Angel Hernandez

Project 1

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| female(eugenia).  female(maria).  female(graciela).  female(angelica).  female(erica).  female(jessica).%Grand  female(stephanie).%Grand  female(mary).%Great  female(dulce).%Great  female(testaunt).  male(guillermo).  male(abel).  male(angel).  male(jr).  male(jose).  male(juan).%Grand  male(antonio).%Great  male(leo).%Great  %family  parent(eugenia,angel).  parent(eugenia,jr).  parent(eugenia,graciela).  parent(eugenia,jose).  parent(guillermo,angel).  parent(guillermo,jr).  parent(guillermo,graciela).  parent(guillermo,jose).  %dad's brother family  parent(abel,angelica).  parent(abel,erica).  %grandparents of dad side  parent(jessica,abel).  parent(jessica,guillermo).  parent(juan,abel).  parent(juan,guillermo). | %grandparent of mom side  parent(stephanie,eugenia).  parent(stephanie,maria).  %GreatGrand of dad side  parent(mary,juan).  parent(antonio,juan).  parent(mary,testaunt).  parent(antonio,testaunt).  %Greatgrand of mom side  parent(dulce,stephanie).  parent(leo,stephanie).  ancestor(X,Y):-parent(X,Y).  ancestor(X,Y):-parent(X,Z), ancestor(Z,Y).  grandparent(X,Y):-parent(X,Z),parent(Z,Y).  grandfather(X,Y):-male(X),grandparent(X,Y).  grandmother(X,Y):-female(X),grandparent(X,Y).  mother(X,Y):-female(X),parent(X,Y).  father(X,Y):-male(X),parent(X,Y).  aunt(X,Y):-female(X),sister(Z,X),ancestor(Z,Y).  aunt(X,Y):-female(X),brother(Z,X),ancestor(Z,Y).  uncle(X,Y):-male(X),sister(Z,X),ancestor(Z,Y).  uncle(X,Y):-male(X),brother(Z,X),ancestor(Z,Y).  cousin(X,Y):-parent(Z,X),sister(Z,V),parent(V,Y).  cousin(X,Y):-parent(Z,X),brother(Z,V),parent(V,Y).  sister(X,Y):-female(X),parent(Z,X),parent(Z,Y),X\=Y.  brother(X,Y):-male(X),parent(Z,X),parent(Z,Y),X\=Y.  descendant(X,Y):-parent(Y,X).  descendant(X,Y):-parent(Y,Z),ancestor(Z,X). |

Code:

Test Cases:

1. ancestor(A,B)
   1. Far away ancestor Greatgrandmother:

1 ?- ancestor(dulce,angel).

true.

* 1. Close ancestor father:

2 ?- ancestor(guillermo,angel).

true.

* 1. Uncle:

3 ?- ancestor(abel,angel).

false.

* 1. Cousin:

4 ?- ancestor(erica,angel).

false.

1. grandparent(A,B):

1 ?- grandparent(A,B).

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| A = jessia,  B = angelica ;  A = jessia,  B = erica ;  A = jessica,  B = angel ;  A = jessica,  B = jr ;  A = jessica,  B = graciela ; | A = jessica,  B = jose ;  A = juan,  B = angelica ;  A = juan,  B = erica ;  A = juan,  B = angel ;  A = juan,  B = jr ;  A = juan,  B = graciela ; | A = juan,  B = jose ;  A = stephanie,  B = angel ;  A = stephanie,  B = jr ;  A = stephanie,  B = graciela ;  A = stephanie,  B = jose ;  A = mary,  B = abel ; | A = antonio,  B = guillermo ;  A = dulce,  B = eugenia ;  A = dulce,  B = maria ;  A = leo,  B = eugenia ;  A = leo,  B = maria. |

1. grandfather(A,B).

5 ?- grandfather(A,B).

