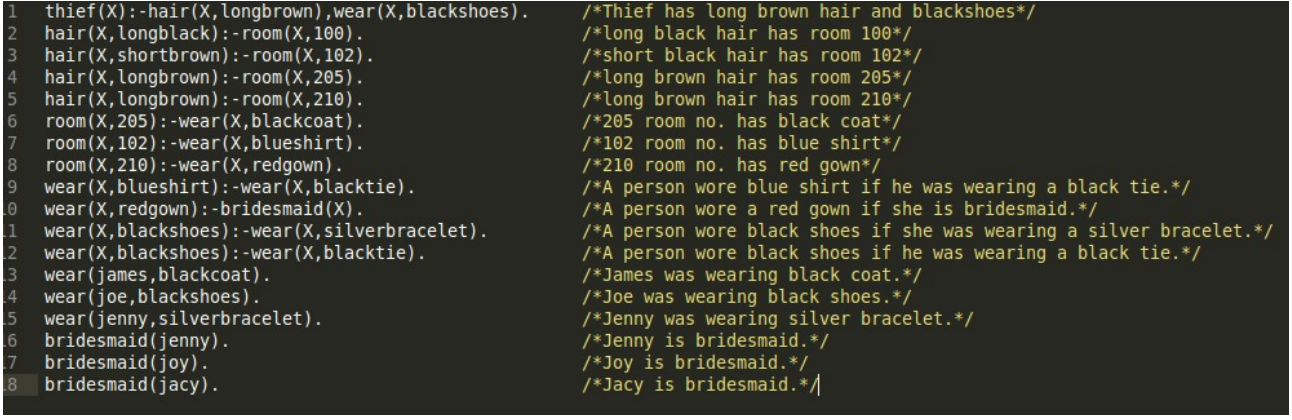
11010170
Prolog Assignment 1

Question 1



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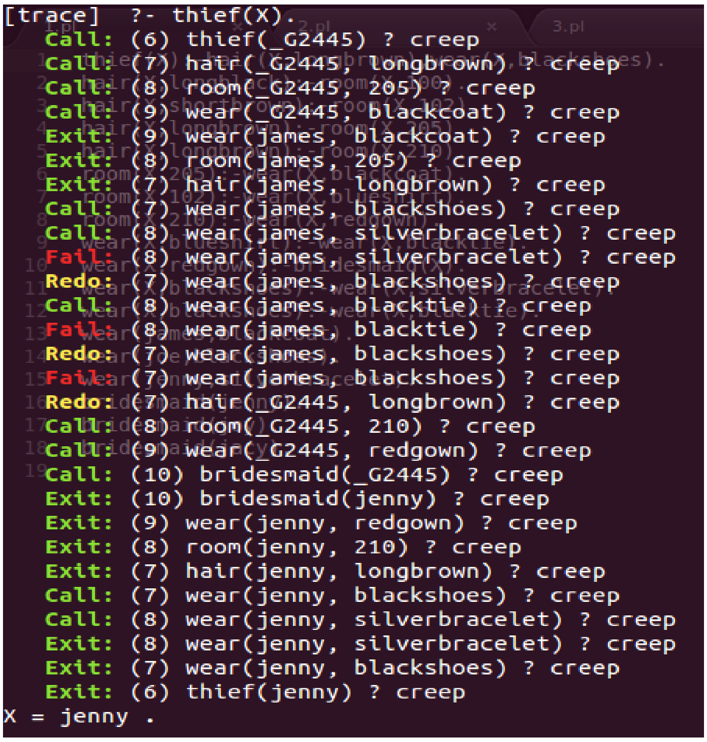
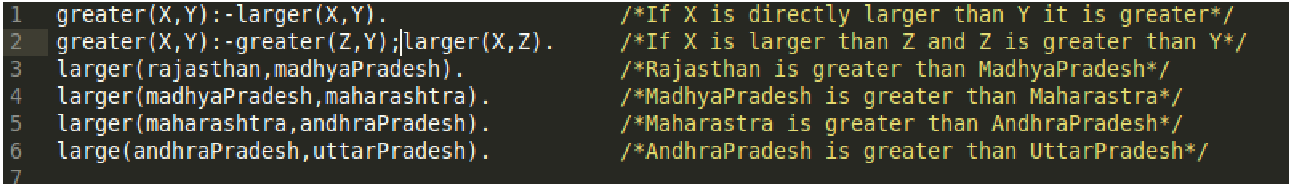
thief(X):-hair(X,longbrown),wear(X,blackshoes).       /*Thief has long brown hair and blackshoes*/
hair(X,longblack):-room(X,100).                       /*long black hair has room 100*/
hair(X,shortbrown):-room(X,102).                      /*short black hair has room 102*/
hair(X,longbrown):-room(X,205).                       /*long brown hair has room 205*/
hair(X,longbrown):-room(X,210).                       /*long brown hair has room 210*/
room(X,205):-wear(X,blackcoat).                       /*205 room no. has black coat*/
room(X,102):-wear(X,blueshirt).                       /*102 room no. has blue shirt*/
room(X,210):-wear(X,redgown).                         /*210 room no. has red gown*/
wear(X,blueshirt):-wear(X,blacktie).                  /*A person wore blue shirt if he was wearing a black tie.*/
wear(X,redgown):-bridesmaid(X).                       /*A person wore a red gown if she is bridesmaid.*/
wear(X,blackshoes):-wear(X,silverbracelet).           /*A person wore black shoes if she was wearing a silver bracelet.*/
wear(X,blackshoes):-wear(X,blacktie).                 /*A person wore black shoes if he was wearing a black tie.*/
wear(james,blackcoat).                                /*James was wearing black coat.*/
wear(joe,blackshoes).                                 /*Joe was wearing black shoes.*/
wear(jenny,silverbracelet).                           /*Jenny was wearing silver bracelet.*/
