

Elementary MATLAB Course

Instructor: Sina Ghanbari

April 16, 2024

First Set of Optional Exercises

1. Let's develop the solved BMI problem in the last session. Consider a group of people with different weights and heights (Table 1). Write a program to calculate the BMI of each group member and display the results in a table.

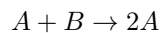
Table 1: Weight and height of group members

Name	Weight (kg)	Height (m)
John	74.5	1.63
Isabella	92.9	1.81
Peter	77.6	1.86
Anna	64.8	1.45
Matteo	64.7	1.94
Emily	78.0	1.91
Joe	62.6	1.64

2. Using Loop definition, write a script to describe the "Fibonacci Sequence." The script gives a number from the user and then returns the n^{th} number of the Fibonacci Sequence. Use `disp` or `fprintf` commands to show the result!
3. You have a tank containing two chemicals, A and B. The tank is well-mixed, and the concentrations of A and B at time $t = 0$ are given by:

$$[A]_0 = 100 \frac{\text{mol}}{\text{m}^3} \quad , \quad [B]_0 = 200 \frac{\text{mol}}{\text{m}^3}$$

The two chemicals react according to the following scheme:



The rate of this reaction is given by the equation:

$$\frac{dC_A}{dt} = k \cdot [A] \cdot [B]$$

Where $k = 0.001 \frac{\text{m}^3}{\text{mol} \cdot \text{s}}$ is the rate constant!

Calculate the concentrations of A and B in the tank after 10 seconds, and use `disp` or `fprintf` commands to show the result!