2 CONSTANTS
3   *Writer*,
4   *Reader*,
5   *T*

7 $notValue \triangleq$ CHOOSE $t : t \notin T$

****

10 **--algorithm** *Register***{**
11   **variables** $r = notValue$, $result = notValue$ **;**

13   **process (** $W \in Writer$ **)**
14   **{**
15         $a:$ $r := notValue$ **;**
16         $b:$ **with (** $v \in T$ **)**
17   **{** $r := v$ **}**
18   **}**

20   **process (** $R \in Reader$ **) {**
21         $c:$ **with (** $v \in$ IF $r = notValue$ THEN T ELSE $\{r\}$ **)**
22   **{** $result := v$ **}**
23   **}**
24 **}**

****

26 BEGIN TRANSLATION
27 VARIABLES r, $result$, pc

29 $vars \triangleq \langle r, result, pc \rangle$

31 $ProcSet \triangleq (Writer) \cup (Reader)$

33 $Init \triangleq$ Global variables
34             $\wedge r = notValue$
35             $\wedge result = notValue$
36             $\wedge pc = [self \in ProcSet \mapsto$ CASE $self \in Writer \rightarrow$ "a"
37 $\square$ $self \in Reader \rightarrow$ "c"$]$

39 $a(self) \triangleq \wedge pc[self] =$ "a"
40                $\wedge r' = notValue$
41                $\wedge pc' = [pc$ EXCEPT $![self] =$ "b"$]$
42                $\wedge$ UNCHANGED $result$

44 $b(self) \triangleq \wedge pc[self] =$ "b"
45                $\wedge \exists v \in T :$
46                     $r' = v$
47                $\wedge pc' = [pc$ EXCEPT $![self] =$ "Done"$]$

```
48                    ∧ UNCHANGED result

50   W(self)  ≜  a(self) ∨ b(self)

52   c(self)   ≜  ∧ pc[self] = "c"
53                ∧ ∃ v ∈ IF r = notValue THEN T ELSE {r} :
54                    result' = v
55                ∧ pc' = [pc EXCEPT ![self] = "Done"]
56                ∧ r' = r

58   R(self)   ≜  c(self)

60   Next  ≜  (∃ self ∈ Writer : W(self))
61              ∨ (∃ self ∈ Reader : R(self))
62              ∨  Disjunct to prevent deadlock on termination
63                  ((∀ self ∈ ProcSet : pc[self] = "Done") ∧ UNCHANGED vars)

65   Spec  ≜  Init ∧ □[Next]_vars

67   Termination  ≜  ◇(∀ self ∈ ProcSet : pc[self] = "Done")

69      END TRANSLATION
70  └──────────────────────────────────────────────────────────────────
```

\ * Modification History
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