Formal Methods in Software Engineering
Laboratory 9

1. Specify and implement in Dafny a class that implements the linked lists, as they are described in Section 10.2 Linked lists, Introduction to Algorithms, Th. Cormen et al. (an electronic copy can be found here: `https://sd.blackball.lv/library/Introduction_to_Algorithms_Third_Edition_(2009).pdf`).
   Then write the contracts of the class and show that (using Dafny) that it respects the contracts:

   (a) Add the ghost members needed to write specifications.

   (b) Write the class invariants that describe the valid states of the class objects.

   (c) for each method, write its specification (precondition and postcondition = its contract) and show that the method implementation verifies it. The specification must describe faithfully what the method should do.

   You may use as a starting point the specification of the class Node from the Section 1.2. Dafny Example, Dafny Reference Manual (`https://dafny.org/latest/DafnyRef/DafnyRef#sec-example`).
   See also the examples used in the presentation (`https://sites.google.com/view/fii-fmse/2023-2024/lectures`).