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unit evaluate;
  interface

    uses
      MemTypes, QuickDraw, OSIntf, ToolIntf, PackIntf, PrintTraps, PasLibIntf
    ,
      globals, help, text, cmmnds1, pusherr, pushStack,

      ruleAtoF, rules050, rules100, rules150, rules200, rules250, rules300,
      rules350, rules400, rules450, rules500;

    procedure evalTempRule(i:longint);
    procedure eval;
    procedure executeRule(i:longint);
    procedure changes(i:longint);

  implementation

procedure evalTempRule(i:longint);
(*****
(*)
(*)      Evaluates temporary theorems that have been added      (*)
(*)      by the user.  the postfix string for each rewrite      (*)
(*)      is in TRULES.  parallel stacks TSTACKL and TSTACKU      (*)
(*)      are used for this interpretation step.                  (*)
(*)                                                                (*)
(*)      + is denoted by 1000, - by 1001, * by 1002,            (*)
(*)      / by 1003, = by 1004, <= by 1005, and                  (*)
(*)      >= by 1006                                              (*)
(*)      all constants are assumed to be positive values        (*)
(*)      and are stored in TRULES as their negative             (*)
(*)      equivalents.                                            (*)
(*)                                                                (*)
(*****
var p, parm, tnext, last: longint;
    l, ll, u, ul, z1, z2, zt: real;
    tstackl, tstacku: array[1..20] of real;
    srule: char5;
    r5: char;
begin if tempactive[i] then
  begin
    rule:= ' TT/ ';
    numToChar(i, r5);
    rule[5]:=r5;
    if i > 9 then
      begin
        numToChar(i div 10, r5);
        rule[4]:=r5;
      end;

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tnext:=tspoint[tsp[i]];
if i < ntt then last:=tspoint[tsp[i+1]]-1
    else last:=trmax;
while (tnext < last) and (errcode = 0) do
begin
    parm:=trules[tnext];
    ttop:=0;
    tnext:=tnext+1;
    p:=trules[tnext];
    while p < 1004 do
        begin
            if (p > 0) and (p < 1000) then
                begin (*      variable name      *)
                    ttop:=ttop+1;
                    if p <> spectr then
                        begin
                            z2:=min[p];
                            z1:=max[p];
                        end
                    else
                        begin
                            z2:=lammin;
                            z1:=lammax;
                        end;
                end
            else
                if p < 1 then
                    begin (*      constant      *)
                        ttop:=ttop+1;
                        z2:=-p;
                        z1:=-p;
                    end
                else
                    begin (*      operator      *)
                        ttop:=ttop-1;
                        l:=tstackl[ttop];
                        ll:=tstackl[ttop+1];
                        u:=tstacku[ttop];
                        ul:=tstacku[ttop+1];
                        case p of
1000: begin (*      add      *)
                            if (l=infinity) or (ll=infinity) then
                                z2:=infinity
                                else
                                z2:=l+ll;
                            if (u=infinity) or (ul=infinity) then
                                z1:=infinity
                                else
                                z1:=u+ul;
                        end;
1001: begin (*      subtract      *)
                            if l=infinity then z2:=infinity

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                                else if u1=infinity then
z2:=0
                                else
z2:=1-u1;
                                if u=infinity then z1:=infinity
                                else if l1=infinity then
z1:=0
                                else
z1:=u-l1;
                                end;
1002: begin      (*      multiply      *)
                                if (u=infinity) or (u1=infinity) then
z1:=infinity
                                else
z1:=u*u1;
                                if (l=infinity) or (l1=infinity) then
z1:=infinity
                                else
z1:=l*l1;
                                if zt <=z1 then z2:=zt
                                else
                                begin
                                    z2:=z1;
                                    z1:=zt;
                                end;
                                if (u=infinity) or (l1=infinity) then
z1:=infinity
                                else
z1:=u*l1;
                                if zt > z1 then z1:=zt
                                else if zt < z2 then z2:=zt;
                                if (l=infinity) or (u1=infinity) then
z1:=infinity
                                else
z1:=l*u1;
                                if zt > z1 then z1:=zt
                                else if zt < z2 then z2:=zt;
                                end;
1003: begin      (*      divide(longint)      *)
                                if (l1=0) or (u=infinity) then z1:
=infinity
                                else if l1=infinity then z1:=0
                                else z1:=u/l1;
                                if (u1=0) or (l=infinity) then zt:
=infinity
                                else if u1=infinity then zt:=0
                                else zt:=1/u1;
                                if zt <= z1 then z2:=zt
                                else
                                begin
                                    z2:=z1;
                                    z1:=zt;

