Question 1
    (a) [i] Yes, it can encode a list of number: [1,1,1,1]
        [ii] Yes, it can encode a list of lists of number : [[0],[0],[0],[0]]
    (b) [i] NO , the second and the fourth element <<nil.nil>.nil> cannot work, as it does not encode a number
        [ii] Yes, it can encode a list of lists of number :[[0],[1],[0],[1],[]]
    (c) [i]Yes, it can encode a list of number: [1,1,1,2,0]
        [ii] Yes, it can encode a list of number:[[0],[0],[0],[0,0],[]]

Question 2
        The given WHILE-program P seems to perform a depth-first traversal of an input tree represented as a nested list structure. Input X represent the root of tree It uses a stack to manage the traversal and constructs an output list Y to represent the length of any given input d by placing nil for each element it encounters. When each node is accessed, if it is not nil (meaning the node is a non-leaf node), it puts its left child node and right child node into the stack. If the node is nil, it adds nil to list Y.

Question3

```
X = var 0
Y = var 1
Z = var 2
Program read X{
        Y := cons nil nil;
        while X {
           Z := hd X;
           if Z {X := tl X}else{Y := nil; X:=nil}
     }
}
write Y
```