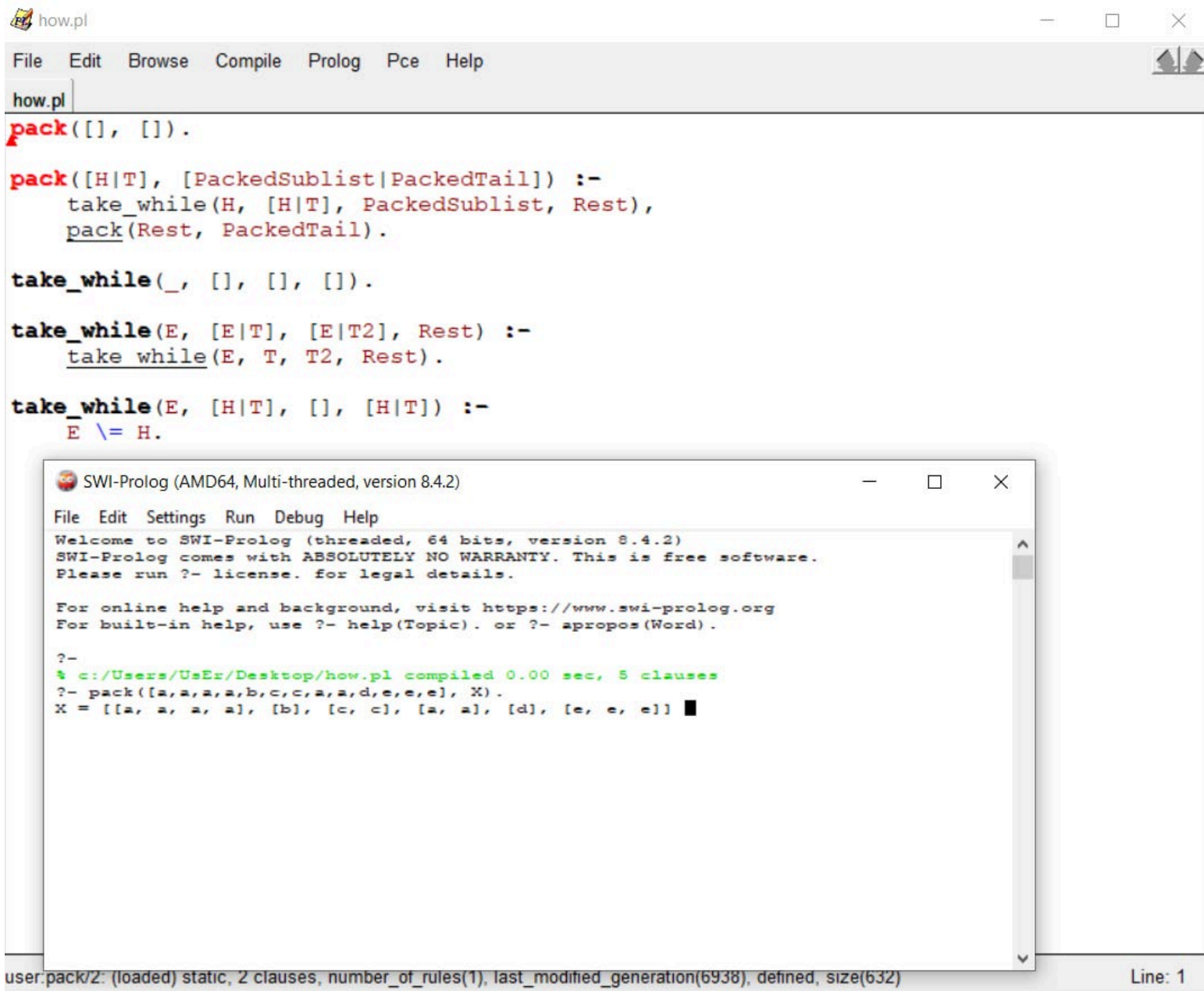


حل اسأله المحاضرة الماضية (علامة تعويض للتقييمات الفائتة بسبب المرض من اجل العلامة التامة)