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                                end;
                                if (u1=0) or (u=infinity) then zt:
=infinity
                                else if u1=infinity then zt:=0
                                                else zt:=u/u1;
                                if zt > z1 then z1:=zt
                                                else if zt < z2 then z2:=zt;
                                if (l1=0) or (l=infinity) then zt:
=infinity
                                else if l1=infinity then zt:=0
                                                else zt:=l/l1;
                                if zt > z1 then z1:=zt
                                                else if zt < z2 then z2:=zt;
                                end;
                                end;
                                end;
                                tstackl[ttop]:=z2;
                                tstacku[ttop]:=z1;
                                tnext:=tnext+1;
                                p:=trules[tnext];
                                end;
if (p > 1006) or (p < 1004) or (ttop <> 1) then
begin
deleteTempTheorem(i);
error(8);
end
else
begin
z:=trunk(tstacku[1]);
if savesw then
begin
srule:=rule;
rule:=blk5;
cart:=blk;
push(-10000-i);
if errcode = 0 then rule:=srule;
end;
if errcode = 0 then
case p of
1004: begin (* parm = .... *)
if parm <> spectr then
begin
if z < max[parm] then pushmax(parm);
if errcode = 0 then
begin
p:=round(tstackl[1]+hf);
if p <> z+1 then z:=p;
if z > min[parm] then pushmin(parm);
end;
end
else
begin

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        rz:=tstacku[1];
        if rz < lammax then pushlammax;
        if errcode = 0 then
            begin
                rz:=tstackl[1];
                if rz > lammin then pushlammin;
            end;
        end;
    end;
end;
1005: begin      (*   parm <= ....   *)
    if parm <> spectr then
        begin
            if z < max[parm] then pushmax(parm);
        end
    else
        begin
            rz:=tstacku[1];
            if rz < lammax then pushlammax;
        end;
    end;
1006: begin      (*   parm >= ....   *)
    if parm <> spectr then
        begin
            z:=round(tstackl[1]+hf);
            if z > min[parm] then pushmin(parm);
        end
    else
        begin
            rz:=tstackl[1];
            if rz > lammin then pushlammin;
        end;
    end;
end;
end;
end;
    if errcode = 0 then tnext:=tnext+1;
end;
    if errcode = 0 then rule:=blk5;
end;
end;

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procedure eval;
( ***** )
( *                                               * )
( *                                               * )
( *   executes the rules involving               * )
( *   the invariant 'X'.                        * )
( *                                               * )
( *   numeric rules and alphabetic rules must   * )
( *   be grouped separately. alphabetic rules   * )
( *   must be preceded by                       * )
( *       rule:=blk5;                           * )

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( * *)
( *****)
var i:longint;
begin
  while (stack > 0) and (errcode = 0) do
    begin
      while (stack > 0) and (errcode = 0) do
        begin
          pop(x);
          i:=direction[x];
          case x of
            nodes: begin
              nthms:=nthms+78;

r030;r035;r040;r042;r049;r050;r052;r057;r059;r067;

r068;r072;r073;r077;r078;r086;r093;r094;r095;r118;

r120;r126;r127;r128;r130;r132;r133;r138;r152;r160;

r161;r162;r180;r184;r186;r187;r196;r197;r204;r207;

r239;r240;r246;r258;r271;r281;r282;r285;r292;r316;

r317;r320;r326;r332;r335;r343;r344;r348;r349;r350;

r351;r360;r381;r391;r400;r403;r406;r411;r416;r419;
              r420;r421;r424;r435;r442;r444;r450;r451;
              if (i= 1) or (i = 2) then
                begin
                  nthms:=nthms+161;

r001;r003;r005;r007;r008;r009;r011;r021;r024;r026;

r027;r028;r031;r033;r036;r037;r044;r053;r056;r058;

r060;r062;r063;r065;r071;r076;r081;r082;r091;r092;

r096;r101;r108;r112;r116;r117;r119;r121;r122;r123;

r125;r129;r139;r140;r141;r143;r146;r147;r163;r175;

r178;r179;r182;r188;r189;r195;r198;r199;r203;r205;

r206;r208;r209;r210;r211;r241;r242;r243;r244;r245;

r247;r250;r253;r254;r259;r270;r274;r279;r280;r288;

r289;r290;r291;r294;r295;r297;r298;r299;r300;r301;

r302;r303;r310;r311;r314;r318;r325;r329;r330;r331;

