Tutorial 2 Total 10 marks

Question 1 (1 mark)

(i) Log into the remote server (or use your own machine) using the username and password provided.

(ii) Create a folder called Tutorial_2. All of your solutions for this tutorial will be placed inside this folder.

Question 2 (2 marks)

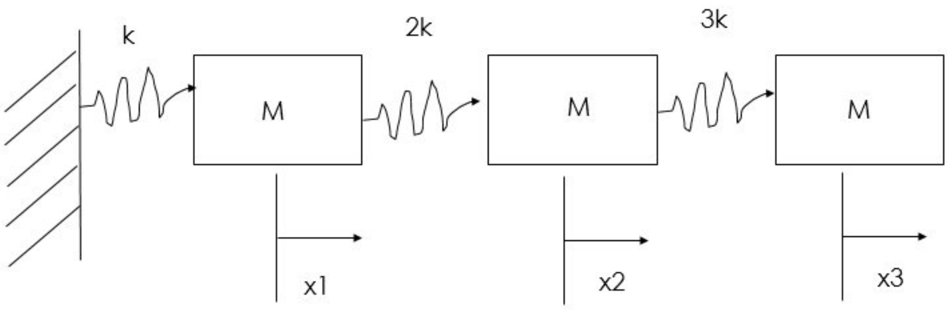
The Lotka-Volterra equations for the relationship between a predator population y(t) and prey x(t) can be written as:

$$\frac{dx}{dt} = \alpha x - \beta xy$$
$$\frac{dy}{dt} = -\gamma y + \delta xy$$

where α, β, γ *and* δ are constants. Given the initial conditions and constants provided to you by the TA, write a code (saved as Tutorial_2a.c in the folder above) which finds the populations x and y after time T.

Question 3 (4 marks)

Use Euler's method to integrate in time the mass-spring system shown below using the initial conditions and constant values provided to you by the TA. Create a code called Tutorial_2a.c for this purpose, and save it in the folder above.



Your code should contain the following features:

(i) All codes should employ the function Compute_Accelerations() developed during last week's tutorial.

(ii) All codes should save the positions x1,x2,x3 and the velocity and accelerations of each mass to a file.

(iii) Create a graph of the accelerations. Save the graph and place it inside your folder.