

CT331 Assignment 4

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https://github.com/jameshhehir/ct331_assignment4

Question 1

Code:

```
2 %Definitions for isElementInList(El, List)
3 isElementInList(El,[El|_]).
4 isElementInList(El,[_|T]):- isElementInList(El,T).
5
```

Output:

```
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?- ['/Users/JimmyHehir/desktop/ct331_assignment4/assignment.pl'].
Warning: /Users/JimmyHehir/desktop/ct331_assignment4/assignment.pl:3:
Singleton variables: [EL,X]
true.

?- ['/Users/JimmyHehir/desktop/ct331_assignment4/assignment.pl'].
true.

?- isElementInList(1, []).
false.

?- isElementInList(1, [1]).
true .

?- isElementInList(1, [2]).
false.

?- isElementInList(2, [1,2,3]).
true .

?- isElementInList(7, [1,2,9,4,5]).
false.

?- |
```

Question 2

Code:

```
15 %Definitions for mergeLists(List1, List2, Merged)
16 mergeLists([], List2, List2).
17 mergeLists([Item | Tail1], List2, [Item | Merged]) :-
18     mergeLists(Tail1, List2, Merged).
19
```

Output:

```
?- mergeLists([7],[1,2,3], X).  
X = [7, 1, 2, 3].  
  
?- mergeLists([2],[1], X).  
X = [2, 1].  
  
?- mergeLists([1],[], X).  
X = [1].  
  
?- |
```

Question 3

Code:

```
6 %Definitions for reverseList(List, ReversedList)  
7 reverseList([], []).  
8 reverseList([H|T], ReversedList) :- mergeLists(Reversed_List, [H], ReversedList),  
9 reverseList(T, Reversed_List).
```

Output:

```
?- reverseList([1,2,3], X).  
X = [3, 2, 1] .  
  
?- reverseList([1], X).  
X = [1] .  
  
?- reverseList([], X).  
X = [] .
```

Question 4

Code:

```
11 %insertElementIntoListEnd(El, List, NewList)  
12 insertElementIntoListEnd(El, [ ], [El]).  
13 insertElementIntoListEnd(El, [H|T], [H|NewList]) :- insertElementIntoListEnd(El, T, NewList).  
14
```

Output:

```
?- insertElementIntoListEnd(7, [1,2,3], X).  
X = [1, 2, 3, 7] .  
  
?- insertElementIntoListEnd(2, [1], X).  
X = [1, 2] .  
  
?- insertElementIntoListEnd(1, [ ], X).  
X = [1] .
```