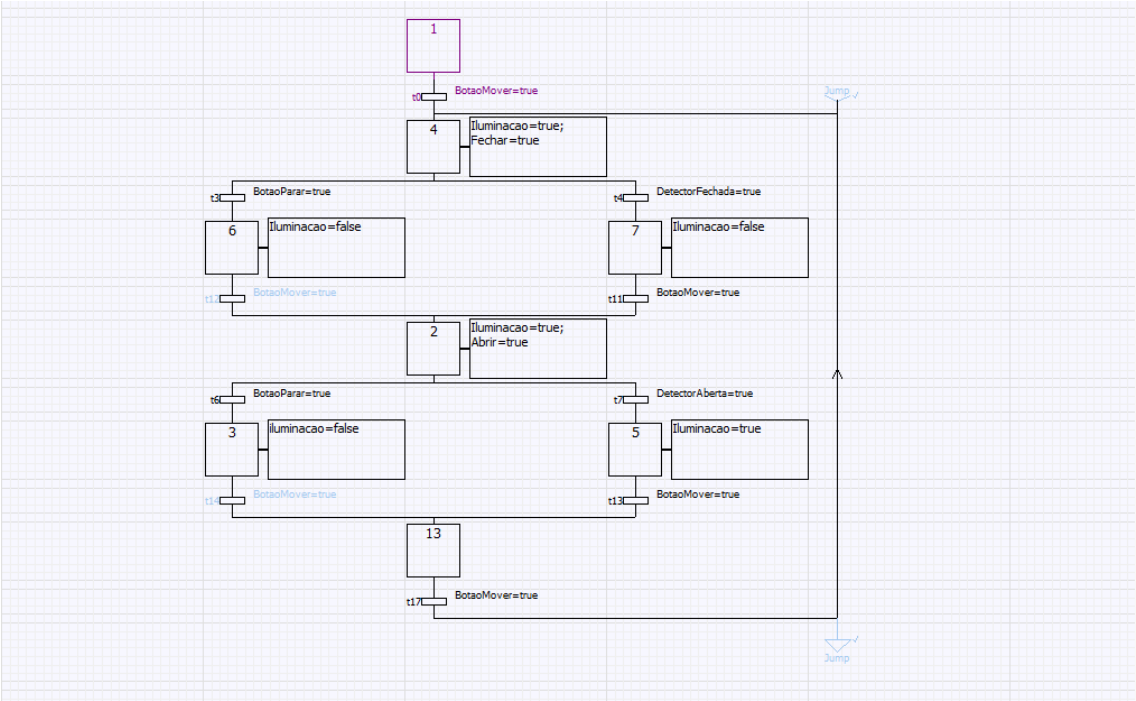
Relatório da TP5 Sala I004

Exercício A:



Código resultante do Grafcet:

```
// Grafcet Modified ...
////////////////////////////////////////////////////////////
// FEUPAutom v3.52 -
// Code Automatically Generated:14-04-2015 15:22:59
////////////////////////////////////////////////////////////

////////////////////////////////////////////////////////////
////////////// If boot => Set Initial Steps /////////////////
////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////
///////////////// Calc Fired Transitions ////////////////////
////////////////////////////////////////////////////////////

// ObjIdx=1 => Transition "t0"
  // Steps Above: id=0 => X1 ;
  // Steps Below: id=2 => X4 ;
  t0 :=  X1 AND  (BotaoMover=true) ;
// ObjIdx=5 => Transition "t3"
  // Steps Above: id=2 => X4 ;
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  // Steps Below: id=3 => X6 ;
  t3 :=  X4 AND  (BotaoParar=true) ;
// ObjIdx=6 => Transition "t4"
  // Steps Above: id=2 => X4 ;
  // Steps Below: id=4 => X7 ;
  t4 :=  X4 AND  (DetectorFechada=true) ;
// ObjIdx=8 => Transition "t11"
  // Steps Above: id=4 => X7 ;
  // Steps Below: id=9 => X2 ;
  t11 :=  X7 AND  (BotaoMover=true) ;
// ObjIdx=11 => Transition "t6"
  // Steps Above: id=9 => X2 ;
  // Steps Below: id=7 => X3 ;
  t6 :=  X2 AND  (BotaoParar=true) ;
// ObjIdx=12 => Transition "t7"
  // Steps Above: id=9 => X2 ;
  // Steps Below: id=10 => X5 ;
  t7 :=  X2 AND  (DetectorAberta=true) ;
// ObjIdx=13 => Transition "t13"
  // Steps Above: id=10 => X5 ;
  // Steps Below: id=14 => X13 ;
  t13 :=  X5 AND  (BotaoMover=true) ;
// ObjIdx=16 => Transition "t12"
  // Steps Above: id=3 => X6 ;
  // Steps Below: id=9 => X2 ;
  t12 :=  X6 AND  (BotaoMover=true) ;
// ObjIdx=17 => Transition "t14"
  // Steps Above: id=7 => X3 ;
  // Steps Below: id=14 => X13 ;
  t14 :=  X3 AND  (BotaoMover=true) ;
// ObjIdx=19 => Transition "t17"
  // Steps Above: id=14 => X13 ;
  // Steps Below: id=2 => X4 ;
  t17 :=  X13 AND  (BotaoMover=true
) ;

////////////////////////////////////////////////////////////
////////////////// ReSet Steps Above fired Tr ///////////////
////////////////////////////////////////////////////////////

// ObjIdx=1 => Transition "t0"
  // Steps Above: id=0 => X1 ;
  // Steps Below: id=2 => X4 ;
  If (t0) Then
    X1:=False;
  End_If;
// ObjIdx=5 => Transition "t3"
  // Steps Above: id=2 => X4 ;
```

```
  // Steps Below: id=3 => X6 ;
  If (t3) Then
    X4:=False;
  End_If;
// ObjIdx=6 => Transition "t4"
  // Steps Above: id=2 => X4 ;
  // Steps Below: id=4 => X7 ;
  If (t4) Then
    X4:=False;
  End_If;
// ObjIdx=8 => Transition "t11"
  // Steps Above: id=4 => X7 ;
  // Steps Below: id=9 => X2 ;
  If (t11) Then
    X7:=False;
  End_If;
// ObjIdx=11 => Transition "t6"
  // Steps Above: id=9 => X2 ;
  // Steps Below: id=7 => X3 ;
  If (t6) Then
    X2:=False;
  End_If;
// ObjIdx=12 => Transition "t7"
  // Steps Above: id=9 => X2 ;
  // Steps Below: id=10 => X5 ;
  If (t7) Then
    X2:=False;
  End_If;
// ObjIdx=13 => Transition "t13"
  // Steps Above: id=10 => X5 ;
  // Steps Below: id=14 => X13 ;
  If (t13) Then
    X5:=False;
  End_If;
// ObjIdx=16 => Transition "t12"
  // Steps Above: id=3 => X6 ;
  // Steps Below: id=9 => X2 ;
  If (t12) Then
    X6:=False;
  End_If;
// ObjIdx=17 => Transition "t14"
  // Steps Above: id=7 => X3 ;
  // Steps Below: id=14 => X13 ;
  If (t14) Then
    X3:=False;
  End_If;
// ObjIdx=19 => Transition "t17"
  // Steps Above: id=14 => X13 ;
```

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  // Steps Below: id=2 => X4 ;
  If (t17) Then
    X13:=False;
  End_If;

////////////////////////////////////////////////////////////
////////////////// Set Steps below fired Tr //////////////////
////////////////////////////////////////////////////////////

// ObjIdx=1 => Transition "t0"
  // Steps Above: id=0 => X1 ;
  // Steps Below: id=2 => X4 ;
  If (t0) Then
    X4 := True;
   X4_T := 0;
  End_If;
// ObjIdx=5 => Transition "t3"
  // Steps Above: id=2 => X4 ;
  // Steps Below: id=3 => X6 ;
  If (t3) Then
    X6 := True;
   X6_T := 0;
  End_If;
// ObjIdx=6 => Transition "t4"
  // Steps Above: id=2 => X4 ;
  // Steps Below: id=4 => X7 ;
  If (t4) Then
    X7 := True;
   X7_T := 0;
  End_If;
// ObjIdx=8 => Transition "t11"
  // Steps Above: id=4 => X7 ;
  // Steps Below: id=9 => X2 ;
  If (t11) Then
    X2 := True;
   X2_T := 0;
  End_If;
// ObjIdx=11 => Transition "t6"
  // Steps Above: id=9 => X2 ;
  // Steps Below: id=7 => X3 ;
  If (t6) Then
    X3 := True;
   X3_T := 0;
  End_If;
// ObjIdx=12 => Transition "t7"
  // Steps Above: id=9 => X2 ;
  // Steps Below: id=10 => X5 ;
  If (t7) Then
```