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| A = juan,  B = angelica ;  A = juan,  B = erica ;  A = juan,  B = angel ;  A = juan,  B = jr ;  A = juan,  B = graciela ;  A = juan, | B = jose ;  A = antonio,  B = abel ;  A = antonio,  B = guillermo ;  A = leo,  B = eugenia ;  A = leo,  B = maria. |

1. grandmother(A,B).

6 ?- grandmother(A,B).

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| A = jessica,  B = angel ;  A = jessica,  B = jr ;  A = jessica,  B = graciela ;  A = jessica,  B = jose ;  A = stephanie,  B = angel ;  A = stephanie,  B = jr ; | A = stephanie,  B = graciela ;  A = stephanie,  B = jose ;  A = mary,  B = abel ;  A = mary,  B = guillermo ;  A = dulce,  B = eugenia ;  A = dulce,  B = maria ; |

1. mother(A,B)

7 ?- mother(A,B).

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| A = eugenia,  B = angel ;  A = eugenia,  B = jr ;  A = eugenia,  B = graciela ;  A = eugenia,  B = jose ;  A = jessica,  B = abel ;  A = jessica,  B = guillermo ; | A = stephanie,  B = eugenia ;  A = stephanie,  B = maria ;  A = mary,  B = juan ;  A = mary,  B = testaunt ;  A = dulce,  B = stephanie ; |

1. father(A,B)

8 ?- father(A,B).

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| A = guillermo,  B = angel ;  A = guillermo,  B = jr ;  A = guillermo,  B = graciela ;  A = guillermo,  B = jose ; | A = abel,  B = angelica ;  A = abel,  B = erica ;  A = juan,  B = abel ;  A = juan,  B = guillermo ; | A = antonio,  B = juan ;  A = antonio,  B = testaunt ;  A = leo,  B = stephanie. |

1. aunt(A,B)

\*testaunt was created to check for greataunt. Since the code for aunt and uncle are the same, the only difference being gender, I did not include a test for greatuncle.

9 ?-aunt(A,B)

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| A = maria,  B = angel ;  A = maria,  B = jr ;  A = maria,  B = graciela ;  A = maria,  B = jose ;  A = testaunt,  B = abel ;  A = testaunt,  B = guillermo ;  A = testaunt,  B = angelica ; | A = testaunt,  B = erica ;  A = testaunt,  B = angel ;  A = testaunt,  B = jr ;  A = testaunt,  B = graciela ;  A = testaunt,  B = jose ;  A = testaunt,  B = abel ;  A = testaunt, | A = testaunt,  B = guillermo ;  A = testaunt,  B = angelica ;  A = testaunt,  B = erica ;  A = testaunt,  B = angel ;  A = testaunt,  B = jr ;  A = testaunt,  B = graciela ;  A = testaunt,  B = jose ; |

1. uncle(A,B)

\*The reason it looks twice is because I’m asking to check the ancestor, meaning if the person has two parents then it will check each parent’s children individually.

10 ?- uncle(A,B).

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| A = guillermo,  B = angelica ;  A = guillermo,  B = erica ;  A = guillermo,  B = angelica ;  A = guillermo,  B = erica ;  A = abel,  B = angel ;  A = abel;  B = jr ; | A = abel,  B = graciela ;  A = abel,  B = jose ;  A = abel,  B = angel ;  A = abel,  B = jr ;  A = abel,  B = graciela ;  A = abel,  B = jose ; |

1. cousin(A,B)

11 ?- cousin(A,B).

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| A = angel,  B = angelica ;  A = angel,  B = erica ;  A = jr,  B = angelica ;  A = jr,  B = erica ;  A = graciela,  B = angelica ;  A = graciela,  B = erica ;  A = jose,  B = angelica ;  A = jose,  B = erica ; | A = angelica,  B = angel ;  A = angelica,  B = jr ;  A = angelica,  B = graciela ;  A = angelica,  B = jose ;  A = erica,  B = angel ;  A = erica,  B = jr ;  A = erica,  B = graciela ;  A = erica,  B = jose . |

1. sister(A,B)

1 ?- sister(A,B).