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r334;r336;r337;r338;r342;r345;r352;r353;r354;r355;
r358;r365;r367;r368;r376;r379;r382;r383;r384;r387;
r388;r392;r393;r394;r395;r396;r398;r401;r402;r404;
r407;r409;r414;r415;r422;r423;r425;r426;r427;r428;
r429;r430;r431;r432;r433;r434;r436;r437;r439;r441;
r443;r445;r446;r447;r448;r449;r453;r454;r455;r457;
r458;
end;
if (i = 0) or (i = 2) then
begin
nthms:=nthms+81;

r012;r015;r020;r025;r032;r038;r055;r064;r075;r080;
r097;r115;r124;r134;r145;r151;r155;r156;r158;r159;
r166;r169;r170;r173;r174;r181;r183;r200;r201;r202;
r233;r234;r248;r249;r255;r256;r260;r263;r265;r266;
r269;r276;r277;r278;r283;r284;r286;r293;r304;r305;
r306;r307;r308;r309;r312;r313;r315;r321;r322;r323;
r324;r347;r356;r357;r359;r363;r364;r366;r375;r385;
r389;r390;r399;r408;r412;r413;r417;r418;r438;r440;
r452;
end;
end;
edges: begin
nthms:=nthms+8;
r030;r049;r050;r133;r281;r351;r406;r416;
if (i= 1) or (i = 2) then
begin
nthms:=nthms+55;

r004;r015;r029;r036;r055;r069;r071;r075;r093;r094;
r095;r113;r114;r115;r120;r130;r134;r135;r144;r158;
r164;r166;r169;r170;r184;r208;r251;r255;r260;r284;
r286;r306;r317;r319;r333;r335;r336;r342;r363;r364;
r384;r400;r408;r417;r418;r421;r424;r429;r438;r439;
r440;r442;r445;r446;r447;

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        end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+71;

r001;r003;r005;r017;r019;r022;r026;r033;r037;r056;
r060;r063;r065;r077;r078;r106;r118;r122;r128;r136;
r138;r139;r140;r141;r143;r152;r175;r179;r188;r195;
r196;r204;r235;r236;r258;r290;r295;r327;r330;r331;
r337;r343;r344;r345;r346;r348;r349;r350;r352;r353;
r354;r379;r381;r382;r391;r394;r396;r401;r409;r413;
r414;r419;r420;r426;r445;r448;r449;r452;r453;r454;
                r455;
            end;
        end;
        maxdeg: begin
            nthms:=nthms+35;

r022;r042;r045;r046;r052;r067;r086;r127;r128;r130;
r136;r148;r149;r150;r153;r155;r157;r160;r180;r187;
r207;r252;r256;r265;r283;r288;r311;r316;r324;r360;
                r389;r400;r416;r435;r441;
                if (i= 1) or (i = 2) then
                    begin
                        nthms:=nthms+75;

r006;r012;r020;r027;r036;r038;r056;r071;r107;r131;
r132;r159;r167;r168;r174;r181;r196;r205;r206;r209;
r210;r211;r217;r236;r247;r248;r263;r266;r277;r278;
r284;r285;r293;r296;r298;r299;r300;r301;r302;r303;
r305;r306;r307;r309;r310;r312;r318;r319;r323;r327;
r332;r347;r377;r399;r401;r417;r418;r424;r428;r429;
                r431;r432;r446;r447;r448;
            end;
            if (i = 0) or (i = 2) then
                begin
                    nthms:=nthms+34;

r008;r019;r028;r055;r147;r151;r165;r216;r243;r253;

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r274;r275;r279;r286;r292;r317;r338;r341;r355;r356;
r357;r361;r362;r383;r398;r404;r407;r408;r412;r423;
    r433;r434;r436;r437;
    end;
    end;
mindeg: begin
    nthms:=nthms+30;

r015;r040;r045;r046;r057;r077;r086;r093;r148;r155;
r156;r161;r205;r281;r283;r304;r321;r322;r324;r329;
r359;r361;r391;r411;r412;r416;r427;r436;r450;r451;
    if (i= 1) or (i = 2) then
    begin
        nthms:=nthms+21;

r056;r081;r118;r129;r159;r160;r174;r202;r206;r207;
r210;r219;r254;r265;r266;r267;r276;r292;r293;r330;
        r448;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+104;

r007;r008;r024;r048;r054;r055;r060;r062;r071;r082;
r087;r091;r092;r099;r103;r107;r110;r112;r113;r117;
r119;r123;r126;r132;r162;r163;r171;r176;r178;r182;
r184;r192;r201;r218;r230;r232;r245;r247;r248;r258;
r271;r286;r287;r291;r296;r298;r299;r300;r301;r302;
r303;r305;r307;r309;r310;r312;r313;r314;r315;r317;
r320;r325;r331;r334;r337;r338;r339;r340;r341;r346;
r351;r352;r355;r358;r362;r367;r378;r382;r386;r387;
r388;r392;r393;r395;r396;r398;r401;r402;r403;r404;
r405;r406;r407;r410;r415;r425;r428;r432;r437;r443;
        r444;r449;r454;r455;
        end;
        end;
chr: begin
    nthms:=nthms+8;

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        r041;r049;r067;r120;r185;r261;r262;r286;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+11;

r020;r032;r053;r069;r070;r106;r198;r220;r233;r275;
            r423;
            end;
            if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+32;

r002;r018;r031;r048;r051;r085;r097;r098;r104;r105;
r106;r115;r119;r121;r131;r144;r147;r157;r167;r168;
r180;r221;r228;r231;r241;r242;r259;r311;r413;r445;
                r456;r457;
                end;
            end;
            clique: begin
                nthms:=nthms+13;

r039;r049;r085;r147;r176;r185;r196;r203;r204;r207;
                r421;r451;r453;
                if (i= 1) or (i = 2) then
                begin
                    nthms:=nthms+46;

r002;r005;r017;r019;r035;r052;r058;r084;r088;r097;
r103;r104;r105;r119;r131;r145;r152;r157;r160;r173;
r174;r182;r183;r192;r195;r209;r210;r234;r241;r276;
r284;r288;r306;r311;r369;r389;r390;r394;r409;r417;
r418;r419;r420;r421;r424;r429;r441;r442;r446;r447;
                    r449;r452;r454;r455;r456;r457;
                    end;
                    if (i = 0) or (i = 2) then
                    begin
                        nthms:=nthms+13;

r029;r054;r081;r108;r113;r114;r184;r187;r194;r202;
                        r220;r294;r458;
                        end;
                    end;
                    spectr: begin
                        nthms:=nthms+14;
                        if (i= 1) or (i = 2) then
                        begin

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        nthms:=nthms+7;
        r003;r052;r150;r165;r238;r366;r410;
    end;
    if (i = 0) or (i = 2) then
    begin
        nthms:=nthms+ 7;
        r004;r006;r058;r069;r164;r318;r319;
    end;
    end;
ncov:  begin
        nthms:=nthms+7;
        r020;r049;r061;r100;r204;r239;r419;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+19;

r002;r004;r019;r036;r073;r106;r172;r193;r199;r202;

r218;r221;r222;r236;r248;r385;r435;r443;r456;
            end;
            if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+34;

r035;r101;r109;r114;r135;r198;r200;r201;r203;r206;

r207;r208;r209;r210;r211;r237;r250;r384;r422;r423;

r424;r425;r429;r430;r431;r432;r436;r437;r439;r441;
                r442;r445;r446;r447;
            end;
        end;
ecov:  begin
        nthms:=nthms+2;
        r049;r240;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+6;
            r023;r025;r036;r212;r439;r440;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+10;

r027;r073;r101;r205;r426;r427;r428;r433;r434;r444;
            end;
        end;
nind:  begin
        nthms:=nthms+14;

r040;r049;r061;r062;r064;r100;r152;r179;r239;r254;
        r308;r420;r451;r452;

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        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+53;

r019;r020;r035;r075;r079;r106;r108;r111;r112;r133;

r145;r159;r160;r169;r170;r173;r174;r178;r181;r182;

r183;r186;r192;r214;r233;r237;r244;r249;r269;r275;

r284;r287;r306;r323;r324;r361;r362;r385;r389;r390;

r394;r413;r417;r418;r421;r438;r440;r449;r450;r454;
                r455;r458;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+12;

r062;r073;r081;r113;r187;r195;r196;r223;r247;r360;
                r402;r457;
            end;
        end;
    eind:    begin
                nthms:=nthms+5;
                r049;r128;r136;r240;r295;
                if (i= 1) or (i = 2) then
                    begin
                        nthms:=nthms+25;

r012;r020;r022;r023;r036;r073;r079;r086;r100;r109;

r155;r156;r200;r201;r213;r235;r252;r257;r304;r305;
                        r312;r356;r357;r403;r412;
                    end;
                if (i = 0) or (i = 2) then
                    begin
                        nthms:=nthms+4;
                        r011;r222;r384;r438;
                    end;
                end;
    nccov:    begin
                nthms:=nthms+6;
                r020;r040;r049;r185;r448;r453;
                if (i= 1) or (i = 2) then
                    begin
                        nthms:=nthms+6;
                        r032;r076;r223;r234;r276;r285;
                    end;
                if (i = 0) or (i = 2) then
                    begin
                        nthms:=nthms+15;

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r031;r073;r108;r143;r178;r181;r186;r211;r212;r224;
    r242;r244;r254;r450;r458;
    end;
    end;
    eccov:  begin
        nthms:=nthms+1;
        r040;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+5;
                r017;r122;r224;r321;r322;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+12;
            end;
        end;
    end;
    radius:  begin
        nthms:=nthms+4;
        r042;r044;r049;r267;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+5;
                r010;r079;r153;r263;r278;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+5;
                r030;r134;r225;r273;r279;
            end;
        end;
    end;
    diam:  begin
        nthms:=nthms+21;
    end;

r007;r028;r044;r093;r094;r095;r099;r121;r129;r130;

r146;r166;r257;r264;r267;r288;r363;r364;r400;r405;
    r411;
    if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+16;
        end;
    end;

r034;r063;r124;r134;r225;r256;r265;r266;r272;r273;
    r292;r293;r307;r347;r399;r408;
    end;
    if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+9;
        end;
    end;

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r010;r040;r111;r172;r192;r325;r334;r395;r414;
    end;
    end;
    genus:    begin
                nthms:=nthms+14;

r047;r070;r083;r084;r087;r088;r089;r125;r158;r161;
                r171;r370;r373;r397;
                if (i= 1) or (i = 2) then
                begin
                    nthms:=nthms+16;

r018;r060;r061;r085;r090;r098;r245;r246;r258;r261;
                    r262;r346;r369;r374;r375;r385;
                    end;
                if (i = 0) or (i = 2) then
                begin
                    nthms:=nthms+6;
                    r021;r116;r229;r260;r297;r376;
                end;
            end;
    nconn:    begin
                nthms:=nthms+16;

r016;r044;r049;r064;r092;r094;r151;r257;r299;r300;
                r358;r359;r363;r364;r403;r444;
                if (i= 1) or (i = 2) then
                begin
                    nthms:=nthms+14;

r001;r062;r073;r117;r272;r277;r296;r331;r347;r351;
                    r360;r399;r401;r435;
                    end;
                if (i = 0) or (i = 2) then
                begin
                    nthms:=nthms+31;

r007;r028;r034;r060;r066;r121;r162;r163;r166;r200;
r226;r252;r253;r258;r281;r283;r297;r298;r300;r302;
r308;r309;r310;r313;r314;r315;r328;r346;r404;r405;
                    r414;r430;
                    end;
            end;
    econn:    begin
                nthms:=nthms+5;
                r016;r095;r123;r307;r404;
                if (i= 1) or (i = 2) then
                begin
                    nthms:=nthms+9;

```

```

r082;r099;r126;r226;r351;r381;r382;r405;r406;
    end;
    if (i = 0) or (i = 2) then
    begin
        nthms:=nthms+9;

r088;r089;r148;r219;r277;r296;r304;r312;r427;
        end;
    end;
    echr:    begin
        nthms:=nthms+19;
        r049;r068;r316;r416;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+7;
            r022;r151;r190;r216;r235;r356;r433;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+8;
            r020;r102;r127;r148;r149;r150;r217;r317;
        end;
    end;
    girth:    begin
        nthms:=nthms+25;

r020;r024;r039;r049;r050;r060;r070;r071;r080;r089;

r090;r096;r125;r139;r188;r251;r292;r325;r329;r338;
        r344;r351;r367;r392;r393;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+5;
            r319;r337;r342;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+57;

r015;r034;r053;r078;r079;r091;r098;r110;r161;r164;

r167;r168;r171;r227;r252;r253;r259;r261;r262;r268;

r269;r274;r318;r320;r323;r324;r334;r339;r340;r341;

r342;r343;r345;r346;r348;r349;r350;r352;r353;r354;

r355;r361;r362;r383;r386;r387;r388;r395;r396;r397;
            r398;r412;r422;r431;r432;r436;r437;
        end;
    end;
end;

```

```

      circ:      begin
                  nthms:=nthms+4;
                  r020;r049;r050;r072;
                  if (i= 1) or (i = 2) then
                    begin
                      nthms:=nthms+13;

r078;r092;r103;r104;r105;r110;r118;r138;r139;r141;

r227;r228;r230;r271;r283;r308;r309;r313;r314;r315;
                      r359;r391;r430;
                    end;
                  if (i = 0) or (i = 2) then
                    begin
                      nthms:=nthms+6;
                      r071;r079;r092;r270;r289;r383;
                    end;
      end;
      ncomp:     begin
                  nthms:=nthms+2;
                  r044;r050;
                  if (i= 1) or (i = 2) then
                    begin
                      nthms:=nthms+6;
                      r015;r115;r135;r260;r305;r428;
                    end;
                  if (i = 0) or (i = 2) then
                    begin
                      nthms:=nthms+21;

r008;r037;r060;r071;r197;r215;r245;r246;r280;r339;

r344;r346;r348;r349;r350;r379;r383;r386;r398;r402;
                      r443;
                    end;
      end;
      xnum:      begin
                  nthms:=nthms+2;
                  r049;r140;
                  if (i= 1) or (i = 2) then
                    begin
                      nthms:=nthms+1;
                      r229;
                    end;
                  if (i = 0) or (i = 2) then
                    begin
                      nthms:=nthms+3;
                      r054;r059;r365;
                    end;
      end;
      arbor:     begin
                  nthms:=nthms+2;

```



```

        r049;r050;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+2;
                r051;r073;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+10;
            end;
r052;r053;r054;r083;r084;r096;r251;r268;r371;r397;
        end;
        end;
earbor: begin
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+4;
                r371;r372;r378;r379;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+4;
                r373;r375;r377;r380;
            end;
        end;
dom: begin
        nthms:=nthms+1;
        r264;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+6;
                r038;r215;r339;r340;r341;r386;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+20;
            end;
r026;r033;r179;r213;r214;r215;r243;r270;r272;r289;
r290;r291;r334;r337;r338;r387;r388;r405;r407;r415;
        end;
        end;
bwidth: begin
        nthms:=nthms+3;
        r049;r175;r335;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+13;
            end;
r036;r102;r124;r176;r191;r231;r232;r237;r249;r250;
        r268;r269;r422;
        end;

```

```

        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+9;
r146;r153;r199;r280;r332;r333;r336;r402;r443;
            end;
        end;
    thick: begin
        nthms:=nthms+2;
        r047;r370;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+6;
            r188;r194;r197;r328;r376;r380;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+12;
r189;r190;r191;r193;r255;r258;r326;r327;r368;r369;
            r372;r374;
        end;
        end;
    compl: begin
        nthms:=nthms+2;
        r040;r068;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+8;
            r052;r067;r080;r170;r208;r292;r321;r322;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+2;
            r020;r117;
        end;
        end;
    bipart: begin
        nthms:=nthms+1;
        r041;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+6;
            r116;r282;r288;r298;r325;r367;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+5;
            r301;r303;r326;r365;r368;
        end;
        end;
    connct: begin

```

```

        nthms:=nthms+10;

r043;r044;r045;r111;r146;r158;r160;r170;r172;r201;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+2;
                r101;r124;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+29;

r030;r052;r063;r067;r112;r172;r207;r208;r255;r264;

r265;r278;r279;r284;r289;r290;r292;r293;r320;r321;

r322;r325;r334;r338;r366;r375;r395;r411;r424;
            end;
        end;
    forest: begin
        nthms:=nthms+4;
        r043;r048;r049;r050;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+12;

r268;r269;r270;r344;r345;r346;r348;r349;r350;r354;
                r383;r412;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+4;
                r079;r280;r396;r422;
            end;
        end;
    tree: begin
        nthms:=nthms+1;
        r043;
        if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+4;
                r034;r289;r292;r395;
            end;
        if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+2;
                r273;r332;
            end;
        end;
    cycle: begin
        nthms:=nthms+5;
        r045;r049;r067;r160;r207;

```

```

        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+2;
            r052;r292;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+2;
            r282;r424;
        end;
    end;
reg:    begin
        nthms:=nthms+5;
        r046;r049;r057;r081;r202;
        if (i= 1) or (i = 2) then
        begin
            nthms:=nthms+4;
            r068;r161;r292;r393;
        end;
        if (i = 0) or (i = 2) then
        begin
            nthms:=nthms+29;

r052;r148;r151;r162;r163;r180;r187;r288;r304;r313;

r314;r315;r316;r320;r321;r322;r325;r329;r356;r357;

r360;r367;r375;r403;r427;r433;r434;r435;r444;
            end;
        end;
    hamil:    begin
        nthms:=nthms+9;

r064;r065;r066;r072;r073;r077;r112;r120;r162;
            if (i= 1) or (i = 2) then
            begin
                nthms:=nthms+16;

r092;r161;r163;r281;r289;r297;r301;r302;r303;r309;
                r310;r313;r314;r315;r330;r358;
            end;
            if (i = 0) or (i = 2) then
            begin
                nthms:=nthms+4;
                r127;r274;r359;r409;
            end;
        end;
    plnar:    begin
        nthms:=nthms+4;
        r035;r036;r047;r054;
        if (i= 1) or (i = 2) then
        begin

```

```

        nthms:=nthms+3;
        r048;r298;r300;
    end;
    if (i = 0) or (i = 2) then
    begin
        nthms:=nthms+13;

r066;r148;r149;r287;r301;r302;r309;r310;r351;r381;
        r382;r401;r425;
    end;
    end;
    end;
    end;
    for i:=1 to ntt do
        if errcode = 0 then evalTempRule(i);
    end;
    if errcode = 0 then
    begin
        moveCurToCopyI(coppyptr);
        primary:=numtables;
        rtopcopy[coppyptr]:=ruletop;
    end;
end;

procedure changes(i:longint);
(*****
(*)
(*) if an activated rule causes *)
(*) a change, evaluate the *)
(*) other rules. If not, *)
(*) reset to prior table. *)
(*)
(*****)
var t:longint;
    alphas:char;
begin
    if errcode = 0 then
        if stack > 0 then
            begin
                cflag:=true;
                if i > 0 then action:='TT- '
                    else action:=' R- ';
                biaction:='act';
                actionrel:=' ';
                t:=7;
                i:=abs(i);
                while i > 0 do
                    begin
                        t:=t-1;
                        numToChar(i,alphas);
                        action[t]:=alphas;
                        i:=i div 10;

```

```

        end;
        if errcode = 0 then eval;
    end
else
    begin
        cflag:=false;
        writeln(' No changes made. ');
        moveForward;
        if errcode = 0 then savesw:=true;
    end;
end;

procedure executerule(i:longint);
(*****
(*)
(*)      causes the execution of the single rule i and      (*)
(*)      any rules that might be affected by rule i.        (*)
(*)
(*****
begin
    if errcode = 0 then
    begin
        if not trace then
        begin
            rule:=blk5;
            cart:=blk;
            savesw:=true;
            push(-i);
            if errcode = 0 then
            begin
                activerule[i]:=true;
                write(sysm:1, ' Theorem',i:4,': reactivated. ');
            end;
        end;
        nthms:=nthms+1;
        if errcode = 0 then
        case i of
            1:r001;  2:r002;  3:r003;  4:r004;  5:r005;  6:r006;
7:r007;
            8:r008;  9:r009; 10:r010; 11:r011; 12:r012; 13:    ;
14:    ;
            15:r015; 16:r016; 17:r017; 18:r018; 19:r019; 20:r020;
21:r021;
            22:r022; 23:r023; 24:r024; 25:r025; 26:r026; 27:r027;
28:r028;
            29:r029; 30:r030; 31:r031; 32:r032; 33:r033; 34:r034;
35:r035;
            36:r036; 37:r037; 38:r038; 39:r039; 40:r040; 41:r041;
42:r042;
            43:r043; 44:r044; 45:r045; 46:r046; 47:r047; 48:r048;
49:r049;
            50:r050; 51:r051; 52:r052; 53:r053; 54:r054; 55:r055;

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56:r056;
57:r057; 58:r058; 59:r059; 60:r060; 61:r061; 62:r062;
63:r063;
64:r064; 65:r065; 66:r066; 67:r067; 68:r068; 69:r069;
70:r070;
71:r071; 72:r072; 73:r073; 74: ; 75:r075; 76:r076;
77:r077;
78:r078; 79:r079; 80:r080; 81:r081; 82:r082; 83:r083;
84:r084;
85:r085; 86:r086; 87:r087; 88:r088; 89:r089; 90:r090;
91:r091;
92:r092; 93:r093; 94:r094; 95:r095; 96:r096; 97:r097;
98:r098;

