



Session 4 Recap

CELEN087

Please check your learning outcomes by working on Lab Worksheet 4 and Homework Exercise Sheet 4.

Learning outcomes:

1. User-defined function:

- Know the standard structure of MATLAB functions
- Know the correct way of calling a function
- Know the structure of recursive function
- Know the differences between MATLAB script and function files
- Know the differences between iteration (loops) and recursion

2. Develop programming skills:

- Use appropriate types of input/output arguments like number (scalar) and vector (array) depending on the problem task
- Design different test cases to check the correctness of your functions
- Call sub-functions to support the computation in the main function
- Propose the method (algorithm) to solve a task problem first, then follow its idea to design MATLAB programs

Open questions (AI tools are allowed/recommended in your learning process):

1. So far, you have been introduced with all the fundamental structures in MATLAB that are sufficient to build your own programs. Besides working on exercises provided by tutors, think of some tasks that can be programmed into MATLAB scripts/functions for your own exercises.
2. Recall two methods you have learned for solving equations (Sem-1 CELEN036): *bisection method* and *fixed point iteration method*. Can you design MATLAB programs for them?
(Hint: both the iteration and recursion techniques can be applied here.)

The following key words will be frequently used in our teaching and assessment. Knowing the meaning of each will help your learning in MATLAB.

Vocabularies:

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|--|---------------------------|
| • user-defined function | • greatest common divisor |
| • input/output argument | • least common multiple |
| • call a function/make a function call | • factorial |
| • recursion/recursive function | • mean value |
| • sub-function | • digit |