```
    X5 := True;
    X5_T := 0;
  End_If;
// ObjIdx=13 => Transition "t13"
  // Steps Above: id=10 => X5 ;
  // Steps Below: id=14 => X13 ;
  If (t13) Then
    X13 := True;
    X13_T := 0;
  End_If;
// ObjIdx=16 => Transition "t12"
  // Steps Above: id=3 => X6 ;
  // Steps Below: id=9 => X2 ;
  If (t12) Then
    X2 := True;
    X2_T := 0;
  End_If;
// ObjIdx=17 => Transition "t14"
  // Steps Above: id=7 => X3 ;
  // Steps Below: id=14 => X13 ;
  If (t14) Then
    X13 := True;
    X13_T := 0;
  End_If;
// ObjIdx=19 => Transition "t17"
  // Steps Above: id=14 => X13 ;
  // Steps Below: id=2 => X4 ;
  If (t17) Then
    X4 := True;
    X4_T := 0;
  End_If;

////////////////////////////////////////////////////////////
////////////////////// Unset all Outputs //////////////////////
////////////////////////////////////////////////////////////

  Iluminacao:=False;
  Abrir:=False;
  Fechar:=False;
  Q3:=False;
  Q4:=False;
  Q5:=False;
  Q6:=False;
  Q7:=False;
  Q8:=False;
  Q9:=False;
  Q10:=False;
  Q11:=False;
```

```
Q12:=False;
Q13:=False;
Q14:=False;
Q15:=False;
Q16:=False;
Q17:=False;
Q18:=False;
Q19:=False;
Q20:=False;
Q21:=False;
Q22:=False;
Q23:=False;
Q24:=False;
Q25:=False;
Q26:=False;
Q27:=False;
Q28:=False;
Q29:=False;
Q30:=False;
Q31:=False;
Q32:=False;
Q33:=False;
Q34:=False;
Q35:=False;
Q36:=False;
Q37:=False;
Q38:=False;
Q39:=False;
Q40:=False;
Q41:=False;
Q42:=False;
Q43:=False;
Q44:=False;
Q45:=False;
Q46:=False;
Q47:=False;

////////////////////////////////////////////////////////////
///// If step active increment MW timer of step @ %s16 /////
////////////////////////////////////////////////////////////

// ObjIdx=0 => Step "X1"
If (%s16) and (X1) Then X1_T := X1_T+1; end_if;
// ObjIdx=2 => Step "X4"
If (%s16) and (X4) Then X4_T := X4_T+1; end_if;
// ObjIdx=3 => Step "X6"
If (%s16) and (X6) Then X6_T := X6_T+1; end_if;
// ObjIdx=4 => Step "X7"
```

```
  If (%s16) and (X7) Then X7_T := X7_T+1; end_if;
  // ObjIdx=7 => Step "X3"
  If (%s16) and (X3) Then X3_T := X3_T+1; end_if;
  // ObjIdx=9 => Step "X2"
  If (%s16) and (X2) Then X2_T := X2_T+1; end_if;
  // ObjIdx=10 => Step "X5"
  If (%s16) and (X5) Then X5_T := X5_T+1; end_if;
  // ObjIdx=14 => Step "X13"
  If (%s16) and (X13) Then X13_T := X13_T+1; end_if;

////////////////////////////////////////////////////////////
//////// If step active, execute its action code ///////////
////////////////////////////////////////////////////////////

  // ObjIdx=0 => Step "X1" (code...)
  // ObjIdx=2 => Step "X4" (code...)
  If X4 Then
    Iluminacao=true;
    Fechar=true
  End_If;
  // ObjIdx=3 => Step "X6" (code...)
  If X6 Then
    Iluminacao=false
  End_If;
  // ObjIdx=4 => Step "X7" (code...)
  If X7 Then
    Iluminacao=false
  End_If;
  // ObjIdx=7 => Step "X3" (code...)
  If X3 Then
    iluminacao=false
  End_If;
  // ObjIdx=9 => Step "X2" (code...)
  If X2 Then
    Iluminacao=true;
    Abrir=true
  End_If;
  // ObjIdx=10 => Step "X5" (code...)
  If X5 Then
    Iluminacao=true
  End_If;
  // ObjIdx=14 => Step "X13" (code...)
```

Exercício B: