FICHERO ENTRADA (“parentesco.d”)

```
Persona: Pedro, Maria, Alicia, Tomas, Juan, Barbara, Carolina,
Roberto, Cecilia, Ana, Francisco, Eduardo.

*progenitor(Persona, Persona)
Pedro, Tomas
Tomas, Barbara
Juan, Carolina
Pedro, Roberto
Roberto, Francisco
Francisco, Eduardo
Maria, Tomas
Alicia, Barbara
Barbara, Carolina
Maria, Roberto
Cecilia, Francisco
Ana, Eduardo
.
ancestro(Persona, Persona)
Pedro, Tomas
Pedro, Barbara
Pedro, Carolina
Pedro, Roberto
Pedro, Francisco
Pedro, Eduardo
Maria, Tomas
Maria, Barbara
Maria, Carolina
Maria, Roberto
Maria, Francisco
Maria, Eduardo
Tomas, Barbara
Tomas, Carolina
Alicia, Barbara
Alicia, Carolina
Juan, Carolina
Barbara, Carolina
Roberto, Francisco
Roberto, Eduardo
Cecilia, Francisco
Cecilia, Eduardo
Ana, Eduardo
Francisco, Eduardo
.
```

SALIDA

```
$ ./foil6 -v 3  < parentesco.d
FOIL 6.4   [January 1996]    Options:    verbosity level 3
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Relation *progenitor
Relation ancestro

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ancestro:
```

/* Inicio Primera Regla */

```
State (24/144, 107.0 bits available)

        A=B  0[0/12] [24/132]   gain 0.0,3.0
           [= tried 1/1] 0.0 secs
        progenitor(A,C)  24[36/144] [0/24]   gain 13.6,0.0
        progenitor(A,B)  12[12/12] [12/132]   gain 30.4,0.0
        progenitor(B,C)  12[12/86] [12/18]   abandoned(62%)
        progenitor(B,A)  0[0/4] [24/71]   abandoned(52%)
        progenitor(C,A)  6[12/32] [18/65]   abandoned(56%)
        progenitor(C,B)  24[48/140] [0/70]   abandoned(97%)
           [progenitor tried 6/6] 0.0 secs

        Save clause ending with progenitor(A,B) (cover 12, accuracy 100%)
        Best literal progenitor(A,B) (4.6 bits)

Initial clause (0 errs): ancestro(A,B) :- progenitor(A,B).
Clause 0: ancestro(A,B) :- progenitor(A,B).
```

/* Primera regla: `ancestro(A,B) :- progenitor(A,B)`
*** No incluye ningún negativo → PARAR**
*** Elimina 12 positivos**
*** Pedro, Barbara**
*** Pedro, Carolina**
*** Pedro, Francisco**
*** Pedro, Eduardo**
*** Maria, Barbara**
*** Maria, Carolina**
*** Maria, Francisco**
*** Maria, Eduardo**
*** Tomas, Carolina**
*** Alicia, Carolina**
*** Roberto, Eduardo**
*** Cecilia, Eduardo**
***/**

/* Inicio Segunda Regla */

```
State (12/132, 70.1 bits available)

        A=B  0[0/12] [12/120]   gain 0.0,1.6
           [= tried 1/1] 0.0 secs
        progenitor(A,C)  12[20/128] [0/24]   gain 8.8,0.0
        progenitor(A,B)  0[0/0] [12/132]   #
        progenitor(B,C)  4[4/136] [8/20]   gain 0.0,17.1
        progenitor(B,A)  0[0/4] [12/60]   abandoned(48%)
        progenitor(C,A)  2[4/24] [10/58]   abandoned(53%)
        progenitor(C,B)  12[24/116] [0/70]   abandoned(96%)
           [progenitor tried 6/6] 0.0 secs

        Best literal not(progenitor(B,C)) (4.6 bits)
```

/* Regla Actual : ancestro(A,B) :- not(progenitor(B,C)) */

```
State (8/20, 49.3 bits available)

        A=B  0[0/2] [8/18]   gain 0.0,1.2
           [= tried 1/1] 0.0 secs
        progenitor(A,C)  8[12/20] [0/4]   gain 4.2,0.0
        progenitor(A,B)  0[0/0] [8/15]   abandoned(75%)
        progenitor(B,A)  0[0/0] [8/15]   abandoned(75%)
        progenitor(C,A)  2[4/20] [6/10]   gain 0.0,3.4
        progenitor(C,B)  8[16/30] [0/0]   abandoned(75%)
           [progenitor tried 5/6] 0.0 secs

        Save not(progenitor(C,A)) (6,10 value 16.2)
        Best literal progenitor(A,C) (4.6 bits)
```

/* Regla Actual : ancestro(A,B) :- not(progenitor(B,C)), progenitor(A,C) */

```
State (12/20 [8/16], 45.7 bits available)

        A=B  0[0/0] [12/20]   gain 0.0,0.0
        A=C  0[0/0] [12/20]   gain 0.0,0.0
        B=C  0[0/0] [12/20]   gain 0.0,0.0
           [= tried 3/3] 0.0 secs
        ancestro(B,D)  0[0/0] [12/20]   A=D B=D C=D #
        ancestro(B,A)  0[0/0] [12/20]   gain 0.0,0.0
        ancestro(B,C)  0[0/0] [12/20]   gain 0.0,0.0
        ancestro(C,D)  12[20/24] [0/4]   gain 5.3,0.0
        ancestro(C,A)  0[0/0] [12/16]   abandoned(80%)
        ancestro(C,B)  8[8/8] [4/12]   gain 5.5,0.0
        ancestro(D,A)  2[4/12] [10/14]   abandoned(95%)
           [ancestro tried 7/7] 0.0 secs
        progenitor(A,B)  0[0/0] [12/16]   abandoned(80%)
        progenitor(B,D)  0[0/0] [12/17]   abandoned(85%) (pruning subsumed args.)
        progenitor(C,D)  12[12/16] [0/4]   [Det] gain 3.7,0.0
        progenitor(C,A)  0[0/0] [12/14]   abandoned(70%)
        progenitor(C,B)  3[3/3] [8/8]   abandoned(55%)
        progenitor(D,A)  2[4/4] [10/12]   abandoned(70%)
        progenitor(D,B)  12[24/28] [0/0]   abandoned(70%)
        progenitor(D,C)  12[24/28] [0/0]   abandoned(70%)
           [progenitor tried 8/12] 0.0 secs

        Save clause ending with ancestro(C,B) (cover 8, accuracy 100%)
        Determinate literals: progenitor(C,D)
                Note A>B A>C A>D B<C
```

/* Regla Actual : ancestro(A,B) :- not(progenitor(B,C)), progenitor(A,C), ancestro(C,B) */

```
State (12/16 [8/12], 45.7 bits available, 1 weak literal)
        A=B  0[0/0] [12/16]   gain 0.0,0.0
        A=C  0[0/0] [12/16]   gain 0.0,0.0
        A=D  0[0/0] [12/16]   gain 0.0,0.0
        B=C  0[0/0] [12/16]   gain 0.0,0.0
        B=D  4[4/4] [8/12]   gain 1.5,0.0
        C=D  0[0/0] [12/15]   abandoned(93%)   [= tried 6/6] 0.0 secs
        ancestro(A,C)  12[12/15] [0/0]   abandoned(93%)
        ancestro(B,E)  0[0/0] [12/16]   abandoned(100%) (pruning subsumed args.)
        ancestro(C,E)  12[20/24] [0/0]   gain 1.6,0.0
        ancestro(C,A)  0[0/0] [12/15]   abandoned(93%)
        ancestro(C,B)  8[8/8] [4/8]   gain 3.1,0.0
        ancestro(C,D)  12[12/14] [0/0]   abandoned(87%)
        ancestro(D,E)  8[8/8] [4/8]   gain 3.1,0.0
        ancestro(D,A)  0[0/0] [12/14]   abandoned(87%)
        ancestro(D,B)  4[4/4] [8/9]   abandoned(81%)
        ancestro(D,C)  0[0/0] [12/14]   abandoned(87%)
        ancestro(E,A)  2[4/8] [10/12]   abandoned(100%)
        ancestro(E,C)  12[32/40] [0/0]   abandoned(87%) [ancestro tried 12/15] 0.0 secs
        progenitor(A,E)  12[20/23] [0/0]   abandoned(93%)
        progenitor(A,B)  0[0/0] [12/14]   abandoned(87%)
        progenitor(A,D)  0[0/0] [12/14]   abandoned(87%)
        progenitor(B,E)  0[0/0] [12/15]   abandoned(93%) (pruning subsumed args.)
        progenitor(C,A)  0[0/0] [12/14]   abandoned(87%)
        progenitor(C,B)  4[4/4] [8/9]   abandoned(81%)
        progenitor(D,E)  8[8/8] [4/8]   gain 3.1,0.0
        progenitor(D,A)  0[0/0] [12/14]   abandoned(87%)
        progenitor(D,B)  4[4/4] [8/9]   abandoned(81%)
        progenitor(D,C)  0[0/0] [12/14]   abandoned(87%)
        progenitor(E,A)  2[4/8] [10/12]   abandoned(100%)
        progenitor(E,B)  12[24/28] [0/0]   abandoned(87%)
        progenitor(E,C)  12[24/28] [0/0]   abandoned(87%)
        progenitor(E,D)  12[24/28] [0/0]   abandoned(87%)  [progenitor tried 14/20] 0.0 se

        Save ancestro(D,E) (4,4 value 13.4)
        Save progenitor(D,E) (4,4 value 13.4)
        Best literal ancestro(C,B) (6.5 bits)
[Replace by saved clause]
```

/* Retoma y refina versión anterior de la regla */

```
Initial clause (0 errs): ancestro(A,B) :- not(progenitor(B,C)),
                                          progenitor(A,C),
                                          ancestro(C,B).
                ancestro(C,B) essential
                progenitor(A,C) essential
                not(progenitor(B,C)) removed
Clause 1: ancestro(A,B) :- progenitor(A,C),
                           ancestro(C,B).
        Clause 0 needed for     Pedro,Tomas
        Clause 1 needed for     Pedro,Barbara
```

/* Reglas Finales */

```
ancestro(A,B) :- progenitor(A,B).
ancestro(A,B) :- progenitor(A,C), ancestro(C,B).

Time 0.0 secs
```