

## Experiment-1:

Construction of a family tree, summation of an integer list & counting the number of elements from that list.

### Objective:

We have to create a prolog code to solve a family hierarchy and check the validation of this tree. Next we have to create another prolog code to determine the summation of an integer list as well as counting the number of elements of from that list.

Code: lab1.pl

male(rahim).

female(rahima).

male(karim).

female(neela).

male(kuddus).

female(marjina).

female(riya).

male(biplop).

female(rita).

male(rayhan).

female(meena).

parent\_of(rahim,neela).

parent\_of(rahim,karim).

parent\_of(rahim, kuddus).

parent\_of(karim, morjina).

parent\_of(karim,riya).

parent\_of(neela, biplop).

parent\_of(neela, rita).

parent\_of(kuddus, ryhan).

parent\_of(kussdus, meena).

/\* Rules \*/

father\_of(X,Y):- male(X),parent\_of(X,Y).

mother\_of(X,Y):- female(X),parent\_of(X,Y).

grandfather\_of(X,Y):- male(X),

parent\_of(X,Z),  
parent\_of(Z,Y).

grandmother\_of(X,Y):- female(X),  
parent\_of(X,Z),  
parent\_of(Z,Y).

sister\_of(X,Y):-female(X),  
father\_of(F, Y), father\_of(F,X),X \= Y.

sister\_of(X,Y):- female(X),  
mother\_of(M, Y), mother\_of(M,X),X \= Y.

brother\_of(X,Y):- %(X,Y or Y,X)%  
male(X),  
father\_of(F, Y), father\_of(F,X),X \= Y.

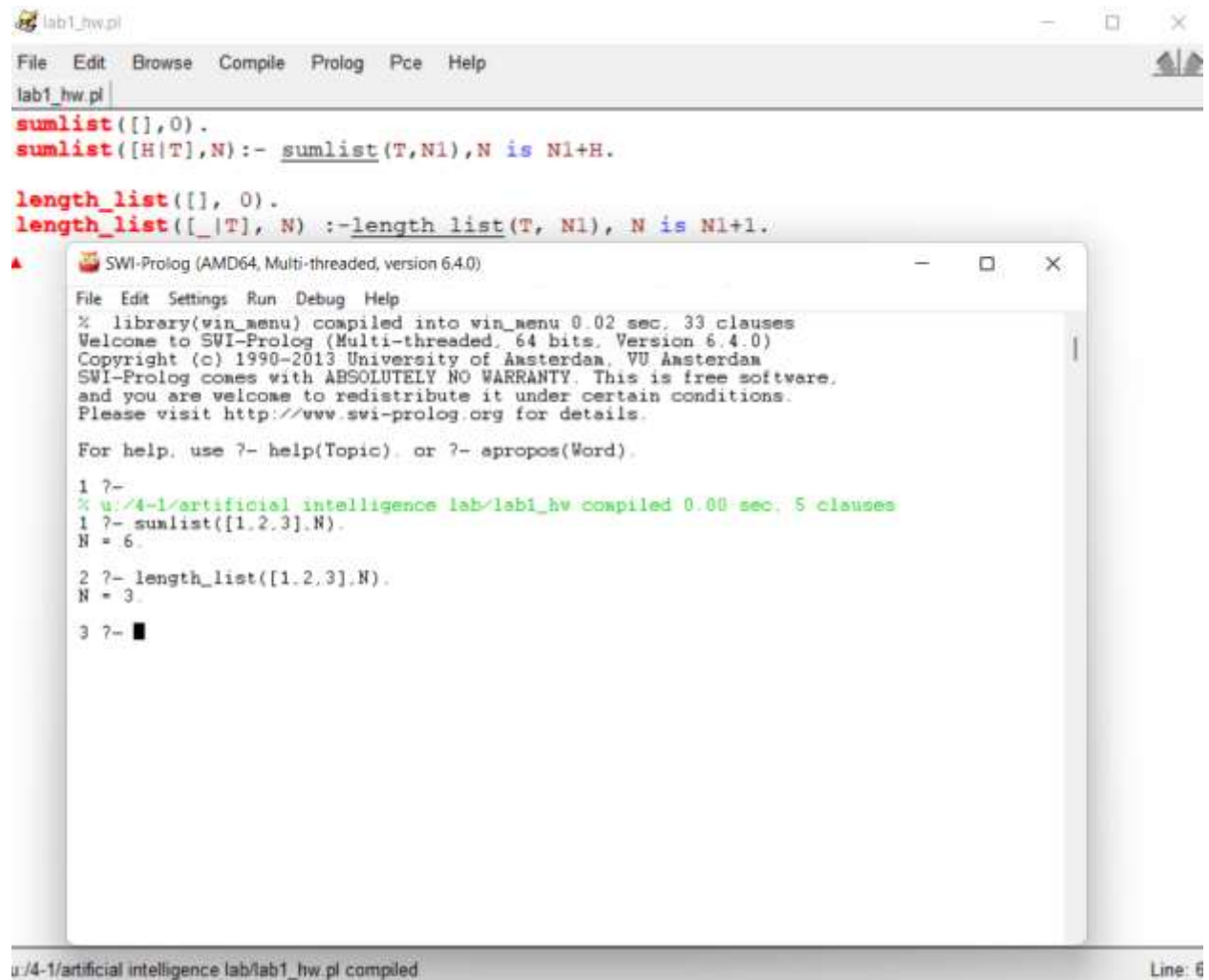
brother\_of(X,Y):- male(X),  
mother\_of(M, Y), mother\_of(M,X),X \= Y.

