CPSC-354 Report

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Abstract

Contents

1 Solution

$letrecfact = \lambda n.ifn = 0then1elsen * fact(n-1)infact3$
-> $letfact = (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))infact3$
-> $(\lambda fact.\lambda n.fact3)(fix(\lambda fact.ifn = 0then1elsen * fact(n-1)))$
-> $fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1))3$
-> $((\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1))(fix(\lambda fact.\lambda n.fn = 0then1elsen * fact(n-1))))3$
-> $(\lambda n.(ifn = 0then1elsen * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(n-1)))3$
-> $(if3 = 0then1else3 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(3-1))$
-> $3 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))2$
-> $3 * ((\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1))fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))2$
-> $3 * ((\lambda n.ifn = 0then1elsen * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(n-1)))2$
-> $3 * ((if2 = 0then1else2 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(2-1)))$
-> $3 * 2 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(1)$
-> $3 * 2 * ((\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1))fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(1)$
-> $3 * 2 * ((\lambda n.ifn = 0then1elsen * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(n-1)))(1)$
-> $3 * 2 * ((if1 = 0then1else1 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(1-1)))$
-> $3 * 2 * 1 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(0)$
-> $3 * 2 * 1 * ((\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1))fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(0)$
-> $3 * 2 * 1 * ((\lambda n.ifn = 0then1elsen * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(n-1)))(0)$
-> $3 * 2 * 1 * ((if0 = 0then1else0 * (fix(\lambda fact.\lambda n.ifn = 0then1elsen * fact(n-1)))(0-1)))(0)$
-> $3 * 2 * 1 * 1$
-> 6