

Scientific Programming (Wissenschaftliches Programmieren)

Exercise 9

1. Gaussian elimination with partial pivoting

- Extend the Gaussian elimination of the last exercise with [partial pivoting](#): Inspect the absolute values of the current column in all rows below the current one. Exchange the current row with the one containing the highest absolute value before doing the elimination.
- Make sure that the first two tests in `test_solvers.py` return the right values.
- Commit your changes.

2. Gaussian elimination with dependency detection

- Extend the Gaussian elimination with detection for linear dependency.
- The program should raise an appropriate exception (e.g. `ValueError`) if the system of equations is linearly dependent.
- Modify the test with the linearly dependent system of equation in `test_solvers.py` to check whether the correct exception is raised.
- Commit your changes.

3. API-documentation

- Set-up in the `docs/` subfolder of your project a Sphinx-project, which automatically extracts the API-documentation from your sources.
- Check that the API-documentation is created correctly.
- Add the relevant files to your repository (and the irrelevant files/directories to the `.gitignore` file).
- Commit your changes