aunt\_of(X,Y):- female(X),  
parent\_of(Z,Y), sister\_of(Z,X),!.

uncle\_of(X,Y):-

parent\_of(Z,Y), brother\_of(Z,X).

Output:



```
lab1_hw.pl
File Edit Browse Compile Prolog Pce Help
lab1_hw.pl
sumlist([],0).
sumlist([H|T],N):- sumlist(T,N1),N is N1+H.

length_list([], 0).
length_list([_|T], N):-length_list(T, N1), N is N1+1.

SWI-Prolog (AMD64, Multi-threaded, version 6.4.0)
File Edit Settings Run Debug Help
% library(win_menu) compiled into win_menu 0.02 sec. 33 clauses
Welcome to SWI-Prolog (Multi-threaded, 64 bits, Version 6.4.0)
Copyright (c) 1990-2013 University of Amsterdam, VU Amsterdam
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and you are welcome to redistribute it under certain conditions.
Please visit http://www.swi-prolog.org for details.

For help, use ?- help(Topic). or ?- apropos(Word).

1 ?-
% u:/4-1/artificial intelligence lab/lab1_hw compiled 0.00 sec. 5 clauses
1 ?- sumlist([1,2,3],N).
N = 6.

2 ?- length_list([1,2,3],N).
N = 3.

3 ?- █

u:/4-1/artificial intelligence lab/lab1_hw.pl compiled Line: 6
```

