AI PRACTICAL FILE

Department of Computer Science

Aryabhatta College

University of Delhi

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Submitted To:

Ms. Neha Kumari

Submitted By:

Harsh Dev Shukla
College Rollno : CSC/21/60
University Rollno : 21059570012

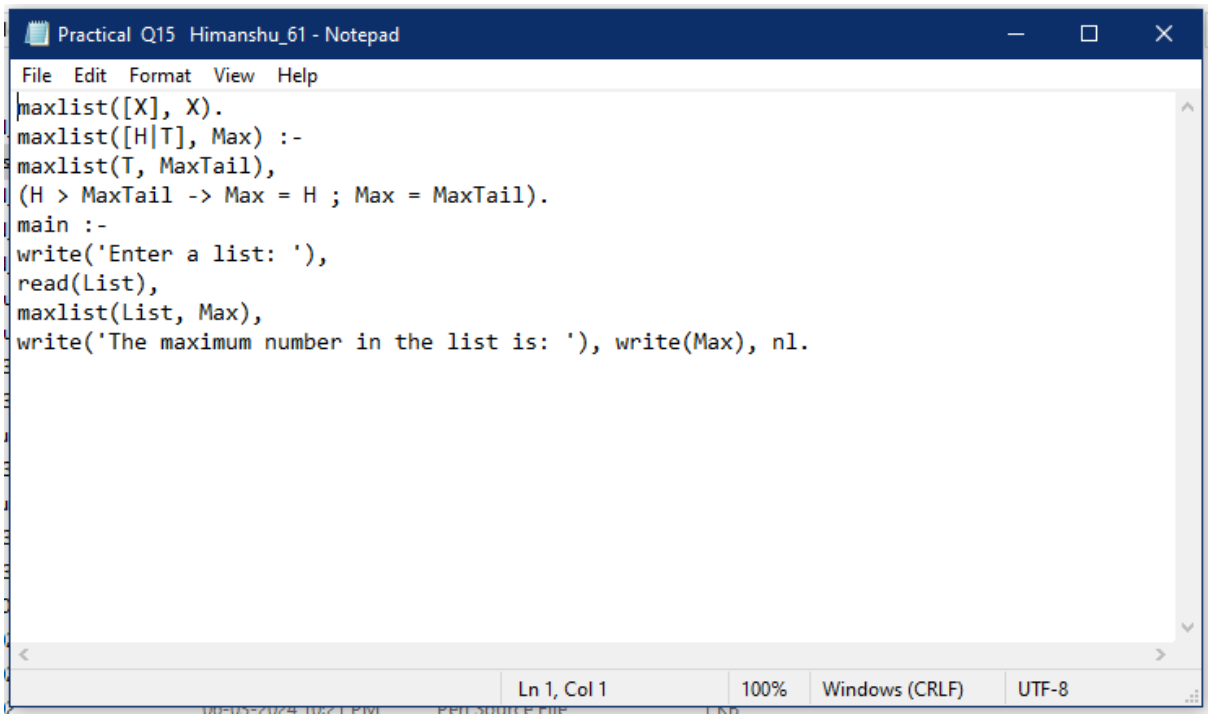
PRACTICAL Q15.

