

**Petunjuk:**

1. Lakukan MOD 6 terhadap digit terakhir pada NIM Anda.
2. Sisanya menentukan problem mana saja yang harus Anda kerjakan.
  - Sisa 0 : mengerjakan Problem 1 dan 2
  - Sisa 1: mengerjakan Problem 1 dan 3
  - Sisa 2: mengerjakan Problem 1 dan 5
  - Sisa 3: mengerjakan Problem 2 dan 4
  - Sisa 4: mengerjakan Problem 3 dan 4
  - Sisa 5: mengerjakan Problem 4 dan 5

**Problem 1 (Searching)**

You are given a list, L, and another list, P, containing integers sorted in ascending order. The operation `printLots(L,P)` will print the elements in L that are in positions specified by P. For instance, if  $P = 1, 3, 4, 6$ , the elements in positions 1, 3, 4, and 6 in L are printed. Write the procedure `printLots(L,P)`. You may use only the public STL container operations. What is the running time of your procedure?

Reference → Book : 2014 Data Structures and Algorithm Analysis in C++ - Mark Allen Weiss, Chapter 3 List, Stack, and Queue , Pages 116 Exercise 3.1

**Problem 2 (Searching, Sorting & Insertion)**

Given two sorted lists, L1 and L2, write a procedure to compute  $L1 \cap L2$  using only the basic list operations.

Reference → Book : 2014 Data Structures and Algorithm Analysis in C++ - Mark Allen Weiss, Chapter 3 List, Stack, and Queue sub-Chapter 3.7, Pages 117 Exercise

**Problem 3 (Searching, Sorting, Insertion, Deletion)**

Given two sorted lists, L1 and L2, write a procedure to compute  $L1 \cup L2$  using only the basic list operations.

Reference → Book : 2014 Data Structures and Algorithm Analysis in C++ - Mark Allen Weiss, Chapter 3 List, Stack, and Queue sub-Chapter 3.7, Pages 117 Exercise

**Problem 4 (Searching)**

This problem are given a pointer to the first element of a linked list L. There are two possibilities for L: it either ends (snake) or its last element points back to one of the earlier elements in the list (snail). Give an algorithm that tests whether a given list L is a snake or a snail.

Reference → Book : 2017 Data Structures and Algorithms - Narasimha Karumanchi, Chapter 3 Linked List sub-Chapter 3.12 Linked List: Problem & Solution Problem-10

**Problem 5 (Searching, Insertion, Deletion)**

Assume that a singly linked list is implemented with a header node, but no tail node, and that it maintains only a pointer to the header node. Write a class that includes methods to

- a. return the size of the linked list
- b. print the linked list
- c. test if a value x is contained in the linked list
- d. add a value x if it is not already contained in the linked list
- e. remove a value x if it is contained in the linked list

Reference → Book : 2014 Data Structures and Algorithm Analysis in C++ - Mark Allen Weiss, Chapter 3 List, Stack, and Queue sub-Chapter 3.7, Pages 117 Exercise