Abbreviated version of the reversing an array (special thanks to Collin Roberts and Jonathan Buss for this code.)
Notice that we have suppressed the requirement that $(n > 0)$ throughout. We could include it but choose not to in the interest of space.

Let $\mathrm{Inv}'(j)$ be the formula

$$\Big(\forall x \, \Big(\big(((1 \le x) \wedge (x < j)) \to \big((R[x] = r_{n+1-x}) \wedge (R[n+1-x] = r_x) \big) \big) \\ \wedge \Big(\big((j \le x) \wedge (x \le \tfrac{n+1}{2}) \big) \to \big((R[x] = r_x) \wedge (R[n+1-x] = r_{n+1-x}) \big) \Big) \Big) \Big).$$

$(\!\vert \big(\forall x\, (((1 \le x) \wedge (x \le n)) \to (R[x] = r_x))\big) \vert\!)$	
$(\!\vert \big(\mathrm{Inv}'(1) \wedge (1 \le (\frac{n}{2} + 1))\big) \vert\!)$	Implied(a)
`j = 1 ;`	
$(\!\vert \big(\mathrm{Inv}'(j) \wedge (j \le (\frac{n}{2} + 1))\big) \vert\!)$	Assignment
`while (2 * j <= n) {`	
$(\!\vert \Big(\big(\mathrm{Inv}'(j) \wedge (j \le (\frac{n}{2} + 1))\big) \wedge ((2 \cdot j) <= n)\Big) \vert\!)$	Partial-While
$(\!\vert \big(\mathrm{Inv}'((j+1))[R'/R] \wedge ((j+1) \le (\frac{n}{2} + 1))\big) \vert\!)$	Implied(c)
`t = R[j]; R[j] = R[n+1-j]; R[n+1-j] = t;`	
$(\!\vert \big(\mathrm{Inv}'((j+1)) \wedge ((j+1) \le (\frac{n}{2} + 1))\big) \vert\!)$	Lemma
`j = j + 1 ;`	
$(\!\vert \big(\mathrm{Inv}'(j) \wedge (j \le (\frac{n}{2} + 1))\big) \vert\!)$	Assignment
`}`	
$(\!\vert \Big(\big(\mathrm{Inv}'(j) \wedge (j \le (\frac{n}{2} + 1))\big) \wedge ((2 \cdot j) > n)\Big) \vert\!)$	Partial-While
$(\!\vert \big(\forall x\, (((1 \le x) \wedge (x \le n)) \to (R[x] = r_{n+1-x}))\big) \vert\!)$	Implied(b)

On the back side of this document is this example in full detail (special thanks to Collin Roberts and Jonathan Buss for the original code). Due to page width restrictions, let

- $R' = R\{j \leftarrow R[((n+1) - j)]\}\{((n+1) - j) \leftarrow R[j]\}$
- $R'' = R\{j \leftarrow R[((n+1) - j)]\}\{((n+1) - j) \leftarrow t\}$
- $R''' = R\{((n+1) - j) \leftarrow t\}$

$\llparenthesis \left(\forall x \left(((1 \leq x) \wedge (x \leq n)) \rightarrow (R[x] = r_x)\right)\right) \rrparenthesis$

$\llparenthesis \left(\mathrm{Inv}'(1) \wedge (1 \leq (\frac{n}{2} + 1))\right) \rrparenthesis$ Implied(a)

`j = 1 ;`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < j)) \rightarrow ((R[x] = r_{n+1-x}) \wedge (R[n+1-x] = r_x))\big)$
$\wedge \big(((j \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R[x] = r_x) \wedge (R[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge (j \leq (\frac{n}{2} + 1))\Bigg) \rrparenthesis$ Assignment

`while (2 * j <= n) {`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < j)) \rightarrow ((R[x] = r_{n+1-x}) \wedge (R[n+1-x] = r_x))\big)$
$\wedge \big(((j \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R[x] = r_x) \wedge (R[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge \Big(j \leq \frac{n}{2} \wedge ((2 \cdot j) <= n)\Big)\Bigg) \rrparenthesis$ Partial-While

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < (j+1))) \rightarrow ((R'[x] = r_{n+1-x}) \wedge (R'[n+1-x] = r_x))\big)$
$\wedge \big((((j+1) \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R'[x] = r_x) \wedge (R'[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge ((j+1) \leq (\frac{n}{2} + 1))\Bigg) \rrparenthesis$ Implied(c)

`t = R[j];`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < (j+1))) \rightarrow ((R''[x] = r_{n+1-x}) \wedge (R''[n+1-x] = r_x))\big)$
$\wedge \big((((j+1) \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R''[x] = r_x) \wedge (R''[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge ((j+1) \leq (\frac{n}{2} + 1))\Bigg) \rrparenthesis$ Assignment

`R[j] = R[n+1-j];`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < (j+1))) \rightarrow ((R'''[x] = r_{n+1-x}) \wedge (R'''[n+1-x] = r_x))\big)$
$\wedge \big((((j+1) \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R'''[x] = r_x) \wedge (R'''[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge ((j+1) \leq (\frac{n}{2} + 1))\Bigg) \rrparenthesis$ Assignment

`R[n+1-j] = t;`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < (j+1))) \rightarrow ((R[x] = r_{n+1-x}) \wedge (R[n+1-x] = r_x))\big)$
$\wedge \big((((j+1) \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R[x] = r_x) \wedge (R[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge ((j+1) \leq (\frac{n}{2} + 1))\Bigg) \rrparenthesis$ Assignment

`j = j + 1 ;`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < j)) \rightarrow ((R[x] = r_{n+1-x}) \wedge (R[n+1-x] = r_x))\big)$
$\wedge \big(((j \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R[x] = r_x) \wedge (R[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge (j \leq (\frac{n}{2} + 1))\Bigg) \rrparenthesis$ Assignment

`}`

$\llparenthesis \Bigg(\Bigg(\forall x \Big(\big(((1 \leq x) \wedge (x < j)) \rightarrow ((R[x] = r_{n+1-x}) \wedge (R[n+1-x] = r_x))\big)$
$\wedge \big(((j \leq x) \wedge (x \leq \frac{n+1}{2})) \rightarrow ((R[x] = r_x) \wedge (R[n+1-x] = r_{n+1-x}))\big)\Big)\Bigg) \wedge \Big((j \leq (\frac{n}{2} + 1)) \wedge ((2 \cdot j) > n)\Big)\Bigg) \rrparenthesis$ Partial-While

$\llparenthesis \left(\forall x \left(((1 \leq x) \wedge (x \leq n)) \rightarrow (R[x] = r_{n+1-x})\right)\right) \rrparenthesis$ Implied(b)