bridesmaid(jenny).                                    /*Jenny is bridesmaid.*/
bridesmaid(joy).                                      /*Joy is bridesmaid.*/
bridesmaid(jacy).                                     /*Jacy is bridesmaid.*/
```



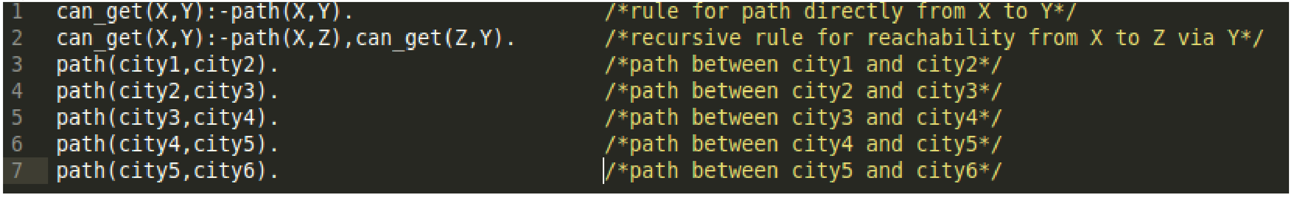
```
[trace]  ?- thief(X).
   Call: (6) thief(_G2445) ? creep
   Call: (7) hair(_G2445, longbrown) ? creep
   Call: (8) room(_G2445, 205) ? creep
   Call: (9) wear(_G2445, blackcoat) ? creep
   Exit: (9) wear(james, blackcoat) ? creep
   Exit: (8) room(james, 205) ? creep
   Exit: (7) hair(james, longbrown) ? creep
   Call: (7) wear(james, blackshoes) ? creep
   Call: (8) wear(james, silverbracelet) ? creep
   Fail: (8) wear(james, silverbracelet) ? creep
   Redo: (7) wear(james, blackshoes) ? creep
   Call: (8) wear(james, blacktie) ? creep
   Fail: (8) wear(james, blacktie) ? creep
   Redo: (7) wear(james, blackshoes) ? creep
   Fail: (7) wear(james, blackshoes) ? creep
   Redo: (7) hair(_G2445, longbrown) ? creep
   Call: (8) room(_G2445, 210) ? creep
   Call: (9) wear(_G2445, redgown) ? creep
   Call: (10) bridesmaid(_G2445) ? creep
   Exit: (10) bridesmaid(jenny) ? creep
   Exit: (9) wear(jenny, redgown) ? creep
   Exit: (8) room(jenny, 210) ? creep
   Exit: (7) hair(jenny, longbrown) ? creep
   Call: (7) wear(jenny, blackshoes) ? creep
   Call: (8) wear(jenny, silverbracelet) ? creep
   Exit: (8) wear(jenny, silverbracelet) ? creep
   Exit: (7) wear(jenny, blackshoes) ? creep
   Exit: (6) thief(jenny) ? creep
X = jenny .
```

Question 2

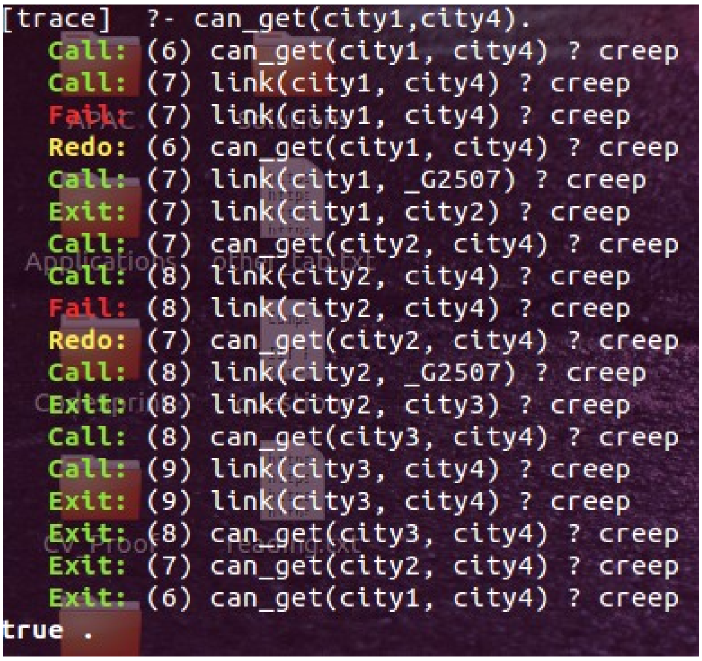