عمل الطالب:

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The image shows a screenshot of a Prolog IDE window titled 'how.pl'. The main editor displays the following Prolog code:

```
pack([], []).  
  
pack([H|T], [PackedSublist|PackedTail]) :-  
    take_while(H, [H|T], PackedSublist, Rest),  
    pack(Rest, PackedTail).  
  
take_while(_, [], [], []).  
  
take_while(E, [E|T], [E|T2], Rest) :-  
    take_while(E, T, T2, Rest).  
  
take_while(E, [H|T], [], [H|T]) :-  
    E \= H.
```

Below the main editor, a smaller window titled 'SWI-Prolog (AMD64, Multi-threaded, version 8.4.2)' shows the output of the compilation and execution:

```
File Edit Settings Run Debug Help  
Welcome to SWI-Prolog (threaded, 64 bits, version 8.4.2)  
SWI-Prolog comes with ABSOLUTELY NO WARRANTY. This is free software.  
Please run ?- license. for legal details.  
  
For online help and background, visit https://www.swi-prolog.org  
For built-in help, use ?- help(Topic). or ?- apropos(Word).  
  
?-  
% c:/Users/UsEr/Desktop/how.pl compiled 0.00 sec, 5 clauses  
?- pack([a,a,a,a,b,c,c,a,a,d,e,e,e], X).  
X = [[a, a, a, a], [b], [c, c], [a, a], [d], [e, e, e]]
```

At the bottom of the IDE, a status bar shows: 'user:pack/2: (loaded) static, 2 clauses, number_of_rules(1), last_modified_generation(6938), defined, size(632) Line: 1'

```
pack([], []).
```

```
pack([H|T], [PackedSublist|PackedTail]) :-  
    take_while(H, [H|T], PackedSublist, Rest),  
    pack(Rest, PackedTail).
```

```
take_while(_, [], [], []).
```

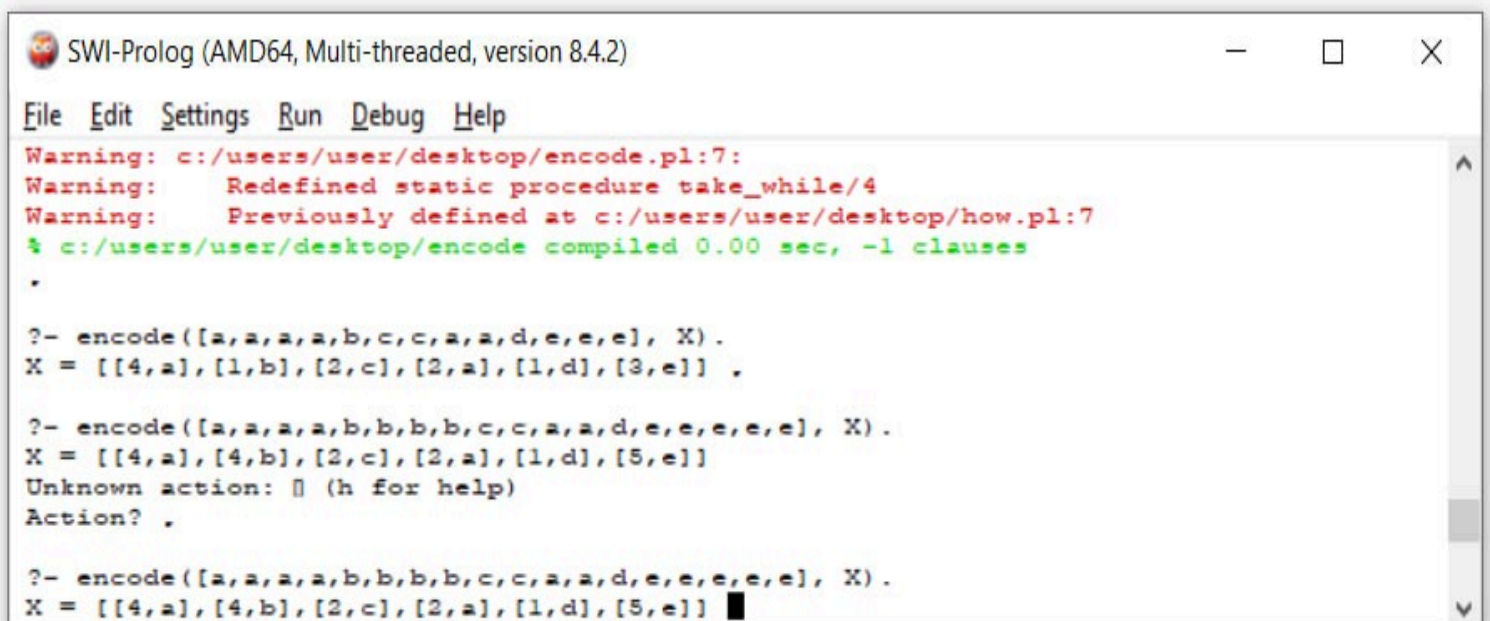
```
take_while(E, [E|T], [E|T2], Rest) :-  
    take_while(E, T, T2, Rest).
```

```
take_while(E, [H|T], [], [H|T]) :-  
    E \= H.
```

```
encode(List, Encoded) :-  
    pack(List, Packed),  
    transform(Packed, Encoded).
```

```
transform([], []).
```

```
transform([[H|T]|PackedTail], [[Count, H]|EncodedTail]) :-  
    length([H|T], Count),  
    transform(PackedTail, EncodedTail).
```



