

PPL Assignment 5

Sagiv Nethanel: 203308069

Roi Soldin: 204542179

Question 4:

1.

$\text{unify}[t(s(s), G, s, p, t(K), s), t(s(G), G, s, p, t(K), U)]$

$s=\{G=s\} \quad t(s(s), s, s, p, t(K), s)$

$t(s(s), s, s, p, t(K), U)$

$s=\{G=s, U=s\} \quad t(s(s), s, s, p, t(K), s)$

$t(s(s), s, s, p, t(K), s)$

$s=\{G=s, U=s\}$

2.

$\text{unify}[g(1, M, g, G, U, g, v(M)), g(1, v(U), g, v(M), v(G), g, v(M))]$

- $s=\{M=v(U)\} \quad g(1, v(U), g, G, U, g, v(v(U)))$
 $g(1, v(U), g, v(v(U)), v(G), g, v(v(U)))$

- $s=\{M=v(U), G=v(v(U))\} \quad g(1, v(U), g, v(v(U)), U, g, v(v(U)))$
 $g(1, v(U), g, v(v(U)), v(v(v(U))), g, v(v(U)))$

Circular occurrence.

3.

$\text{unify}[m(M,N), n(M,N)]$

$A= m(M,N)$

$B= n(M,N)$

no such substitution

4.

$\text{unify}[p([v \mid [V \mid VW]]), p([[v \mid V] \mid VW])]$

$A = p([v \mid [V \mid VW]])$

$B = p([[v \mid V] \mid VW])$

no such substitution

5.

$\text{unify}[g([T]), g(T)]$

$A = g([T])$

$B = g(T)$

Circular occurrence

$plus(s(s(zero)), s(x), s(s(s(s(zero))))))$

plus Rule 1

$\{x-1: s(s(zero))$
 $zero: s(x)$
 $x-1: s(s(s(s(zero))))\}$

fail

plus Rule 2

$\{x-1: s(s(zero))$
 $s(y-1): s(x)$
 $s(z-1): s(s(s(s(zero))))\}$

$plus(s(s(zero)), x, s(s(s(zero))))$

plus Rule 2

$\{x-2: s(s(zero))$
 $s(y-2): x$
 $s(z-2): s(s(s(zero))))\}$

plus Rule 1

$\{x-2: s(s(zero))$
 $zero-2: x$
 $x-2: s(s(s(zero))))\}$

fail

$plus(s(s(zero)), y_2, s(zero))$

plus Rule 2

$\{x-3: s(s(zero))$
 $s(y-3): x$
 $s(z-3): s(zero)\}$

$plus(s(s(zero)), y_3, s(zero))$

plus Rule 1

$\{x-3: s(s(zero))$
 $zero: x$
 $x-3: s(s(zero))\}$

natural_number(s(s(zero)))

$n-4: s(s(x-1: s(s(zero))))$

natural_number(s(zero))

$n-4$
 $rule 2: \{s(x-2): s(zero)\}$

plus Rule 1

$\{x-4: s(s(zero))$
 $s(y-4): s(zero)$
 $s(z-4): s(zero)\}$

fail

plus Rule 2

$\{x-4: s(s(zero))$
 $s(y-4):$
 $s(z-4): s(zero)\}$

$plus(s(s(zero)), y_4, zero)$

0/1

$\{x-5: s(s(zero))$
 $zero:$
 $x-5: zero$

fail

0/2

$\{x-5: s(s(zero))$
 $s(y-5):$
 $s(z-5): zero$

fail

true

$\{x: s(zero)\}$

(b

the true for or for in, and to /c

and and for, for to to (d