

Results for CXPASO (in 00:00:05.676):

NB\_EV: 15  
AP: AP0  
NB\_AP: 3  
NB\_MAY: -1  
NB\_MUST\_MINUS: -1  
NB\_MUST\_PLUS: -1  
NB\_MUST\_SHARP: -1  
NB\_AS: 4  
NB\_AS\_RCHD: 2  
TAU\_AS: 50.00  
NB\_AT: 53  
NB\_AT\_RCHD: 10  
TAU\_AT: 18.87  
NB\_EXPECTED\_AS: 4  
NB\_EXPECTED\_AS\_RCHD: 2  
TAU\_EXPECTED\_AS: 50.00  
NB\_EXPECTED\_AT: 5  
NB\_EXPECTED\_AT\_RCHD: 1  
TAU\_EXPECTED\_AT: 20.00  
NB\_CS: 105  
NB\_CS\_RCHD: 11  
NB\_CT: 61  
NB\_CT\_RCHD: 10  
RHO\_CS: 10.48  
RHO\_CT: 16.39  
NB\_TESTS: 3  
NB\_STEPS: 11  
  
TESTS:  
c0q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ OP1 ]-> c1q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1  
c1q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ OP1 ]-> c3q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=5, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1  
c3q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=5, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ CD1 ]-> c5q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1  
c5q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ FP2 ]-> c8q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=0, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=0, Pos(3)=1  
c8q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=0, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=0, Pos(3)=1 - [ FP2 ]-> c9q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=0, Mvt(3)=0, Portes(1)=4, Portes(2)=3, Portes(3)=4, Pos(1)=0, Pos(2)=0, Pos(3)=1  
c9q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=0, Mvt(3)=0, Portes(1)=4, Portes(2)=3, Portes(3)=4, Pos(1)=0, Pos(2)=0, Pos(3)=1 - [ OP2 ]-> c10q0 = Dir(1)=1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=0, Mvt(3)=0, Portes(1)=4, Portes(2)=5, Portes(3)=4, Pos(1)=0, Pos(2)=0, Pos(3)=1  
#####  
c0q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ OP1 ]-> c1q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1  
c1q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ OP3 ]-> c4q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=3, Pos(1)=0, Pos(2)=1, Pos(3)=1  
c4q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=3, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ FP3 ]-> c7q4 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=3, Portes(2)=4, Portes(3)=5, Pos(1)=0, Pos(2)=1, Pos(3)=1  
#####  
c0q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=4, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ OP3 ]-> c2q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=3, Pos(1)=0, Pos(2)=1, Pos(3)=1  
c2q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=3, Pos(1)=0, Pos(2)=1, Pos(3)=1 - [ FP3 ]-> c6q0 = Dir(1)=-1, Dir(2)=-1, Dir(3)=-1, Mvt(1)=0, Mvt(2)=1, Mvt(3)=0, Portes(1)=4, Portes(2)=4, Portes(3)=5, Pos(1)=0, Pos(2)=1, Pos(3)=1  
#####  
SET\_EXPECTED\_AS:  
q0 = -(p0 = Portes(1)=ouvertes[3]), -(p1 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R)  $\neq$  NS1, , Dir(R)  $\neq$  1), or(Pos(R)  $\neq$  0, , Dir(R)  $\neq$  -1),  $\forall R$ 1.(and(R1  $\in$  Rames) => R1  $\neq$  R => or(Pos(R1)  $\neq$  Pos(R), , Dir(R1)  $\neq$  Dir(R)))))), -(p2 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Mvt(R)=1,  $\forall R$ 1.(and(R1  $\in$  [1..NR]) => and(R1  $\neq$  R) => or(Pos(R1)  $\neq$  (Pos(R) + Dir(R)), , Dir(R1)  $\neq$  Dir(R))))))  
q1 = -(p0 = Portes(1)=ouvertes[3]), -(p1 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R)  $\neq$  NS1, , Dir(R)  $\neq$  1), or(Pos(R)  $\neq$  0, , Dir(R)  $\neq$  -1),  $\forall R$ 1.(and(R1  $\in$  Rames) => R1  $\neq$  R => or(Pos(R1)  $\neq$  Pos(R), , Dir(R1)  $\neq$  Dir(R)))))), -(p2 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Mvt(R)=1,  $\forall R$ 1.(and(R1  $\in$  [1..NR]) => and(R1  $\neq$  R) => or(Pos(R1)  $\neq$  (Pos(R) + Dir(R)), , Dir(R1)  $\neq$  Dir(R))))))  
q2 = -(p0 = Portes(1)=ouvertes[3]), (p1 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R)  $\neq$  NS1, , Dir(R)  $\neq$  1), or(Pos(R)  $\neq$  0, , Dir(R)  $\neq$  -1),  $\forall R$ 1.(and(R1  $\in$  Rames) => R1  $\neq$  R => or(Pos(R1)  $\neq$  Pos(R), , Dir(R1)  $\neq$  Dir(R)))))), -(p2 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Mvt(R)=1,  $\forall R$ 1.(and(R1  $\in$  [1..NR]) => and(R1  $\neq$  R) => or(Pos(R1)  $\neq$  (Pos(R) + Dir(R)), , Dir(R1)  $\neq$  Dir(R))))))  
q4 = (p0 = Portes(1)=ouvertes[3]), -(p1 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R)  $\neq$  NS1, , Dir(R)  $\neq$  1), or(Pos(R)  $\neq$  0, , Dir(R)  $\neq$  -1),  $\forall R$ 1.(and(R1  $\in$  Rames) => R1  $\neq$  R => or(Pos(R1)  $\neq$  Pos(R), , Dir(R1)  $\neq$  Dir(R)))))), -(p2 =  $\exists R$ .(and(and(R  $\in$  Rames), and(R=1, Mvt(R)=1,  $\forall R$ 1.(and(R1  $\in$  [1..NR]) => and(R1  $\neq$  R) => or(Pos(R1)  $\neq$  (Pos(R) + Dir(R)), , Dir(R1)  $\neq$  Dir(R))))))

