

## Homework #4: Shortest Path Routing

Due date: May 30, 2024

In this homework, you are asked to write a MATLAB program to find the distance matrix via the short path routing algorithm in the lecture notes. Please download the adjacency matrix of network A ([network\\_A.mat](#) that contains a 100x100 [matrix named "A"](#)) on ILMS.

1. The matrix A is the adjacency matrix of a network with 100 nodes.
  - $A(i,j)=1$ , if there is an edge between nodes i and j.
  - $A(i,j)=0$ , otherwise.
2. Please use matrix A to find the final distance matrix d (Global View).
  - $d(i,j)$  is the distance (of the shortest path) from node i to j.

Upload two files to ILMS.(Please code by matlab.)

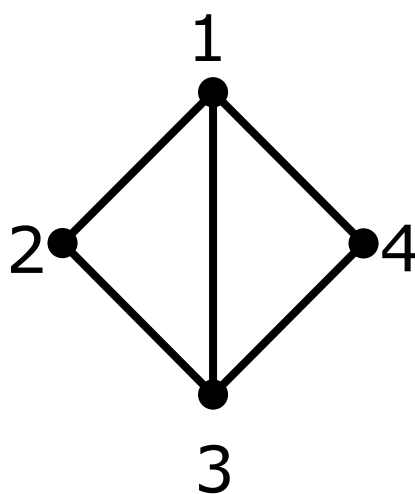
1. source code [file named "code.m"](#)
2. result data [file named "result.mat"](#) that contains the following
  - [distance matrix named "d"](#).

Other requirement:

- You should use "load" to get inputdata.
- Programs should have comments.

Example:

$$A = \begin{matrix} & \begin{matrix} 1 & 2 & 3 & 4 \end{matrix} \\ \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} & \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 \end{bmatrix} \end{matrix}$$



$$d = \begin{matrix} & \begin{matrix} 1 & 2 & 3 & 4 \end{matrix} \\ \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} & \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 2 \\ 1 & 1 & 0 & 1 \\ 1 & 2 & 1 & 0 \end{bmatrix} \end{matrix}$$