- ## Code

```
MODULE main
 VAR
   proc1      : process task(x);
   proc2      : process task(x);
   x : 0 .. 200;
ASSIGN
   init(x) := 0;

---EF p = exists some path (E) that eventually in the future satisfies p.
---EG p = exists some path (E) that condition p is continuously true.
-----------------------------------------------------------------------

 SPEC EG (x = 0)
 SPEC EG (x = 1)
 SPEC EG (x = 2)

 SPEC EF (x = 0  & proc1.counter = 100 & proc2.counter = 100 )
 SPEC EF (x = 1  & proc1.counter = 100 & proc2.counter = 100 )
 SPEC EF (x = 2  & proc1.counter = 100 & proc2.counter = 100 )
 SPEC EF (x = 100 & proc1.counter = 100 | proc2.counter = 100 )
 SPEC EF (x = 200 & proc1.counter = 100 & proc2.counter = 100 )
 SPEC EF (x = 201)

------------------------
MODULE task(x)
VAR
   counter : 0 .. 100;
ASSIGN
   init(counter) := 0;
   next(x) :=
      case
         (counter < 100) & (x < 200) : x+1;
         TRUE    : x;
      esac;

   next(counter) :=
      case
         (counter < 100) : counter + 1;
         TRUE    : counter;
      esac;
```

- **Command**

  NuSMV.exe hw2.smv

- **Results**

  Result shows that in ***smv*** implementation of the problem, there is a chance of starvation but there is no chance of accessing the shared variable at the same time.

  -- specification EG x = 0 is true

  None of processes start running

  -- specification EG x = 1 is false
  -- specification EG x = 2 is false
  -- specification EF ((x = 0 & proc1.counter = 100) & proc2.counter = 100) is false
  -- specification EF ((x = 1 & proc1.counter = 100) & proc2.counter = 100) is false
  -- specification EF ((x = 2 & proc1.counter = 100) & proc2.counter = 100) is false

  The above lines show that mutual exclusion condition is always preserved.

  -- specification EF ((x = 100 & proc1.counter = 100) | proc2.counter = 100) is true

  It shows that starvation condition may happen.

  -- specification EF ((x = 200 & proc1.counter = 100) & proc2.counter = 100) is true

  It shows that the ideal condition of processing can be achieved.

  -- specification EF x = 201 is false