

# 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*