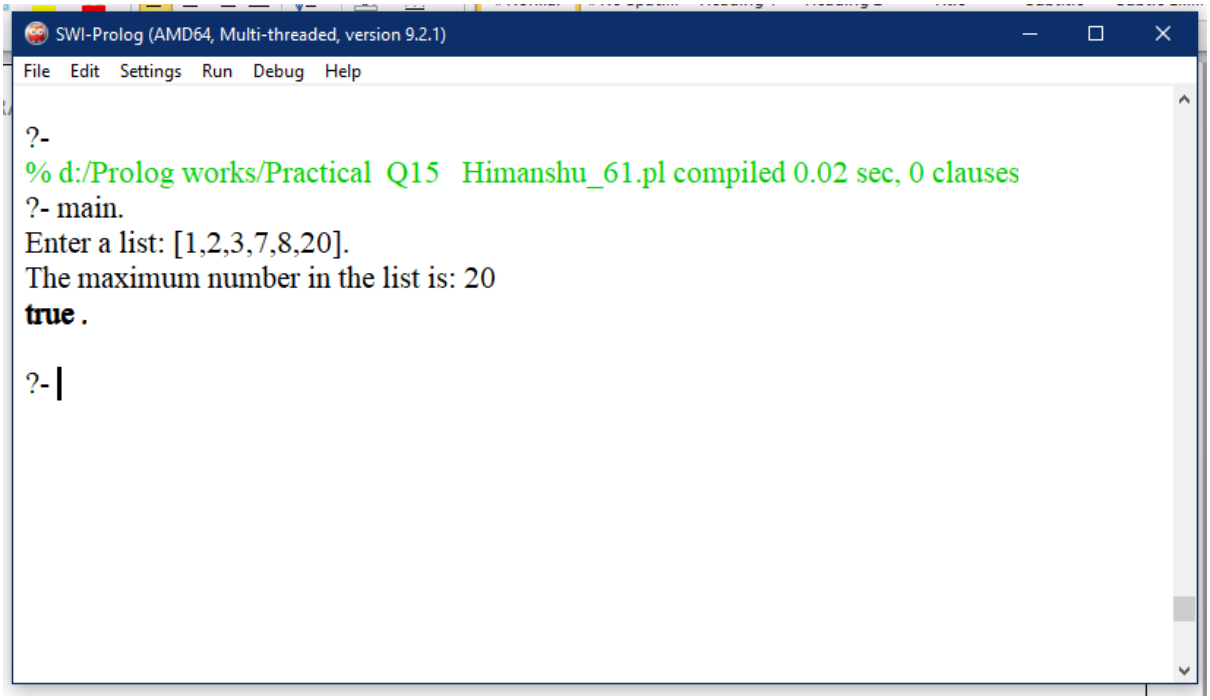
Write a Prolog program to implement maxlist(L, M) so that M is the maximum number in the list.

➢ CODE:

```
maxlist([X], X).
maxlist([H|T], Max) :-
maxlist(T, MaxTail),
(H > MaxTail -> Max = H ; Max = MaxTail).
main :-
write('Enter a list: '),
read(List),
maxlist(List, Max),
    write('The maximum number in the list is: '), write(Max), nl.
```

➢ OUTPUT:




SWI-Prolog (AMD64, Multi-threaded, version 9.2.1)
File Edit Settings Run Debug Help
?-
% d:/Prolog works/Practical Q15 Himanshu_61.pl compiled 0.02 sec, 0 clauses
?- main.
Enter a list: [1,2,3,7,8,20].
The maximum number in the list is: 20
true .
?-

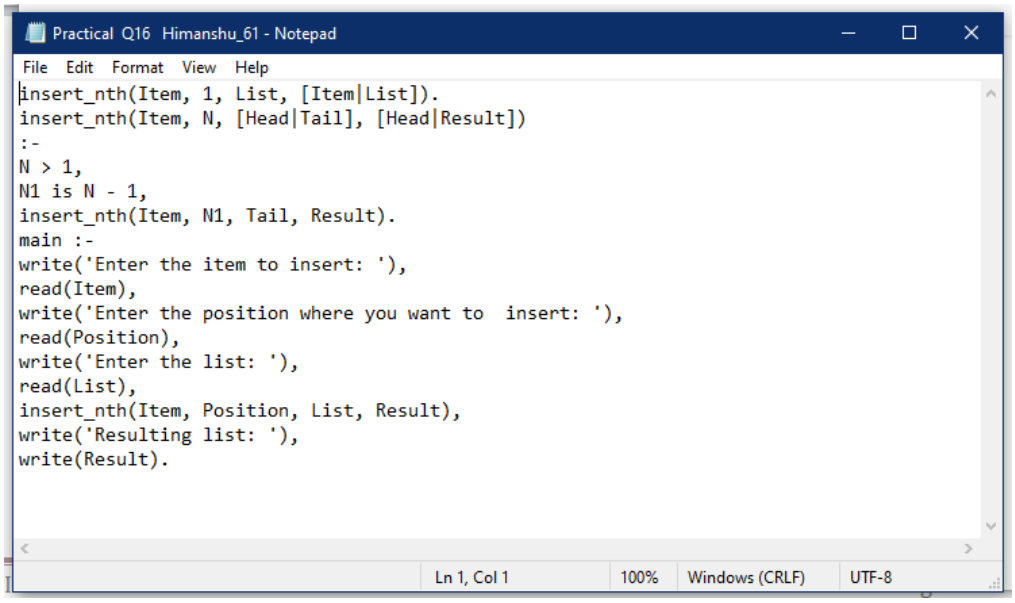
PRACTICAL Q16:

