

edit red sysin

EDIT:

type *

```
DEF TRUE = 1=1;
DEF FALSE = 1=0;
DEF S1 X = H X;
DEF S2 X = H(T X);
DEF TAIL X = T X;
DEF EQ(X,Y) = X=Y;
DEF APPLY(X,Y) = X Y;
DEF AND(X,Y) = X ? Y | FALSE;
DEF NOT X = X ? FALSE | TRUE;
DEF SEP X = H X,T X;
DEF UN(X,Y) = X:Y;
DEF B F G X = F(G X);
DEF I X = X;
DEF REC L A G F X = NULL X ? A | G( F(H X),L A G F (T X) );
DEF NF S X = LET F G = G X;
                L () UN F S;
DEF CN P F G X = P X ? F X | G X;
DEF C X Y = X;
DEF REC WHILE P F X = CN P (B (WHILE P F) F) I; P X ? WHILE P F (F X) | X;
DEF AA = L () UN;
DEF INS F A = L A F I;
DEF ROTL X = L (H X) UN I (T X);
DEF ROTR S = LET REC SPLIT L = NULL(T L) ? ():H L
                | LET M,X = SPLIT(T L);
                H L:M,X;
                LET N,Z = SPLIT S;
                Z:N;
DEF DISTL(X,S) = LET F Y = X,Y; L () UN F S;
DEF DISTR(S,Y) = LET F X = X,Y; L () UN F S;
```

EOF:

i.e. $NF(K X, I) \in D \rightarrow D^{[2]}$

i.e. $DISTL(X,S) = L () UN (\lambda Y. X,Y) S$

$= \lambda L. \lambda A. \lambda G. \lambda F. \lambda X'. X' = (I ? A |$

$G(\lambda Y. X,Y)(H X'),$

$L A G F (T X))$.

quit

R;

$L \in D \rightarrow [B \rightarrow D] \rightarrow [D \rightarrow D] \rightarrow [D \rightarrow D]$

$DISTL \in D \times D^n \rightarrow (D \times D)^n$

edit cred sysin

EDIT:

t *

DEF NIL = ();

DEF TRUE = 1=1;

DEF FALSE = 1=0;

DEF OMEGA X = PR X;

DEF S I L = I I;

DEF S1 L = L 1;

DEF S2 L = L 2;

DEF S3 L = L 3;

DEF TAIL X = T X;

DEF JOIN(X,L) = X:I;

DEF SEP L = H L,T L;

DEF REC LENGTH I = NULL I ? 0 | 1+LENGTH (T I);

DEF ATOM X = LST X ? FALSE | TRUE;

DEF EQ(X1,X2) = X1=X2;

DEF NULL X = X=NULL;

DEF AND(R1,R2) = R1 ? R2 | FALSE;

DEF OR(R1,R2) = R1 ? TRUE | R2;

DEF NOT R = R ? FALSE | TRUE;

DEF APPLY(X,Y) = X Y;

DEF REC COMP FI X = NULL FI ? X | H FI (COMP (T FI) X);

DEF R E G X = F(G X);

DEF I X = X;

DEF K Y Y = X;

DEF REC D E X = F(D E,X);

DEF REC M E I Y = F(M E, I, Y);

DEF REC NE FI Y = NULL FI ? NIL | H FI Y:NE (T FI) Y;

DEF CM(P,E,C) X = P X ? E X | C X;

DEF REC AA F I = NULL I ? NIL | F(H L):AA F (T I);

DEF REC WHILE(P,F) X = P X ? WHILE(P,F)(F X) | X;

DEF REC POWER F (N,X) = N=0 ? X | POWER F (N-1, F X);

DEF REC LAST L = NULL(T L) ? H L | LAST(T L);

DEF REC DROPLAST I = NULL(T L) ? NIL | H L:DROPLAST(T L);

DEF ROTR L = LAST L:DROPLAST I;

DEF ROTL I = T L:(H L:NIL);

DEF DISTL(X,L) = AA(NE(K Y, I)) I;

DEF DISTP(I,Y) = AA(NE(I, K Y)) I;

DEF REC TRANS I = NULL(H L) ? NIL | AA S1 L:TRANS(AA TAIL I);

DEF INCREASE N = N+1;

DEF DECREASE N = N-1;

DEF ADD(N,M) = N+M;

DEF SUB(N,M) = N-M;

DEF MUL(N,M) = N*M;

DEF DIV(N,M) = N/M;

DEF LESS(N,M) = N<M;

DEF MAPPLY = COMP(APPLY,
NEC COMP(APPLY, NE(S1,S2)),
S3));

```

DEF REVP = R( CN( COMP( NULL, S2 ),
                  K NIL,
                  COMP( ROTL,
                      JOIN,
                      NF( COMP( S1, S2 ),
                        COMP( APPLY,
                          NF( S1,
                            COMP( TAIL, S2 ) ) ) ) ) ) );

DEF REVI = COMP( S2,
                 WHILE( COMP( NOT, NULL, S1 ),
                     NF( COMP( TAIL, S1 ),
                       COMP( JOIN, NF( COMP( S1, S1 ), S2 ) ) ) ),
                 NF( 1, K NIL ) );

DEF TAILS3 = COMP( TAIL, S3 );
DEF S1S3 = COMP( S1, S3 );
DEF INSERT =
M( CN( COMP( NULL, TAILS3 ),
      S1S3,
      COMP( APPLY,
        NF( S2,
          NF( S1S3,
            COMP( MAPPLY,
              NF( S1, S2, TAILS3 ) ) ) ) ) ) );

DEF EE =
M( COMP( MAPPLY,
      NF( K AA,
        S2,
        COMP( TRANS, S3 ) ) ) );

DEF IP = COMP( INSERT ADD, EE MUL );
DEF MM =
COMP( AA( COMP( AA IP, DISTL ) ),
      DISTP,
      NF( S1, COMP( TRANS, S2 ) ) );

DEF IOTA =
COMP( S2,
      POWER( NF( B DECREASE S1, JOIN ) ),
      NF( 1, NF( 1, K NIL ) ) );

DEF TR1 = COMP( CN( COMP( INSERT AND, AA NULL, S1 ),
                    COMP( AA( AA S1 ), TAIL ),
                    OMEGA ),
              AA( POWER( AA TAIL ) ),
              COMP( ROTR, DISTR, NF( COMP( JOIN,
                                          NF( K 0, COMP( IOTA,
                                                                LENGTH,
                                                                S1 ) ) ) ),
                1 ) ) );

DEF TR2 = COMP( CN( COMP( INSERT AND, AA NULL, S2 ), S1, OMEGA ),
               WHILE( COMP( NOT, NULL, S1, S2 ),
                   NF( COMP( ROTL, JOIN, NF( COMP( AA S1, S2 ),
                                                S1 ) ),
                     COMP( AA TAIL, S2 ) ) ),
               NF( K NIL, 1 ) );

DEF REC TR3 = CN( COMP( INSERT AND, AA NULL ),
                 K NIL,
                 COMP( JOIN, NF( AA S1, COMP( TR3, AA TAIL ) ) ) );

```