A **linear list** is a sequence of $n \geq 0$ nodes `X[1],X[2],...,X[n]` whose essential structural properties involve only the relative positions between items as they appear in a line. The only thing we care about in such structures are the facts that, if $n > 0$, `X[1]` is the first node and `X[n]` is the last node; and if $1 < k < n$, the kth node `X[k]` is preceded by `X[k-1]` and followed by `X[k+1]`.

The operations we might want to perform on linear lists include:

i) Gain access to the kth node of the list to examine and/or to change the contents of its fields.

ii) Delete the kth node.

iii) Delete the kth node.

iv) Combine two or more linear lists into a single list.

v) Split a linear list into two or more lists.

vi Make a copy of a linear list.

vii Determine the number of nodes in a list.

viii Sort the nodes of the list into ascending order based on certain fields of the nodes.

ix Search the list for the occurrence of a node with a particular value in some field.