Lab Home Work: Lab1\_hw.pl

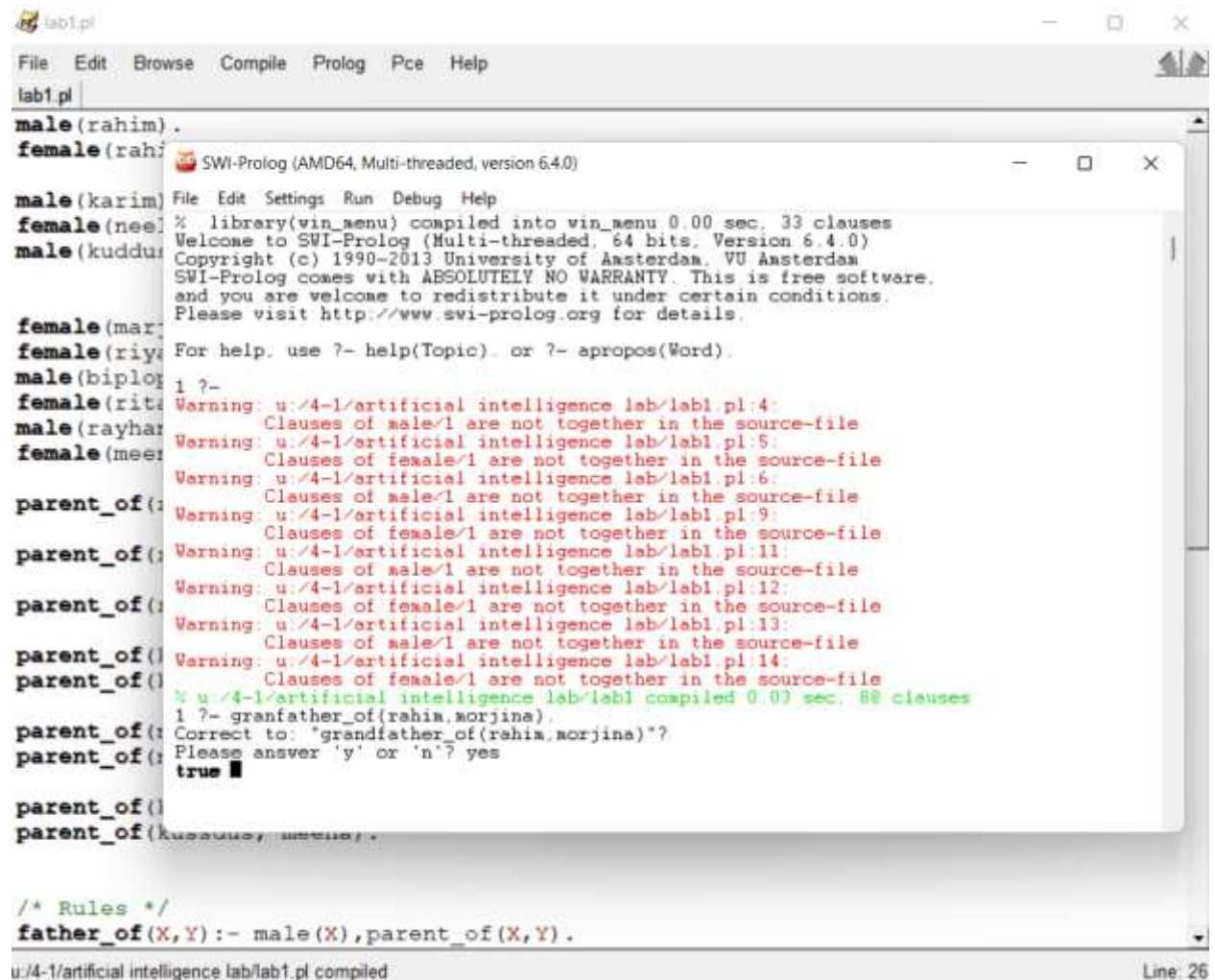
sumlist([],0).

sumlist([H|T],N):- sumlist(T,N1),N is N1+H.

length\_list([], 0).

length\_list([\_|T], N) :-length\_list(T, N1), N is N1+1.

Output:



```
lab1.pl
File Edit Browse Compile Prolog Pce Help
lab1.pl
male(rahim).
female(rahim).
male(karim).
female(neelam).
male(kuddus).
female(marjina).
female(riyaz).
male(biplob).
female(ritika).
male(rayhan).
female(meera).
parent_of(rahim, karim).
parent_of(rahim, neelam).
parent_of(karim, kuddus).
parent_of(karim, marjina).
parent_of(neelam, kuddus).
parent_of(neelam, marjina).
parent_of(kuddus, rayhan).
parent_of(kuddus, meera).
1 ?- granfather_of(rahim, marjina).
Correct to: 'grandfather_of(rahim, marjina)'?
Please answer 'y' or 'n'? yes
true
parent_of(karim, kuddus).
parent_of(karim, marjina).
/* Rules */
father_of(X,Y) :- male(X),parent_of(X,Y).
u:/4-1/artificial intelligence lab/lab1.pl compiled
```

SWI-Prolog (AMD64, Multi-threaded, version 6.4.0)

File Edit Settings Run Debug Help

% library(win\_menu) compiled into win\_menu 0.00 sec, 33 clauses  
Welcome to SWI-Prolog (Multi-threaded, 64 bits, Version 6.4.0)  
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and you are welcome to redistribute it under certain conditions.  
Please visit <http://www.swi-prolog.org> for details.

For help, use ?- help(Topic). or ?- apropos(Word).

1 ?-  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:4:  
Clauses of male/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:5:  
Clauses of female/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:6:  
Clauses of male/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:9:  
Clauses of female/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:11:  
Clauses of male/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:12:  
Clauses of female/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:13:  
Clauses of male/1 are not together in the source-file  
Warning: u:/4-1/artificial intelligence lab/lab1.pl:14:  
Clauses of female/1 are not together in the source-file  
% u:/4-1/artificial intelligence lab/lab1 compiled 0.03 sec, 88 clauses  
1 ?- granfather\_of(rahim, marjina).  
Correct to: 'grandfather\_of(rahim, marjina)'?  
Please answer 'y' or 'n'? yes  
true

Line: 26