```
───────────────── MODULE Alternation ─────────────────
EXTENDS Sequences, Integers
Put(s) ≜ Append(s, "widget")
Get(s) ≜ Tail(s)

 VARIABLES box

 vars ≜ ⟨box⟩

 Init ≜ ∧ box = ⟨⟩

 Next ≜ ∧ IF Len(box) = 1
          THEN box′ = Get(box)
          ELSE box′ = Put(box)

 Spec ≜ Init ∧ □[Next]_vars

 Invariant ≜ Len(box) ≤ 1

 ***********************************************************************
--algorithm Alternate{
    variable b = 0, box = ⟨⟩ ;
    process ( Producer = 0 )
    { p1: while ( TRUE )
        { await b = 0 ;
          box := Put(box) ;
          b := 1 ;
         }
     }

    process ( Consumer = 1 )
    { c1: while ( TRUE )
        { await b = 1 ;
          box := Get(box) ;
          b := 0 ;
         }
     }
 }
 ***********************************************************************
 BEGIN TRANSLATION (chksum(pcal) = "4b985bc0" ∧ chksum(tla) = "ae3ada3a")
VARIABLES b, box

vars ≜ ⟨b, box⟩

ProcSet ≜ {0} ∪ {1}
```

$$Init \triangleq \begin{array}{l} \text{Global variables} \\ \land b = 0 \\ \land box = \langle \rangle \end{array}$$

$$Producer \triangleq \begin{array}{l} \land b = 0 \\ \land box' = Put(box) \\ \land b' = 1 \end{array}$$

$$Consumer \triangleq \begin{array}{l} \land b = 1 \\ \land box' = Get(box) \\ \land b' = 0 \end{array}$$

$$Next \triangleq Producer \lor Consumer$$

$$Spec \triangleq Init \land \Box[Next]_{vars}$$

END TRANSLATION

* Modification History
* Last modified *Wed Sep* 29 10:50:08 *CST* 2021 by *wrz*
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