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SET_RCHD_AS:
q0 = !~(p0 = Portes(1)=ouvertes[3]), !(p1 = ?R).(and(and(R € Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R) ≠ NS1, , Dir(R) ≠ 1), or(Pos(R) ≠ 0, , Dir(R) ≠ -1), ∀R1).(and(R1 € Rames) => R1 ≠ R => or(Pos(R1) ≠ Pos(R), , Dir(R1) ≠ Dir(R))))), !(p2 = ?R).(and(and(R € Rames), and(R=1, Mvt(R)=1, ∀R1).(and(R1 € [..NR]) => and(R1 ≠ R) => or(Pos(R1) ≠ (Pos(R) + Dir(R)), , Dir(R1) ≠ Dir(R))))) q4 = !(p0 = Portes(1)=ouvertes[3]), !(p1 = ?R).(and(and(R € Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R) ≠ NS1, , Dir(R) ≠ 1), or(Pos(R) ≠ 0, , Dir(R) ≠ -1), ∀R1).(and(R1 € Rames) => R1 ≠ R => or(Pos(R1) ≠ Pos(R), , Dir(R1) ≠ Dir(R))))), !(p2 = ?R).(and(and(R € Rames), and(R=1, Mvt(R)=1, ∀R1).(and(R1 € [..NR]) => and(R1 ≠ R) => or(Pos(R1) ≠ (Pos(R) + Dir(R)), , Dir(R1) ≠ Dir(R))))))

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SET_RCHD_EXPECTED_AS:
q0 = -(p0 = Portes(1)=ouvertes[3]), -(p1 =  $\exists(R).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Portes}(R)=\text{refermees}[5], \text{Mvt}(R)=0, \text{or}(\text{Pos}(R) \neq \text{NS1}, \text{Dir}(R) \neq 1), \text{or}(\text{Pos}(R) \neq 0, \text{Dir}(R) \neq -1), \forall(R1).(\text{and}(R1 \in \text{Rames}) \Rightarrow R1 \neq R \Rightarrow \text{or}(\text{Pos}(R1) \neq \text{Pos}(R), \text{Dir}(R1) \neq \text{Dir}(R))))))$ ), -(p2 =  $\exists(R).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Mvt}(R)=1, \forall(R1).(\text{and}(R1 \in [1..NR]) \Rightarrow \text{and}(R1 \neq R \Rightarrow \text{or}(\text{Pos}(R1) \neq (\text{Pos}(R) + \text{Dir}(R)), \text{Dir}(R1) \neq \text{Dir}(R))))))$ ))
q4 = (p0 = Portes(1)=ouvertes[3]), -(p1 =  $\exists(R).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Portes}(R)=\text{refermees}[5], \text{Mvt}(R)=0, \text{or}(\text{Pos}(R) \neq \text{NS1}, \text{Dir}(R) \neq 1), \text{or}(\text{Pos}(R) \neq 0, \text{Dir}(R) \neq -1), \forall(R1).(\text{and}(R1 \in \text{Rames}) \Rightarrow R1 \neq R \Rightarrow \text{or}(\text{Pos}(R1) \neq \text{Pos}(R), \text{Dir}(R1) \neq \text{Dir}(R))))))$ ), -(p2 =  $\exists(R).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Mvt}(R)=1, \forall(R1).(\text{and}(R1 \in [1..NR]) \Rightarrow \text{and}(R1 \neq R \Rightarrow \text{or}(\text{Pos}(R1) \neq (\text{Pos}(R) + \text{Dir}(R)), \text{Dir}(R1) \neq \text{Dir}(R))))))$ )

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q4 = (p0 = Portes(1)=ouvertes[3], ~(p1 = Ǝ(R).(and(and(R ∈ Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R) ≠ NS1, , Dir(R) ≠ 1), or(Pos(R) ≠ 0, , Dir(R) ≠ -1), ∀(R1).(and(R1 ∈ Rames) => R1 ≠ R => or(Pos(R1) ≠ Pos(R), , Dir(R1) ≠ Dir(R)))))), ~p2 = Ǝ(R).(and(and(R ∈ Rames), and(R=1, Mvt(R)=1, ∀(R1).(and(R1 ∈ [1..NR]) => and(R1 ≠ R) => or(Pos(R1) ≠ (Pos(R) + Dir(R)), , Dir(R1) ≠ Dir(R)))))) - [ OP3 ] -> q4 = (p0 = Portes(1)=ouvertes[3], ~(p1 = Ǝ(R).(and(and(R ∈ Rames), and(R=1, Portes(R)=refermees[5], Mvt(R)=0, or(Pos(R) ≠ NS1, , Dir(R) ≠ 1), or(Pos(R) ≠ 0, , Dir(R) ≠ -1), ∀(R1).(and(R1 ∈ Rames) => R1 ≠ R => or(Pos(R1) ≠ Pos(R), , Dir(R1) ≠ Dir(R)))))), ~p2 = Ǝ(R).(and(and(R ∈ Rames), and(R=1, Mvt(R)=1, ∀(R1).(and(R1 ∈ [1..NR]) => and(R1 ≠ R) => or(Pos(R1) ≠ (Pos(R) + Dir(R)), , Dir(R1) ≠ Dir(R)))))))

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SET\_RCHD\_EXPECTED\_AT:

$q0 = \neg(p0 = Portes(1) \wedge ouvertes[3]), \neg(p1 = E(R), \text{and}(\text{and}(R \in Rames), \text{and}(R=1, Portes(R)=referemes[5], Mvt(R)=0, or(Pos(R) \neq NS1, Dir(R) \neq 1), or(Pos(R) \neq 0, Dir(R) \neq -1), \forall(R1).(\text{and}(R1 \in Rames) \Rightarrow R1 \neq R \Rightarrow or(Pos(R1) \neq Pos(R), Dir(R1) \neq Dir(R)))))), \neg(p2 = E(R), \text{and}(\text{and}(R \in Rames), \text{and}(R=1, Mvt(R)=1, \forall(R1).(\text{and}(R1 \in [..NR]) \Rightarrow and(R1 \neq R) \Rightarrow or(Pos(R1) \neq (Pos(R) + Dir(R)), Dir(R1) \neq Dir(R)))))))] - [CD1] \rightarrow q0 = \neg(p0 = Portes(1) \wedge ouvertes[3]), \neg(p1 = E(R), \text{and}(\text{and}(R \in Rames), \text{and}(R=1, Portes(R)=referemes[5], Mvt(R)=0, or(Pos(R) \neq NS1, Dir(R) \neq 1), or(Pos(R) \neq 0, Dir(R) \neq -1), \forall(R1).(\text{and}(R1 \in Rames) \Rightarrow R1 \neq R \Rightarrow or(Pos(R1) \neq Pos(R), Dir(R1) \neq Dir(R)))))), \neg(p2 = E(R), \text{and}(\text{and}(R \in Rames), \text{and}(R=1, Mvt(R)=1, \forall(R1).(\text{and}(R1 \in [..NR]) \Rightarrow and(R1 \neq R) \Rightarrow or(Pos(R1) \neq (Pos(R) + Dir(R)), Dir(R1) \neq Dir(R)))))))]$

**SET\_UNRCHD\_AS:**

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q1 = -(p0 = Portes(1)=ouvertes[3]), -(p1 = E(R)).(and((R E Rames), and(R=1, Portes(R)=referemes[5], Mvt(R)=0), or(Pos(R) NS1, , Dir(R) 1), or(Pos(R) 0, , Dir(R) -1), V(R1).(and(R1 E Rames) => R1 R => or(Pos(R1) Pos(R), , Dir(R1) Dir(R))))), (p2 = E(R).(and((and(R E Rames), and(R=1, Mvt(R)=1, V(R1).(and(R1 [..NR]) => and(R1 R => or(Pos(R1) (Pos(R) + Dir(R)), , Dir(R1) Dir(R))))))) q2 = -(p0 = Portes(1)=ouvertes[3]), (p1 = E(R).(and((R E Rames), and(R=1, Portes(R)=referemes[5], Mvt(R)=0), or(Pos(R) NS1, , Dir(R) 1), or(Pos(R) 0, , Dir(R) -1), V(R1).(and(R1 E Rames) => R1 R => or(Pos(R1) Pos(R), , Dir(R1) Dir(R))))), -(p2 = E(R).(and((and(R E Rames), and(R=1, Mvt(R)=1, V(R1).(and(R1 [..NR]) => and(R1 R => or(Pos(R1) (Pos(R) + Dir(R)), , Dir(R1) Dir(R)))))))
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#### SET\_UNRCHD\_EXPECTED\_AS:

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q1 =  $\neg(p_0 = \text{Portes}(1) = \text{ouvertes}[3]) \wedge \neg(p_1 = \text{E}(R)) \wedge (\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Portes}(R)=\text{referemes}[5], \text{Mvt}(R)=0)) \Rightarrow \text{or}(\text{Pos}(R) \neq \text{NS1}, \text{Dir}(R) \neq 1),$ 
 $\neg(\text{or}(\text{Pos}(R) \neq 0, \text{Dir}(R) \neq -1), \forall(R).(\text{and}(\text{and}(R \in \text{Rames}), \Rightarrow R1 \neq R \Rightarrow \text{or}(\text{Pos}(R1) \neq \text{Pos}(R), \text{Dir}(R1) \neq \text{Dir}(R))))), (p_2 = \text{E}(R)).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Mvt}(R)=1, \forall(R1).(\text{and}(R1 \in [1..NR]) \Rightarrow \text{and}(R1 \neq R) \Rightarrow \text{or}(\text{Pos}(R1) \neq (\text{Pos}(R) + \text{Dir}(R)), \text{Dir}(R1) \neq \text{Dir}(R))))))$ 
q2 =  $\neg(p_0 = \text{Portes}(1) = \text{ouvertes}[3]), (p_1 = \text{E}(R)).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Portes}(R)=\text{referemes}[5], \text{Mvt}(R)=0) \Rightarrow \text{or}(\text{Pos}(R) \neq \text{NS1}, \text{Dir}(R) \neq 1),$ 
 $\neg(\text{or}(\text{Pos}(R) \neq 0, \text{Dir}(R) \neq -1), \forall(R).(\text{and}(\text{and}(R \in \text{Rames}), \Rightarrow R1 \neq R \Rightarrow \text{or}(\text{Pos}(R1) \neq \text{Pos}(R), \text{Dir}(R1) \neq \text{Dir}(R))))), \neg(p_2 = \text{E}(R)).(\text{and}(\text{and}(R \in \text{Rames}), \text{and}(R=1, \text{Mvt}(R)=1, \forall(R1).(\text{and}(R1 \in [1..NR]) \Rightarrow \text{and}(R1 \neq R) \Rightarrow \text{or}(\text{Pos}(R1) \neq (\text{Pos}(R) + \text{Dir}(R)), \text{Dir}(R1) \neq \text{Dir}(R))))))$ 

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**SET\_UNRCHD\_AT:**



SET\_UNRCHD\_EXPECTED\_AT:

TIME\_TESTS: 00:00:00.000