Course Project 1 (Due: 8:00 Dec 10, 2024)

- Implement the Francis QR algorithm for computing the Schur decomposition of a real matrix. Make sure your implementation has $O(n^3)$ complexity.
- Write a report (either in Chinese or in English) for your implementation. The report should contain necessary components such as code structure, detailed algorithm, numerical experiments (on accuracy, performance, and convergence behavior), etc. *However, an unnecessarily long report will negatively affect your grade.*
- Submit necessary supplementary data (programs, test examples, etc.) along with your report.
- You are not encouraged to collaborate with others, though discussions are permitted. Helpful inputs from peers and/or LLMs (such as chatGPT) should be properly acknowledged in the report.

  Note that LLMs can only be used to polish the language. A low-quality report that is logically incorrect runs the risk of being identified as a machine-generated report, and *may result in an immediate zero grade.*
- Your entire submission *cannot exceed 8 MB (i.e., 8,388,608 bytes)* unless otherwise approved.