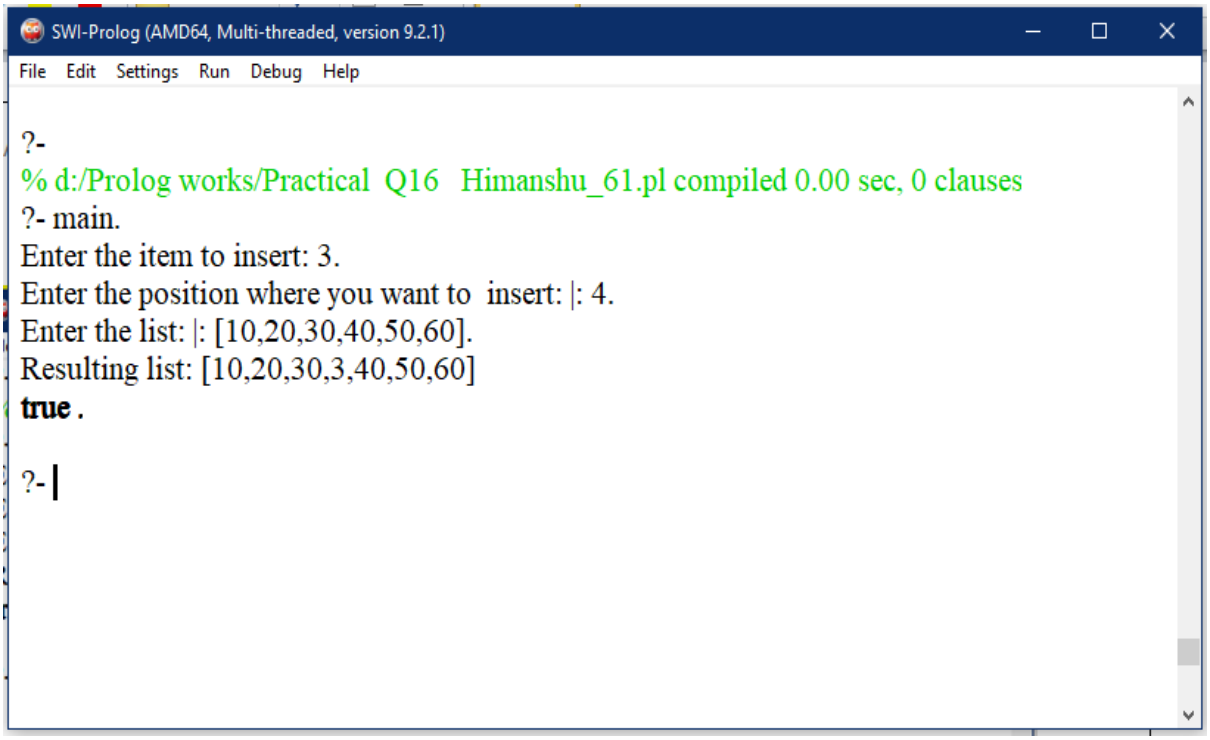
Write a prolog program to implement insert_nth (I, N, L, R) that inserts an item I into Nth position of list L to generate a list R.

➢ CODE:

```
insert_nth(Item, 1, List, [Item|List]).
insert_nth(Item, N, [Head|Tail], [Head|Result])
:-
N > 1,
N1 is N - 1,
insert_nth(Item, N1, Tail, Result).
main :-
write('Enter the item to insert: '),
read(Item),
write('Enter the position to insert: '),
read(Position),
write('Enter the list: '),
read(List),
insert_nth(Item, Position, List, Result),
write('Resulting list: '),
write(Result).
```

➢ OUTPUT:




SWI-Prolog (AMD64, Multi-threaded, version 9.2.1)
File Edit Settings Run Debug Help
?-
% d:/Prolog works/Practical Q16 Himanshu_61.pl compiled 0.00 sec, 0 clauses
?- main.
Enter the item to insert: 3.
Enter the position where you want to insert: |: 4.
Enter the list: |: [10,20,30,40,50,60].
Resulting list: [10,20,30,3,40,50,60]
true .
?-

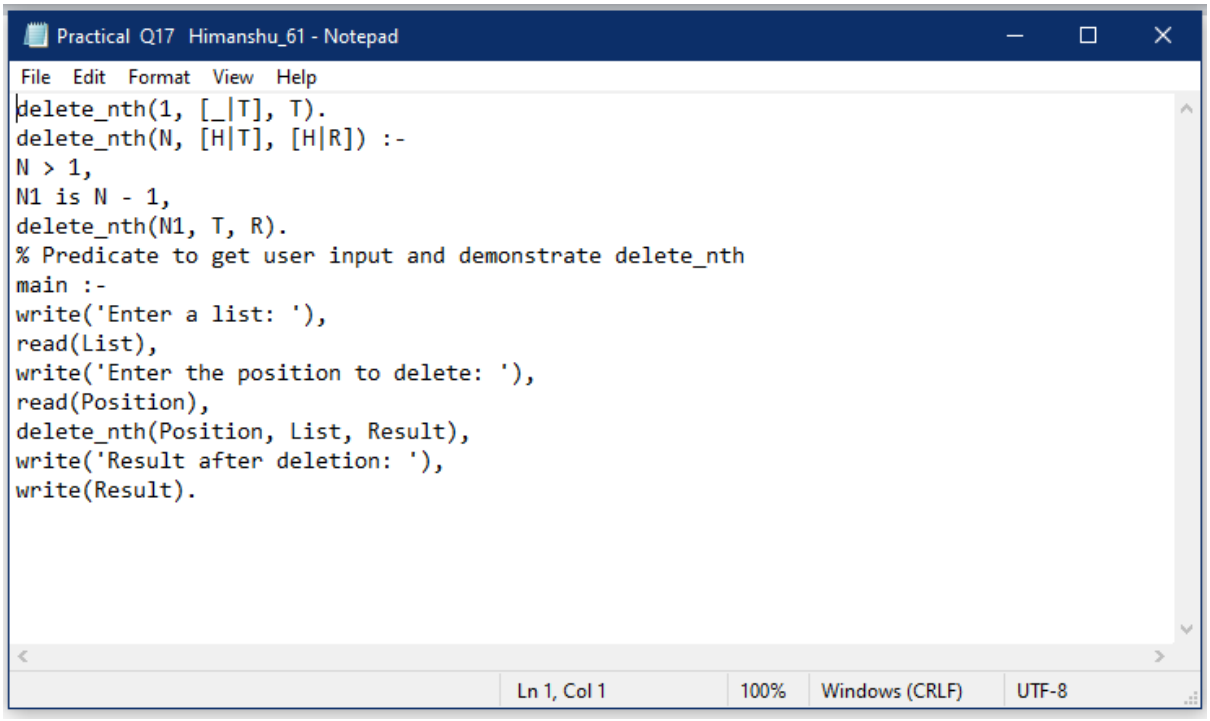
PRACTICAL Q17.

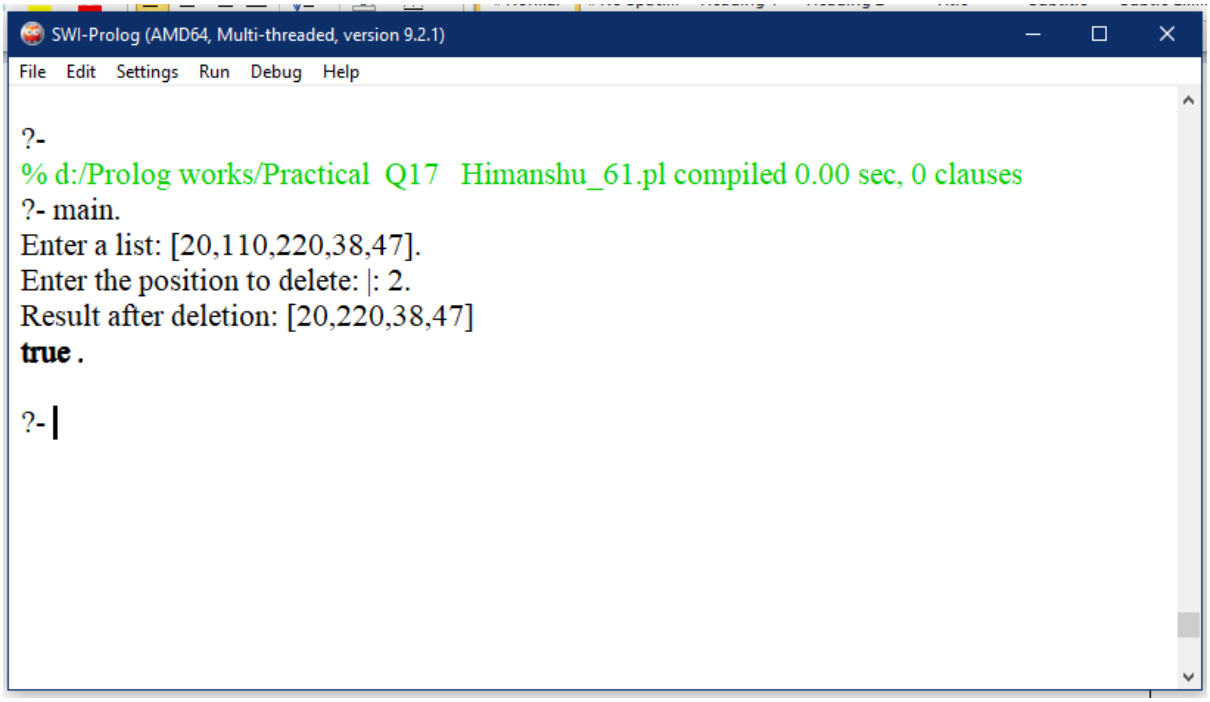
Write a Prolog program to implement delete_nth (N, L, R) that removes the element n Nth position from a list L to generate a list R.

➢ CODE:

```
delete_nth(1, [_|T], T).
delete_nth(N, [H|T], [H|R]) :-
N > 1,
N1 is N - 1,
delete_nth(N1, T, R).
% Predicate to get user input and demonstrate delete_nth
main :-
write('Enter a list: '),
read(List),
write('Enter the position to delete: '),
read(Position),
delete_nth(Position, List, Result),
write('Result after deletion: '),
    write(Result).
```

➢ OUTPUT:




SWI-Prolog (AMD64, Multi-threaded, version 9.2.1)
File Edit Settings Run Debug Help
?-
% d:/Prolog works/Practical Q17 Himanshu_61.pl compiled 0.00 sec, 0 clauses
?- main.
Enter a list: [20,110,220,38,47].
Enter the position to delete: |: 2.
Result after deletion: [20,220,38,47]
true .
?-

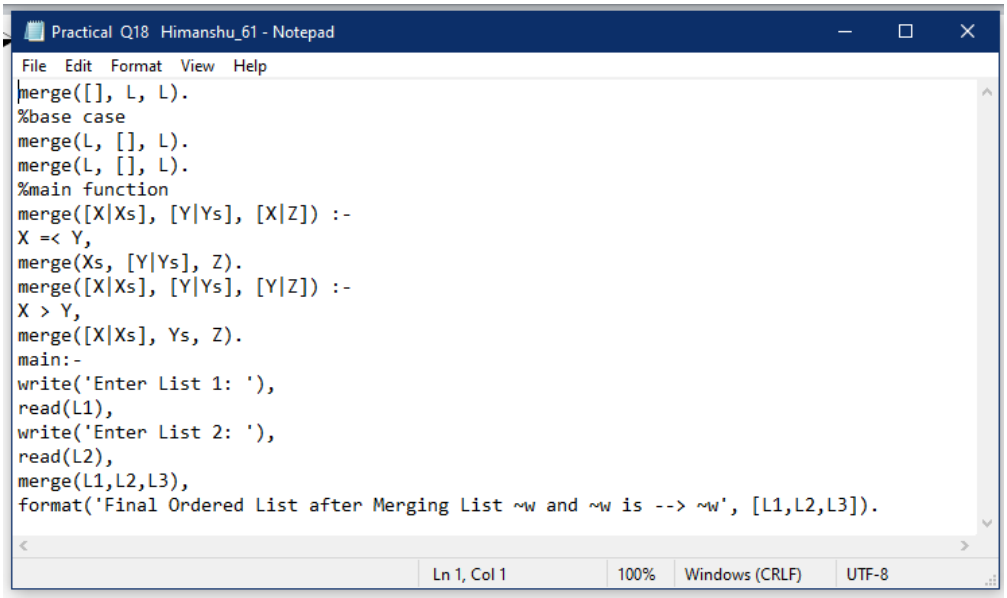
PRACTICAL Q18:

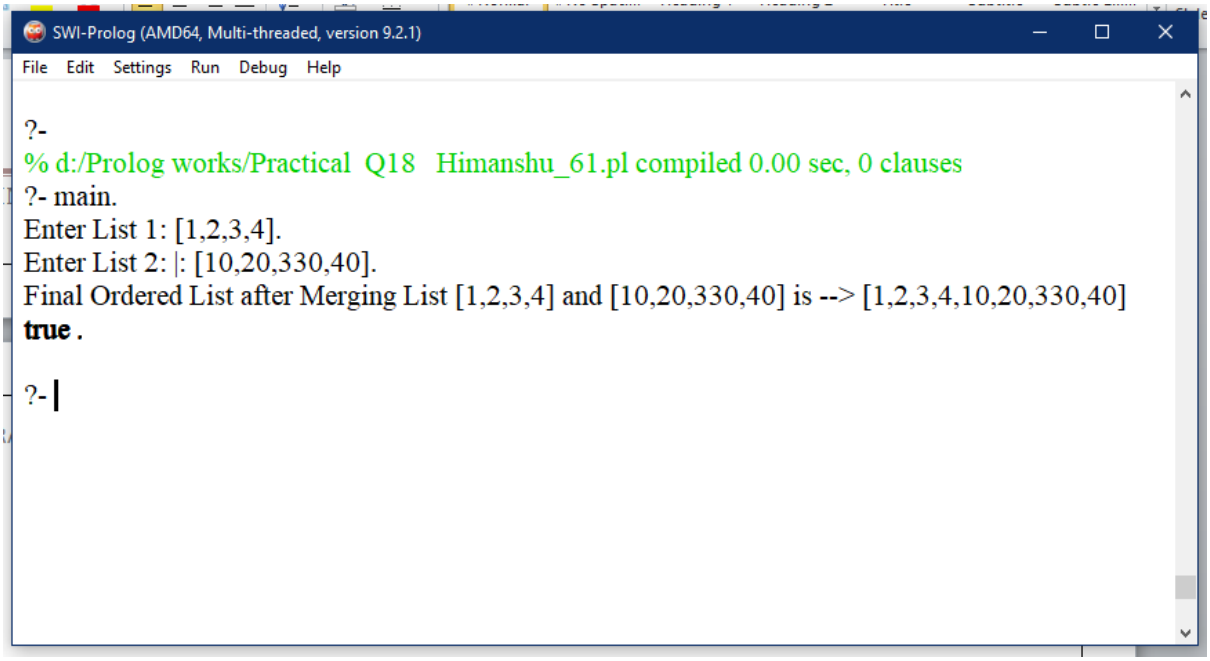
Write a program in PROLOG to implement merge (L1, L2, L3) where L1 is first ordered list and L2 is second ordered list and L3 represents the merged list %base case merge([], L, L).

➢ CODE:

```
merge([], L, L).
%base case
merge(L, [], L).
merge(L, [], L).
%main function
merge([X|Xs], [Y|Ys], [X|Z]) :-
X =< Y,
merge(Xs, [Y|Ys], Z).merge([X|Xs], [Y|Ys], [Y|Z]) :-
X > Y,
merge([X|Xs], Ys, Z).
main:-
write('Enter List 1: '),
read(L1),
write('Enter List 2: '),
read(L2),
merge(L1,L2,L3),
format('Final Ordered List after Merging List ~w and ~w is --> ~w', [L1,L2,L3]).
```

➢ OUTPUT:




SWI-Prolog (AMD64, Multi-threaded, version 9.2.1)
File Edit Settings Run Debug Help
?-
% d:/Prolog works/Practical Q18 Himanshu_61.pl compiled 0.00 sec, 0 clauses
?- main.
Enter List 1: [1,2,3,4].
Enter List 2: |: [10,20,330,40].
Final Ordered List after Merging List [1,2,3,4] and [10,20,330,40] is --> [1,2,3,4,10,20,330,40]
true .
?-