

# Lenguajes de Programación

## Tarea III

Andrea Itzel González Vargas  
Karla Esquivel Guzmán  
Carlos Gerardo Acosta Hernández  
Facultad de Ciencias UNAM

### Problema I

$$\begin{array}{c} \Gamma [x \leftarrow \text{number}], [\text{fib} (\text{number} \rightarrow \text{number})] \vdash (- x 1) : \text{number} \checkmark \\ \Gamma [x \leftarrow \text{number}], [\text{fib} (\text{number} \rightarrow \text{number})] \vdash (- x 2) : \text{number} \checkmark \\ \hline \Gamma [x \leftarrow \text{number}] \vdash x : \text{number} \quad \Gamma [x \leftarrow \text{number}] \vdash 1 : \text{number} \checkmark \\ \Gamma [x \leftarrow \text{number}] \vdash (\text{fib} (- x 1)) : \text{number} \\ \Gamma [x \leftarrow \text{number}] \vdash (\text{fib} (- x 2)) : \text{number} \\ \hline \Gamma [x \leftarrow \text{number}] \vdash x : \text{number} \checkmark \\ \Gamma [x \leftarrow \text{number}] \vdash 0 : \text{number} \checkmark \\ \Gamma [x \leftarrow \text{number}] \vdash (= x 1) : \text{bool} \quad \Gamma [x \leftarrow \text{number}] \vdash 1 : \text{number} \checkmark \\ \Gamma [x \leftarrow \text{number}] \vdash (+ (\text{fib} (- x 1)) (\text{fib} (- x 2))) : \text{number} \\ \hline \Gamma [x \leftarrow \text{number}] \vdash (= x 0) : \text{boolean} \\ \Gamma [x \leftarrow \text{number}] \vdash 0 : \text{number} \checkmark \\ \Gamma [x \leftarrow \text{number}] \vdash (\text{if} (= x 1) 1 (+ (\text{fib} (- x 1) \text{fib} (- x 2)))) : \text{number} \\ \hline \Gamma [x \leftarrow \text{number}] \vdash (\text{if} (= x 0) 0 (\text{if} (= x 1) 1 (+ (\text{fib} (- x 1) \text{fib} (- x 2))))) : \\ \text{number} \\ \hline \Gamma \vdash \text{fib} (x : \text{number}) : \text{number} (\text{if} (= x 0) 0 (\text{if} (= x 1) 1 (+ (\text{fib} (- x 1) \text{fib} (- x 2))))) : (\text{number} \rightarrow \text{number}) \end{array}$$

$$\Gamma \vdash \text{empty?} : (\text{list} \rightarrow \text{bool}) \quad \Gamma \vdash l : \text{list} \quad \checkmark$$


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$$\Gamma \vdash (\text{empty? } l) : \text{bool}$$

## Problema II

$$[1] (+ [2] 1 [3] (\text{first } [4] (\text{cons } [5] \text{true } [6] \text{empty})))$$

Retricciones

$[[1]] = \text{number}$  si  $[[2]] = [[3]] = \text{number}$

$[[2]] = \text{number}$

$[[3]] = \text{number}$  si  $[[4]] = \text{nlist}$

$[[4]] = \text{nlist}$  si  $[[5]] = \text{number}$  y  $[[6]] = \text{nlist}$

$[[5]] = \text{number}$  si  $[[5]]$  contiene un numeral, pero  $[[5]] = \text{boolean!!}$

Por lo tanto esta mal formado el programa

## Problema III

## Problema IV