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| A = eugenia,  B = maria ;  A = maria,  B = eugenia ;  A = graciela,  B = angel ;  A = graciela,  B = jr ;  A = graciela,  B = jose ;  A = graciela,  B = angel ;  A = graciela, | B = jr ;  A = graciela,  B = jose ;  A = angelica,  B = erica ;  A = erica,  B = angelica ;  A = testaunt,  B = juan ;  A = testaunt,  B = juan ; |

1. brother(A,B).

2 ?-brother(A.B).

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| A = guillermo,  B = abel ;  A = guillermo,  B = abel ;  A = abel,  B = guillermo ;  A = abel,  B = guillermo ;  A = angel,  B = jr ;  A = angel,  B = graciela ;  A = angel,  B = jose ;  A = angel,  B = jr ; | A = angel,  B = graciela ;  A = angel,  B = jose ;  A = jr,  B = angel ;  A = jr,  B = graciela ;  A = jr,  B = jose ;  A = jr,  B = angel ;  A = jr,  B = graciela ;  A = jr,  B = jose ;  A = jose,  B = angel ; | A = jose,  B = jr ;  A = jose,  B = graciela ;  A = jose,  B = angel ;  A = jose,  B = jr ;  A = jose,  B = graciela ;  A = juan,  B = testaunt ;  A = juan,  B = testaunt ; |

1. descendant(A,B)

3 ?-descendant(A,B).

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| A = angel,  B = eugenia ;  A = jr,  B = eugenia ;  A = graciela,  B = eugenia ;  A = jose,  B = eugenia ;  A = angel,  B = guillermo ;  A = jr,  B = guillermo ;  A = graciela,  B = guillermo ;  A = jose,  B = guillermo ;  A = angelica,  B = abel ;  A = erica,  B = abel ;  A = abel,  B = jessica ;  A = guillermo,  B = jessica ;  A = abel,  B = juan ;  A = guillermo,  B = juan ; | A = eugenia,  B = stephanie ;  A = maria,  B = stephanie ;  A = juan,  B = mary ;  A = juan,  B = antonio ;  A = testaunt,  B = mary ;  A = testaunt,  B = antonio ;  A = stephanie,  B = dulce ;  A = stephanie,  B = leo ;  A = angelica,  B = jessica ;  A = erica,  B = jessica ;  A = angel,  B = jessica ;  A = jr,  B = jessica ;  A = graciela,  B = jessica ;  A = jose,  B = jessica ; | A = angelica,  B = juan ;  A = erica,  B = juan ;  A = angel,  B = juan ;  A = jr,  B = juan ;  A = graciela,  B = juan ;  A = jose,  B = juan ;  A = angel,  B = stephanie ;  A = jr,  B = stephanie ;  A = graciela,  B = stephanie ;  A = jose,  B = stephanie ;  A = abel,  B = mary ;  A = guillermo,  B = mary ;  A = angelica,  B = mary ;  A = erica,  B = mary ; | A = angel,  B = mary ;  A = jr,  B = mary ;  A = graciela,  B = mary ;  A = jose,  B = mary ;  A = abel,  B = antonio ;  A = guillermo,  B = antonio ;  A = angelica,  B = antonio ;  A = erica,  B = antonio ;  A = angel,  B = antonio ;  A = jr,  B = antonio ;  A = graciela,  B = antonio ;  A = jose,  B = antonio ;  A = eugenia,  B = dulce ;  A = maria,  B = dulce ; | A = angel,  B = dulce ;  A = jr,  B = dulce ;  A = graciela,  B = dulce ;  A = jose,  B = dulce ;  A = eugenia,  B = leo ;  A = maria,  B = leo ;  A = angel,  B = leo ;  A = jr,  B = leo ;  A = graciela,  B = leo ;  A = jose,  B = leo ; |