


### 30. Write a Prolog Program to implement Towers of Hanoi.

#### Program:

```
move(1,X,Y,_):-
    write('Move top disk from '), write(X), write(' to '), write(Y), nl.
move(N,X,Y,Z):-
    N>1,
    M is N-1,
    move(M,X,Z,Y),
    move(1,X,Y,_),
    move(M,Z,Y,X).
```

#### OUTPUT:

 SWI-Prolog (AMD64, Multi-threaded, version 8.4.3)

```
File Edit Settings Run Debug Help
|
% c:/users/rohith kumar/onedrive/documents/prolog/tower of honoi compiled
0.00 sec, 0 clauses
|
    move(M,Z,Y,X).
    Call: (10) move(_25306, _25308, _25310, _25312) ? creep
    Call: (11) write('Move top disk from ') ? creep
Move top disk from
    Exit: (11) write('Move top disk from ') ? creep
    Call: (11) write(_25308) ? creep
_25308
    Exit: (11) write(_25308) ? creep
    Call: (11) write(' to ') ? creep
to
    Exit: (11) write(' to ') ? creep
    Call: (11) write(_25310) ? creep
_25310
    Exit: (11) write(_25310) ? creep
    Call: (11) nl ? creep

    Exit: (11) nl ? creep
    Exit: (10) move(1, _25308, _25310, _25312) ? creep
M = 1 .

[trace] ?- move(N,X,Y,Z).
    Call: (10) move(_37202, _37204, _37206, _37208) ? creep
    Call: (11) write('Move top disk from ') ? creep
Move top disk from
    Exit: (11) write('Move top disk from ') ? creep
    Call: (11) write(_37204) ? creep
_37204
    Exit: (11) write(_37204) ? creep
    Call: (11) write(' to ') ? creep
to
    Exit: (11) write(' to ') ? creep
    Call: (11) write(_37206) ? creep
_37206
    Exit: (11) write(_37206) ? creep
    Call: (11) nl ? creep

    Exit: (11) nl ? creep
    Exit: (10) move(1, _37204, _37206, _37208) ? creep
N = 1 .
```

