

Submission Guidelines for Homework 1

VU Numerical High Performance Algorithms, WiSe 2018

due date: 22.10.2018, 18:00

1. Basics:

- Octave users: please use *version 4.4* or higher
- Matlab users: please use *version 9.2 (R2017a)* or higher
- No global variables allowed.
- Pay attention to the interface definitions (i.e., use the specified terms! In/output parameters must be in the specified order!)
- Your routines should always check the number and types of input arguments.
- Do not plot results in predefined routines! Plot results in scripts or self defined routines only.

2. Interface:

- For the blocked LU factorization routine implement the following interface:

$$[A, P] = plu(A, n)$$

– Input: $n \times n$ matrix A , n

– Output:

- * $n \times n$ matrices L and U stored in the array A
- * the permutation matrix P

- Additionally, write an evaluation-routine that calls and evaluates your *plu* implementation:

$$[rn, foe, fae, t] = pluStats(A, n)$$

– Input: $n \times n$ matrix A , n

– Output:

- * the relative residual norm rn
- * the relative forward error foe
- * the relative factorization error fae

* the runtime t

- Write a script *assignment1.m* to call your routines and plot your results.

3. Submission:

- Upload a single zip archive with all your source code files and your report (as a single PDF file named *report.pdf* with all plots and discussions of results) on the course page in Moodle.
- Name your archive **a<matriculation number>.zip** (e.g. *a01234567.zip*)
- Directories in the archive are not allowed.
- A complete submission should include the following files:
 - a) Routine(s): *plu.m*, *pluStats.m*, self defined routines (optional)
 - b) Script(s): *assignment1.m*
 - c) Documentation: *report.pdf*