99:r099;100:r100;101:r101;102:r102;103:r103;104:r104;105:r105;
106:r106;107:r107;108:r108;109:r109;110:r110;111:r111;112:r112;
113:r113;114:r114;115:r115;116:r116;117:r117;118:r118;119:r119;
120:r120;121:r121;122:r122;123:r123;124:r124;125:r125;126:r126;
127:r127;128:r128;129:r129;130:r130;131:r131;132:r132;133:r133;
134:r134;135:r135;136:r136;137: ;138:r138;139:r139;140:r140;
141:r141;142: ;143:r143;144:r144;145:r145;146:r146;147:r147;
148:r148;149:r149;150:r150;151:r151;152:r152;153:r153;154: ;
155:r155;156:r156;157:r157;158:r158;159:r159;160:r160;161:r161;
162:r162;163:r163;164:r164;165:r165;166:r166;167:r167;168:r168;
169:r169;170:r170;171:r171;172:r172;173:r173;174:r174;175:r175;
176:r176;177: ;178:r178;179:r179;180:r180;181:r181;182:r182;
183:r183;184:r184;185:r185;186:r186;187:r187;188:r188;189:r189;
190:r190;191:r191;192:r192;193:r193;194:r194;195:r195;196:r196;
197:r197;198:r198;199:r199;200:r200;201:r201;202:r202;203:r203;
204:r204;205:r205;206:r206;207:r207;208:r208;209:r209;210:r210;
211:r211;212:r212;213:r213;214:r214;215:r215;216:r216;217:r217;
218:r218;219:r219;220:r220;221:r221;222:r222;223:r223;224:r224;
225:r225;226:r226;227:r227;228:r228;229:r229;230:r230;231:r231;

232:r232;233:r233;234:r234;235:r235;236:r236;237:r237;238:r238;
239:r239;240:r240;241:r241;242:r242;243:r243;244:r244;245:r245;
246:r246;247:r247;248:r248;249:r249;250:r250;251:r251;252:r252;
253:r253;254:r254;255:r255;256:r256;257:r257;258:r258;259:r259;
260:r260;261:r261;262:r262;263:r263;264:r264;265:r265;266:r266;
267:r267;268:r268;269:r269;270:r270;271:r271;272:r272;273:r273;
274:r274;275:r275;276:r276;277:r277;278:r278;279:r279;280:r280;
281:r281;282:r282;283:r283;284:r284;285:r285;286:r286;287:r287;
288:r288;289:r289;290:r290;291:r291;292:r292;293:r293;294:r294;
295:r295;296:r296;297:r297;298:r298;299:r299;300:r300;301:r301;
302:r302;303:r303;304:r304;305:r305;306:r306;307:r307;308:r308;
309:r309;310:r310;311:r311;312:r312;313:r313;314:r314;315:r315;
316:r316;317:r317;318:r318;319:r319;320:r320;321:r321;322:r322;
323:r323;324:r324;325:r325;326:r326;327:r327;328:r328;329:r329;
330:r330;331:r331;332:r332;333:r333;334:r334;335:r335;336:r336;
337:r337;338:r338;339:r339;340:r340;341:r341;342:r342;343:r343;
344:r344;345:r345;346:r346;347:r347;348:r348;349:r349;350:r350;
351:r351;352:r352;353:r353;354:r354;355:r355;356:r356;357:r357;
358:r358;359:r359;360:r360;361:r361;362:r362;363:r363;364:r364;
365:r365;366:r366;367:r367;368:r368;369:r369;370:r370;371:r371;
372:r372;373:r373;374:r374;375:r375;376:r376;377:r377;378:r378;
379:r379;380:r380;381:r381;382:r382;383:r383;384:r384;385:r385;
386:r386;387:r387;388:r388;389:r389;390:r390;391:r391;392:r392;
393:r393;394:r394;395:r395;396:r396;397:r397;398:r398;399:r399;
400:r400;401:r401;402:r402;403:r403;404:r404;405:r405;406:r406;
407:r407;408:r408;409:r409;410:r410;411:r411;412:r412;413:r413;


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414:r414;415:r415;416:r416;417:r417;418:r418;419:r419;420:r420;
421:r421;422:r422;423:r423;424:r424;425:r425;426:r426;427:r427;
428:r428;429:r429;430:r430;431:r431;432:r432;433:r433;434:r434;
435:r435;436:r436;437:r437;438:r438;439:r439;440:r440;441:r441;
442:r442;443:r443;444:r444;445:r445;446:r446;447:r447;448:r448;
449:r449;450:r450;451:r451;452:r452;453:r453;454:r454;455:r455;
    456:r456;457:r457;458:r458;459:r459;460:r460;
    end;
    if (not trace) and (errcode = 0) then
        begin
            changes(-i);
            if cflag then writeln;
        end;
    end;
end;

end.

```