

(修練):
가 - I
(Dijkstra's "A Discipline of Programming":
The Ninth Lecture, The Formal Treatment of
Some Small Examples - I)

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1)

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가

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가 2)

2003

2) 'hand-waving'

1)

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[1]

(, , , ,)

$x = y \wedge x = y$, R
 $;$
 $;$
 $(P \text{ and non } BB) \quad R \quad P$.
 $P \quad R$
 $;$
 $(x = y \text{ or } y = x) = T$.
 (abortion) (existence) 가
 proof) : $x = y$, n
 $R(m) \quad m$) . $(x = y \wedge j = n) \quad P$
 $y \text{ and } y = x) \quad F$
 (deterministic) . $0 \leq k < j < n \text{ and } (\forall i: 0 \leq i < j: f(k) = f(i))$
 $x = y$, $j = n$
 $;$
 f (finite domain) 가 .
 . 'max'가
 $R(\max(x, y)) = T$ $(P \text{ and } j = n) \quad R$
 $m := \max(x, y)$. (.)
 P
 가 ,
 $;$, .
 . $(k = 0 \text{ and } j = 1) \quad P$
 .
 $n(n > 0)$, $f(i)$ 가 0 (.)
 $i = n$. R 가) .
 $;$
 $0 \leq k < n \text{ and } (\forall i: 0 \leq i < n: f(k) = f(i))$
 n

```

k, j := 0, 1 {P가 };
do j = n P j = n
od
{R }

```

(monotonically decreasing) $t \quad t$
 $= (n - j) \quad ,$
 $P \quad (t = 0) \quad . \quad t$
 $\quad , \quad j = 1 \quad \text{가}$
 $\quad ,$
 $\quad :$

$0 \quad j < j + 1 \quad n \text{ and}$
 $(A \ i: 0 \quad i < j + 1: f(i) \quad f(i)) =$
 $0 \quad j < j + 1 \quad n \text{ and}$
 $(A \ i: 0 \quad i < j: f(i) \quad f(i))$

$(P \text{ and } j = n \text{ and } f(k) = f(j))$
 $\text{wp}("k, j := j, j + 1", P)$

$\text{wp}("j := j + 1", P) =$
 $0 \quad k = j + 1 \quad n \text{ and}$
 $(A \ i: 0 \quad i < j + 1: f(k) = f(i)) =$
 $0 \quad k = j + 1 \quad n \text{ and}$
 $(A \ i: 0 \quad i < j: f(k) = f(i)) \text{ and } f(k) = f(j)$

$P \text{ and } j = n$
 $((j = n \text{ and } j = n) \quad (j + 1$
 $n) \quad , \quad \text{가 } j = 1$
 $\text{가} \quad)$.

$k, j := 0, 1;$
 $\text{do } j = n \quad \text{if } f(k) = f(j) \quad j := j + 1$
 $\quad | f(k) = f(j) \quad k, j := j, j + 1 \text{ fi od}$

$(P \text{ and } j = n \text{ and } f(k) = f(j))$
 $\text{wp}("j := j + 1", P)$

$\text{가} \quad (\quad) \quad \text{가}$

가

$k, j := 0, 1;$
 $\text{do } j = n \quad \text{if } f(k) = f(j) \quad j := j + 1 \text{ fi od}$

f 가 k
 $;$
 $!$

$\text{가} \quad ,$
 $(\quad) \quad \text{가} \quad ;$
 $- \quad k = 0 \quad R$

$f(k) \quad f$
 $f(j)$ 가 $k:$
 $= j \quad ,$
 $\text{가} \quad : \quad k \quad f(k)$

$\text{wp}("k, j := j, j + 1", P) =$

가 , $h('help')$)

가

(messiness) 가

(global)

가 : 가 : $j = n$,

$f(j)$ 가

.) $h = f(j)$ $j = n$

; 가

가 , 'od' ' $h = f(j)$ -

() 1) ,

k $f(k)$ 가 , $k, j, max := 0, 1, f(0);$

max $do j = n$ $h := f(j);$

$max = f(k)$ $if max < h$ $j := j + 1$

$max < h$

$k, j, max := j, j + 1, h$ **fi od**

가 가

k k

$-max$

—

:

$k, j, max := 0, 1, f(0);$ 가

$do j = n$ $if max < f(j)$ $j := j + 1$ 가 ,

$max < f(j)$

$k, j, max := j, j + 1, f(j)$ **fi od**

가 , ' (trading)'

$f(j)$ 가

