Resolucion Parcial I

Estuardo Valenzuela Girón/20181135

August 15, 2019

1 Ejercicio 1

1. caso base: n=1

   $2 \cdot s(0)$

   $s(0) + s(0) = s(s(0)) -> Par$

   $0 \geq 0$

   caso Inductivo: $n = s(x)$

   $2 \cdot s(x)$

   $s(x) + s(x) = s(s(x))$

2. caso base: $n = s(s(s(s(0)))))$

   $2^s(s(s(s(0))))$

2 Ejercicio 2

1.

$$N! \begin{cases} 0 & n = 0 \\ N & N = 1 \\ s(0) \cdot s(0) ... \cdot (n - s(0)) \cdot n & n \neq 0 \end{cases}$$

2.

$$a \ominus b \begin{cases} 0 & a \leq b \\ a & b = 0 \\ a \ominus b & a \neq b \end{cases}$$

3.

$$\sum_{i}^{n} \begin{cases} 0 & i = n = 0 \\ i \oplus (i \oplus s(0) \oplus ... \oplus (n - s(0))) \oplus n & n \geq i \end{cases}$$

4.

$$a^b \begin{cases} a & b = 1 \\ 1 & b = 0 \\ a \otimes a \otimes a ... (bveces) & b \geq 0 \ \wedge b \geq 1 \end{cases}$$

3 Ejercicio 3

1. caso base: $a = 0$ $\qquad\qquad$ $0 \; si \; a = 0 \; \vee \; b = 0$

   $2 \otimes 0 = 0 \oplus 0$

   $0 = 0$

   Caso inductivo: $a = s(x)$

   $2 \otimes s(x) = s(x) + s(x)$ $\qquad$ $2 \otimes a = a \oplus a$

   $s(x) + s(x) = s(x) + s(x)$

   $s(s(x)) = s(s(x))$