δ) $\underbrace{\mathrm{Inv} \wedge \pi \wedge t = t_0 \wedge 2 \nmid i \Rightarrow wp(i, y := i-1, y \cdot b, \mathrm{Inv} \wedge t < t_0)}_{\text{we calculate this } wp}$

$$(\mathrm{Inv} \wedge t < t_0)^{i \leftarrow i-1,\, y \leftarrow y \cdot b} \wedge i-1 \in \mathbb{N}$$

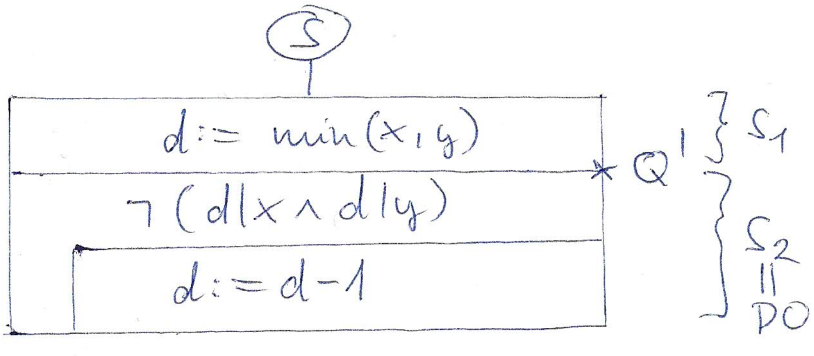
The value of $i-1$ has to be a natural number, as we have to guarantee that executing $i, y := i-1, y \cdot b$ will terminate without error. Recall: the type of i is $\mathbb{N}$.

$$(\underbrace{Q \wedge y \cdot b^i = x^n}_{\mathrm{Inv}} \wedge i>0 \wedge i = t_0 \wedge 2 \nmid i) \Rightarrow ((Q \wedge y \cdot b^i = x^n \wedge i < t_0)^{i \leftarrow i-1,\, y \leftarrow y \cdot b} \wedge i-1 \in \mathbb{N})$$

$$\underbrace{(\underbrace{Q \wedge \underbrace{y \cdot b \cdot b^{i-1} = x^n}_{y \cdot b^i = x^n}}_{\mathrm{Inv}\ ✓} \wedge \underbrace{i-1 < t_0}_{i = t_0\ ✓} \wedge i-1 \in \mathbb{N})}\ ✓$$

We know:
$\left.\begin{array}{l} i : \mathbb{N} \\ 2 \nmid i \end{array}\right\} i : \mathbb{N}^+$

$A = (x : \mathbb{N}^+, y : \mathbb{N}^+, d : \mathbb{N}^+)$
$B = (x' : \mathbb{N}^+, y' : \mathbb{N}^+)$
$Q = (x = x' \wedge y = y')$
$R = (Q \wedge d \mid x \wedge d \mid y \wedge \forall k \in [d+1 .. \min(x,y)] : \neg(k \mid x \wedge k \mid y))$



$Q' = (Q \wedge d = \min(x,y))$
$\mathrm{Inv} = (Q \wedge \forall k \in [d+1 .. \min(x,y)] : \neg(k \mid x \wedge k \mid y))$
$t : d$

We want to prove: $Q \Rightarrow wp(S, R)$. S is a sequence.

I) $Q \Rightarrow wp(S_1, Q')$
II) $Q' \Rightarrow wp(DO, R)$

I) $Q \Rightarrow wp(d := \min(x,y), Q')$
$Q'^{\,d \leftarrow \min(x,y)}$
$(Q \wedge d = \min(x,y))^{d \leftarrow \min(x,y)}$
$(Q \wedge \min(x,y) = \min(x,y))$
$Q \Rightarrow Q$ ✓