The Forward algorithm can be used to solve the evaluation problem for Hidden Markov Models, i.e. to compute the probability of an observation sequence according to the model.

The Viterbi algorithm computes the most probably sequence of states corresponding to the observation sequence.

The two algorithms have a similar structure. Exploit this similarity and write pseudo-code (or real code) to compute in a single pass:

- The probability of the observation sequence
- The Viterbi path, i.e. sequence of states with the highest probability corresponding to the observation sequence
- The probability of the Viterbi path

Consider a version of the HMM model whose parameters are logarithms of probabilities rather than probabilities. Write pseudo-code for the Viterbi logarithm with the transition and emission log-probabilities as parameters.

Please send your solutions to gchrupala@lsv.uni-saarland.de by Thursday February 5.