

Rubin's problem statement says that nothing should be printed if

$$\forall i \in \{0, \dots, n-1\}, \sim (\forall j \in \{0, \dots, n-1\}, x[i][j] = 0)$$

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The Theorem of the Bounded Linear Search is

### Theorem

*If  $n \in \mathbb{W}$  and  $B : 0, \dots, n - 1 \rightarrow \mathbb{B}$ , then the Hoare triple in the following code holds:*

```
f = True
i = 0
# P
while f and i != n :
    f = B(i)
    i += 1
# Q
```

*where...*

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$$\begin{aligned} P &= 0 \leq i \leq n \wedge \\ & f \equiv (\forall k \in \{0, \dots, i\}, B(k)) \wedge \\ & \forall k \in \{0, \dots, i-1\}, B(k) \end{aligned}$$

$$Q = P \wedge (\sim f \vee i = n)$$

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