```
greater(X,Y):-larger(X,Y).                       /*If X is directly larger than Y it is greater*/
greater(X,Y):-greater(Z,Y);larger(X,Z).          /*If X is larger than Z and Z is greater than Y*/
larger(rajasthan,madhyaPradesh).                 /*Rajasthan is greater than MadhyaPradesh*/
larger(madhyaPradesh,maharashtra).               /*MadhyaPradesh is greater than Maharastra*/
larger(maharashtra,andhraPradesh).               /*Maharastra is greater than AndhraPradesh*/
large(andhraPradesh,uttarPradesh).               /*AndhraPradesh is greater than UttarPradesh*/
```

Question 3



```
can_get(X,Y):-path(X,Y).                    /*rule for path directly from X to Y*/
can_get(X,Y):-path(X,Z),can_get(Z,Y).       /*recursive rule for reachability from X to Z via Y*/
path(city1,city2).                          /*path between city1 and city2*/
path(city2,city3).                          /*path between city2 and city3*/
path(city3,city4).                          /*path between city3 and city4*/
path(city4,city5).                          /*path between city4 and city5*/
path(city5,city6).                          /*path between city5 and city6*/
```



```
[trace]  ?- can_get(city1,city4).
   Call: (6) can_get(city1, city4) ? creep
   Call: (7) link(city1, city4) ? creep
   Fail: (7) link(city1, city4) ? creep
   Redo: (6) can_get(city1, city4) ? creep
   Call: (7) link(city1, _G2507) ? creep
   Exit: (7) link(city1, city2) ? creep
   Call: (7) can_get(city2, city4) ? creep
   Call: (8) link(city2, city4) ? creep
   Fail: (8) link(city2, city4) ? creep
   Redo: (7) can_get(city2, city4) ? creep
   Call: (8) link(city2, _G2507) ? creep
   Exit: (8) link(city2, city3) ? creep
   Call: (8) can_get(city3, city4) ? creep
   Call: (9) link(city3, city4) ? creep
   Exit: (9) link(city3, city4) ? creep
   Exit: (8) can_get(city3, city4) ? creep
   Exit: (7) can_get(city2, city4) ? creep
   Exit: (6) can_get(city1, city4) ? creep
true .
```