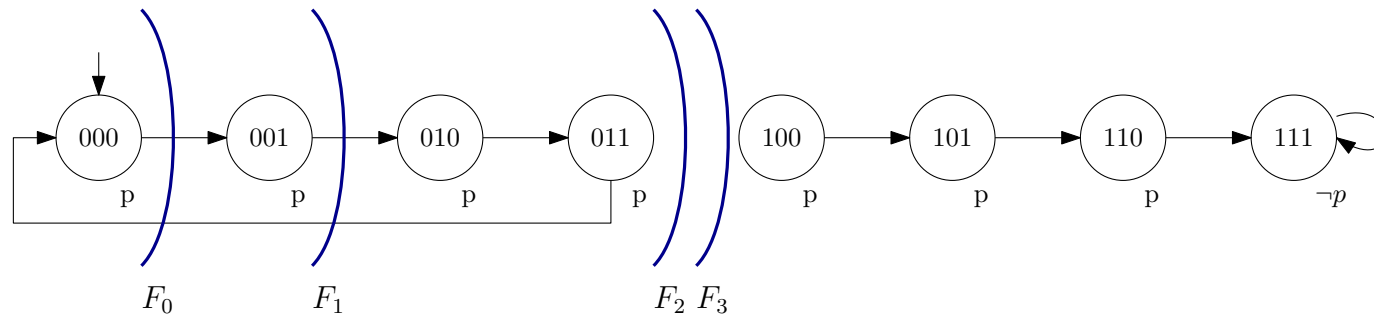
propagateClauses($k = 3$)

$$i = 2, \quad F_2 = \neg x_1$$

$$\text{UNSAT}(F_2 \wedge R \wedge \neg(\neg x'_1)) \quad ? \quad \checkmark \quad \rightarrow F_3 := F_3 \wedge \neg x_1$$

Model checking HW4 - Solution and common mistakes

Task 4a.



$$k = 3$$

$$F_0 = \neg x_1 \wedge \neg x_2 \wedge \neg x_3$$

$$F_1 = \neg x_1 \wedge \neg x_2$$

$$F_2 = \neg x_1$$

$$F_3 = \neg x_1$$

$$F_2 \wedge R \wedge \neg p' \quad \text{UNSAT}$$

$$k++ \text{ and } F_3 = p$$

propagateClauses($k = 3$)

$$i = 2, \quad F_2 = \neg x_1$$

$$\text{UNSAT}(F_2 \wedge R \wedge \neg(\neg x'_1)) \quad ? \quad \checkmark \quad \rightarrow F_3 := F_3 \wedge \neg x_1$$

$$F_2 = F_3 \rightarrow \checkmark$$

return $M \models AG p$