SWI-Prolog (AMD64, Multi-threaded, version 8.4.2)

File Edit Settings Run Debug Help

```
Warning: c:/users/user/desktop/encode.pl:7:  
Warning:   Redefined static procedure take_while/4  
Warning:   Previously defined at c:/users/user/desktop/how.pl:7  
% c:/users/user/desktop/encode compiled 0.00 sec, -1 clauses  
.  
  
?- encode([a,a,a,a,b,c,c,a,a,d,e,e,e], X).  
X = [[4,a],[1,b],[2,c],[2,a],[1,d],[3,e]] .  
  
?- encode([a,a,a,a,b,b,b,b,c,c,a,a,d,e,e,e,e,e], X).  
X = [[4,a],[4,b],[2,c],[2,a],[1,d],[5,e]]  
Unknown action: [] (h for help)  
Action? .  
  
?- encode([a,a,a,a,b,b,b,b,c,c,a,a,d,e,e,e,e,e], X).  
X = [[4,a],[4,b],[2,c],[2,a],[1,d],[5,e]]
```

```
replicate(H, N, ReplicatedList),
duplicate(T, N, Rest),
append(ReplicatedList, Rest, X).
```

```
replicate(_, 0, []).
```

```
replicate(E, N, [E|T]) :-
    N > 0,
    N1 is N - 1,
    replicate(E, N1, T).
```

Action? .

```
?- set_prolog_flag(answer_write_options, [max_depth(0)]).
true.
```

```
?- duplicate([a,b,c], 4, X).
X = [a,a,a,a,b,b,b,b,c,c,c,c]
Unknown action: [] (h for help)
Action?
Unknown action: [] (h for help)
Action?
Unknown action: [] (h for help)
Action? .
```

```
?- duplicate([a,b,c], 4, X).
X = [a,a,a,a,b,b,b,b,c,c,c,c]
Unknown action: [] (h for help)
Action?
Unknown action: [] (h for help)
Action? .
```

```
?- duplicate([a,b,c], 4, X).
X = [a,a,a,a,b,b,b,b,c,c,c,c] .
```

```
?- duplicate([a,b,c], 6, X).
X = [a,a,a,a,a,a,b,b,b,b,b,b,c,c,c,c,c,c]
```