Programming assignment 0

Getting started

All your submissions should be implemented in Go unless the problem specifies something different. You can download Go at https://go.dev/dl/. You can also use variouses package managers to install it, e.g., HomeBrew on macOS.

Problem 1

Write a program that simulate that you are rolling two dice 10 000 times. At the same time, keep track of the number of times you get the result (adding the dice values) 2, 3, ..., 11, 12. (Use a list to store a count of the numbers.) After the simulation, present the frequencies for the different numbers.

Problem 2

A random walk is basically a sequence of steps in some enclosed plane, where the direction of each step is random. The walk terminates when a maximal number of steps have been taken or when a step goes outside the given boundary of the plane.

For this task, assume a plane given by a grid, with the point $(0, 0)$ at the center. The size of the plane is given by an integer; if the given integer is k, then the values of the x and y coordinates can vary from $-k$ to k. Each step will be one unit up, one unit down, one unit to the right or one unit to the left (no diagonal movements).

Problem 3

Implement a generic BST. Your implementation should use structs and methods on those. Your BST should at least support adding, removing, and finding values. It should also support at least one way to walk the tree and apply a function that is passed as a parameter on each node.

Problem 4

Implement Quicksort on slices.

Submission guidelines

Submit your solutions as a single zip-file via Moodle no later than 17:00 on February 16, 2024 (cutoff 08:00 February 19). This is a group assignment that can be done in groups of one or two students. Your submission should contain well-structured and organized Go code for the problems with a README.txt (or .md) file that describes how to compile and run the Go programs.