Home work 10 sample solution

Q1:
(a) $travel(X) :- young(X),\ enterprising(X).$
(b) $likes(\_,Y) :- book(Y),\ wellwritten(Y),\ haspictures(Y).$
        $likes(\_,Y) :- movie(Y),\ endshappy(Y).$

Q2:
(1)   call $abc(a,b)$.
$abc(a,b)$ is unified with the rule
        $abc(X,Y) :- cde(X,U),\ efg(V,U),\ hij(V,Y)$
,which yield
        $abc(a,b) :- cde(a,U),\ efg(V,U),\ hij(V,b).$

(2)   call $cde(a,U)$.
$cde(a,U)$ is unified with the fact $cde(a,b)$
,which yield
        $abc(a,b) :- cde(a,b),\ efg(V,b),\ hij(V,b).$

(3)   call $efg(V,b)$.
$efg(V,b)$ is unified with the fact $efg(d,b)$,
which yield
        $abc(a,b) :- cde(a,b),\ efg(d,b),\ hij(d,b).$

(4)   call $hij(d,b)$.   This goal fails.

(5)   redo $efg(V,b)$.   This goal fails.

(6)   redo $cde(a,U)$.
    $cde(a,U)$ is unified with the fact $cde(a,c)$,
which yield
        $abc(a,b) :- cde(a,c),\ efg(V,c),\ hij(V,b).$

(7)   call $efg(V,c)$.
    $efg(V,c)$ is unified with the fact $efg(h,c)$,
which yield
        $abc(a,b) :- cde(a,c),\ efg(h,c),\ hij(h,b).$

(8)   call $hij(h,b)$.   This goal succeeds.

(9)   The query abc(a,b) succeeds.

Q3:
        $? - consult(kennedy).$
        % familial compiled 0.00 sec, 2,200 bytes
        Yes
        $? - birth(\_,\_,P,\_,(\_,\_,1961)).$
        $P = robin\_Lawford;$

$P = edward\_KennedyJr$;
No
$? - birth(\_, patricia\_Kennedy, C, \_, \_)$.
$C = christopher\_Lawford$;
$C = sydney\_Lawford$;
$C = victoria\_Lawford$;
$C = robin\_Lawford$;
No
$? - halt$.

Q4:

$? - consult(familial)$.
% familial compiled 0.00 sec, 2,172 bytes
Yes
$? - consult(kennedy)$.
% $kennedy$ compiled 0.00 sec, 11,560 bytes
Yes
$? - brotherOf(X, john\_Kennedy)$.
$X = joseph\_KennedyJr$;
$X = rosemary\_Kennedy$;
$X = kathleen\_Kennedy$;
$X = eunice\_Kennedy$;
$X = patricia\_Kennedy$;
$X = robert\_Kennedy$;
$X = jean\_Kennedy$;
$X = edward\_Kennedy$;
No
$? - parentOf(edward\_KennedyJr, P), brotherOf(P, Uncle)$.
$P = edward\_Kennedy$
$Uncle = joseph\_KennedyJr$;

$P = edward\_Kennedy$
$Uncle = john\_Kennedy$;

$P = edward\_Kennedy$
$Uncle = robert\_Kennedy$;

No
$? - halt$.