

Variables as Resources - An Example

$RI \equiv \text{Own}_T \text{ full} * \text{if full then } \text{Own}_T c \text{ else emp}$

$\{ (RI * \text{emp}) \wedge \text{full} \}$

$\{ \text{Own}_T \text{ full} * \text{Own}_T c * \text{emp} \}$

$\text{full} := \text{false}$

$\{ (\text{Own}_T \text{ full} * \text{emp} * \text{Own}_T c) \wedge \neg \text{full} \}$

$\{ RI * \text{Own}_T c \}$

$\text{buf} : RI \vdash \{ \text{emp} \}$

with buf when full do $\text{full} := \text{false} \{ \text{getc}$

$\{ \text{Own}_T c \}$

$RI \equiv \text{Own}_T \text{full} * \text{if full then } \text{Own}_T c \text{ else emp}$

$\{ (RI * \text{Own}_T c) \wedge \neg \text{full} \}$

$\{ \text{Own}_T \text{full} * \text{emp} * \text{Own}_T c \}$

$\text{full} := \text{true}$

$\{ (\text{Own}_T \text{full} * \text{emp} * \text{Own}_T c) \wedge \text{full} \}$

$\{ RI * \text{emp} \}$

$\text{buf} : RI \vdash \{ \text{Own}_T c \}$

with buf when $\neg \text{full}$ do $\text{full} := \text{true}$ } putc

$\{ \text{emp} \}$

buf:BI \vdash
{own_Tc * emp}

{own_Tc}
c := !;
{own_Tc}
putc
{emp}

||

{emp}
getc;
{own_Tc}
c := c + 1
{own_Tc}

{emp * own_Tc}

$R_I \equiv \text{Own}_T \text{ full} * \text{if full then Own}_T c \text{ else emp}$

{emp}

local full, c in

{ $\text{Own}_T \text{ full} * \text{Own}_T c$ }

full := false;

{ $R_I * \text{Own}_T c * \text{emp}$ }

resource but in

$\left(\begin{array}{l} c := 1 \quad \parallel \quad \text{getc} \\ \text{putc} \quad \parallel \quad c := c + 1 \end{array} \right)$

{ $R_I * \text{emp} * \text{Own}_T c$ }

{ $(\text{Own}_T \text{ full} * \text{emp} * \text{emp} * \text{Own}_T c) \wedge \text{full} = \text{false}$ }

{emp}