Second homework assignment, due 15. 5. 2026 (as a zip file in Brute)

We have seen that a simulator of a Turing machine can be written in a couple of lines of Python. Simulators of quantum computers are not much more complicated. For inspiration, you may want to consider `https://github.com/Qiskit/qiskit-aer/tree/main/src/simulators/statevector`, which is a simulator of quantum circuits.

In this homework assignment, you can get 20 points for all of:

- in Python, implementing a simulator of Quantum Simulation Logic (QSL) introduced in `https://arxiv.org/abs/1508.05027`, published in `https://link.springer.com/article/10.1007/s11128-017-1679-7` (unless you have negotiated a different model of quantum computing).
- implementing one simple circuit (e.g., Hadamard on 2 qubits followed by a CNOT) within the simulator
- implementing Quantum Fourier Transform within the simulator,
- preparing a short document illustrating this (e.g. in PDF).

Here, any use of the LLMs are allowed and you can get up to 10 additional points for visualizations that help understand the workings of the QFT.