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1  %Assignment - 1
2  male(jack).
3  male(oliver).
4  male(ali).
5  male(james).
6  male(simon).
7  male(harry).
8  female(helen).
9  female(sophie).
10 female(jess).
11 female(lily).
12
13 parent_of(jack,jess).
14 parent_of(jack,lily).
15 parent_of(helen, jess).
16 parent_of(helen, lily).
17 parent_of(oliver,james).
18 parent_of(sophie, james).
19 parent_of(jess, simon).
20 parent_of(ali, simon).
21 parent_of(lily, harry).
22 parent_of(james, harry).
23
24 %Rules
25 father_of(X,Y):- male(X),
26     parent_of(X,Y).
27
28 mother_of(X,Y):- female(X),
29     parent_of(X,Y).
30
31 grandfather_of(X,Y):- male(X),
32     parent_of(X,Z),
33     parent_of(Z,Y).
34
35 grandmother_of(X,Y):- female(X),
36     parent_of(X,Z),
37     parent_of(Z,Y).
38
39 sister_of(X,Y):- female(X),
40     parent_of(F, Y), parent_of(F, X), X \= Y.
41
42
43 brother_of(X,Y):- male(X),
44     parent_of(F, Y), parent_of(F,X), X \= Y.
45
46 aunt_of(X,Y):- female(X),
47     parent_of(Z,Y), sister_of(X,Z).
48
49 uncle_of(X,Y):- male(X),
50     parent_of(Z,Y), brother_of(X, Z).
51
52 ancestor_of(X,Y):- parent_of(X,Y).
53 ancestor_of(X,Y):- parent_of(Z,Y),
54     ancestor_of(X,Z).
55 %Assignment - 2
56 find_sum(A, B):- R is A + B, write('sum = '), write(R).
57 %Assignment - 3
58 find_product(A, B, C):- R is A * B * C, write('product = '), write(R).
59 %Assignment - 4
60 find_odd_even(A, X):- X == 0, write(A), write(' is even').
61 find_odd_even(A, X):- X \= 0, write(A), write(' is odd').
62 odd_even(A):- R is (A mod 2), find_odd_even(A, R).
63 %Assignment - 5
64 max_val(X, Y, X):- X >= Y.
65 max_val(X, Y, Y):- Y >= X.
66 %Assignment - 6
67 smallest(X, Y, Z, X):- X <= Y, X <= Z.
68 smallest(X, Y, Z, Y):- Y <= X, Y <= Z.
69 smallest(X, Y, Z, Z):- Z <= X, Z <= Y.
70 %Assignment - 7
71 largest(X, Y, Z, X):- X >= Y, X >= Z.
72 largest(X, Y, Z, Y):- Y >= X, Y >= Z.

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73 largest(X, Y, Z, Z):- Z >= X, Z >= Y.
74 maxdiff(A, B, C):- X is abs(A-B),
75     Y is abs(A-C),
76     Z is abs(B-C),
77     largest(X, Y, Z, R), write('max difference is '), write(R).
78 %Assignment - 8
79 find_ans(A, B, C, X, Y, Z, R):- R == X, write(' closest pair is '), write(A),
write(' and '), write(B).
80 find_ans(A, B, C, X, Y, Z, R):- R == Y, write(' closest pair is '), write(A),
write(' and '), write(C).
81 find_ans(A, B, C, X, Y, Z, R):- R == Z, write(' closest pair is '), write(B),
write(' and '), write(C).
82 closest(A, B, C):- X is abs(A-B),
83     Y is abs(A-C),
84     Z is abs(B-C),
85     smallest(X, Y, Z, R),
86     find_ans(A, B, C, X, Y, Z, R).
87

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