



Session 3 Recap

CELEN087

Please check your learning outcomes by working on Lab Worksheet 3 and Homework Exercise Sheet 3.

Learning outcomes:

1. Logical statement:
 - Know the syntax in MATLAB and the precedence of evaluation.
 - Design suitable logical statements for conditions used in IF and While Loop structures.
2. IF and nest IF structure:
 - Design suitable structures to solve problems with multiple outcomes with clear logic.
3. For Loop:
 - Use For Loop for basic computations.
 - Manage the index vector or looping statements for solving questions.
 - Apply nested For Loop on 2-d arrays (matrices) with i, j indices.
4. While Loop:
 - Manage the conditional statement and looping statements with clear logic.
 - Ensure the final computation result is correct.
5. **Develop programming skills:**
 - Initialize suitable variables for solving questions.
 - Use suitable data structures (scalar/vector/matrix) for holding the computed values.
 - Design programs using While loop when the iteration numbers is not known.
 - For specific problems, know when/how to terminate the loops early before the program reach to the maximum number of iterations.
 - Know how to check the correctness of answers computed by your program.
 - Use “flag” variable to control the displayed message.
 - Analyze the logic in complex code segments.

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

1. For the two iteration/looping structures For Loop and While Loop, briefly state what are in common and what are their differences.
2. Recall the repeated steps in binary search on a sorted list of numbers (Sem-1). Without using recursion, we may also implement it by using the While Loop. Have a try!
(Hint: it is very convenient to use the array index for selecting the middle element or picking up the left/right half list in the process.)

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:

- logical/Boolean values
- iteration/loop
- nested IF/For
- conditional statement
- Fibonacci number
- valid/invalid input
- initialize the variable
- run/execute the program
- terminate the program
- linear search
- search key
- binary search
- divisible
- leap year
- counter variable
- flag variable
- comment/uncomment